DCN FLEP-00001
COMMENTER Missouri Department of Natural Resources
SUBJECT UNWAS1
COMMENT After a great deal of discussion and deliberation, we have decided that adding mercury lamps to the Universal Waste Proposal is the best of the two options.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements for hazardous waste lamps (i.e., universal waste rule is less stringent than full Subtitle C management standards), but also allows the Agency to set specific management standards to control potential emissions.

DCN FLEP-00006
COMMENTER Owens Brockway Glass Container Inc.
SUBJECT UNWAS1
COMMENT The relative advantage of regulating mercury-containing lamps as hazardous waste are greatly outweighed by the potential burdens attendant with the cost of compliance and the subsequent reluctance to participate in energy efficient lighting programs. As outlined in the proposed rule the greatest reduction in mercury releases to the environment will be realized by the facilitation of participation in these programs. Energy efficient programs in the long term will result in a greater reduction of risk posed by mercury than the regulation of disposal of lamps through the Universal Waste Management System.

The option 2 projected annual cost savings may not be significant enough to encourage participation by small and medium sized facilities that either lack the manpower alternatives to dedicate the time to the program or that cannot justify the economic expense considering the cost imposed by the regulatory paperwork, training, and record keeping.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore are subject to full

RCRA Subtitle C management standards. By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards).

Replacing energy inefficient lighting systems under one of the energy-efficient lighting programs could require the use and eventual disposal of hazardous waste lamps. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a topical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent only a slight decrease in IRR despite a 100 percent increase in waste management costs. This result suggests that the cost associated with lamp replacement programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00007
COMMENTER Gates Corporation
SUBJECT UNWAS1
COMMENT In contrast, the complexity of managing mercury-containing lamps would not be substantially reduced by the universal waste proposal. The universal waste proposal would create a new special collection system in addition to the existing RCRA requirements. In light of the insignificant risk to human health and the environment presented by mercury containing lamps, Gates urges EPA to reject the universal waste proposal.
RESPONSE
The Agency does not agree with the commenter that adding hazardous waste lamps to the universal waste rule does not reduce management requirements. Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore are subject to full RCRA Subtitle C management standards. By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). Handlers will only need to comply with the universal waste standards, rather than full RCRA Subtitle C standards.

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp

accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress.* The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury. Hazardous waste lamps that contain mercury are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency has concluded that some management controls are essential for this waste.

DCN FLEP-00011
COMMENTER General Motors
SUBJECT UNWAS1
COMMENT Option Two: Universal Waste Management System (page 38295) GM agrees that spent lamps may appropriately be considered "universal wastes": i.e., generated in a wide variety of settings by a very large number of generators, and present in significant volumes in municipal waste streams. However, although Option Two would provide some relief from the requirements for collection of spent lamps, it would not provide any relief for ultimate treatment and disposal. In our opinion, this option would not provide enough incentive for generators to participate in the Green Lights program.
RESPONSE
The Agency agrees with the commenter that hazardous waste lamps may appropriately be considered universal wastes. Hazardous waste lamps meet the criteria for determining if hazardous lamps fits into a universal waste management regulatory program and if the streamlined standards of the universal waste program would improve the overall management of the waste. The criteria, which are codified at 40 CFR 273.81, include a) the waste must be a hazardous waste generated by a wide variety of generators; b) the waste, or category of waste, should not be exclusive to a particular industry but must be generated by a wide variety of establishments; c) the waste should be generated frequently, but in relatively small quantities; d) systems to be used for collecting the waste should ensure close stewardship of the waste; e) the risks posed by the waste during accumulation and transport should be relatively low compared to the risks posed by other hazardous waste and specific management standards would be protective of human health and the

environment during accumulation and transport; f) regulation of the waste under the universal waste rule should result in the diversion of the waste from management with non-hazardous waste streams; g) regulation of the waste as a universal waste should improve implementation of and compliance with the hazardous waste regulatory program.

The hazardous waste lamps final rule does not amend the existing standards for destination facilities (i.e., recycling facilities and treatment facilities). Destination facilities are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment and storage facilities. EPA believes that with adequate state oversight, universal waste lamps can be safely recycled, allowing the mercury and other economically viable materials to be reclaimed.

Replacing energy inefficient lighting systems under one of the energy-efficient lighting programs, such as the Green Lights program, could require the use and eventual disposal of hazardous waste lamps. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase. The Agency performed calculations on the impact of disposal costs on a lighting upgrade's internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, only a slight decrease in IRR despite a 100 percent increase in waste management costs. This result suggests that the cost associated with lamp replacement programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00012
COMMENTER Arkansas Dept. of Poll. Cont. and Ecol.
SUBJECT UNWAS1
COMMENT It is the opinion of the Arkansas Department of Pollution Control and Ecology that the preferable solution to the regulation of the disposal of mercury-containing lamps is the second option you described in 59 FR 38302. That approach, as explained in your summary would add mercury lamps to EPA's Universal Waste Management System, which was proposed for batteries and pesticides on February 11, 1993 (58 FR 8102). The summary described the Universal Waste approach as a streamlined, reduced regulatory structure designed to address the management of certain widely generated wastes currently subject to full Subtitle C RCRA regulations. The overall goal of reducing full Subtitle C RCRA regulations with a view to encouraging participation in energy-efficient lighting programs and the resulting promotion of the energy-efficiency and the environmental benefits derived from that program is a goal worth

pursuing. As mentioned, the use of energy-efficient lighting can reduce mercury emissions from coal-burning power plants as well as emissions of carbon dioxide and sulfur oxide. Mercury-containing lamps certainly seem to fit the characteristics of "universal wastes" as they are frequently generated in a wide variety of settings other than the industrial settings usually associated with hazardous wastes; are generated by a vast community, the size of which poses implementation difficulties for both those who are regulated and the regulatory agencies charged with implementing the hazardous waste program; and may be present in significant volumes in the municipal waste stream. There are many advantages to using the Universal Waste Management System designation for mercury-containing lamps and its special collection system which could remove some barriers to management of these lamps under the Subtitle C system by reducing the technical and paper-work requirements, thus making collection more efficient and economical. Also, as pointed out, this approach encourages participation in energy-efficient lighting programs such as "Green Lights".

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN SCSP-00014
COMMENTER Miles, Inc.
SUBJECT UNWAS1
COMMENT Fluorescent Light Bulbs Miles also believes that fluorescent light bulbs meet the conditions in the special waste collection system. These bulbs are generally from a large number of sources on an intermittent basis. The most effect lighting management programs will replace a large number of lamps on a periodic basis. In addition, a key principle in the EPA Green Lights program is the wholesale replacement of less efficient bulbs with more efficient bulbs to conserve energy and reduce air emissions from power plants. Consequently, a significant number of bulbs are generated at a single time. The number of bulbs generated can be sufficient to make the facility a

regulated generator, even if the facility is a medium sized office. Typically, these bulbs are disposed of in the municipal waste stream and have the potential to be released to the environment. Again, the manifest and permit requirements are so difficult to comply with, that most generators are unwilling to commit the resources to recycle these types of bulbs.

RESPONSE

The Agency agrees with the commenter that hazardous waste lamps, such as fluorescent light bulbs, meet the factors codified in 40 CFR 273.81 for universal wastes. The factors include a) the waste must be a hazardous waste generated by a wide variety of generators; b) the waste, or category of waste, should not be exclusive to a particular industry but must be generated by a wide variety of establishments; c) the waste should be generated frequently, but in relatively small quantities; d) systems to be used for collecting the waste should ensure close stewardship of the waste; e) the risks posed by the waste during accumulation and transport should be relatively low compared to the risks posed by other hazardous waste and specific management standards would be protective of human health and the environment during accumulation and transport; f) regulation of the waste under the universal waste rule should result in the diversion of the waste from management with non-hazardous waste streams; g) regulation of the waste as a universal waste should improve implementation of and compliance with the hazardous waste regulatory program.

Replacing energy inefficient lighting systems under one of the energy-efficient lighting programs, such as the Green Lights program, could require the use and eventual disposal of larger quantities of hazardous waste lamps. Before today=s hazardous waste lamps final rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation and recordkeeping are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. Facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility=s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in Part 262. The notification in today=s rule is a new requirement only for generators of universal waste lamps that have never generated more than 100 kg of hazardous waste in a calendar month, but now accumulate more than 5,000 kg of universal waste lamps.

DCN FLEP-00015
COMMENTER USPCI
SUBJECT UNWAS1
COMMENT Under the second option, mercury lamps would remain subject to Subtitle C. However, the lamps could be managed pursuant to the proposed Universal waste Management System as set forth in EPA's

proposed rulemaking of February 11, 1993.

RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Destination facilities are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment and storage facilities under RCRA Subtitle C.

DCN FLEP-00017

COMMENTER Charles W. Knight

SUBJECT UNWAS1

COMMENT Finally, your department through its "Green Lights" program is encouraging the upgrade of facility lighting. This program has great potential to reduce energy consumption along with greenhouse gases, NO[x], and SO[x]. The reduction of energy use, greenhouse gases, and acid rain precursors is beneficial to both the environment and the economy. Listing mercury-containing lamps as hazardous or otherwise adding cost to their management, i.e. universal waste proposal, would make relamping less cost effective, or perhaps not at all; and would negatively impact this good program.

RESPONSE

The Agency would like to thank the commenter for submitting comments on the proposed rule. The commenter appears to be asserting that promulgation of the universal waste option would lead to additional regulatory barriers to participation in energy-efficient lighting programs, such as the EPA Green Lights program. The Agency disagrees. Under the full Subtitle C hazardous waste management system, hazardous waste lamps must be managed as hazardous waste if the lamps exhibit a hazardous waste characteristic. The regulations for the management of hazardous waste have been known to discourage participation in energy-efficient lighting programs. The universal waste management standards under option 2, however, establish significantly less stringent standards for the management of hazardous waste lamps, and the Agency believes this will result in significantly lower barriers to participation in energy-efficient lighting programs.

A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase. The Agency performed calculations on the impact of disposal costs on a lighting upgrade's internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA

DCN FLEP-00019
COMMENTER United States Air Force
SUBJECT UNWAS1
COMMENT 5. Proposed Option 2 (i.e. universal waste management system/special collection system) is an extremely undesirable option in that available data does not indicate that the risk to human health and the environment from mercury release from mercury-containing lamps is significant enough to warrant the excess of record keeping, storage, notification, management and disposal requirements contained in this option. Further, this proposed option is even more onerous since it addresses all lamps that are hazardous waste.
RESPONSE
The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

The Agency does not agree with the commenter that adding hazardous waste lamps to the

universal waste rule makes management of hazardous waste lamps more onerous. Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore were subject to full RCRA Subtitle C management requirements. By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00020
COMMENTER Deere and Company
SUBJECT UNWAS1
COMMENT Many of the facilities generating this waste do not have the regulatory expertise to deal with the more complicated disposal strategy in Option 2. Compliance will be enhanced by selection of a system which is simple and easy to comply with. Option 2 is certainly preferable, however, to managing this waste under the regular RCRA program. While it is better than no program, the increased regulations do not provide much in the way of environmental benefit for the increased resources required over Option 2

RESPONSE
Under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore were subject to full RCRA Subtitle C management requirements. By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). For example, hazardous waste manifests are not required. Instead, the universal waste rule includes a recordkeeping requirement for large quantity handlers only and this record may take the form of a log, invoice, manifest, bill of lading or other shipping document. Standard business records that are normally kept by businesses will fulfill this requirement. Small quantity handlers are not required to keep records of shipments of universal waste lamps. This allows for flexibility in recordkeeping requirements and meshes with normal business practices.

DCN FLEP-00021
COMMENTER Indianapolis Power and Light Co.
SUBJECT UNWAS1

COMMENT The universal waste option is not the answer to this problem. As long as lighting wastes remain under the umbrella of Subtitle C regulation, there will be significant economic burdens associated with relamping programs. Under the universal waste option, lighting wastes would remain subject to the most onerous components of the Subtitle C program: the land disposal restrictions program -- which is only becoming more onerous and the costs of Subtitle C disposal.

RESPONSE

The Agency does not agree with the commenter=s statement that there will be significant economic burdens associated with relamping programs. Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste (40 CFR Parts 262, 263). In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g. universal wastes cannot be land disposed without meeting treatment standards, dilution prohibition, etc) but not the administrative requirements (e.g. notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN SCSP-00021
COMMENTER NYNEX
SUBJECT UNWAS1

COMMENT There are many products that are well suited for "universal" hazardous waste For instance, in addition to batteries and used pesticides, fluorescent light and used antifreeze, both of which may fail current or lowered criteria for toxicity characteristic leaching procedure (TCLP), are good candidates for universal waste status.

RESPONSE

The Agency would like to thank the commenter for submitting comments on the proposed rule. The Agency agrees with the commenter that fluorescent lights are well suited for the universal waste management standards and is including all waste lamps that exhibit a hazardous waste characteristic in today=s rulemaking. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency notes that spent antifreeze was not included in the universal waste rule finalized on May 11, 1995 due to insufficient information pertaining to antifreeze, and the regulation of antifreeze is beyond the scope of today=s rulemaking. States with authorized universal waste programs may have the authority to add spent antifreeze to their individual state programs.

DCN FLEP-00022

COMMENTER Cooper Industries

SUBJECT UNWAS1

COMMENT The proposed Universal Waste approach would not solve the current problems associated with lamp disposal. Cooper Industries does not believe that Universal Waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep costs of lamp replacement very high.

RESPONSE

Under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards. By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because

the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The EPA believes that including hazardous waste lamps in the universal waste regulations is environmentally protective. The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Examples of acceptable packaging could include placing the lamps evenly spaced in double or triple-ply cardboard containers with closed lids. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. An example of such containment could include placing unintentionally broken lamps in closed wax fiberboard drums.

The Agency points out that in addition to these container and packaging provisions, universal waste handlers, including handlers of universal waste lamps, must comply with the provisions of 40 CFR ''273.17 and 273.37 for responding to releases of universal waste. Handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste and, if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR Parts 260 through 268, as well as all other applicable statutory provisions.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00023
COMMENTER Kmart Corporation
SUBJECT UNWAS1
COMMENT In contrast to the above alternative, the proposed Universal Waste approach would not solve the current problems associated with lamp disposal. Kmart Corporation believes that Universal Waste may actually work to increase risks by encouraging the

accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep costs of lamp replacement very high.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps. The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Examples of acceptable packaging could include placing the lamps evenly spaced in double or triple-ply cardboard containers with closed lids. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. An example of such containment could include placing unintentionally broken lamps in closed wax fiberboard drums.

The Agency points out that in addition to these container and packaging provisions, universal waste handlers, including handlers of universal waste lamps, must comply with the provisions of 40 CFR ''273.17 and 273.37 for responding to releases of universal waste. Handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste and, if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR Parts 260 through 268, as well as all other applicable statutory provisions.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost

the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00024
COMMENTER EG&G Rocky Flats, Inc.
SUBJECT UNWAS1
COMMENT Based on EPA's own data, and the data reported in the Research Triangle Park Report, it is our position that the selection of the Special Collection System option is unwarranted. With regard to the selection of the Conditional Exclusion option, we acknowledge that this option is more reasonable than the Special Collection System option and that adoption of the Conditional Exclusion option would simplify fluorescent bulb management and reduce costs associated with managing the bulbs. However, we believe, based on the current technical data describing the waste stream as presenting a "negligible" or "insignificant" danger to human health or the environment, that regulation of fluorescent light bulbs is unnecessary, unwarranted, and excessively restrictive.
RESPONSE
The Agency would like to thank the commenter for submitting comments on the proposed rule. The commenter states that any regulation of the fluorescent light tubes is Aunnecessary, unwarranted, and excessively restrictive@ due to its lower risk to human health and the environment. The Agency disagrees. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study*

Report to Congress. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN FLEP-00025
COMMENTER Environmental Energy Group/NAEP
SUBJECT UNWAS1
COMMENT NEMA, through it's Residential Controls Section, has supported the inclusion of the waste thermostat containing mercury under the Universal waste rule by previously submitted comment to that effect. Such approaches (the thermostat to be designated as a Universal waste and the electric lamp to be exempted) do not present the type of policy consistency which should be fashioned by the agency. This is particularly true in view of future and expected mercury contributions in solid waste from electric lamps as a waste stream. The most recent and reordered listing of hazardous substances under CERCLA lists mercury as the third most visible remediation concern preceded only by lead and arsenic on this list of 275 chemicals. (attachment 1) [See hard copy of Comment FLEP-00025 for attachment.] This level of contaminant priority does not support continued land disposal of mercury, generally.
RESPONSE
The Agency would like to thank the commenter for submitting comments on the proposed rule. The Agency generally agrees with the commenter that land disposal of mercury should be discouraged and is not promulgating the conditional exclusion that would have allowed disposal in municipal landfills. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the

proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00025
COMMENTER Environmental Energy Group/NAEP
SUBJECT UNWAS1
COMMENT POSITION We support the selection of Option 2 with a five year sunset provision.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal wasterule is less stringent than full Subtitle C management standards).

The Agency is not including a sunset provision with today's final rule. The Agency believes that the data and information provided to the Agency and the Agency's own studies and analyses that were conducted during the period of time since the proposed rulemaking on hazardous waste lamps provide adequate evidence of the behavior of mercury in the environment and the potential releases of mercury to the environment to support today's final rule. The Agency notes, however, that should sufficient and compelling information related to the behavior of mercury become available in the future, the Agency can always re-evaluate the standards promulgated in today's final rule.

DCN FLEP-00025
COMMENTER Environmental Energy Group/NAEP
SUBJECT UNWAS1
COMMENT DISCUSSION We appreciate this opportunity to submit comment concerning the proposed rule for disposing of mercury containing electric lamps. The balance which the agency should construct would be one which promotes the general concepts of responsible care, waste minimization and materials reuse, and the energy conservation benefits of energy efficient lighting attached to sustainable environmental decision making. We feel that exempting targeted products at this stage of development of the new Universal waste concept would be premature and may create an unwarranted precedent. The reduced management approach under Option 2 rather that an exempted status under Option 1, viewed

as a continuous process, should be structured to recognize innovations in the manufacturing of safer, non-toxic or less toxic products.

RESPONSE

The Agency agrees with the commenter that a reduced management approach for handling hazardous waste lamps is the best approach. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Source reduction, which is the reduction or elimination of the toxicity and/or volume of a waste product, is at the top of EPA's hierarchy of solid waste management methods. The Agency encourages cost-effective source reduction of mercury contained in hazardous waste lamps. Second on the hierarchy is recycling. Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of hazardous waste lamps. Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste. Today=s rule retains requirements for hazardous waste lamps to ultimately be managed in accordance with RCRA Subtitle C hazardous waste management requirements. This may provide incentives for lamp manufacturers to pursue additional source reduction efforts to reduce or eliminate the amount of mercury used in the manufacture of fluorescent tubes. If source reduction is pursued aggressively by the hazardous waste lamp manufacturing industry and more lamps are managed as universal waste, the overall contribution of mercury from fluorescent lamps to municipal solid waste should decrease over time.

DCN FLEP-00025

COMMENTER Environmental Energy Group/NAEP

SUBJECT UNWAS1

COMMENT From a different perspective, as general solid waste recycling efforts continue to expand (paper, glass, aluminum, yard waste, etc.) solid waste materials remaining in the waste stream should be expected to increase in overall toxicity. Option 2 with an effective educational outreach constitutes a necessary balance in keeping with broad environmental objectives; to encourage reductions in the generation and disposal of all wastes with better control over hazardous or toxic waste constituents within

the waste stream.

RESPONSE

The Agency agrees with the commenter that the addition of hazardous waste lamps to the universal waste rule is the better of the two proposed options. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00025

COMMENTER Environmental Energy Group/NAEP

SUBJECT UNWAS1

COMMENT Overall we believe there are sufficient reasons to designate waste electric and fluorescent lamps as a Universal waste at this time to simplify procedures and reduce the burdens for the public and the regulatory community.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

DCN FLEP-00026

COMMENTER Thomas Industries, Inc.

SUBJECT UNWAS1

COMMENT Position on Universal waste The proposed Universal waste

approach would not solve the current problems associated with lamp disposal. Thomas Industries does not believe that Universal Waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep costs of lamp replacement very high.

RESPONSE

The Agency does not agree with the commenter. Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA does not believe that allowing handlers of spent lamps to accumulate the lamps for longer periods of time will increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Examples of acceptable packaging could include placing the lamps evenly spaced in double or triple-ply cardboard containers with closed lids. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. An example of such containment could include placing unintentionally broken lamps in closed wax fiberboard drums. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost

the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00027
COMMENTER Georgia Dept. of Natural Resources
SUBJECT UNWAS1
COMMENT 2. GAEPD agrees with the proposed 273.2 criteria for petitions to add other universal hazardous wastes to Part 273. However, GAEPD feels that all petitions should be evaluated and new wastes proposed by USEPA in order to ensure national consistency. GAEPD supports the inclusion of used anti-freeze, used mercury switch thermostats and used fluorescent tubes in the initial rule.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency notes that mercury thermostats were included as universal waste in the universal waste rule finalized on May 11, 1995. Spent antifreeze was not included in the final universal waste rule due to insufficient information pertaining to antifreeze, and the regulation of antifreeze is beyond the scope of today-s rulemaking. States with authorized universal waste programs may have the authority to add spent antifreeze to their individual state programs through the petition process.

DCN FLEP-00029
COMMENTER Texaco, Inc.
SUBJECT UNWAS1
COMMENT In addition to EPA's rationale provided in this proposed rule, Texaco would like to add that, as many of our facilities do not meet the definition of a conditionally exempt small quantity generator ("CESQG"), management of small quantities of mercury-containing lamps would be overly burdensome if the special waste, collection system option were to be selected.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps.

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Hazardous waste lamps that are managed as universal waste under 40 CFR Part 273 do not have to be included in a facility=s determination of hazardous waste generator status (40 CFR 261.5(c)(6)). Therefore, if a generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the hazardous waste generator regulations in Part 262. A generator that generates more than 100 kilograms of hazardous waste in addition to universal waste lamps would be regulated as a small or large quantity hazardous waste generator and would be required to manage all hazardous wastes not included within the scope of the universal waste rule in accordance with all applicable full Subtitle C hazardous waste management standards.

DCN FLEP-00031
COMMENTER Potomac Electric Power Co.
SUBJECT UNWAS1
COMMENT The alternative option, (Option 2), proposed by EPA is more limited in scope and would involve including all spent hazardous waste lamps (e.g., incandescent and neon, as opposed to just mercury-containing lamps) in the universal waste rule. Even though lighting wastes under option 2 would be subject to relaxed collection and storage standards, they would remain subject to the most onerous components of the Subtitle C system -- the land disposal restrictions program (which is becoming ever more onerous) and the costs of Subtitle C disposal.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Specifically, the transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping,

storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00031
COMMENTER Potomac Electric Power Co.
SUBJECT UNWAS1
COMMENT It is clear that Option 2 would not promote the Agency's program in the manner that is most beneficial to the environment because it would severely frustrate participation in energy-efficient relamping programs by driving up the costs of compliance.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). These calculations do not agree with the commenter=s statement that the costs of compliance will be driven up for relamping programs. At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00032
COMMENTER Niagara Mohawk
SUBJECT UNWAS1
COMMENT 9. The universal waste option is not the answer to this

> problem. As long as lighting wastes remain under the umbrella of Subtitle C regulation, there will be significant economic burdens associated with relamping programs. Under the universal waste option, lighting wastes would remain subject to the most onerous components of the Subtitle C program: the land disposal restrictions program -- which is only becoming more onerous. and the costs of Subtitle C disposal.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). These calculations do not agree with the commenter=s statement that the costs of compliance will be driven up for relamping programs. At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00032
COMMENTER Oklahoma Gas and Electric
SUBJECT UNWAS1
COMMENT By including wastes that are not only universal to industry but also to households, this special collection system could allow industry to incorporate its employees' HHW into identical industrial waste streams. This will ultimately assure proper recycling or disposal of HHW. The wastes suggested in these comments and the propose rule are all wastes generated in households. Each of us could find in our household or garage a broken thermometer or used mercury containing lamp, used incandescent lamps, spent solvents and the shop rags that go with them, unusable pesticides, paint wastes, used batteries and waste antifreeze at some point during an average year. By incorporating into this rule wastes universally generated by industry and households/ there lies an opportunity to keep HHW out of municipal landfills and into responsible hazardous waste recycling or disposal programs. USED MERCURY CONTAINING MANUFACTURED ITEMS AND MERCURY CONTAMINATED WASTES Used mercury containing manufactured items or mercury contaminated wastes include items such as thermometers, mercury containing lighting wastes (except fluorescent lighting wastes), rags and water from mercury handling operations and mercury contaminated laboratory waste. Small amounts of these wastes are generated slowly at a variety of facilities through activities such as maintenance of mercury filled equipment at generating stations, laboratory and field testing, and of course, changing burned out lamps. Recovery efforts would be streamlined and more cost effective if small amounts of these wastes could be consolidated and shipped for mercury recovery in larger quantities. The specific exclusion of fluorescent lighting wastes in these remarks is in anticipation of a total exclusion from title C regulation for fluorescent lighting wastes. In the event that exclusion does not materialize, it is recommended fluorescent lighting waste be included in the special collection system rules with other mercury containing lighting wastes.

RESPONSE

Household wastes are excluded from RCRA Subtitle C regulation under 40 CFR 261.4 (b)(1). Therefore, a program such as that suggested by the commenter can not be required. However, this co-mingling of HHW with like industrial waste is a very good thing to do on a voluntary basis, and household waste lamps will be managed very well in the universal waste scheme. EPA

therefore, encourages this program.

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the waste suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as spent antifreeze, to their individual state universal waste programs through the petition process.

DCN FLEP-00034
COMMENTER Leaseway Transportation Corp.
SUBJECT UNWAS1
COMMENT 2.Because Leaseway subsidiaries operate at so many facilities, all of which are likely to produce varying quantities of light bulbs governed by this proposal, this proposal's provisions will considerably increase the RCRA compliance efforts of these facilities. During the last several years Leaseway has made a concentrated effort to minimize the quantity of hazardous wastes generated, and was nearing its goal of generating no RCRA hazardous wastes at any of its facilities. If the new proposals are adopted, the recordkeeping associated with inventory control, employee training and other compliance activities would add burdens to the facility.
RESPONSE
The Agency compliments the commenter on his hazardous waste reduction goals. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility=s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the

generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in Part 262. Under the universal waste system, conditionally-exempt quantity generators can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273 (40 CFR 273.8(a)(2)).

The universal waste rule does not require formal training for facility employees, but does require that employees at large quantity handler facilities are thoroughly familiar with proper waste handling and emergency procedures related to their responsibilities, and employees at small quantity handler facilities be informed of the proper handling and emergency procedures appropriate to the types of universal waste being handled. The Agency believes that a basic employee training requirement is necessary to ensure that employees are specifically familiar with waste handling procedures. Training that is required under other programs (e.g., OSHA, RCRA Subtitle C) will most likely meet the Part 273 training requirements.

DCN FLEP-00034
COMMENTER Leaseway Transportation Corp.
SUBJECT UNWAS1
COMMENT If EPA does elect to proceed with these regulations, Leaseway recommends the final rules should: 1 .Require the manufactures of the lights that contain mercury to notify the public which of their products would be classified as hazardous waste. This would eliminate unnecessary testing and dramatically reduce compliance costs for nearly all businesses. (Perhaps the results of their tests could be reported in the Federal Register.) 2.Require only that the generator arrange for the lights to be ultimately disposed at a facility acceptable to the EPA. The same care could be given to old bulbs as to new ones. There is a very low incident of breakage of new bulbs when they are in storage or use at our facilities. 3. Eliminate the training and recordkeeping requirements.
RESPONSE
The commenter requests that manufacturers be required to notify which products may be regulated as hazardous waste. EPA cannot require manufacturer product notification under the statutory authority of RCRA. It is the handler=s responsibility to determine if the spent lamp contains hazardous constituents and to see that it is handled using proper management standards. However, a handler could choose to handle all spent lamps, whether hazardous or non-hazardous, under the universal waste approach if the handler so chooses.

The hazardous waste lamps final rule requires that spent lamps be managed in a way that prevents releases of hazardous constituents to the environment during accumulation, storage, and

transport. All handlers of universal waste lamps must immediately contain any releases from the lamps and must handle the residues according to all applicable regulatory requirements. Handlers of universal waste are prohibited from sending universal waste to a place other than another universal waste handler, a destination facility, or a foreign destination. Large quantity handlers must track waste lamp shipments by maintaining records documenting shipments received by and sent from the facility.

The universal waste rule does not require formal training for facility employees, but does require that employees at large quantity handler facilities are thoroughly familiar with proper waste handling and emergency procedures related to their responsibilities, and employees at small quantity handler facilities be informed of the proper handling and emergency procedures appropriate to the types of universal waste being handled. The Agency believes that a basic employee training requirement is necessary to ensure that employees are specifically familiar with waste handling procedures. Training that is required under other programs (e.g., OSHA, RCRA Subtitle C) will most likely meet the Part 273 training requirements.

DCN SCSP-00034
COMMENTER Dept. of the Army (AEHA)
SUBJECT UNWAS1
COMMENT Keeping this mercury out of Subtitle D landfills is the primary reason to include fluorescent lamps in the "universal waste" category (enclosure 3b). Enclosure 3c
RESPONSE
The Agency thanks the commenter for submitting comments and additional information addressing issues raised in the proposed rule. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00037
COMMENTER Central Iowa Power Cooperative
SUBJECT UNWAS1
COMMENT Alternatively, if you decide that a complete exclusion is not appropriate, we urge you to add mercury lamps to the Universal Waste rules. Specifically, we believe there should be a complete exemption for disposal of small quantities of lamps.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

Adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month. CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under '261.5 are met.

DCN FLEP-00040
COMMENTER Eli Lilly and Company
SUBJECT UNWAS1
COMMENT V. Universal waste System: This option does little to provide incentive to participate in the Green Lights program. For larger companies that already consolidate their lamps in a central location or locations for transportation to a recycler or disposal site, this option would not save enough money or management efforts to remove disincentives from participation in Green Lights. In essence, the economic incentives are so minimal

that this option will continue to discourage the marginal lighting replacement projects.

RESPONSE

Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than 40 CFR Part 262 and 263 regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00040

COMMENTER University of Nevada-Reno

SUBJECT UNWAS1

COMMENT In addition to reducing regulation of certain specific types of waste (e.g. batteries) under the RCRA system, fundamental issues in solid waste identification under 40 CFR 261.2 need to be addressed. A priority area should be the regulated status of spent materials exhibiting characteristic which are reclaimed. Materials which exhibit identical characteristics but which are categorized as by-products are not regulated when being reclaimed. The basis for this differentiation is difficult to justify, and imposes unnecessary burden on reclamation associated with spent materials. Indeed, many proposed "universal" wastes fall into this category, including: batteries, barometers, thermometers and thermostats, antifreeze, and fluorescent tubes. A number of other wastes also fall into this area. In addition to special collection system provisions for the "universal" wastes, EPA should remove spent materials exhibiting a characteristic which are being reclaimed from full solid and hazardous waste status. Reasons that "universal" wastes are managed as municipal wastes: One reason that

"universal" wastes end up in municipal waste streams is that manufacturers don't identify products which when spent exhibit a characteristic, i.e. batteries, fluorescent bulbs, thermometers. Businesses don't know any better. Another reason is the difficulty and cost associated with managing numerous extremely small quantity waste streams properly. Insufficient information is presented on MSDS's to enable a product user to make a

determination without running the TCLP test on the waste. The TC rule addresses concentrations at fractions of a part per million, whereas, the MSDS typically provides little or no information on ingredients present at less than a percentage or a half a percent. Candidate universal wastes include: antifreeze, barometers, thermometers, thermostats, fluorescent tubes and compact fluorescent bulbs, filters exhibiting a characteristic, and contaminated wipers. Other candidate wastes are likely to be identified as TCLP results are on additional common wastes.

RESPONSE

The commenter requests that the Agency reevaluate when a waste becomes a solid waste under full Subtitle C. Solid waste identification issues are beyond the scope of today=s rulemaking.

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as spent antifreeze, to their individual state universal waste programs.

The commenter requests that manufacturers be required to give me information on the MSDS that accompany a product so the hazardous waste status can be determined. EPA cannot require manufacturer product notification under the statutory authority of RCRA. It is the handler=s responsibility to determine if the spent lamp contains hazardous constituents and to see that it is handled using proper management standards. However, a handler could choose to handle all spent lamps, whether hazardous or non-hazardous, under the universal waste approach. Small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

DCN SCSP-00040
COMMENTER University of Nevada-Reno
SUBJECT UNWAS1
COMMENT Several facilities located in California are listed in California's Directory of Industrial Waste Recycling Facilities which recovery mercury from fluorescent lamps. Therefore, this waste should fulfill EPA's criteria as a universal waste. If these wastes are determined to be hazardous under existing regulations which currently, apply to their management and recycling potential exists, EPA should implement Part 273 provisions to keep them out of the municipal waste stream and to facilitate recycling. EPA's mandate under RCRA, HSWA, and the Pollution Prevention Act of 1990 requires this course of action rather than studying risks posed by these wastes in landfills and municipal waste incinerators.
RESPONSE
Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). The Agency agrees with the commenter that hazardous waste lamps meet the criteria established for designating a material as universal waste.

Adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

DCN FLEP- 00041
COMMENTER John A. Williams
SUBJECT UNWAS1
COMMENT I support Option 2 of your proposed Rule on Mercury-Containing Lamps with suggested additions underlined and deletions shaded. My rational for these comments are in quotation marks.
RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). The Agency agrees with the commenter that hazardous waste lamps meet the criteria established for designating a material as universal waste.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

The Agency decided to amend the universal waste management standards (40 CFR Part 273) to include hazardous waste lamps within the scope of this rule. The Agency does not have extensive data characterizing the behavior of mercury released from spent lamps in a landfill environment over long periods of time. Although available data may support the conclusion that mercury may stay in a stable, non-mobile state over the shorter term and may not migrate from a landfill environment very quickly, studies also show that the greatest threat of mercury releases from the management of lamps is during storage and transport. The universal waste rule provides a reduced, or streamlined set of requirements, but also allows the Agency to set specific management standards to control potential emissions. The potential for mercury emissions occurs when hazardous waste lamps are not managed in a protective manner.

DCN FLEP-00042
COMMENTER Energy Services, Inc.
SUBJECT UNWAS1
COMMENT The universal waste option is not the solution to this issue because it would continue to subject lighting wastes to the most onerous and expensive components of Subtitle C regulation -- the Land Ban program and Subtitle C disposal costs.
RESPONSE
The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal.

Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g. universal wastes cannot be land disposed without meeting treatment standards, dilution prohibition, etc) but not the administrative requirements (e.g. notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00042
COMMENTER Energy Services, Inc.
SUBJECT UNWAS1
COMMENT The Universal waste Option The Universal waste Option is not the solution to the lighting waste issue. As long as lighting wastes remain under Subtitle C regulation, there will be a significant economic burden associated with relamping programs. Under the universal waste option, lighting wastes would remain subject to the most onerous components of the Subtitle C program: the Land Disposal Restrictions program, which only increases the complexity and associated costs of Subtitle C waste disposal.
RESPONSE
Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the regulations in 40 CFR Parts 262, 263 for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal.

Under the universal waste regulations, handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g .universal wastes cannot be land disposed without meeting treatment standards, dilution prohibition, etc) but not the administrative requirements (e.g. notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00044
COMMENTER Solid Waste Association of North America
SUBJECT UNWAS1
COMMENT Mercury is a volatile metal and can be released within the solid waste handling system from breakage. Mercury containing lamps can be broken at several stages in the disposal process including, at placement into waste receptacles, at introduction into transfer stations and materials processing facilities, as well as at final disposal at landfills or incinerators. At all stages, workers are potentially exposed and mercury is potentially released into the environment. Until these releases and their implications are studied by EPA and/or OSHA, designation of these lamps as a Subtitle D waste is premature. Although it might be reasonable to prohibit and control breakage under Subtitle C, it is an unrealistic expectation under Subtitle D. Therefore, regulations that minimize mercury emissions during storage and transportation must be presently implemented.
RESPONSE
The Agency agrees with the commenter=s concern about the hazards of mercury emissions. Based upon additional analyses of the behavior of mercury in the environment and data from commenters, the Agency decided to amend the universal waste management standards (40 CFR Part 273) to include hazardous waste lamps within the scope of this rule. The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these

mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN FLEP-00043
COMMENTER Ohio Edison Company
SUBJECT UNWAS1
COMMENT 4. The universal waste option is not the answer to this problem. As long as lighting wastes remain under the umbrella of Subtitle C regulation, there will be significant burdens associated with relamping programs. Under the universal waste option, lighting wastes would remain subject to the most onerous components of the Subtitle C program, the land disposal restrictions program, and the high costs of Subtitle C disposal.
RESPONSE
Based upon additional analyses of the behavior of mercury in the environment, the Agency decided to amend the universal waste management standards (40 CFR Part 273) to include hazardous waste lamps within the scope of today=s rule.

Adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal.

Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g. universal wastes cannot be land disposed without meeting treatment standards, dilution prohibition, etc) but not the administrative requirements (e.g. notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN SCSP-00043
COMMENTER Eugene Water and Electric Board
SUBJECT UNWAS1
COMMENT Other wastes that I recommend be covered under this rule include
1) empty aerosol cans, and 2) spent light bulbs and lamps.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards), but also allows the Agency to set specific management standards to control potential emissions.

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the waste suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as spent aerosol cans, to their individual state universal waste programs.

DCN FLEP-00044
COMMENTER Solid Waste Association of North America
SUBJECT UNWAS1
COMMENT With the orientation of our membership heavily directed toward
municipal solid waste management we are vitally interested in
the ultimate results of EPA's efforts relative to regulating

solid waste disposal facilities. It is our members who must site, design, own, operate, and maintain disposal facilities to meet new regulations issued by EPA, and ultimately implemented by state regulatory agencies. SWANA supports Option 2, the "universal waste" option, which treats mercury-containing lamps as a hazardous waste which would be regulated under RCRA Subtitle C under a streamlined reduced regulatory structure.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards), but also allows the Agency to set specific management standards to control potential emissions.

Adding hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN SCSP-00045

COMMENTER Shell Oil Company

SUBJECT UNWAS1

COMMENT Rather, we recommend that EPA identify a broad category of materials which would be considered a "universal waste". For example, instead of limiting the "universal wastes" to automobile antifreeze and thermostats and thermometers which contain mercury, all antifreeze and mercury contaminated materials (e.g., light fixtures and bulbs) should be considered. All antifreeze, although generated in many different pieces of equipment, vehicles, vessels, and industries, would have similar contamination and should therefore be considered as a single "universal waste". The same would be true for mercury contaminated materials and paint related materials. In addition, we would also recommend inclusion of photo-developing chemicals since they would meet the same consideration criteria as the

batteries and other suggested wastes. By keeping the "universal waste" categories as generic as possible based on waste characteristics, an even larger volume of hazardous wastes could be eliminated from disposal at municipal sites.

RESPONSE

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the waste suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as spent antifreeze and paint waste, to their individual state universal waste programs through the petition process.

The commenter suggests that EPA identify a broad category of materials which would be considered a universal waste. Hazardous waste lamps meet the criteria for determining if they would fit into a universal waste management regulatory program and if the streamlined standards of the universal waste program would improve the overall management of this waste. The criteria, which are codified at 40 CFR 273.81, include a) the waste must be a hazardous waste generated by a wide variety of generators; b) the waste, or category of waste, should not be exclusive to a particular industry but must be generated by a wide variety of establishments; c) the waste should be generated frequently, but in relatively small quantities; d) systems to be used for collecting the waste should ensure close stewardship of the waste; e) the risks posed by the waste during accumulation and transport should be relatively low compared to the risks posed by other hazardous waste and specific management standards would be protective of human health and the environment during accumulation and transport; f) regulation of the waste under the universal waste rule should result in the diversion of the waste from management with non-hazardous waste streams; g) regulation of the waste as a universal waste should improve implementation of and compliance with the hazardous waste regulatory program.

DCN FLEP-00046

COMMENTER American Public Power Association

SUBJECT UNWAS1

COMMENT The "universal waste option" is not the proper resolution to the lighting waste issue because, under that option, lighting wastes are subject to the most onerous and expensive components of Subtitle C regulation, namely the land ban program and Subtitle C disposal costs.

RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards), but also allows

the Agency to set specific management standards to control potential emissions and releases. The Agency does not believe the conditional exclusion would sufficiently protect human health and the environment. Under the universal waste regulations, hazardous waste lamps will ultimately be managed at RCRA hazardous waste facilities.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal.

Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g. universal wastes cannot be land disposed without meeting treatment standards, dilution prohibition, etc) but not the administrative requirements (e.g. notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00046
COMMENTER American Public Power Association
SUBJECT UNWAS1
COMMENT APPA concludes that the "universal waste option" is not the answer because, under universal waste rules, lighting waste would remain subject to the most rigid provisions of Subtitle C, including the land disposal restrictions program. The universal waste option would encompass all spent lighting waste lamps including incandescent and neon, as opposed to just mercury-containing lamps.
RESPONSE
Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e.,

universal waste rule is less stringent than full Subtitle C management standards), but also allows the Agency to set specific management standards to control potential emissions and releases. The Agency does not believe the conditional exclusion would sufficiently protect human health and the environment. Under the universal waste regulations, hazardous waste lamps will ultimately be managed at RCRA hazardous waste facilities.

Adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal.

Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g. universal wastes cannot be land disposed without meeting treatment standards, dilution prohibition, etc) but not the administrative requirements (e.g. notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN SCSP-00046
COMMENTER The Boeing Company
SUBJECT UNWAS1
COMMENT EPA may consider the following readily available commercial products as potential candidates for future inclusion as universal wastes: paint cans, office supplies such as inks, copier-toners, reprographic materials, building materials, janitorial cleaning supplies, fluorescent tubes, and antifreeze.
RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the waste suggested may be appropriate candidates for the universal waste system in the future,

the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as spent antifreeze and paint waste, to their individual state universal waste programs through the petition process.

DCN FLEP-00048
COMMENTER Sullivan & Ward, P.C.
SUBJECT UNWAS1
COMMENT Alternatively, if you decide that a complete exclusion is not appropriate, we urge you to add mercury lamps to the Universal waste rules. Specifically, we believe there should be a complete exemption for disposal of small quantities of lamps. For facilities which generate larger numbers of lamps, we support review of the waste disposal process to encourage recycling rather than discouraging it. If facilities want to join together to collect enough lamps to make it cost-effective to transport them to a recycler, they should be encouraged to do so. Relaxing the manifesting requirements and RCRA TSD facility permit requirements for collection points would assist members of the regulated community who want to try to join together to recycle their lamps. At this point, we do not know whether it is feasible to do so, given the number and complexity of the regulations, and the potential liabilities for participating parties.
RESPONSE
Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards), but also allows the Agency to set specific management standards.

Today=s final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under '261.5 are met. Spent lamps that are managed as universal waste under Part 273 are not included in a facility's determination of hazardous waste generator status ('261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in Part 262. Under the universal waste system, conditionally-exempt quantity generators can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273 (40 CFR

273.8(a)(2)).

The final rule for hazardous waste lamps does not contain a separate category for consolidation points. Consolidators would be subject to the universal waste standards as either small or large quantity handlers. A RCRA permit is not required as long as the universal waste management standards are met. The Agency notes that all parties handling hazardous waste lamps can be held liable for releases of hazardous constituents from the waste regardless of the regulatory requirements under full Subtitle C.

DCN FLEP-00050
COMMENTER LRI Consulting and Technologies
SUBJECT UNWAS1
COMMENT EPA's proposed alternative of adding mercury lamps to EPA's Universal waste would help ease the financial cost of management of this material. This would allow generators to transport the material at a reduced cost since the waste could be transported by a company without a hazardous waste transportation license and the waste could be stored for up to a year to reduce the frequency of transportation. This alternative also reduces the technical and paperwork requirements associated with the management of this toxic material while still maintaining special management requirements to help ensure its proper and responsible management. Even under the Universal waste approach, final management of these mercury containing wastes should be evaluated for long term effect on the environment and public health. Landfill disposal of mercury containing lamps will inevitably result in the release of mercury to the environment. With recycling technologies available for the management of this material, I feel that the EPA should take the approach of "best available management technology" in evaluating the management method that would be both environmentally and public health conscientious over time instead of evaluating a short term economic solution.
RESPONSE
The Agency agrees with the commenter that adding hazardous waste lamps to the universal waste regulations will ease the financial cost of management of this material. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste rule includes storage

and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between mercury lamp generators and collection points or disposal or recycling facilities. The universal waste rule includes a basic recordkeeping requirement to track waste shipments arriving at and leaving from large quantity handlers. Large quantity handlers (those who accumulate more than 5,000 kilograms of total universal waste at one time) are required to keep records of each shipment of hazardous waste lamps received and keep records of each shipment of lamps sent off-site. The record may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement. Records must be retained for at least three years from the date of receipt of a shipment of lamps or the date a shipment of lamps left the facility. Small quantity handlers (those who accumulate 5,000 kilograms or less of total universal waste at one time) are not required to keep records of shipments of hazardous waste lamps.

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00054
COMMENTER U.S. Department of Interior
SUBJECT UNWAS1
COMMENT The following comments are provided to the proposed rules published on July 27, 1994 concerning the modification of the hazardous waste program for mercury-containing lamps. As a Federal organization whose mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner, we are considering significant relighting efforts at a number of our offices to increase energy conservation. As part of this mission Reclamation supports the disposal of lamp waste in an environmental-sound manner. Since the risk of potential mercury release from landfills is not well understood, we suggest waste mercury containing lamps be managed under the Universal waste Management System (option B) with sunset provisions and no specific record keeping for lamp shipment. All other provisions proposed in the February 11, 1993 proposed rule should apply to mercury-containing lamps. This option eliminates burdensome regulations in the disposal

process while compliance with the Resource Conservation and Recovery Act is maintained. We believe option B management will not deter the public nor the governmental sector from proceeding with lighting upgrades.

RESPONSE

The Agency agrees with the commenter that today=s rulemaking eases some of the burdens in the management of hazardous waste lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00056

COMMENTER International Paper Company

SUBJECT UNWAS1

COMMENT During our internal survey we asked our facilities whether the Agency's "relaxed" management option (option two) would alleviate any of the problems they were having with the current management requirements. Their answer was that option two would only substitute one set of requirements for another and that the "relaxed" rules would only complicate the current hazardous waste program. Several facilities said that they would most likely keep the existing program (full RCRA management) rather than try to maintain two very similar programs.

RESPONSE

The hazardous waste lamps final rule does not add an additional waste management system to the regulations, instead it incorporates hazardous waste lamps into an existing system under 40 CFR 273, Standards for Universal Waste Management. Adding hazardous waste lamps to the universal waste rule provides a reduced or streamlined set of requirements for hazardous waste lamps that is less stringent than full Subtitle C management standards while still protecting human health and the environment.

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program. However, a generator can choose to continue to manage his hazardous waste lamps under 40 CFR Part 262 if he so desires.

DCN FLEP-00059
COMMENTER Connecticut Dept. of Env. Protection
SUBJECT UNWAS1
COMMENT The Connecticut Department of Environmental Protection (DEP), has reviewed the proposed rule for the management of mercury containing lamps as published in the Federal Register on July 27, 1994 (59 FR 38288), and offers the following comments. DEP believes that the "Universal waste rule" is the more appropriate strategy for the management of spent mercury containing lamps. Adding mercury containing lamps to the universal waste rule will foster better management of spent lamps through reduced regulatory requirements under RCRA Subtitle C, while also maintaining a necessary level of protection for public health and the environment.

2. DEP believes management option 2, inclusion in the Universal waste rule, is the best way to encourage recycling and Green Lights activity without increasing environmental/health risks. DEP recommends the following provisions for inclusion in the universal waste rule for the management of mercury containing lamps:

RESPONSE
The Agency agrees with the commenter that inclusion of hazardous waste lamps in the universal waste rule is the preferred option. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal

waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00060
COMMENTER New Hampshire Dept. Of Env. Services
SUBJECT UNWAS1
COMMENT Thank you for the opportunity to comment on EPA's proposals' for managing spent mercury-containing lamps (fluorescent lamps) as outlined in EPA fact sheet EPA 530-F-94-022 and 40 CFR 260, 261 and 273. The New Hampshire Department of Environmental Services (DES) supports management option B, "Universal waste Management System," which would include the management of fluorescent lamps within EPA's proposed Universal waste rule. There is presently a well developed infrastructure to collect store and recycle spent fluorescent lamps in an environmentally sound manner in the northeast region. Managing fluorescent lamps as a universal waste will stimulate recycling markets while diverting a potentially dangerous waste stream from landfills.
RESPONSE
The Agency agrees with the commenter that inclusion of hazardous waste lamps in the universal waste rule is the preferred option. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal

waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00063
COMMENTER American Waste Management, Inc.
SUBJECT UNWAS1
COMMENT A "universal waste" approach for management of spent mercury lamps would help ease the financial burdens placed upon lamp waste generators if transportation by companies without hazardous waste transportation licenses is allowed.
RESPONSE
Today-s final rule adds hazardous waste lamps to the universal waste regulations under Part 273. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp handlers and collection points or disposal or recycling facilities. Universal wastes being offered for off-site transportation that meet the Department of Transportation (DOT) definition of hazardous material must comply with the applicable DOT requirements.

DCN FLEP-00064
COMMENTER Southern company Services, Inc.
SUBJECT UNWAS1
COMMENT 9. Finally, the Southern Company does not support the universal waste option as a solution to this problem. As long as

lighting wastes remain under the umbrella of Subtitle C regulation, there will be significant economic burdens associated with relamping programs. Under the universal waste option, lighting wastes would remain subject to the most onerous components of the Subtitle C program: the land disposal restrictions program --which is only becoming more onerous -- and the costs of Subtitle C disposal.

RESPONSE

Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the regulations in 40 CFR Parts 262, 263 for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal.

Under the universal waste regulations, handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g .universal wastes cannot be land disposed without meeting treatment standards, dilution prohibition, etc) but not the administrative requirements (e.g. notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00065
COMMENTER American Fisheries Society
SUBJECT UNWAS1
COMMENT Therefore to minimize the release of mercury into the environment promote recycling of fluorescent lamps and to

minimize public confusion over apparently inconsistent regulations, the Society urges USEPA to require disposal of fluorescent lamps under the "universal waste rule" option for hazardous waste.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00065

COMMENTER American Fisheries Society

SUBJECT UNWAS1

COMMENT WHEREAS, the United States Environmental Protection Agency (USEPA) has proposed a regulation for public comment to exempt fluorescent lamps from the requirements of the Resource Conservation and Recovery Act (RCRA) Subtitle C for hazardous waste management; and WHEREAS, USEPA is simultaneously establishing maximum available control technologies for mercury sources pursuant to the Clean Air Act, proposing tightening water quality criteria for mercury under the Clean Water Act, placing priority on mercury contaminated Superfund sites, but is proposing to exempt mercury-containing lamps from RCRA requirements for hazardous waste, now therefore be it RESOLVED, that the American Fisheries Society, assembled on August 24, 1994, at the 124th Annual Meeting in Halifax, Nova Scotia, urges: USEPA RCRA and state Solid Waste Management Agencies support all efforts to eliminate atmospheric -transport of mercury by' adopting the "Universal waste, Rule" option for the estimated 500 million used fluorescent lamps disposed of annually for the following reasons: --Inclusion in the Universal Waste Rule will result in an economic incentive to recycle mercury-containing lamps consistent with the Pollution Prevention Act of 1990; --Facilitating the recycling of lamps closes the loop between manufacturing and disposal, promoting the recycling industry; --The universal waste rule addresses the effects of this difficult-to-control, persistent, bioaccumulative toxic element in a cross-media approach rather than allowing the potential shifting of mercury from waste to air, and ultimately, water and fish.

RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in

municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN FLEP-00067
COMMENTER Georgia Power Company
SUBJECT UNWAS1
COMMENT In conclusion, Georgia Power Company does not support the universal waste option as a solution to the lighting wastes problem. As long as lighting wastes remain under the umbrella of Subtitle C regulation, there will be significant economic burdens associated with relamping programs. Under the universal waste option, lighting wastes would remain subject to the most onerous components of the Subtitle C program: the land disposal restrictions program and the costs of Subtitle C disposal.
RESPONSE
By adding hazardous waste lamps to the universal waste program in today=s rule, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00070
COMMENTER Univ. of Texas Office of Env. Affairs
SUBJECT UNWAS1
COMMENT EPA's option #2, adding mercury-containing lamps to the Universal waste Proposal, merely allows generators to ship mercury-containing lamps without a hazardous waste manifest and to store them for a longer period of time than currently allowed. This second option does not go far enough in providing cost relief to generators, including governmental agencies such as UT. Although minor savings will be achieved, disposing of mercury- containing lamps as hazardous waste (not municipal solid waste) will remain expensive and the cost can be expected to escalate.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards), but also allows the Agency to set specific management standards to control potential emissions. Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00071
COMMENTER Sterling Environmental Services, Inc.
SUBJECT UNWAS1
COMMENT Working with industry both large and small it is my feeling that waste streams such as light bulbs and batteries, that are widely generated in low volumes should have less stringent storage options. These wastes would not excluded from regulation as hazardous waste, but should have modified storage limitations

(i.e. exempt from the 90 day storage clock). In essence I agree with the "Universal waste " approach and feel light bulbs should be included in this approach.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

In the hazardous waste lamps final rule, EPA has determined that regulations applicable to accumulation of hazardous waste lamps should be consistent with the accumulation regulations applicable to all universal wastes (''273.15 and 273.35). In the universal waste final rule (60 FR 25526, May 11, 1995), the Agency determined that accumulation of universal wastes for more than one year can be allowed. Therefore, in today=s final rule, small and large handlers of hazardous waste lamps may accumulate hazardous waste lamps for up to one year as proposed, and for more than one year if such accumulation is solely for the purpose of accumulating such quantities of universal waste as are necessary to facilitate proper recovery, treatment, or disposal. For any accumulation longer than one year, the handler must be able to prove that such accumulation is solely for accumulating quantities necessary to facilitate proper recovery, treatment, or disposal (it is assumed that any accumulation up to one year is for this purpose).

DCN FLEP-00076

COMMENTER The Southland Corporation

SUBJECT UNWAS1

COMMENT Position on Universal waste The proposed Universal waste approach would not solve the current problems with lamp disposal. The Southland Corporation does not believe that Universal waste will remove the stigma associated with he hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep costs of lamp replacement very high. The Universal Waste approach was not designed for fragile wastes whose risks derive from air emissions due to breakage. Rather, it was designed to relatively sturdy wastes that could withstand the rigors of large scale accumulation and transport. We are particularly concerned about the lack of regulatory requirements for Consolidation Points and are unlikely to send our spent lamps to them due to liability concerns.

RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than in 40 CFR Part 262, 263 regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements.

A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Hazardous waste lamps meet the criteria for determining if they would fit into a universal waste management regulatory program and if the streamlined standards of the universal waste program would improve the overall management of this waste. The criteria, which are codified at 40 CFR 273.81, include a) the waste must be a hazardous waste generated by a wide variety of generators; b) the waste, or category of waste, should not be exclusive to a particular industry but must be generated by a wide variety of establishments; c) the waste should be generated frequently, but in relatively small quantities; d) systems to be used for collecting the waste should ensure close stewardship of the waste; e) the risks posed by the waste during accumulation and transport should be relatively low compared to the risks posed by other hazardous waste and specific management standards would be protective of human health and the environment during accumulation and transport; f) regulation of the waste under the universal waste rule should result in the diversion of the waste from management with non-hazardous waste streams; g) regulation of the waste as a universal waste should improve implementation of and compliance with the hazardous waste regulatory program.

The final rule for hazardous waste lamps does not contain a separate category for consolidation points. Facilities that generate universal waste and/or consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. A handler may choose to send his hazardous waste lamps directly to a destination facility if he so desires.

DCN SCSP-00077
COMMENTER U.S. Department of Energy
SUBJECT UNWAS1
COMMENT 3. 58 FR 8110, II.B.2- EPA requests comment on whether used motor vehicle antifreeze or mercury-containing thermometers and thermostats meet the proposed criteria for regulation under Part 273. DOE urges EPA to include mercury-containing wastes (thermometers, thermostats, used fluorescent light bulbs, switches, and paint residues) as special collection system wastes in 40 CFR Part 273.
RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as spent antifreeze, to their individual state universal waste programs through the petition process.

DCN SCSP-00077
COMMENTER U.S. Department of Energy
SUBJECT UNWAS1
COMMENT This information indicates that mercury-containing waste are being disposed in the municipal waste stream and are presenting a risk to human health or the environment as a result. Accordingly, the risk could be reduced by adding these mercury-containing wastes to Part 273. DOE recommends including such wastes in Part 273. In support of this recommendation, information that would be provided as part of a petition using the proposed 273.2 criteria for fluorescent, incandescent, and high-intensity discharge lamps is provided with these comments (Attachment 1). This serves to both "test" the use of the criteria and to make the strongest case possible for inclusion of the lamps as a category of post consumer items in the final

rule.

In the February 11, 1991 Federal Register (FR), [58 FR 8107] the EPA requested comments on whether wastes other than those proposed for inclusion in 40 Code of Federal Regulations (CFR) Part 273 (hazardous waste batteries and canceled or suspended and recalled pesticides that are hazardous wastes) deserve consideration. Numerous post-consumer items are potential candidates for management under the proposed regulatory scheme. Fluorescent, incandescent, and high- intensity discharge lamps are among these. EPA proposed two sets of criteria for evaluation of these candidate wastes which will be used to evaluate both the extent of the problem posed by a particular type of waste and the suitability of the special collection program for contribution to improved management of the particular waste [58 FR 8128-9]. It was proposed that any person seeking to add hazardous wastes to 40 CFR Part 273 may petition for a regulatory amendment under 40 CFR 273, Parts 260.20, and 260.34. The petitioner must submit adequate information to support the criteria for evaluation [58 FR 8128, In response to EPA's above-mentioned request for comments, the following information is provided for submittal to EPA regarding inclusion of fluorescent lamps, incandescent lamps, and high-intensity discharge lamps in 40 CFR Part 273. It is noted that evidence need not be provided on all factors from a single petitioner and that EPA will evaluate the candidate waste based on evidence received from all petitioners. This information is provided based on the assumption that the criteria listed in the proposed regulations for selecting additional hazardous wastes to be regulated under 40 CFR Part 273 are appropriate, and that at present, there are no other criteria that should be considered. Proposed 40 CFR 273.2(a) Demonstration that special collection system regulations are appropriate.

Fluorescent lamps generally meet the proposed criteria of 40 CFR 273.2(a)(1) (i.e., the candidate waste stream exhibits one or more of the characteristics identified in 40 CFR Part 261).

High-intensity discharge lamps generally meet the proposed criteria of 40 CFR 273.2(a)(1) (i.e., that the candidate waste stream exhibits one or more of the characteristics identified in 40 CFR Part 261).

(3) A special collection system would facilitate removal of the waste from the municipal waste stream; Current waste management practices involve disposal of large quantities of fluorescent, incandescent, and high-intensity discharge lamps in municipal landfills while 'look-alike' fluorescent, incandescent, and high-intensity discharge lamps generated by knowledgeable generators must be treated to meet land disposal restrictions, treatment standards and placed in appropriate landfills. Management of these lamps under the proposed special collection systems would capture a large volume of the waste currently being disposed of in municipal landfills and would facilitate recycling or appropriate treatment and disposal. Fluorescent, incandescent, and high-intensity discharge lamps generally meet the proposed criteria of 40 CFR 273.2(b)(3). A special collection system would facilitate removal of the waste from the municipal waste stream.

Fluorescent, incandescent, and high-intensity discharge lamps generally meet the proposed criteria of 40 CFR 273.2(b)(4). If viable recycling technologies are available for the hazardous waste, a special collection system would facilitate recycling.
(5) A special collection system would improve implementation of the hazardous waste regulatory program; There are many inherent problems in managing fluorescent, incandescent, and high-intensity discharge lamps as hazardous waste. Some of these problems are summarized as follows:
Special collection systems for all lamp types would improve implementation of the hazardous waste regulatory program by requiring all generators to manage this waste stream in a consistent manner. 2. Storage of these lamps in satellite accumulation areas, 90-day storage areas, or interim status or permitted facilities requires utilization of valuable storage space that may be better utilized for wastes that are more inherently hazardous (for large quantity generators). For accumulation satellite areas, it is difficult to estimate a 55-gallon equivalent for uncrushed fluorescent lamps. Fluorescent lamps are typically crushed in 90-day storage areas in order to minimize volume required for storage. The crushed lamps are no longer candidates for the recycle operations described under proposed 40 CFR 273.2(b)(4) criteria above. Some states permit crushing of fluorescent lamps in 90-day areas

without a permit, while other states require a hazardous waste treatment per mil Special collection systems for these lamps would facilitate movement off-site, minimize the need to crush lamps, free up valuable storage space, and facilitate recycling. 3.Hazardous waste storage permits may be written so as to preclude storage of fluorescent lamps in the original cardboard containers, i.e., the permits may specify that the waste may only be stored in "DOT-approved containers." Special collection systems would facilitate movement of these lamps from SAAs and 90-day areas to off-site facilities and would minimize the need for permit modifications. 4. As mentioned under the proposed criteria for 40 CFR 273.2(a)(4) above, change out of traffic lights, or incandescent lamps or high-intensity discharge lamps on utility poles, or in signs located on public highways presents complex regulatory issues as a result of sporadic generation of hazardous lamps in isolated areas. These locations are typically not associated with an EPA generator identification number and the conditionally exempt small-quantity generator regulations do not apply very well to these particular situations. Special collections systems could be proposed that would streamline this collection process. Fluorescent, incandescent, and high-intensity discharge lamps generally meet the proposed criteria of 40 CFR 273.2(b)(5) (i.e., that a special collection system would improve implementation of the hazardous waste regulatory program).

RESPONSE

The Agency agrees with the commenter that hazardous waste lamps meet the criteria used to determine if a waste fits into the universal waste management program. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

Permits are not required for facilities that store universal waste lamps but do not treat, recycle, or

dispose hazardous waste lamps. Today's standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

Universal waste handlers may accumulate universal waste lamps for one year. The regulations also allow for accumulation for more than one year if such accumulation is solely for accumulating such quantities of universal waste as are necessary to facilitate proper recovery, treatment, or disposal. For any accumulation longer than one year, the handler must be able to prove that such accumulation is solely for accumulating quantities necessary to facilitate proper recovery, treatment, or disposal (it is assumed that any accumulation up to one year is for this purpose).

DCN FLEP-00078
COMMENTER Tennessee Valley Authority
SUBJECT UNWAS1
COMMENT Administrative Costs of RCRA - The administrative burden in meeting RCRA requirements for lamps for an operation as large and dispersed as TVA adds substantially to recycling and disposal costs. Regulating lamps as hazardous waste under RCRA makes it difficult to find municipal landfills in the TVA region that will accept lamps from conditionally exempt small quantity generators. Moreover, TVA has been striving to minimize the generation of hazardous waste at our sites. This has allowed us to significantly reduce the number of sites that exceed the small and large quantity generation limits and thereby reduce our costs and environmental risks. Regulating lamps as hazardous waste would force many of our sites into a higher generator status, particularly if we are to carry out group relamping as part of the Green Lights program.
RESPONSE
Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Currently,

under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.
By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility-s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that generate less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under '261.5 are met.

DCN SCSP-00078
COMMENTER Northern States Power Company
SUBJECT UNWAS1
COMMENT Other Waste Streams EPA has suggested that the SCSP could also be applied to other waste streams, e.g., antifreeze, paint application wastes, fluorescent lamps and certain mercury containing wastes. EPA requested comments on whether these and other candidate wastes fit the criteria for regulation under Part 273. Although NSP is not providing supporting data with this comment letter, NSP strongly encourages the application of the SCSP to other appropriate universal wastes.
RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as spent antifreeze, to their individual state universal waste programs through the petition process.

DCN FLEP-00079
COMMENTER Voltarc Technologies, Inc.
SUBJECT UNWAS1
COMMENT Position on Universal waste The proposed Universal waste approach would not solve the current problems associated with lamp disposal. Voltarc does not believe that the Universal waste approach will remove the stigma associated with the hazardous waste designation. In fact, this approach will likely result in increased risk by encouraging the accumulation of large quantities of intact lamps.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps.

DCN FLEP-00080
COMMENTER City of Colorado Springs
SUBJECT UNWAS1
COMMENT Although the City strongly favors the exclusion alternative, it would support the second alternative if faced with an all or nothing proposition. The Universal waste rule approach, while falling well short of managing these lamps appropriately, would lessen the regulated community's burden associated with the storage, consolidation, and transportation of spent mercury-containing lamps.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste

approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN SCSP-00080
COMMENTER Technical Comm., S.C. Chamber of Comm.
SUBJECT UNWAS1
COMMENT Additional Wastes for Inclusion in Part 273 - The following wastes streams should be considered for inclusion in Part 273, if promulgated: fluorescent light tubes, thermometers, paint filters, reproduction equipment toners, and electronic appliances/devices. All of these wastes, generated by a wide variety of businesses, are present in significant volumes in municipal waste stream, and, except for paint filters, have recoverable components. According to a 1991 EPA study of mercury sources in municipal landfills, light bulbs, paint residues, thermometers, and thermostats were identified as major mercury sources.
RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-00084
COMMENTER Jeff Carmichael
SUBJECT UNWAS1

COMMENT Option 2: Universal waste System Alternative for Lamps I also support the Universal waste System Alternative for mercury-containing lamps. However, I favor Options 1 over Option 2, if EPA aggressively promotes recycling as suggested in my Option 1 comments. Option 1 provides the greatest relief to mercury-containing lamp generators, while encouraging companies to participant in EPA's Green Lights program.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN SCSP-00086

COMMENTER Northeast Utilities

SUBJECT UNWAS1

COMMENT III. Light Bulbs Should Be Granted Some Relief: Either in a Separate Rule As Universal wastes NUSCO notes that EPA is considering granting some regulatory relief for fluorescent lamps. However, if such relief is not issued, fluorescent lamps should be designated universal wastes, as they meet the suitability and criteria for universal wastes.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps.

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN SCSP-00086
COMMENTER Northeast Utilities
SUBJECT UNWAS1
COMMENT For the reasons stated above, NUSCO believes EPA should implement a universal waste rule for batteries, paint wastes, antifreeze, aerosol cans, circuit boards, Clor-N-Oil kits, hazardous waste used oil, and light bulbs.
RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN SCSP-00091
COMMENTER Department of the Navy
SUBJECT UNWAS1
COMMENT The Navy supports the petition process for including additional waste streams under Part 273. It also supports expanding the proposed rule to mercury containing thermometers and thermostats, and to fluorescent lights as identified by EPA. In addition, the Navy believes there are other waste streams that are eligible, e.g., paint, aerosol cans, cleaning fluids, rags, etc.
RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as spent antifreeze, to their individual state universal waste programs through the petition process.

DCN FLEP-00094

COMMENTER City of Springfield Office of Pub. Util.
SUBJECT UNWAS1
COMMENT The universal waste option, in our opinion, is not the proper resolution to the lighting waste issue. This option would subject the lighting waste to the most onerous and expensive components of the Subtitle C regulation, including the land ban program in Subtitle C disposal costs.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00095
COMMENTER Allegheny Power System
SUBJECT UNWAS1
COMMENT The universal waste option is not the answer to this problem. As long as lighting -wastes remain under Subtitle C regulation, there will be significant economic burdens associated with relamping programs. Under the universal waste option, lighting wastes would remain subject to the most onerous components of the Subtitle C program: the land disposal restrictions, and the costs of Subtitle C disposal.
RESPONSE

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.
By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase. The Agency performed calculations on the impact of disposal costs on a lighting upgrade's internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00098
COMMENTER Indiana Retail Council, Inc.
SUBJECT UNWAS1
COMMENT On the other hand, the proposed Universal waste approach would not solve the current problems associated with lamp disposal. The Retail Council does not believe that Universal waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude

of environmental problems. It also continues to keep costs of lamp replacement very high. The Universal waste approach was not designed for fragile wastes whose risk derive from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that could withstand the rigor of large scale accumulation and transport. Our members are particularly concerned about the lack of regulatory requirements for Consolidation Points and are unlikely to send their spent lamps to them due to liability concerns.

RESPONSE

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements.

A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase. The Agency performed calculations on the impact of disposal costs on a lighting upgrade's internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

EPA does not agree that the universal waste program will increase risk and environmental problems. The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage

that could cause leakage under reasonably foreseeable conditions. Examples of acceptable packaging could include placing the lamps evenly spaced in double or triple-ply cardboard containers with closed lids. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. An example of such containment could include placing unintentionally broken lamps in closed wax fiberboard drums.

The Agency points out that in addition to these container and packaging provisions, universal waste handlers, including handlers of universal waste lamps, must comply with the provisions of 40 CFR ''273.17 and 273.37 for responding to releases of universal waste. Handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste and, if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR Parts 260 through 268, as well as all other applicable statutory provisions.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

DCN FLEP-00100
COMMENTER Arizona Municipal Power Users' Assn.
SUBJECT UNWAS1
COMMENT The "universal waste option" is not the proper resolution to the lighting waste issue because, under that option, lighting wastes are subject to the most onerous and expensive components of Subtitle C regulation, namely the land ban program and Subtitle C disposal costs. AMPUA concludes that the "universal waste option" is not the answer because, under universal waste rules, lighting waste would remain subject to the most rigid provisions of Subtitle C, including the land disposal restrictions program. The universal waste option would encompass all spent lighting waste lamps including incandescent and neon, as opposed to just mercury-containing lamps.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal wasterule is less stringent than full Subtitle C management standards).

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set

forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards. By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced
set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00101
COMMENTER Montana-Dakota Utility Company
SUBJECT UNWAS1
COMMENT 3. It was never the intent of EPA to have every business and government organization classified as a small or large quantity generator. By classifying spent light bulbs as a hazardous waste, conditionally exempt small quantity generators may become small or large quantity generators. Most businesses and government organizations do not handle hazardous waste. If light bulb disposal was regulated, these businesses and government organizations would be required to meet all the requirements of a small or large quantity generator. Even if the Universal waste approach was used this would have a detrimental economic effect on businesses, government organizations, and the economy. The estimated cost impact will be significantly more than estimated because it needs to include the light bulb disposal cost and the added costs of being a small or large quantity generator (documentation, training, inspections, transportation, storage, and waste management). 4. Change to energy efficient lighting would be stifled because it could change generator status, and increase costs.

RESPONSE
Facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility=s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in Part 262.

Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements.

A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00102
COMMENTER Hopkinsville Electric System
SUBJECT UNWAS1
COMMENT The Hopkinsville Electric System feels "the universal waste option" not to be the proper resolution to the lighting waste issue because this subjects lighting wastes to the most exacting and expensive components of Subtitle C regulation, namely the land ban program and Subtitle C disposal costs. In turn this will prevent more lighting change outs to more efficient lamps and inhibits the conservation of energy.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase. The Agency performed calculations on the impact of disposal costs on a lighting upgrade's internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00103
COMMENTER Tahlequah Public Works Authority
SUBJECT UNWAS1
COMMENT Tahlequah Public Works Authority is urging you to exclude mercury- containing lamps from Subtitle C of RCRA regulation. We believe the "Universal waste option" is not the proper resolution of the lighting waste issue in our case, or in the best interest of our customers. Subtitle C disposal costs seem to grow every day as more regulation is implemented. Tahlequah Public Works Authority would be forced to reduce the amount of relamping on our system due to the added cost of disposal. Also participation in energy efficient lighting programs would greatly be affected by this regulation. Tahlequah Public Works Authority uses a municipal solid waste transfer facility where our lighting waste disposal will be managed in accordance with

all RCRA regulations. We, at Tahlequah Public Works Authority, appreciate the opportunity provided during this public comment period to submit these comments in favor of the conditional exclusion from hazardous waste regulations for mercury-containing lamps and in opposition to the "Universal Waste Option" as a solution for proper disposal of spent lighting waste.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements.

A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00103
COMMENTER ASTSWMO
SUBJECT UNWAS1
COMMENT The Task Force recommends that USEPA consider other wastes potential universal wastes to be regulated under the new Part 273 other special waste provisions. The Task Force believes that

the wastes listed below are good candidates for inclusion in a special waste framework due to their widespread use and/or because they are routinely disposed of in the municipal waste stream. Additionally, the Task Force has determined that some of the wastes which we are proposing for special consideration are simply not amenable to "full-scale" RCRA Subtitle C regulation due to their physical characteristics. The Task Force realizes that some of the wastes listed below may require special management standards or flexibility above and beyond the proposed Part 273 provisions. The Task Force recommends that the following wastes be considered: -Thermostats and thermometers -Antifreeze -Sandblasting debris -Fluorescent lamps and other

High Intensity Discharge (HID) bulbs -Construction/demolition debris -Contaminated rags -Toner/inks -Used lead-acid batteries -Used oil -Auto shredder fluff -Spent treated poles -Lead paint abatement contaminated soils and debris

RESPONSE

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those types of wastes mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-00105

COMMENTER Waverly Light and Power

SUBJECT UNWAS1

COMMENT The "universal waste option" is not the answer. Under universal waste rules, lighting waste would remain subject to the most rigid provisions of Subtitle C, including the land disposal restrictions program. The universal waste option would encompass all spent lighting waste lamps including incandescent and neon, as opposed to just mercury-containing lamps.

RESPONSE

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to

the full RCRA Subtitle C management standards.

By adding all hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN SCSP-00105
COMMENTER Nevada Dept. of Cons. and Nat. Res.
SUBJECT UNWAS1
COMMENT While there are a number of other wastes that could be managed as universal wastes, we are especially interested in seeing antifreeze, fluorescent tubes and bulbs, filters exhibiting a characteristic and contaminated wipers addressed.
RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492).

Today=s rule adds hazardous waste lamps to the universal waste regulations. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. The universal waste rule

provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). States authorized for the universal waste regulations may add additional types of waste, such as spent antifreeze, filters, and wipers, to their individual state universal waste programs through the petition process.

DCN FLEP-00106
COMMENTER Town of Wickenburg, AZ
SUBJECT UNWAS1
COMMENT The "universal waste option" is not the proper resolution to the lighting waste issue because, under that option, lighting wastes are subject to the most onerous and expensive components of Subtitle C regulation, namely the land ban program and Subtitle C disposal costs. The Town of Wickenburg concludes that the "universal waste option" is not the answer because, under universal waste rules, lighting waste would remain subject to the most rigid provisions of Subtitle C, including the land disposal restrictions program. The universal waste option would encompass all spent lighting waste lamps including incandescent and neon, as opposed to just mercury-containing lamps.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification).

Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00107
COMMENTER North Carolina Dept. of Env. Health
SUBJECT UNWAS1
COMMENT NC DEHNR supports option two - managing the lamps under the universal waste system. Subtitle D landfills in North Carolina are by rule mandated not to receive hazardous waste including that from Conditionally Exempt Small Quantity Generators. NC DEHNR would not adopt option one if it were promulgated.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

The Agency notes that many States have already adopted or are considering adopting universal waste standards for spent lamps. Since this rule is not promulgated pursuant to HSWA it is applicable on the effective date only in States that do not have final RCRA authorization. Authorized states that wish to adopt this rule will have to seek authorization for the adoption of spent lamps to their universal waste programs. States are not required to adopt less stringent regulations, and therefore, need not adopt the universal waste regulations for spent lamps. However, EPA strongly encourages them to do so, not only to achieve the most benefits of the universal waste program but also to reduce the complexity of interstate transportation of these universal wastes.

DCN FLEP-00109
COMMENTER City of Edmond, OK
SUBJECT UNWAS1
COMMENT The "universal waste option" is not the proper resolution to the lighting waste issue because, under that option, lighting wastes are subject to the most burdensome and expensive components of Subtitle C regulation, namely the land ban program and Subtitle C disposal costs, The City of Edmond believes that the "universal waste option" is not the answer because, under universal waste rules, lighting waste would remain subject to the most rigid provisions of Subtitle C, including the land

disposal restrictions program. The universal waste option would encompass all spent lighting waste lamps including incandescent and neon, as opposed to just mercury-containing lamps.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00110

COMMENTER City of Wahoo, NE

SUBJECT UNWAS1

COMMENT We do, however, have an active energy efficiency program which offers our customers an attractive package of incentives including rebates and no interest loans for a number of energy saving measures, including lighting. This program has been well received and is creating the desired demand side management results. The added problems and costs which would be incurred if it is required that lamp wastes be disposed of as hazardous waste under Subtitle C regulations, we feel would definitely discourage many of our customers from using our program. The City of Wahoo utilizes a qualified, State licensed

landfill for our waste, and we appreciate this opportunity to express our opposition to the "universal waste option" as a solution for proper disposal of spent lighting wastes.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters since the management standards (including land disposal restrictions requirements) are less stringent. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00111

COMMENTER Michigan Department of Natural Resources

SUBJECT UNWAS1

COMMENT The Michigan Department of Natural Resources, Waste Management Division (WMD), is taking this opportunity to submit comments regarding the Mercury-Containing Lamp Proposal. The proposal,

published July 27, 1994 (59 FR 38288) in the Federal Register, contains two options for management of mercury lamps under the Resource Conservation and Recovery Act of 1976 (RCRA). The first option is to conditionally exclude lamps from hazardous waste regulation. The second option is to manage lamps under a set of tailored management standards. The WMD supports a modified Universal waste (Special Collection System) Option over the exclusion. The Universal waste Option will encourage the development of recycling networks, recovery of resources and provide greater protection of human health and the environment during generation, collection and transportation of mercury containing lamps.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters since the management standards (including land disposal restrictions requirements) are less stringent. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00112

COMMENTER Wisconsin Electric Power Company

SUBJECT UNWAS1
COMMENT I am writing you on behalf of the Wisconsin Electric Power Company in support of the full exclusion option from RCRA Subtitle C regulation of mercury containing lamps. The Universal waste option is not the solution to the issue because it would continue to subject lighting wastes to onerous and expensive components of Subtitle C regulation and limit the recycling market that has been effectively developing in Wisconsin.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). EPA believes the universal waste program should create more incentives to recycle hazardous waste lamps than the current full Subtitle C regulations.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00113
COMMENTER City of Safford, AZ
SUBJECT UNWAS1
COMMENT The City of Safford concludes that the "universal waste option" is not the answer because, under universal waste rules, lighting waste would remain subject to the, most rigid provisions of Subtitle C, including the land disposal restrictions program. The universal waste option would encompass all spent lighting waste lamps including incandescent and neon, as opposed to just mercury-containing lamps.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters since the management standards (including land disposal restrictions requirements) are less stringent. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule should encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive

and the administrative requirements for universal waste.

DCN FLEP-00114
COMMENTER Meijer, Inc.
SUBJECT UNWAS1
COMMENT The proposed Universal waste approach would not solve the current problems associated with lamp disposal. Meijer does not believe that Universal waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep costs of lamp replacement very high. The Universal waste approach was not designed for fragile wastes whose risks derive from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that could withstand the rigors of large scale accumulation and transport. We are particularly concerned about the lack of regulatory requirements for Consolidation Points and are unlikely to send our spent lamps to them due to liability concerns. An underlying goal of the Universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a good goal, it has been our experience that there are too few recycling facilities in operation currently to make the Universal waste approach feasible nationwide. The high cost of shipping the lamps and packaging to prevent breakage would again adversely impact our program. This option would more than double the cost of an average relamping with the cost to recycle nearly equal to the cost for the initial lamp. In our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost-effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place.
RESPONSE
The Agency appreciates the commenter=s input but points out that currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing

this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in 40 CFR Part 262 and 263. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule should encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

Source reduction, which is the reduction or elimination of the toxicity and/or volume of a waste product, is at the top of EPA's hierarchy of solid waste management methods. The Agency encourages cost-effective source reduction of mercury contained in fluorescent lamps. Second on the hierarchy is recycling. Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of hazardous waste lamps. Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN SCSP-00114
COMMENTER National Electric Manufacturers Assn.
SUBJECT UNWAS1
COMMENT This letter is in response to EPA's request for comments on whether lamps containing mercury should qualify for coverage under the universal waste rule. We believe that including lamps

containing mercury at this time is premature. The premise of the Universal waste rule is that certain types of post-consumer items are generated by widely different types of generators. The RCRA Subtitle C system captures some of these generators and not others. Thus, identical waste is sometimes managed in Subtitle C hazardous waste facilities and sometimes not, depending upon the generator's status. The situation with lamps containing mercury differs significantly from this scenario. While lamps have some similarities to batteries in their distribution patterns among regulated and non-regulated generators, lamps only recently came under Subtitle C coverage when EPA changed from the EP to the TCLP Test for determining characteristic mercury wastes.

RESPONSE

Based upon EPA=s evaluation of hazardous waste lamps against the criteria set for adding additional wastes to the universal waste rule and the goals the Agency set for the final rule and based upon commenter input to the proposed rule, the Agency decided to include hazardous waste lamps that fail a hazardous waste characteristic within the scope of the universal waste rule. The Agency has determined that hazardous waste lamps meet the criteria established in the final universal waste rule for evaluating new wastes to be included as universal waste and included under '273.81:

- hazardous waste lamps frequently exhibit the hazardous waste toxicity characteristic for mercury and sometimes for lead;
- spent lamps are frequently generated in a wide variety of setting other than the industrial settings usually associated with hazardous wastes;
- spent lamps are generated by a large number of generators;
- spent lamps have a high likelihood of being collected and recycled within a system that will ensure Agood stewardship;@
- waste management requirements appropriate for the universal waste regulations can be used to mitigate risks posed by the accumulation and transport of spent lamps;
- the addition of hazardous waste lamps to the scope of the universal waste regulations may facilitate the removal of spent lamps from the municipal waste stream.

DCN SCSP-00114

COMMENTER National Electric Manufacturers Assn.

SUBJECT UNWAS1

COMMENT Thus, NEMA believes the universal waste rule fails to address the core issue with regard to laws containing mercury. Subtitle C vs. Subtitle D management-facilities. Collection systems are a secondary issue and are appropriately deferred until the issue of appropriate management standards is addressed.

RESPONSE

The Agency believes that management controls for hazardous waste lamps are necessary to

minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish. Therefore, EPA is adding hazardous waste lamps to the universal waste rule, 40 CFR Part 273.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes. For these reasons, EPA believes hazardous waste lamps will be best managed under the universal waste program, where ultimate disposal is at RCRA Subtitle C facilities.

DCN SCSP-00115
COMMENTER New York Dept. of Environ. Conservation
SUBJECT UNWAS1
COMMENT On the whole, New York State strongly supports the proposed action. I. Request for Additional Candidates The proposal currently lists just two "special collection system hazardous wastes" (batteries and certain pesticides), but acknowledges that, within the set of "universal wastes," there may be other candidates that would be better managed under proposed Part 273 regulations, and invites nominations (page 8107/3). New York State suggests EPA consider the following waste streams: fluorescent light bulbs industrial rags/soiled work clothing used antifreeze mercury-containing devices construction and

demolition debris ash from municipal incinerators that do not recover energy A. Fluorescent Light Bulbs New York State recommends that EPA reconsider its withdrawal of light bulbs as a special collection system hazardous waste. In the original draft of May 29, 1992, EPA had included light bulbs as a third candidate for regulation under Part 273, but the finalized proposal (i.e., the February 11, 1993 Federal Register) did not include this waste stream. New York State finds the justification provided on pages 72-75 of the May 29 proposal to be persuasive, and requests that EPA reconsider the inclusion of light bulbs in this list of special collection system hazardous wastes.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste programs. States authorized for the universal waste regulations may add additional types of waste, such as those mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-00116

COMMENTER Bath Iron Works Corporation

SUBJECT UNWAS1

COMMENT With regard to the subject proposed rule, we urge you to consider that mercury-containing lamps be considered a "universal waste", and managed as such. When saluting the options proposed by USEPA, it is clear that fluorescent lamps

and other mercury bearing devices need to be removed from the "mixed" solid waste stream, and preferably recycled whenever possible. This is the stated purpose of the proposed "Universal Waste Rule", and is in harmony with EPA Administrator Browner's recently enacted "Common Sense initiative". Given that the intent of the proposed "Universal waste rule" is to ensure that hazardous wastes are managed safely and without unnecessary regulation, and that such hazardous wastes are not realistically manageable under the auspices of RCRA and its current regulatory structure; then EPA should include fluorescent and HID lamps in the final draft of this proposed rule.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00117

COMMENTER Dayton Power and Light Company

SUBJECT UNWAS1

COMMENT DP&L does not believe that designating mercury-containing lamps as universal waste would be a viable solution to the lamp management challenge. Managing mercury-containing lamps as hazardous wastes would render virtually all major relamping programs too costly and burdensome. Additional lamp management costs would be a deterrent to potential lighting retrofit participants. This would significantly weaken DP&L's DSM program which includes a lighting rebate program providing governmental, commercial, and industrial customers with financially viable electric efficiency improvement options.

RESPONSE

Replacing energy inefficient lighting systems under one of the energy-efficient lighting programs could require the use and eventual disposal of hazardous waste lamps. Given that the life span of hazardous waste lamps is approximately three to four years, businesses that participate in mass

relampings may only dispose of lamps every few years.

Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00118
COMMENTER Wheeling Power Company
SUBJECT UNWAS1
COMMENT The universal waste option is not the solution. Significant economic burdens associated with relamping programs will exist if lighting wastes remain under Subtitle C regulation. We support the ability of generators to engage in materials separation and consolidation of spent lamps in an environmentally sound manner. Any prohibition on such recycling activities simply drives up the cost of compliance and frustrates participation in Green Lights and other DSM programs.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project

over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00118
COMMENTER Robert M. Quintal
SUBJECT UNWAS1
COMMENT It in the intent of this document to petition the EPA to include additional hazardous wastes in the proposal. Data will be shown that supports the idea of an integrated waste management approach to mercury containing electric lights. OVERVIEW Given that the intent of the proposed rule is to ensure that hazardous wastes are managed safely and without unnecessary regulation, and that such hazardous wastes are not realistically manageable under the auspices of RCRA and its current regulatory structure; then the EPA should include fluorescent (fluorescent and high intensity discharge) lamps in the final draft of this proposed rule.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00120
COMMENTER Twin Valleys Public Power District
SUBJECT UNWAS1
COMMENT Twin Valleys concludes that the "universal waste option" is not the answer because, under universal waste rules, lighting waste would remain subject to the most rigid provisions of Subtitle C, including the land disposal restrictions program. The universal waste option would encompass all spent lighting waste lamps including incandescent and neon, as opposed to just

mercury-containing lamps.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273.

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The land disposal restrictions (LDR) apply to waste management activities governed by RCRA Subtitle C. The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00121

COMMENTER Arizona Electric Power Cooperative, Inc.

SUBJECT UNWAS1

COMMENT The "universal waste option" is not the proper resolution to the lighting waste issue because, under that option lighting wastes are subject to the most onerous and expensive components of Subtitle C regulation namely, the land ban program and Subtitle C disposal costs. The universal waste option would encompass all spent lighting waste lamps including incandescent and neon, as

opposed to just mercury- containing lamps.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous characteristic the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273.

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The land disposal restrictions (LDR) apply to waste management activities governed by RCRA Subtitle C. The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN SCSP-00121

COMMENTER American Electronics Association

SUBJECT UNWAS1

COMMENT The American Electronics Association - Texas Council, Environmental Policy Working Group (EPWG) appreciates this opportunity to provide its comments regarding the Environmental Protection Agency's proposed Universal hazardous Wastes Rule, published in the February 11, 1993 and April 8, 1993 Federal Registers. It is the EPWG's understanding that a number of states have commented or are preparing to supply comments to the

EPA regarding the potential expansion of the proposed Rule to include mercury-containing light bulbs. The EPWG supports this expansion and urges the Texas Water Commission (TWC) to submit timely comments in favor of such expansion. As the TWC is undoubtedly aware, the proper handling and disposal of used mercury containing bulbs is an enormous task. EPA is proposing rule amendments which would allow a significantly simplified process through which regulated persons may properly handle, transport, dispose of and/or recycle batteries and certain pesticides. The EPWG believes that these rules can justifiably and easily be expanded to incorporate mercury-containing light bulbs. It is believed that a reduction of the record requirements, while continuing to regulate consolidation points and/or destination facilities will not compromise the protection of human health and the environment. Further, as a significant number of such light bulb users may not be reached under the RCRA hazardous waste regulatory scheme, we believe that the expansion of the proposed Universal Hazardous Waste Rule will permit and encourage those currently unregulated businesses and other consumers to responsibly dispose of their wastes.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Under the universal waste system, conditionally-exempt quantity generators can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273.

DCN FLEP-00122
COMMENTER American Electric Power Service Corp.
SUBJECT UNWAS1
COMMENT Regulation of mercury-containing lamps under a hazardous waste regime is not only unnecessary, but equally important such regulation impedes industries' full participation in Green Lights and other energy-efficient relamping programs. USEPA itself acknowledges in the proposal that "[t]he additional costs associated with managing, transporting, and disposing of lighting wastes as hazardous wastes can create an additional disincentive to join Green Lights and make the initial

> investment in energy-efficient light technologies." 59 Federal Register 38288,38290 (July 27, 1994). USEPA's assessment is correct. The universal waste option is not the answer to this problem. As long as lighting wastes remain under the umbrella of Subtitle C regulation, there will be significant economic burdens associated with relamping programs. Under the universal waste option, lighting wastes would remain subject to the most onerous components of the Subtitle C program: the land disposal restrictions program, which is only becoming more onerous, and the costs of Subtitle C disposal.

RESPONSE

The Agency believes that the majority of owners recognize that lamp disposal costs are minimal when viewed in terms of the lamp's life-cycle costs. This view is supported by cost analyses conducted by EPA on typical light upgrades. For example, the cost of operating a lamp (including the ballast losses) for its 20,000-hour life is $64 at the national average electric rate of seven cents per kilowatt-hour. Assuming a $0.50/lamp disposal fee, disposal costs would be less than one percent of its operating costs. See the February 1997 edition of "Lighting Waste Disposal" (EPA 430-B-95-004) for additional information on upgrading costs. EPA has also conducted a number of independent analyses of the internal rate of return (IRR) of various lighting upgrades. The Agency has found that, holding all other lamp operating costs constant, the cost of lamp disposal had minimal impacts on an upgrading project's IRR. At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years was 51 percent. At a $1.00/lamp transportation and recycling cost, the IRR was 50 percent **C** only a slight decrease in IRR despite a 100 percent increase in waste management costs. Because of these reasons, EPA continues to believe that use of energy-efficient lamps is independent of the policy options.

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The land disposal restrictions, (LDR), apply to waste management activities governed by RCRA Subtitle C. The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification).

Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00124
COMMENTER Commonwealth Edison Company
SUBJECT UNWAS1
COMMENT Regulation of mercury-containing lamps under a hazardous waste regime is not only unnecessary, but such regulation impedes ComEd's customers from full participation in potential energy conservation. ComEd is also of the opinion that lighting waste regulated under the proposed universal waste option is not the answer to the problem. Under the universal waste option, lighting waste would remain subject to the most onerous components of Subtitle C (i.e. land disposal restrictions and disposal costs). As long as lighting waste remains under the umbrella of Subtitle C regulation there will be significant economic burdens associated with relamping programs.
RESPONSE
The Agency believes that the majority of owners recognize that lamp disposal costs are minimal when viewed in terms of the lamp's life-cycle costs. This view is supported by cost analyses conducted by EPA on typical light upgrades. For example, the cost of operating a lamp (including the ballast losses) for its 20,000-hour life is $64 at the national average electric rate of seven cents per kilowatt-hour. Assuming a $0.50/lamp disposal fee, disposal costs would be less than one percent of its operating costs. See the February 1997 edition of "Lighting Waste Disposal" (EPA 430-B-95-004) for additional information on upgrading costs. EPA has also conducted a number of independent analyses of the internal rate of return (IRR) of various lighting upgrades. The Agency has found that, holding all other lamp operating costs constant, the cost of lamp disposal had minimal impacts on an upgrading project's IRR. At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years was 51 percent. At a $1.00/lamp transportation and recycling cost, the IRR was 50 percent **C** only a slight decrease in IRR despite a 100 percent increase in waste management costs. Because of these reasons, EPA continues to believe that use of energy efficient lamps is independent of the policy options.

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The land disposal restrictions, (LDR), apply to waste management activities governed by RCRA Subtitle C. The purpose of the LDR program is to prohibit the land disposal of hazardous wastes

that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00125
COMMENTER J.R. Simplot Company
SUBJECT UNWAS1
COMMENT 5)Regulation of mercury-containing lamps as hazardous waste discourages planned energy conservation programs which rely on replacing inefficient lighting systems with energy efficient fluorescent and high density discharge lamps which of necessity must contain some mercury. Because electric utilities, when burning fossil fuels, emit mercury at a rate of 0.0428 mg/kWh it is in the best interest of the public to encourage, not discourage, replacement of inefficient lighting systems. Furthermore, these lighting upgrades typically yield internal rate of return of 20-30 percent and have a payback of 3-4 years. These energy conservation measures reduce the emission of several other air pollutants including sulfur dioxide, nitrogen dioxide and greenhouse gases such as carbon dioxide. It is in the best interest of the public, aside from the environmental affects, to encourage such energy conservation measures.
RESPONSE
The Agency agrees that energy conservation measures such as relamping should be encouraged and believes that the majority of owners recognize that lamp disposal costs are minimal when viewed in terms of the lamp's life-cycle costs. This view is supported by cost analyses conducted by EPA on typical light upgrades. For example, the cost of operating a lamp (including the ballast losses) for its 20,000-hour life is $64 at the national average electric rate of seven cents per kilowatt-hour. Assuming a $0.50/lamp disposal fee, disposal costs would be less than one percent of its operating costs. See the February 1997 edition of "Lighting Waste Disposal" (EPA 430-B-95-004) for additional information on upgrading costs. EPA has also conducted a number of independent analyses of the internal rate of return (IRR) of various lighting upgrades. The Agency has found that, holding all other lamp operating costs constant, the cost of lamp disposal had minimal impacts on an upgrading project's IRR. At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years was 51 percent. At a $1.00/lamp transportation and recycling cost, the IRR was 50 percent **C** only a slight decrease in IRR despite a 100 percent increase in waste management costs. Because of these reasons, EPA continues to believe that use

of energy efficient lamps is independent of the policy options being considered today.

DCN FLEP-00128
COMMENTER Suburban Lighting, Inc.
SUBJECT UNWAS1
COMMENT I am particularly concerned with the impact these lamps could have on the generator status of businesses. The possibility that businesses whose only potentially hazardous waste is mercury containing lamps to be considered large quantity hazardous waste generators in a league with the largest polluters of our environment is a grave injustice. Many of these businesses have undertaken large scale lighting upgrades to prevent pollution. To label them as "large quantity hazardous waste generators" will have a negative impact on other businesses contemplating energy efficient lighting upgrades.
RESPONSE
Spent lamps that are managed as universal waste under Part 273 are not included in a facility's determination of hazardous waste generator status ('261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in Part 262. Under the universal waste system, conditionally-exempt quantity generators can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273.

DCN FLEP-00129
COMMENTER Automated Energy Controls
SUBJECT UNWAS1
COMMENT AEC does not feel that the proposed universal waste approach is the answer to the disposition of mercury contained lamps. We believe that recycling is necessary but we need safe and cost effective options available to us.
RESPONSE
The Agency believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline. Under the universal waste rule, the Agency has not limited a generator's waste management options.

DCN FLEP-00130
COMMENTER U.S. Department of Energy
SUBJECT UNWAS1
COMMENT Universal wastes must be treated to meet LDR standards. Some LDR treatments applicable to mercury-containing lamps, such as thermal treatment, fixation/stabilization, and immobilization, focus on preventing the leach ability of hazardous contaminants rather than on preventing air emissions during the treatment process. Given that the air pathway appears to be a much more significant source of mercury exposure than the groundwater pathway, EPA should evaluate whether the LDR treatment standards applicable to mercury-containing lamps are appropriate if mercury-containing lamps are regulated under the universal waste system.
RESPONSE
Today=s rule adds hazardous waste lamps to the scope of the universal waste rule (40 CFR Part 273). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes. A change to the treatment standards applicable to hazardous waste wastes is beyond the scope of today=s rulemaking, which is intended to focus on the collection phase of universal waste lamp management rather than the final treatment stage. However, it should be noted that the Agency is considering revising the LDR treatment standard for mercury. In addition, all applicable OSHA workplace protection standards and Clean Air Act emission standards continue to apply to mercury treatment processes.

Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but are not required to comply with the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN SCSP-00131
COMMENTER Monsanto
SUBJECT UNWAS1
COMMENT Having reviewed the proposed rule, we offer the following comments: 1. The list of universal wastes provided relief under this rulemaking needs to be expanded significantly beyond certain hazardous waste batteries and obsolete pesticides. In this rule, EPA has proposed less stringent management standards for hazardous batteries and recalled pesticides. Other

widespread hazardous items to which this new special collection system program could apply include fluorescent light bulbs, aerosol cans, liquid mercury in thermometers and instruments, and paint wastes. In this proposal, two sets of criteria have been established that would be used to evaluate adding a waste to the special collection system program. The first set of criteria would be used to demonstrate that a hazardous waste negatively impacts human health and the environment due to its presence in municipal waste streams. The hazardous items listed above fulfill these requirements in that they are all hazardous due to either listing or characteristic, they are present in municipal waste systems in significant amounts, and there are more than 1,000 generators of these materials nationwide. These wastes also meet the second set of criteria, used to determine the feasibility of regulating a waste under the special collection program. These wastes specified above pose a relatively low risk to human health and the environment during storage and transport, good management of the waste is easily implemented, a special collection system would result in less waste entering the municipal waste system and would encourage recycling of these wastes. Classification as universal wastes would improve implementation of the RCRA hazardous waste regulatory program for these wastes. 2. Fluorescent light bulbs and tubes should be reinstated as a viable candidate for regulation under this proposed rulemaking. Monsanto believes that fluorescent light bulbs and tubes should be classified as universal wastes. It is our understanding that this was proposed in early drafts of this NPRM.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

In response to the proposed universal waste rule, a number of commenters suggested additional

wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-00132
COMMENTER Trico Electric Cooperative, Inc.
SUBJECT UNWAS1
COMMENT Trico concludes that the "universal waste option" is not the answer because, under universal waste rules, lighting waste would remain subject to the most rigid provisions of Subtitle C, including the land disposal restrictions program. The universal waste option would encompass all spent lighting waste lamps including incandescent and neon, as opposed to just mercury-containing lamps.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under

the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00133
COMMENTER Robroy Industries
SUBJECT UNWAS1
COMMENT In addition, we believe the Universal waste approach would not solve the current problems associated with lamp disposal. We feel that Universal waste will not remove the stigma associated with the hazardous waste designation and also believe it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps. It will also continue to keep costs of lamp replacement very high.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight

decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00135
COMMENTER Town of Okeene, OK
SUBJECT UNWAS1
COMMENT The Town of Okeene supports recycling spent lamps in most cases; however, many municipal solid waste landfills are more protective of human health and environment than recycling centers. therefore; the universal waste option" is not adequate for mercury-containing lighting wastes.
RESPONSE
Based upon additional analyses of the behavior of mercury in the environment, the Agency decided to amend the Universal Waste Management Standards (40 CFR Part 273) to include hazardous waste lamps within the scope of this rule. The universal waste rule provides a reduced, or streamlined set of requirements, but also allows the Agency to set specific management standards to control emissions and releases. The potential for mercury emissions and the release of other hazardous constituents occurs when hazardous waste lamps are not managed in a protective manner. Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN FLEP-00135
COMMENTER Town of Okeene, OK
SUBJECT UNWAS1
COMMENT The Town of Okeene appreciates the opportunity provided during this public comment period to submit our sentiment in favor of the conditional exclusion from hazardous waste regulation for mercury-containing lamps and in opposition C" the "universal waste option" as a solution for proper disposal of spent lighting wastes.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently

protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions and the release of other hazardous constituents to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN SCSP-00135
COMMENTER New York Dept. of Environ. Conservation
SUBJECT UNWAS1
COMMENT Attached is a packet of information related to mercury and fluorescent lights at the Rock Dump, Milton, Saratoga County, New York. This information includes letters, a memorandum, and data that may be useful to the Agency in formulating the proposed "universal waste" rule.
RESPONSE
The Agency thanks the commenter for submitting the information on mercury and fluorescent lights at a municipal landfill. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00136
COMMENTER Wisconsin Dept. of Natural Resources
SUBJECT UNWAS1
COMMENT The WDNR supports the recycling, rather than the disposal, of

mercury-containing lamps to the maximum extent possible. We believe that the rapid growth of the mercury-containing lamp recycling industry "in Wisconsin is proof that such an approach can and will work. The recycling options presented in this proposed rule, particularly the option to manage waste lamps under the proposed Universal wastes Rule, would help to better protect our environment and people by addressing a controllable source of mercury emissions. Based upon experience in dealing with fluorescent lighting waste issues, this Department developed guidance encouraging recycling that has served us well for the past year and a half.

As such, the disposal exemption approach does not adequately protect the environment or human health, and we strongly suggest that USEPA no longer consider the disposal exemption option, and instead promote the Universal waste option, which encourages recycling.

7. Management of used fluorescent lamps should be included in the universal waste rule as a special waste under the Resource, Conservation and Recovery Act (RCRA) , Subtitle C, rather than under Subtitle D. The mercury from these lamps should be recovered and recycled.

RESPONSE

The Agency commends the state=s initiatives in addressing the management of hazardous waste lamps. The Agency agrees with the commenter and does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00137

COMMENTER Planned Lighting, Inc.
SUBJECT UNWAS1
COMMENT The proposed universal waste approach may complicate the issue by promoting the accumulation of vast quantities of intact lamps for future disposal.
RESPONSE
Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps. In addition, the universal waste limits accumulation to one year, unless the handler can demonstrate such accumulation is necessary to facilitate proper recovery, treatment, or disposal.

DCN FLEP-00137
COMMENTER Planned Lighting, Inc.
SUBJECT UNWAS1
COMMENT The EPA's regulation of lamps disposal should assure safe and economical options for lamp disposal until a universal recycling infrastructure can be implemented. The universal waste approach can have additional adverse effects. Such as the creation of 658,000 new small-quantity hazardous waste generators and 64,000 new large-quantity hazardous waste generators, based on classifying HID and fluorescent lamps as hazardous waste. These figures are based on a realistic estimate of the volume of lamps generated for group and spot relamping. Another concern is the severe decrease in energy-saving lighting upgrades and group relampings which will result from this approach to disposal. Many companies may choose to forego upgrades or relamping which will result in additional power demands and increased air pollution.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management

standards).

Facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility=s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in Part 262. Under the universal waste system, conditionally-exempt quantity generators can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273.

Given the life span of hazardous waste lamps is approximately three to four years, businesses that participate in mass relampings may only dispose of lamps every few years. In addition, the universal waste rule is expected to result in cost reductions over full Subtitle C management requirements for generators, collectors, and transporters, yet it ensures that lamps are managed in an environmentally protective manner and are properly recycled or treated at full Subtitle C facilities prior to disposal.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00137
COMMENTER Utility Solid Waste Activities Group
SUBJECT UNWAS1
COMMENT addressing lighting waste, if by any chance that rule does not materialize, we fully expect that all lighting wastes will be included in the final special collection system rule. E. Lighting Wastes. USWAG notes that fluorescent lighting wastes are conspicuously absent from the proposal. Id. at 8111. While these wastes are perhaps one of the best candidates for inclusion in the special collection system, USWAG understands that EPA is currently working on a more comprehensive exclusion from hazardous waste regulation for these materials. While USWAG anticipates that the separate rulemaking for lighting wastes will be forthcoming in short order, if by any chance that rule does not materialize, we fully expect that all mercury-containing lighting wastes will be included in the final

special collection system rule.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00138

COMMENTER Indiana Michigan Power Company

SUBJECT UNWAS1

COMMENT The universal waste option is not the solution to this issue because it would continue to subject lighting wastes to the most onerous and expensive components of Subtitle regulation, the land ban program, and Subtitle C disposal cost.

RESPONSE

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification).

Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00138
COMMENTER Indiana Michigan Power Company
SUBJECT UNWAS1
COMMENT Regulation of mercury-containing lamps under the hazardous waste program is not only unnecessary, but equally important, such - regulation impedes industries' full participation in Green Lights and other energy-efficient relamping programs. AEP, our parent company, has a total of 2200 facilities and 12 million feet of lighting space. Energy savings and associated emission reductions from upgrading these facilities should not be discouraged by USEPA through unnecessary regulations. USEPA acknowledges in the proposal that "[t]he additional costs associated with managing, transporting, and disposing of lighting wastes as hazardous wastes can create an additional disincentive to either join Green Lights or make the initial investment in energy-efficient light technologies." 59 Federal Register 38288 38290 (July 27, 1994).
RESPONSE
Replacing energy inefficient lighting systems under one of the energy-efficient lighting programs could require the use and eventual disposal of hazardous waste lamps. Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00140
COMMENTER Texas Utilities Services, Inc.
SUBJECT UNWAS1

COMMENT Regarding EPA's second alternative, Texas Utilities opposes adding mercury-containing lamps to the Universal waste Proposal that is still to be promulgated. The Universal waste Proposal presents many of the same problems as with current management of mercury lamps under RCRA. The added requirements for handling, transport, final disposition of the lamps, and associated recordkeeping would be onerous, overly burdensome, and cost prohibitive.

RESPONSE

Today=s rule adds hazardous waste lamps to the scope of the universal waste rule (40 CFR Part 273). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters, yet ensures that lamps are recycled or treated in an environmentally protective manner at full Subtitle C facilities. The storage, handling, transport, and recordkeeping requirements for universal waste lamps are less stringent than for hazardous waste fully regulated under full Subtitle C. Fewer hazardous waste lamps will be managed in the municipal solid waste stream, therefore reducing the number of lamps going to municipal combustors and decreasing the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks).

DCN SCSP-00140

COMMENTER Advanced Environmental Recycling Corp.

SUBJECT UNWAS1

COMMENT Thank you for the opportunity to Provide comments to the Environmental Protection Agency on the Proposed February 11, 1993 rule to modify the Hazardous Waste Recycling Regulatory Process. These comments are made on behalf of Advanced Environmental Recycling Corporation and seek to address EPA's potential interest "to include other additional hazardous wastes (besides hazardous waste batteries &ad suspended or canceled and recalled pesticides) in the final rule." Fluorescent light bulbs should be added to the final rule for the reasons listed below. EPA's TCLP test results indicate fluorescent light bulbs often fail the toxicity test, thereby meeting the Federal definition of a hazardous waste. However, strictly regulating their management as a RCRA hazardous waste would probably not be practicable or enforceable because of the wide variety of sources from which they are generated. Fluorescent lights should

be added to the final rule as a "universal waste" for the following reasons: 1) to encourage resource conservation by facilitating more cost effective opportunities for recycling fluorescent light bulbs; 2) to assist generators in better understanding and complying with EPA regulations while assuring adequate protection of human health, and the environment, and 3) to assist efforts by States, municipalities, businesses and individuals to reduce the toxicity of their municipal waste stream. U.S. Senators' Letter Several U.S. Senators have expressed support for the proposed rule and efforts to reduce the toxicity of the municipal waste stream by having fluorescent lights included in the final rule. In a November 17, 1992 letter, (see Exhibit A) to the Office of Management and Budget, Senators Jeffords, Rockefeller, Durenberger, Lautenberg, Breaux and Byrd state that the draft rule: "would establish special collection system regulations for used batteries; recalled and canceled and suspended pesticides; and fluorescent light bulbs." In their letter, the Senators also contend that the draft rule is key to reducing the regulatory burden on recyclable wastes that would otherwise go into the municipal waste stream and express the following concerns: "The presence of toxic substances in the municipal solid waste stream is of great concern. These discarded wastes have the potential to release their toxic contents and contaminate groundwater resources. The combustion of these wastes are believed to be a source of toxic air emissions and contribute to concentrations of metals in the fly and bottom ash generated from these combustion activities." Furthermore, the Senators argue that without the rule, RCRA presents "major obstacles" that prevent toxic metals from being extracted from the municipal waste stream, concluding: "The proposed regulations would establish a special collection system and provide a less burdensome alternative than current regulations for the management of these wastes ... These efforts will improve public health and protect the environment by removing sources of mercury, cadmium and other metals from the municipal waste stream." EPA's Draft May 29, 1993 Rule There are many compelling reasons to have fluorescent light bulbs managed as a universal waste. Fluorescent lights were included in EPA's May 29, 1992 original draft rule as a third category, but were dropped from the finalized proposal. Based upon EPA's own previous (5/29/93 draft) observations, it is recommended that EPA reconsider its withdrawal of fluorescent light bulbs from the currently proposed universal waste rule. The rationale

provided by EPA's May 29 draft proposal on page 72 justifies their inclusion: "it appears that light bulbs fit many of the criteria proposed today for special collection system wastes. EPA hopes to encourage the efficient collection of waste light bulbs ... This rationale should still be used by EPA to place fluorescent lights in the final rule (see NYDEC fax with enclosure in Exhibit B).

These concerns are addressed in EPA's May 29 Draft rule: "Special collection systems, that would allow the development of efficient collection systems for light bulbs, are particularly important at this time because of shifts in common lighting maintenance practices .... Special collection system regulations for light bulbs would simplify management of these wastes, and would reduce existing barriers to the movement toward more energy efficient lighting systems." Adding fluorescent lights to the final rule will provide regulators with guidance needed to advise participants in the Greenlights Program (and state companion programs) of their responsibilities as generators under RCRA. However, in order for the proposal to better attain the goal set forth in the draft rule, EPA should reconsider its earlier proposition and place fluorescent lights in the final rule. Including mercury-containing wastes such as fluorescent lights in the Universal waste rule will facilitate fluorescent light recycling (helping to conserving natural resources), reduce the toxicity of the municipal waste stream, and, in the process, help to protect human health, wildlife and the environment.

RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations.

DCN FLEP-00141
COMMENTER Dow Chemical Company
SUBJECT UNWAS1
COMMENT Universal waste MANAGEMENT ALTERNATIVE Although Dow prefers the conditional exclusion, this approach is preferred to full Subtitle C management.

RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions and any other hazardous constituents to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00142
COMMENTER The Fertilizer Institute
SUBJECT UNWAS1
COMMENT Option 2 -- regulating mercury-containing lamps under the Universal waste Management proposal (58 Fed. Reg. 8102 (February II, 1993)) - would not eliminate this economic barrier to relamping. As EPA acknowledges, the Universal waste Management proposal "would not change any of the requirements applicable to the ultimate treatment and disposal or recycling of any wastes collected." 59 Reg. 38,295. Thus, covered wastes would remain subject to the most onerous, and costly, aspects of RCRA Subtitle C, i.e., the treatment, storage and disposal requirements and the Land Disposal Restrictions (which mandate pretreatment before disposal of such wastes in land-based units, such as landfills). In sum, the Universal waste Management proposal would not significantly reduce the high disposal costs of mercury-containing lamps and, thus, would not lower the economic barrier to relamping.
RESPONSE
Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes. Facilities that generate, store (but do not treat or dispose), or transport universal waste lamps are subject to less stringent management standards for storage, transport, and recordkeeping. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have

not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.
In addition, the universal waste rule is expected to result in cost reductions over full Subtitle C management requirements for generators, collectors, and transporters, yet it ensures that lamps are managed in an environmentally protective manner and are properly recycled or treated at full Subtitle C facilities prior to disposal.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00142
COMMENTER The Fertilizer Institute
SUBJECT UNWAS1
COMMENT B. The high Disposal Cost of Mercury- Containing Lamps Is Not Merely Theoretical According to EPA, a facility that generates 350 mercury-containing lamps (exhibiting the Toxicity Characteristic) in a month would exceed the "Conditionally Exempt Small Quantity Generator" (CESQG) limit of 100 kilograms of hazardous waste and, consequently, would have to send such lamps to a RCRA Subtitle C facility, rather than a municipal landfill or incinerator, for treatment or disposal. 59 Fed. Reg. 38,294. A relamping campaign for even a small facility likely would generate over 350 bulbs. Perhaps more significant, a non-exempt facility that converts to fluorescent lighting would thereafter have to manage all spent fluorescent lamps exhibiting the Toxicity Characteristic as hazardous waste.
RESPONSE
Before today-s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C

regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility=s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in Part 262. Under the universal waste system, conditionally-exempt quantity generators can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273.

DCN FLEP-00143
COMMENTER A-TEC Energy Corporation
SUBJECT UNWAS1
COMMENT Potential CERCLA liability for our clients and their customers would not change (although their careful management of lamps might) if used lamps were to receive Subtitle C Exclusion and be landfilled. We therefore strongly encourage the U.S. EPA to implement "Option 2"; the reclassification of used fluorescent and HID lamps under Universal waste rules.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of

requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). However, the Agency notes that all parties can still be held liable for releases of hazardous constituents from hazardous waste, regardless of the management requirements under RCRA.

DCN FLEP-00143
COMMENTER A-TEC Energy Corporation
SUBJECT UNWAS1
COMMENT OTHER INFORMATION The recycling (rather than landfilling) of used lamps will help meet waste reduction goals by reducing the amount of material going into sanitary landfills. The great lakes region (and particularly Minnesota) views toxic contamination from mercury as a major problem. Both Minnesota and Wisconsin have specific lamp disposal regulations which ban landfilling ... However, other area states do not have such lamp disposal regulations and are likely to continue causing mercury contamination in the region. (see attachments) Note: The State of Iowa currently bans the disposal of lamps in Iowa Sanitary Landfills by stating in the Iowa code that no RCRA determined hazardous waste may be landfilled. If a full Subtitle C Exclusion is granted for lamp disposal, lamps will once again be landfilled in Iowa with the result that extensive breakage of lamps will contribute heavily to mercury migration by air in the region. Should EPA change its policy to allow landfilling of lamps; States like Iowa are likely to change policy to allow landfilling of lamps. As a result, Iowa is likely to receive (whether desired or not) large quantities of lamps from Minnesota and Wisconsin to be landfilled due to the expense of complying with existing Minnesota and Wisconsin state regulations regarding lamp disposal. If this occurs, additional mercury will find its way into surface water in the region. Either maintaining the current policy where lamps are scheduled hazardous waste or reclassifying lamps as universal waste would prevent this from happening not only in Iowa but in states which border those states with lamp disposal regulations.
RESPONSE
The Agency agrees with the commenter that its proposed conditional exclusion approach would not sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions and the release of other hazardous constituents to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous

waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273.

The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport. The universal waste rule requires handlers to prevent releases and minimize emissions from breakage.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00144
COMMENTER National Rural Electric Cooperative Assn
SUBJECT UNWAS1
COMMENT Keeping lighting wastes in the Subtitle C system does not make sense from an environmental perspective. The record is clear that the overall reduction in air emissions, including mercury emissions, attributable to full participation in Green Lights and other energy-efficient relamping programs far outweighs any perceived benefits of retaining lighting wastes in the hazardous waste system.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50

percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00144
COMMENTER National Rural Electric Cooperative Assn
SUBJECT UNWAS1
COMMENT The universal waste option is not the answer to this problem. As long as lighting wastes remain under the umbrella of Subtitle C regulation, there will be significant economic burdens associated with relamping programs. Under the universal waste option, lighting wastes would remain subject to the most onerous components of the Subtitle C program: the land disposal restrictions program -- which is only becoming more onerous - and the costs of Subtitle C disposal.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

In addition, the universal waste rule is expected to result in cost reductions over full Subtitle C management requirements for generators, collectors, and transporters, yet it ensures that lamps are managed in an environmentally protective manner and are

properly recycled or treated at full Subtitle C facilities prior to disposal.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00145
COMMENTER ASTSWMO
SUBJECT UNWAS1
COMMENT In particular, the Board wishes to note that USEPA's proposals seem to underestimate the degree of concern States waste managers have with the growing releases and accumulations of mercury in the environment. Based on its excellent presentation of the seriousness with which States view these releases, the Task Force provides the Agency with convincing rationale for maintaining the integrity of its stated management hierarchy, for avoiding a bad precedent of exempting a waste which fails the TCLP, and explains how it is possible to maintain the momentum of the successful Green Lights program while retaining sound regulatory controls over the disposal of mercury-containing lamps. Their recommendations flow directly from this well structured rationale. The Task Force believes that the appropriate system for environmentally safe management of fluorescent lamps can be created by including waste lamps in the Universal waste rule (Universal waste R) . Moreover, USEPA should consider regulating fluorescent lamp recycling facilities in accordance with the Category D (commercial off-site recycling facility) requirements which have been recommended by USEPA's Definition of Solid Waste Task Force, in the Office of Solid Waste. [1] [Footnote 1: Please see "Re-engineering RCRA for Recycling"; USEPA' a Definition of Solid Waste Task Force: Report and Recommendations; August 18, 1994 draft document.] The Task Force believes that by coordinating these two rule changes for waste f fluorescent lamp management, USEPA could create an economically feasible system which would promote reclamation and at the same time allow for environmentally safe management of a readily recyclable waste. Product stewardship by manufacturers of the lamps would also be promoted. The Universal waste R should receive USEPA's immediate attention so that the rule can be implemented,

providing a necessary management alternative.

Frankly, it difficult to see why USEPA has elected to protract this issue by the extended proposal of two such unequal alternatives. Only one adequately provides for protection of human health and the environment through comprehensive management of these wastes. We urge USEPA to withstand the pressures of those who would recommend the environmentally flawed alternative of exclusion, and to quickly move to control this significant source of release along the lines State waste managers have suggested.
We strongly believe that the mercury transport issue is analogous to the regional and global concerns of the acid rain issue. Therefore, ASTSWMO believes that USEPA must promulgate a national waste fluorescent lamp management program which considers those concerns and ensures protection of human health and the environment throughout the nation.

Recommendations for waste fluorescent lamp management We believe that, for the reasons listed above, waste fluorescent lamps should be included in the Universal waste R. Including the waste fluorescent lamps in the Universal waste R will facilitate their elimination from the MSW stream as well as promote the safe and efficient collection of waste lamps.

Lastly, ASTSWMO believes that the recommendations listed above will facilitate the development of increased national capacity for safe recycling of waste fluorescent lamps and ensure long term protection of human health and the environment.

RESPONSE
The Agency agrees with the commenter and does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions and the release of other hazardous constituents to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps.

The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure

sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273.

EPA believes that with adequate state oversight, hazardous waste lamps can be safely recycled and the mercury and other hazardous waste constituents reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions since that it is in the recycling facility's best economical interest to strive to limit mercury releases since mercury is essentially the product of the recovery process. In addition, recycling facilities remain subject to all applicable OSHA workplace protection standards and Clean Air Act emission standards.

DCN FLEP-00145
COMMENTER ASTSWMO
SUBJECT UNWAS1
COMMENT Inclusion of waste fluorescent lamps in the Universal waste R will not affect implementation of USEPA's Green Lights Program.

Information from the Green Lights Program as well as from lamp recycling facilities in Minnesota and California indicates that lamp recycling/management under RCRA's Universal waste R provisions is likely to contribute only one to two percent (1-2%) to the total costs incurred from a relamping project. Thus the costs incurred through "additional RCRA oversight" will have a very minor effect on project payback time and the rate of return on investment. Other cost components such as labor costs and electric rates constitute a much larger portion of total relamping costs and have a much larger impact on payback time and return on investment.
RESPONSE
The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00146
COMMENTER Sierra Club/North Star Chapter
SUBJECT UNWAS1
COMMENT Management under the universal waste rule, on the other hand, will require more careful management of the lamps prior to final management, and because of the expense associated with hazardous

waste management, will provide a powerful stimulus to the lamp recycling industry, where capture of the elemental mercury and mercury vapor is possible. This will result in significantly less lamp breakage and disposal in conditions that allow further environmental releases.

SUMMARY AND CONCLUSION In conclusion, the Sierra Club North Star Chapter urges you to select the option requiring management of fluorescent lamps under the Universal waste proposal rather than granting conditional exclusion to fluorescent lamps. Given the highly persistent, bioaccumulative, and toxic nature of the mercury in these lamps, this step is necessary to protect public health and the environment from unnecessary risk.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN SCSP-00146

COMMENTER Advanced Environmental Recycling Corp.

SUBJECT UNWAS1

COMMENT ADDITIONAL WASTES TO BE INCLUDED The proposed rule has included batteries and pesticides as part of the Universal waste system. Although these materials apply, they are not sufficient to make the program a success. This is based on the premise that other commonly landfilled or treated items are recyclable. The USEPA should expand the material list to include the following items. *PAINT, BOTH LATEX AND ENAMEL *INKS, DYES, AND OTHER

PIGMENT-RELATED PRODUCTS *ETHYLENE GLYCOL AND OTHER ANTIFREEZE-RELATED PRODUCTS *MERCURY-CONTAINING DEVICES, INCLUDING THERMOMETERS, BAROMETERS, MANOMETERS, MERCURY SWITCHES, ETC *FLUORESCENT LAMPS AND OTHER MERCURY-CONTAINING LIGHTING DEVICES INCANDESCENT LAMPS AND OTHER NON MERCURY-CONTAINING LIGHTING DEVICES LABORATORY CHEMICALS The majority of AERC's comments are directed to including mercury lighting devices and other mercury-containing devices to the list of Universal waste. This is based on an overwhelming response from our customers, state regulatory agencies, and environmental groups who have detailed the extent of mercury contamination throughout the country.

RESPONSE

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). States authorized for the universal waste regulations may add additional types of waste, such as those mentioned by the commenter, to their individual state universal waste programs through the petition process.

The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations.

DCN SCSP-00146

COMMENTER Advanced Environmental Recycling Corp.

SUBJECT UNWAS1

COMMENT The Universal waste regulation should maintain a focus on reducing the amount of mercury in the environment. The proposed Universal waste regulation, if amended, will provide direction for generators of mercury-containing waste for an environmentally sound approach for dealing with these waste products.

FLUORESCENT LAMPS AERC is fully aware of the USEPA's

consideration of various options for the handling of fluorescent lamps, ranging from regulatory exclusion to full regulation of fluorescent lamps as a hazardous waste. AERC believes that the Universal waste proposal is a perfect application for fluorescent lamps, due to the associated hazards of fluorescent lamps (mercury). The total amount of lamps generated each year is 600 million fluorescent lamps and 75 million specialty lamps. The following sections of these comments will detail various issues involving fluorescent lamps. It is imperative that the USEPA fully comprehends the extent of the problems associated with lamp handling and the overwhelming national support for a viable program for all mercury-containing lighting devices.

Enclosed is a letter to Richard Darman, Director of Office of Management and Budget (OMB) from Senators James M. Jeffords, John D. Rockefeller, Dave Durenberger, Frank R. Lautenberg, John Breaux, and Robert C. Byrd. This letter endorses the Universal Waste rule and includes fluorescent lamps in the content. I am sure this support extends beyond these six senators.

RESPONSE

The Agency appreciates the commenter-s input supporting the universal waste approach and the additional information supplied. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN SCSP-00146

COMMENTER Advanced Environmental Recycling Corp.

SUBJECT UNWAS1

COMMENT The report also concluded the viability of fluorescent lamp recycling. For the past three years, AERC and MTI have been developing appropriate technologies for the safe and proper recycling of fluorescent lamps. This program is predicated on the fact that fluorescent lamps pose significant negative environmental impact when handled improperly. The Universal Waste regulation (with fluorescent lamps included) will significantly reduce this environmental impact by recycling all components of a fluorescent lighting device.

Capacity - A major concern that has been expressed is the issue of capacity. Opponents of recycling state that it would be

unfair and impractical to require recycling, as there is not enough capacity throughout the country. Although this concern is somewhat valid, the industry cannot commit to capacity without viable directives from the USEPA on sound options for the handling of spent lighting devices. Again, the Universal waste proposal provides generators with an option for environmentally sound approaches for the handling of fluorescent lamps. This will allow time for the industry to gear up to continue to provide additional options for the handling of these materials.

It must be again stated that the Universal waste proposal accommodates any lack of capacity in recycling through the option of handling these materials through standard hazardous waste programs. This will provide for a sound transition for viable recycling alternatives.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of hazardous waste lamps. Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00147

COMMENTER Earthwell International Tech., Inc.

SUBJECT UNWAS1

COMMENT We are writing to you today because we are alarmed that the EPA is considering inducting lamps in the Universal waste rule. Designating spent fluorescent and other mercury-containing lamps as hazardous waste will greatly reduce interest in energy saving programs through the use of energy efficient lighting. This results in a net increase in emissions of mercury and greenhouse gasses into the environment since both are released when we burn fossil fuels to produce our energy. We would also like to add that we have tested lamps for mercury for several of our clients and have yet to fail one (TCLP) test. It has been our experience

that the vast majority of businesses we've worked with would back away from energy efficient lighting retrofits regardless of the environmental impact and savings if the disposal of the lamps made them a hazardous waste generator.

RESPONSE

Today's rule adds hazardous waste lamps that are hazardous waste because the lamps exhibit a hazardous waste characteristic to the scope of the universal waste rule (40 CFR Part 273). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

EPA studies have determined that the majority of hazardous waste lamps fail the TCLP for mercury and some fail for other hazardous constituents such as lead. Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00148
COMMENTER Total Lighting Maintenance and Electric
SUBJECT UNWAS1
COMMENT Universal waste TOTAL LIGHTING DOES NOT BELIEVE THE Universal waste WILL SERVE TO REMOVE THE STIGMA ATTACHED TO HAZARDOUS WASTE DESIGNATION WHEN CONGRESS PASSED THE NATIONAL ENERGY POLICY ACT OF 1992 IT DIDN'T GO FAR ENOUGH. IT ESSENTIALLY DEALT WITH THE ENERGY SAVING ASPECT OF LAMPS, APPLIANCES, MOTORS, TRANSFORMERS, WATER HEATERS, ETC., WE ALL AGREE THIS WAS A GOOD PIECE OF LEGISLATURE, HOWEVER THE DISPOSAL END OF IT WASN'T ADDRESSED. THIS WOULD HAVE BEEN GOOD TIME TO DO THAT. NOW WE IN THE BUSINESS FIND OURSELVES SUFFERING DELAYS IN DECISIONS, START DATES, AND PRODUCT AVAILABILITY TO COORDINATE A RETROFIT VERY OFTEN BECAUSE OF "GREY AREAS" IN DISPOSAL LAWS. THE NEGATIVE IMPACT OF THE PRESENT PROPOSAL IS GOING TO CREATE 658,000 NEW SMALL-QUANTITY GENERATORS AND 64,000 LARGE QUANTITY GENERATORS BASED SOLELY ON CLASSIFYING FLUORESCENT AND HID LAMPS AS HAZARDOUS WASTE.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility=s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in Part 262. Under the universal waste system, conditionally-exempt quantity generators can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273 (40 CFR 273.8(a)(2)).

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-

efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00149
COMMENTER Weyerhaeuser Company
SUBJECT UNWAS1
COMMENT Option Two of the proposed rule, regulating Mercury-Containing Lamps as a Hazardous Waste, is overly burdensome to large and small businesses alike. The regulation of these lamps as a Hazardous Wastes will significantly hinder the Pollution Prevention activities across the country. This will increase the number of regulated Hazardous Waste generators throughout the United States. Businesses, which do not currently generate any Hazardous Wastes, would be required to follow all of the pertinent regulations and be subject to substantial enforcement fines for a waste which EPA concludes "is not being readily released by leaching processes that typically occur in a MSW landfill environment." This will cause an increased investment of funds, special handling and administration of wastes without any significant increase in the protection human health or the environment.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements. The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The number of hazardous waste generators will not increase due to today's rulemaking. Spent lamps that exhibit a hazardous waste characteristic only are subject to the hazardous waste lamps

rulemaking. Facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility=s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in Part 262. Under the universal waste system, conditionally-exempt quantity generators can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273 (40 CFR 273.8(a)(2)).

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00150
COMMENTER Anchorage Municipal Light and Power
SUBJECT UNWAS1
COMMENT Our support of the conditional exclusion is based largely on our belief that including mercury-containing lamps in the Agency's Universal waste Management System would needlessly complicate compliance and greatly increase costs for all Alaskan RCRA waste generators.

Our support of the conditional exclusion also stems from the recognition that including mercury-containing lamps in the Agency=s Universal waste Management System would have a deleterious effect on energy efficient lighting initiatives.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters, yet ensures that lamps are recycled or

treated in an environmentally protective manner at full Subtitle C facilities. Fewer hazardous waste lamps will be managed in the municipal solid waste stream, therefore reducing the number of lamps going to municipal combustors and decreasing the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks).

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00150
COMMENTER Browning-Ferris, Inc.
SUBJECT UNWAS1
COMMENT Second, there are broad categories of universal type that because of ease of identification may lend themselves to special collection under Part 273 even though the contents of these wastes may vary dramatically. For example, universal type wastes that are easily identified because they are in they are well labeled (e.g., pharmaceuticals, sundries, paints, etc.) or are common articles familiar to generators and waste service providers (e.g., thermometers, batteries, mercury switches, light bulbs, etc.) would be good candidates for special collection. These easily identified wastes are good candidates because: They could be readily sorted and assigned waste codes without the necessity of sampling and laboratory analysis which would greatly facilitate: sorting of wastes at consolidation points manifesting after consolidation determining land ban requirements -Transport, storage and handling all would be easier because handlers of the wastes would be able to recognize the waste immediately and properly handle the waste.
RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future,

the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-00151
COMMENTER Association of American Railroads
SUBJECT UNWAS1
COMMENT The proper handling of mercury-containing lamps should reduce all risks to human health and the environment. A special collection system approach, as proposed under the second alternative, is not necessary. In addition, the added cost of the universal waste management system is likely to discourage participation in the "Green Lights" program, under which mercury-containing lamps would be replaced with energy efficient Lighting systems. Furthermore, the capacity at hazardous waste disposal facilities is, a significant problem. Such facilities should not be used for waste that does not require this type of disposal.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from

these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.
EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00153
COMMENTER Vermont Dept. of Environ. Conservation
SUBJECT UNWAS1
COMMENT 2.The HMMD supports adoption of a modified version of management option 2 for inclusion of mercury-containing lamps within the

Universal waste rule as the best way to encourage recycling and Green Lights activity without increasing health or environmental risks. The HMMD recommends consideration of the following provisions for inclusion within a modified universal waste rule for the management of mercury-containing lamps: a. At 273.30 mercury-containing lamps from large quantity generators of hazardous wastes should also be included. In rural state or region, for collection systems to be viable, as many bulbs as possible will need to be collected.

c. At 273.43, in lieu of full Part B permits, allowance for a regulatory exemption similar to that given spent lead-acid batteries that are reclaimed (40 CFR. Part 266, Subpart G), may be more appropriate for those processing facilities that are able to reclaim virtually all mercury and hazardous constituents from the lamps. Some existing retort technologies already claim to do this for mercury, although handling of older cadmium-containing phosphors may remain problematic for a while. Also, development of newer or more efficient technologies would be encouraged by such a provision. The proper management of mercury-containing lamps is a matter of considerable concern to the regulated community in Vermont. The HMMD urges EPA to act expeditiously to promulgate rules for this and similar waste streams under its "Universal waste rule".

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

The regulatory approach finalized today will encourage participation in energy-efficient lighting programs such as EPA=s Green Lights Program. The universal waste standards are less stringent and less costly that full Subtitle C standards. The reduced waste management costs associated with the final lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of spent lamps. Studies have shown that participation in energy-efficient lighting programs reduces potential mercury (as well as other pollutant) air emissions associated with the burning of fossil fuels for electricity generation.

Hazardous waste recycling facilities that do not store hazardous wastes prior to recycling may be

exempt from permitting under federal regulations (40 CFR 261.6(c)(2)).

DCN SCSP-00153
COMMENTER U.S. West Business Resources, Inc.
SUBJECT UNWAS1
COMMENT USWBRI also urges EPA to include fluorescent light tubes within the scope of the new Part 273. As a final point under the discussion around the scope of the types of wastes which should be made subject to the special collection procedures, we concur with the special criteria identified by EPA for selecting other wastes to be included in Part 273.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency determined that hazardous waste lamps meet the criteria established for designating a material as universal waste. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN SCSP-00154
COMMENTER Lighting Recycling, Inc.
SUBJECT UNWAS1
COMMENT The only significant obstacle now to the emergence of a widespread and viable recycling market for spent lamps is the indecision and lack of enforcement commitment on the part of EPA. Therefore, we welcome the appearance of this proposed special collection rule and strongly urge EPA to include fluorescent lamps as a waste under the final rule. It is very important that EPA include fluorescent lamps in the rule now rather than wait for a future petition to be made. The inevitable delays this would entail would have an extremely negative economic effect on the several recycling companies which have started up in the list 6 months. Moreover, the Agency has sufficient information to include spent lamps in the rule now. There is a simple justification for believing that waste lamps should kept out of municipal waste (the current disposal method); and there is available to the Agency good information on the safety and efficacy of current recycling technology (current recycling technology can economically and safely remove over 98% of the mercury from the spent lamp waste stream). Finally, recycling adds only a minor economic burden to the

costs of lighting upgrades under such programs as Green Lights and utility Demand Side Management initiatives (lamp recycling costs less than 3% of the budget and does not appreciably effect the economics of these programs). Earlier language in the May 29,1992 draft of the special collection rule included lamps which test hazardous as a candidate for regulation under the rule. We find that the original reasons for that inclusion still obtain and that lamps should be re-included. NEMA and some companies in the lighting industry oppose the inclusion of lamps in the rule. This opposition is based (in the argument that lamps pose little risk when managed in a Subtitle D landfill and that there are "still unanswered questions" on the final fate of mercury as residue in the glass and at the re-refiner.

In summary, Lighting Recycling, Inc. strongly supports the inclusion of fluorescent and other mercury-bearing lamps in the Special Collection rule.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Furthermore, the regulatory approach finalized today will encourage participation in energy-efficient lighting programs such as EPA=s Green Lights Program. The universal waste standards are less stringent and less costly that full Subtitle C standards. The reduced waste management costs associated with the final lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of spent lamps. Studies have shown that participation in energy-efficient lighting programs reduces potential mercury (as well as other pollutant) air emissions associated with the burning of fossil fuels for electricity generation.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats

over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN FLEP-00156
COMMENTER National Electrical Manufacturers Assn.
SUBJECT UNWAS1
COMMENT NEMA disagrees with the Universal waste option because it fails to address the issues surrounding Subtitle C management of spent lamps.

NEMA has a number of other concerns about including mercury-containing lamps in the Universal waste program. 1. The Universal waste system keeps the waste streams withing the Subtitle C at the ultimate destination point, keeping the costs of management high. In the case of mercury- containing lamps, the added regulatory requirements of Subtitle C landfilling over Subtitle D landfilling does not justify the additional cost, thus leaving in place one of the disincentives to lighting system upgrades. Universal waste also does not remove the stigma associated with hazardous waste, it does not resolve the very real technical problems associated with running the TCLP that cause the variability in results, [21] [Footnote 21: NEMA, "TCLP Testing of Fluorescent Lamps, February 1992. (Enclosure 6).] it does not address the environmental risks associated with recycling and use of the materials reclaimed, and it does not remove the paperwork burdens of the LDR program. 2. The Subtitle C status of lamps under Universal waste triggers the LDR requirements, resulting in extra costs to analyze and handle land applied products (even if the recycled product is high quality). It also results in Subtitle C permit and permit modification procedures for recycling facilities and other treatment (crushing) and storage facilities, making it difficult to upgrade existing facilities quickly and to site new facilities where lamp storage is involved prior to processing. Moreover, if EPA proceeds to implement the recommendations of the Definition of Solid Waste Task Force, further controls are likely to be placed on lamp recycling operations, including permit requirements. 3.The cost of complying with the LDR requirements for land-applied recycling residuals may also create incentives to avoid those costs by introducing contaminated lamp recycling residuals into non-land-applied products where the contaminants are not needed, e.g., fiberglass. These activities are considered to be "sham" recycling.

RESPONSE
Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA. The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

EPA studies have determined that many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards. By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements. Spent lamps that do not exhibit the toxicity characteristic are not subject to today=s rulemaking.

Destination facilities (i.e., facilities that treat, dispose of, or recycle universal wastes) are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment, storage and disposal facilities under 40 CFR Parts 264 and 265, as well as applicable standards in 40 CFR Parts 268 and 270. Hazardous waste recycling facilities that do not store hazardous wastes prior to recycling may be exempt from permitting under federal regulations (40 CFR 261.6(c)(2)).

Residuals from recovery operations must be managed in accordance with all applicable solid and

hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed as hazardous waste.

DCN FLEP-00156
COMMENTER National Electrical Manufacturers Assn.
SUBJECT UNWAS1
COMMENT 4. EPA needs to make clear that if lamps are included in the Universal waste system, generators still have the option of managing lamps under Subtitle C, which would allow crushing at the generator's site within 90 days of generation in a RCRA tank, container, or containment building. EPA should also emphasize that lamps that do not fail the TCLP do not have to be managed under either the Universal waste scheme or Subtitle C.
RESPONSE
The current universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). The final rule for hazardous waste lamps retains the treatment prohibition for universal waste handlers and applies the prohibition to handlers of hazardous waste lamps. The definition of treatment under RCRA includes Aany method, technique, or process...designed to change the physical, chemical, or biological character or composition of any hazardous waste, so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.@ The shedding or crushing of hazardous waste lamps clearly falls within the definition of treatment under RCRA (40 CFR 260.10).

Some commenters to the proposed spent hazardous waste lamps rule requested that the Agency allow generators of such lamps to crush them on-site before sending them off-site for treatment or disposal. However, as explained in the preamble to the final universal waste rule (60 **FR** 25519), the Agency believes that it is not appropriate to allow universal waste handlers to treat universal wastes because the handlers are not required to comply with the full Subtitle C hazardous waste management standards for generators (40 CFR Part 262). These hazardous waste generators must obtain EPA identification numbers, are subject to the 90-day (or 180-day) accumulation limit, and must comply with the technical standards of 40 CFR Part 265 for storage and accumulation units. Because these standards are relatively stringent, EPA=s policy is that generators may treat hazardous wastes on-site, provided that they comply with all applicable requirements of 40 CFR Part 262 for storage and accumulation of hazardous wastes.

Universal waste handlers, on the other hand, are allowed a much longer accumulation time limit of one year and need not comply with specific technical standards for accumulation and storage units. Instead, they are subject only to the general performance standard of managing universal wastes in a manner Athat prevents releases@ to the environment. In addition, information available to the Agency on drum top crushing systems for lamps indicates that these units may allow significant air emissions of mercury, particularly when the units are not in operation, and

emissions often may exceed the OSHA limit of 0.05 mg/m^3.

For these reasons, the Agency is not allowing crushing of hazardous waste lamps under federal regulations. However, generators located in a state with an authorized universal waste program may be allowed to crush, universal waste lamps, if within the state authorization process the Agency determines that a state=s program allowing generators to treat lamps under controlled or restricted conditions is equivalent (per RCRA '3006) to the federal prohibition. EPA believes that this approach both ensures protection of human health and the environment while allowing for the development of state regulatory programs that include specific standards for the safe crushing of hazardous waste lamps.

The commenter is correct; if generators choose to manage their hazardous waste lamps in full compliance with all applicable full Subtitle C management standards, generators may treat (e.g., crush) hazardous waste lamps on-site under the Federal regulations. Such generators must comply with all applicable hazardous waste management standards of 40 CFR Part 262, may only accumulate hazardous waste lamps on site for 90 days or less, and must comply with the container standards of 40 CFR Part 265, subpart I. However, authorized states may be more stringent. EPA also notes that studies have determined that the majority of hazardous waste lamps fail the TCLP for mercury and many fail for lead . Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or the universal waste program.

DCN SCSP-00157
COMMENTER Pacificorp
SUBJECT UNWAS1
COMMENT PacifiCorp strongly believes that the above discussion summarizing the problems with the current system in contrast to the advantages of the proposed system accurately describes the scenario faced by the electric utility industry with regard to a number of relatively low-risk waste types, and that these waste types are ideally suited for the Universal waste designation. PacifiCorp therefore recommends that EPA consider the following waste types for inclusion into the Final Rule: -paint wastes -antifreeze -acidic and alkaline cleaning chemicals -aerosol containers -lighting wastes -various vault/manhole clean out sludges -rags, sorbent materials and protective clothing -mercury-containing instruments -electronic circuit boards

the Final Rule to include additional waste streams which are ideally suited to this new approach. Specifically, Pacificorp recommends that the following waste types be included as Universal wastes in the Final Rule and in the new 40 CFR 273: -paint wastes -antifreeze -acidic and alkaline cleaning

chemicals -aerosol containers -lighting wastes -various vault/manhole clean out sludges -rags, sorbent materials and protective clothing -mercury-containing instruments -electronic circuit boards PacifiCorp also feels that the mechanisms by which additional wastes are brought into the Universal waste system should be as flexible and as streamlined as possible to avoid obstacles to full implementation and to maximize the resultant benefits.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). States authorized for the universal waste regulations may add additional types of waste, such as those mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN SCSP-00158

COMMENTER Environmental Law Foundation of Vermont

SUBJECT UNWAS1

COMMENT ELF of VT strongly urges EPA to further consider including fluorescent light bulbs as at "universal waste." Fluorescent lights were included in EPA's May 29, 1992 draft rule as a third category, but were dropped from the final proposal. The rationale provided by EPA in the May 29 proposal on pages 72-75 appears to justify inclusion of fluorescent in the draft and formed the basis for EPA to include fluorescent lights in this draft rule. This rationale should carry through to the final rule.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e.,

universal waste rule is less stringent than full Subtitle C management standards).

DCN SCSP-00159
COMMENTER Robert K. Stockett
SUBJECT UNWAS1
COMMENT COMMENTS REGARDING PROPOSED MODIFICATION OF THE HAZARDOUS WASTE

RECYCLING REGULATORY PROGRAM The EPA has requested comments regarding additional hazardous wastes (besides hazardous waste batteries and suspended or canceled and recalled pesticides) in the final rule. This comment provides technical information to support inclusion of used fluorescent light bulbs in the proposed "universal waste rule" under Subtitle C, part 273. This comment was prepared by Robert K. Stockett, Chemical Engineer, under contract with Advanced Environmental Recycling Corporation (AERC). The EPA has defined characteristics describing universal hazardous wastes: 1. These wastes are frequently generated in a wide variety of settings other than industrial settings usually associated with hazardous wastes; 2. They are generated by a vast community, the size of which poses implementation difficulties for those who are regulated and regulatory agencies; 3. These wastes may be present in significant volume in the municipal waste stream. The EPA has also set forth three goals of the proposed special requirements for universal hazardous wastes: 1- To encourage resource conservation, while ensuring adequate protection of human health and the environment; 2. Improve implementation of the current Subtitle C hazardous waste regulatory program; 3. Remove these wastes from the municipal waste stream. Fluorescent light bulbs fit the above characteristics of universal hazardous wastes. Including fluorescent light bulbs under the proposed rule is also consistent with the goals of this rule. It is therefore recommended that fluorescent light bulbs be included in the final rule. Specific information supporting this position is described in the following comments.

RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN SCSP-00159
COMMENTER Robert K. Stockett
SUBJECT UNWAS1
COMMENT Including fluorescent bulbs in special collection systems for universal wastes would encourage further growth of the fluorescent bulb recycling industry. This in turn would promote resource conservation and provide incentive to collect bulbs from unregulated sources.
RESPONSE
Today-s final rule adds hazardous waste lamps to the universal waste regulations under Part 273. Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of hazardous waste lamps. The ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste. Handlers and collection centers are encouraged to manage all hazardous waste lamps, whether they are generated by the regulated community or other sources (e.g., households), as universal wastes.

DCN FLEP-00160
COMMENTER Central and South West Services, Inc.
SUBJECT UNWAS1
COMMENT Therefore, when similar standards are imposed on metal-bearing hazardous wastes in June 1996 (see 59 Fed. Reg. 2104 21096 (April 25, 1994)) lighting waste recyclers will have to ensure that any treatment residuals from such operations -- including recyclable materials that are used in a manner constituting disposal -- meet all applicable UTS standards. CSW respectfully suggests that neither EPA nor the lighting waste recycling industry fully appreciates the impact this requirement will have on the continued viability of many recycling operations. This is especially significant in view of the fact that one of the primary recycling outlets identified by lighting waste recyclers for recovered glass is reuse of such glass as roadbase material. Such recycling activities constitute "use constituting disposal" and thus subjects the recyclable glass to all applicable LDR treatment standards. See 40 C.F.R. ' 266.20. In addition to compliance with the LDR notification and treatment standards, another regulatory complication associated with the LDR program that will frustrate participation in energy- efficient relamping programs is the LDR storage prohibition. See RCRA ' 3004(j). That provision bars the storage of any LDR wastes in circumstances where storage is compelled because there is inadequate treatment (including recycling) or disposal capacity. See EEI v. EPA, 996 F.2d 326 (D.C. Cir. 1993). In fact, the

> storage prohibition contemplates the storage of LDR wastes only when storage "is intended to build up an amount of waste that can be readily transported, treated, or disposed -- as, for example, when storage, is -used to meet minimum volume requirements imposed by waste transporters or treatment facilities." id. at 335. Thus, storage of LDR wastes -- including LDR lighting wastes -- occur "while treatment methods [including recycling capacity] or disposal capacity is developed." Id. Unfortunately, as long as lighting wastes remain subject to Subtitle C regulation, companies participating in relamping programs may be caught in precisely this predicament. While there is continuing concern over the amount of legitimate recycling and treatment capacity, there will undoubtedly be instances where a large "change out" leaves a generator with no option but to store at least some lighting wastes on-site until recycling or disposal capacity becomes available (for example, when a recycling facility experiences a backup and cannot take a company's bulbs until capacity becomes available). Clearly, generators will be reluctant to participate in any relamping program that may propel them into immediate noncompliance with the law. The electric utilities are acutely aware of the implications of the LDR storage prohibition and understand fully its potential impact on relamping programs. CSW believes that as others in the regulated community become familiar with the full implications of the prohibition, they too will be reluctant to participate in major relamping programs.

RESPONSE

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

Residuals from recovery operations must be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed as hazardous waste, including the land disposal restrictions (LDR) program. Any residuals that do not exhibit a hazardous waste characteristic are not subject to hazardous waste regulation. The Agency notes that the treatment standards for a hazardous

waste that is characteristically hazardous for a metal constituent, such as mercury, now do include a requirement for treating underlying hazardous constituents. The final rule addressing treatment standards with underlying hazardous constituents was promulgated on May 26, 1998 (63 FR 28556).

Universal waste handlers may accumulate universal waste lamps for one year and may accumulate universal waste for more than one year if solely for accumulating such quantities of universal waste as are necessary to facilitate proper recovery, treatment, or disposal. This accumulation time limitation was designed to implement, for universal wastes, the LDR statutory provision that prohibits the storage of restricted hazardous waste, unless the waste is being accumulated for the purpose of accumulating quantities necessary for proper recovery, treatment, or disposal.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00161
COMMENTER American Forest and Paper Association
SUBJECT UNWAS1
COMMENT III. Universal waste rule AF&PA opposes regulating spent lamps under the universal waste rule. See Proposed 40 C.F.R. Part 273, 59 Fed. Reg. At 38302-38303. Under the universal waste rule, large quantity generators would still have to arrange for the treatment and disposal of spent lamps as hazardous waste. As a result, management costs under the universal waste rule will remain almost as high as they would under full RCRA Subtitle C regulation. According to EPA's data, the universal waste rule will save generators only minor administrative and transportation costs, resulting in approximately 14% lower costs than full Subtitle C regulation. See 59 Fed. Reg. At 38299. Regulation of spent lamps under the universal waste rule is not environmentally or economically beneficial for the same reasons that full regulation of spent lamps under RARA Subtitle C is not environmentally or economically beneficial. The high costs of

treating and disposing of spent lamps as hazardous waste is not necessary because spent lamps can be disposed of safely in municipal landfills at a much lower cost. Furthermore, high management costs discourage investment in more efficient lighting systems, and result in increased power consumption and emissions from power plants. In an informal survey of several of our members, we learned that mill personnel would find it far more confusing to establish separate management standards for mercury lamps from regular hazardous waste management activities. It would cost far more in establishing separate training, inspection, and auditing procedures for lamps than the cost of continued management under Subtitle C. Therefore, the mills would not implement such a program.

RESPONSE

The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters, yet ensures that lamps are recycled or treated in an environmentally protective manner at full Subtitle C facilities. The storage, transportation, and recordkeeping requirements under the universal waste regulations are less stringent than full hazardous waste regulation. Fewer hazardous waste lamps will be managed in the municipal solid waste stream, therefore reducing the number of lamps going to municipal combustors and decreasing the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks).

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Generators may continue to handle their hazardous waste lamps under full Subtitle C regulation if they so choose.

DCN FLEP-00162
COMMENTER Delaware Department of Natural Resources
SUBJECT UNWAS1
COMMENT The Delaware HWMB strongly urges the U.S. EPA to promulgate

Option Two of the proposed rule, including mercury containing lamps in the Universal waste Management System.

FINAL REMARKS The Delaware HWMB strongly recommends that the U.S. EPA include mercury containing lamps in the Universal waste R, for the reasons mentioned above. Managing mercury lamps in the Universal waste R will ensure the sanctuary of human health and the environment.

INCLUSION OF MERCURY CONTAINING LAMPS IN THE Universal waste R WILL NOT INTERFERE WITH THE GREEN LIGHTS PROGRAM An inclusion of mercury lamps in the Universal waste rule (Universal waste R) would not suppress the Green Lights Program. The Delaware HWMB maintains that an inclusion of mercury lamps in the Universal waste R would not hinder any incentive to participate in the Green Lights Program because disposing of the lamps as hazardous waste is an insignificant cost when considering the total cost of revamping. The total cost is recovered in only three to four years through energy savings. Also the Delaware HWMB asserts that allowing the large amount of mercury containing lamps, due to Green Lights retrofitting, to be placed in MSW landfills would not be in the best interest of human health and the environment.

RESPONSE

The Agency agrees with the commenter. Based upon additional analyses of the behavior of mercury in the environment, the Agency decided to amend the universal waste management standards (40 CFR Part 273) to include hazardous waste lamps within the scope of this program. The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to

Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00163
COMMENTER Massachusetts Dept. of Environ. Prot.
SUBJECT UNWAS1
COMMENT B. Comments on Universal waste System (Option 2) : MA DEP supports this option to the extent that it does more to encourage recycling; decreases the amount of mercury going to landfills; prohibits incineration; and lessens the regulatory requirements of SFLs at the site of generation. Each of these features from Option 2 are incorporated into MA DEP's proposed third option, which is described below.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00164

COMMENTER E.I. Du Pont De Nemours and Co., Inc.
SUBJECT UNWAS1
COMMENT The universal waste management system approach fails to remove the stigma associated with a hazardous waste designation and will continue to keep management costs unnecessarily high as the requirements applicable to the ultimate treatment and disposal or recycling of spent lamps would not change. DuPont is also very concerned about the increased potential for releases of mercury from extra handling of intact lamps at consolidation facilities.
RESPONSE
Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

The final rule for hazardous waste lamps does not contain a separate category for consolidation points. Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

DCN FLEP-00165
COMMENTER Ohio Chamber of Commerce
SUBJECT UNWAS1
COMMENT POSITION ON Universal waste The proposed Universal waste approach will not solve the current problems associated with lamp disposal. Universal waste will not remove the stigma associated with the hazardous waste designation and it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It

> also continues to keep costs of lamp replacement very high. The Universal waste approach was not designed for fragile waste whose risks derive from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that could withstand the rigors of large scale accumulation and transport. Our members are particularly concerned about the lack of regulatory requirements for Consolidation Points and are unlikely to send their spent lamps to them due to liability concerns.

RESPONSE

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Examples of acceptable packaging could include placing the lamps evenly spaced in double or triple-ply cardboard containers with closed lids. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. An example of such containment could include placing unintentionally broken lamps in closed wax fiberboard drums.

The Agency points out that in addition to these container and packaging provisions, universal waste handlers, including handlers of universal waste lamps, must comply with the provisions of 40 CFR ''273.17 and 273.37 for responding to releases of universal waste. Handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste and, if so, must manage the hazardous waste in compliance with all

applicable provisions of 40 CFR Parts 260 through 268, as well as all other applicable statutory provisions.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

DCN FLEP-00166
COMMENTER American Electric Power Service Corp.
SUBJECT UNWAS1
COMMENT Supporting these comments is a compelling technical record demonstrating that lighting wastes do not pose a threat to human health and the environment when managed an non-hazardous solid waste. Similarly, our own data and experiences demonstrate that the costs of managing lighting waste in special collection systems outweigh any minimal benefits which are thought to be realized. Therefore, regulation or management of lighting waste as a Subtitle C material, or in programs modeled after Subtitle C regulations (i.e., under the proposed Universal waste rule), is neither warranted nor justified.

V. A SEPARATE COLLECTION SYSTEM (i.e., THE Universal waste RULE) IS NOT THE SOLUTION AND WILL DISCOURAGE PARTICIPATION IN EFFICIENT LIGHTING PROGRAMS SUCH AS GREEN LIGHTS

EPA has also proposed that instead of a conditional exclusion, lighting waste be included in the Universal waste rule to be promulgated in final in the near future (Option 2).

Therefore, AEP does not support regulating lighting waste under the Universal waste rule (Option 2) as the net positive effect is virtually insignificant. Technical data and cost/benefit information do not support this action; the burden placed on generators at smaller facilities would be no less (CESQGs would still have to segregate their lighting waste from other MSWs - see Comments II and IV); the reduction in risk to human health and the environment is not perceptible; some disincentives to full and wholehearted participation in Green Lights will still be present; and efforts to maximize reductions in overall mercury loading to the environment will be negated.

X. SUMMARY Regulating mercury-containing lighting waste under the Universal waste rule (Option 2) is not the solution.

RESPONSE
The Agency does not agree with the commenter concerning the hazards of lighting wastes. The Agency believes that management controls for hazardous waste lamps are necessary to minimize

releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. Today's final rule adds hazardous waste lamps to the universal waste rule regulations under 40 CFR Part 273. By removing some of the barriers to full Subtitle C management for lamps, a universal waste approach could minimize concerns about decreased participation in energy-efficient lighting programs by simplifying and clarifying the requirements for hazardous waste lamp collection while maintaining full Subtitle C control over final treatment and disposal (or recycling) for these lamps. Management costs under the universal waste approach will be lower than full Subtitle C management because hazardous waste transporters and manifests will not be required for lamp shipments between hazardous waste lamp generators and disposal or recycling facilities. In addition, permits will not be required for storage at interim collection facilities. Such an approach could help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency

performed calculations on the impact of disposal costs on a lighting upgrade's internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Under the universal waste system, conditionally-exempt quantity generators can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273 (40 CFR 273.8(a)(2)).

DCN SCSP-00166
COMMENTER Hennepin Cty. Dept. of Environ. Mgmt.
SUBJECT UNWAS1
COMMENT There are several other waste that should definitely be included under this regular framework. Probably the most critical wastes that should be included would be mercury containing wastes. In Minnesota there are approximately 12 million fluorescent and high intensity discharge lamps disposed of each year. There are two recycling facilities that have been built in the state this past year to process these tubes to remove the phosphor which contains mercury. Most of these tubes are classified as hazardous wastes because they leach mercury. The mercury tubes and lamps should be included in this regulatory framework. The County's own programs for collecting fluorescent tubes, batteries, and electronic equipment is also being hampered by the existing RCRA and state regulations. Current programs can only be directed to households and do not include the 40,000 + businesses in the county. The proposed special waste rules will greatly facilitate the collection of these universal wastes that contaminate solid waste. The proposed regulatory framework would not be a burden to the many small companies regulated and would give the regulators enough flexibility to monitor the consolidation points. Keeping these wastes out of most of the RCRA regulatory requirements will greatly facilitate their collection and keep these wastes out of both the solid waste and waste water systems.
RESPONSE
The Agency agrees with the commenter regarding the advantages of the universal waste approach. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic

fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00167
COMMENTER Florida Power and Light Company
SUBJECT UNWAS1
COMMENT Florida Power and Light believes that the Universal waste Option, and specifically the lighting waste proposal, will be administratively too burdensome and will not, in all cases, provide administratively too burdensome and will not, in all cases, provide an economically feasible solution to the management of mercury-containing lamps. Benefits derived from the Universal waste Option for lighting waste will not be commensurate to the benefits derived from the exclusion of the material from Subtitle C regulation.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore,

the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00169
COMMENTER Advanced Environmental Recycling Corp.
SUBJECT UNWAS1
COMMENT SOLID WASTE FLOWS: It appears there is a consensus opinion that mercury-containing lighting devices should not be allowed in resource recovery facilities. AERC/MTI concurs with that position. It is again shortsighted to believe that municipalities, county, and state governments can effectively regulate and control the solid waste flow through effective segregation techniques. Will they effectively be able to control and redirect mercury-containing lighting devices from non-authorized facilities? From an USEPA perspective, I believe you know the answer to that question. How will states with specific county solid waste flows that contain only one disposal option handle lamps effectively and in compliance with the regulations? The answer is clear; it will pose significant problems to those districts that do not have landfilling as an option. They will again have to place themselves in a dependent situation on other districts that may have viable options. By including lamps in the Universal waste program, all authorities having jurisdiction under the solid waste flows will be equal. It is essential that the USEPA not contribute to the confusion and inconsistency with the solid waste programs throughout the country.

AERC/MTI strongly supports including lamps in a modified Universal waste Management system. This support is based on extensive research and development comprehensive operational efforts performed by AERC since 1990. AERC/MTI has been consistent in our sentiments concerning the effective handling of fluorescent lamps, but, unfortunately has been responding to

> 'moving indictments' from opposing organizations. Through the duration of this issue, many questions and concerns have been addressed by the USEPA and opposing trade organizations. These comments will not only address the specific topics requested by the USEPA but also some of the issues known throughout the industry.

RESPONSE

Management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes. Further data and analysis are necessary to evaluate the potential for mercury to be released in landfill leachate as a landfill ages.

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00169
COMMENTER Advanced Environmental Recycling Corp.
SUBJECT UNWAS1
COMMENT A modified Universal waste Management System should maintain a focus on reducing the total amount of mercury in the environment, providing a sound direction for generators of mercury-containing lighting devices. The USEPA has the opportunity to reduce the last part of the mercury emissions problem. It is evident, based on a cross section of studies, that fluorescent lamps are a hazardous waste based on TCLP testing and analysis. The USEPA must do whatever possible to reduce this exposure. The inclusion of fluorescent lamps in the Universal waste option will assist in that effort. Exhibits 2, 3, and 4 detail the environmental issues associated with mercury in the environment. These Exhibits are clearly a small cross section of information available to the USEPA. It is essential that state and environmental group data be evaluated in great detail during this process.

COMPLIANCE AND ENCOURAGEMENT: The Universal waste proposal provides generators of hazardous waste with various options for the safe and environmentally sound handling of hazardous materials. In addition, the Universal waste regulation program provides administrative relief for materials handled through recycling options. AERC/MTI believes these positive forces will absolutely encourage compliance and recycling as viable options for the included materials. The overwhelming result of this compliance will reduce emissions to both ground, water, and air.

BIPARTISAN AGENDA: Leadership in both the Republican and Democratic parties have expressed not only the environmental concerns associated with this and other topics, but also the excitement concerning economic growth throughout the country. Clearly, the Universal waste option will provide not only the environmental controls and associated regulatory relief, but also jobs throughout the emerging growth activities of the recycling industry. This issue has organized many groups which normally find themselves opposing each other, such as the Environmental Technology Council, state organizations, federal departments, private industry groups, environmental groups, and so forth. All of these organizations have come together on this issue for not only the practicality, but also the technology

aspects of the alternatives. The USEPA must fully consider and evaluate the issues concerning effective handling of fluorescent lamps and provide the regulatory relief and environmental benefits by endorsing the Universal waste option for fluorescent lamps.

SUMMARY: Unfortunately, the comprehensive issue involving the effective handling of waste mercury-containing lighting devices has been political in nature. In making their final decision, the USEPA must fully evaluate all of the known and available information from the states, private industries, environmental groups, and so forth. In addition, the USEPA must evaluate its own internal data, which in October of 1992, included fluorescent lamps in the Universal waste option. A new industry has formed based not only on economic considerations, but primarily on the environmental issues. This issue can be narrowed down to whether lamps should be permitted to be disposed at Subtitle D, nonhazardous waste landfills. The evidence clearly exhibits this will prove to be counterproductive. Therefore, with all of the issues considered, the USEPA should support the inclusion of lamps in a modified Universal hazardous Waste Management System. AERC/MTI will continue further analyses and testing during the evaluation period. This testing will include further evaluation of mercury released in powder form during transportation and landfill operations. We are available throughout the evaluation process for discussions and additional feedback in a effort to assist the USEPA, while providing the best options for the regulated community.

RESPONSE

The Agency believes that reducing the total amount of mercury and other hazardous constituents released from spent lamps conforms to the goals of protecting human health and the environment. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of

managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00170
COMMENTER National Assn. of Energy Services Comp.
SUBJECT UNWAS1
COMMENT As noted, the Universal waste rule offers certain benefits with respect to the management of spent lamps, since it would appear to provide economic incentives for recycling and it represents a fairly comprehensive waste management regime. However, it does not cover certain crucial points in the management of spent lamps, in particular, handling, transportation and storage from the point of generation to a collection center or a disposer or recycler. Nor does it provide for the management of lamp components subsequent to recycling. It also should be noted that the regulatory burdens imposed on the"treatment" of waste under RCRA could tend to discourage the development of economic and environmentally sound methods of lamp crushing. (Footnote 2 - While NAESCO is not in a position to comment further on this point at this time, it is our understanding that others will, and we would encourage the EPA to give careful consideration to this aspect of spent lamp management) one of the most significant weaknesses of the Universal waste rule is that it has not been finalized and thus, at this time, does not promote certainty in the marketplace.
RESPONSE
Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule was finalized on May 11, 1995 (60 *FR* 25492). The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

The current universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). The final rule for hazardous waste lamps retains the treatment prohibition for universal waste handlers and applies the prohibition to handlers of hazardous waste

lamps. The definition of treatment under RCRA includes Aany method, technique, or process...designed to change the physical, chemical, or biological character or composition of any hazardous waste, so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.@ The shredding or crushing of hazardous waste lamps clearly falls within the definition of treatment under RCRA (40 CFR 260.10).

The Agency is not allowing uncontrolled crushing of hazardous waste lamps under federal regulations, however, generators located in a state with an authorized universal waste program may be allowed to treat, or crush, universal waste lamps, if within the state authorization process the Agency determines that a state=s program allowing generators to treat lamps under controlled or restricted conditions is equivalent (per RCRA '3006) to the federal prohibition. EPA believes that this approach both ensures protection of human health and the environment while allowing for the development of state regulatory programs that include specific standards for the safe crushing of hazardous waste lamps.

DCN FLEP-00171
COMMENTER Monsanto Company
SUBJECT UNWAS1
COMMENT B. The Alternative of Using the Universal waste Approach to Manage Hg-Lamps Should Not Be Preferred by the Agency. On February 11, 1993, the Agency proposed to establish a category of "Universal wastes" which would remain in Subtitle C, but which would be subjected to streamlined management requirements applicable to the generator and to collection points which would manage such wastes. The relief from Subtitle C management standards under the proposal would not reach to treaters or disposers. One attribute of the approach would be that more not less of wastes generated by households and by small quantity generators would be managed under Subtitle C. The Agency should carefully consider the evidence that indicates that the use of the Universal waste concept in the case of Hg-lamps might be a step backwards. As discussed above, it is apparent that the environmental release of mercury in the recycling process is probably more than the release if disposed in MSW landfills. With even more Hg-lamps being recycled through the use of the Universal waste construct, this would work to increase the environmental release from recycling operations.

The Agency should not prefer to use the Universal waste option, whereas the conditional exclusion approach offers environmental, cost and energy benefits.

If, in spite of Monsanto comments, the Agency elects to use the Universal waste option, it should limit the option to Hg-lamps.

With less reduction in cost burdens, the Universal waste option offers fewer incentives to the generator to support energy conservation programs such as Green Lights; the cost of the reclamation option would continue to be borne by the generator just as at present.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline. Recycling facilities remain subject to all applicable OSHA workplace protection standards and Clean Air Act emission standards.

In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under '261.5 are met.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00172
COMMENTER Advanced Environmental Technology Corp.
SUBJECT UNWAS1
COMMENT AETC recommends the inclusion of mercury containing articles such as fluorescent lamps, thermometers, thermostats and switches into the special collection system. These streams are hazardous wastes by definition and are frequently managed as municipal wastes because of lack of knowledge of their mercury content, lack of direction from regulatory authorities and that they are predominantly generated by entities such as CESQG's (Office buildings, small businesses, etc.).
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as thermometers and switches, to their individual state universal waste programs through the petition process.

DCN SCSP-00172
COMMENTER Advanced Environmental Technology Corp.
SUBJECT UNWAS1
COMMENT The special collection system, if expanded to fluorescent lamps would bring these wastes into more environmentally sound management with minimal regulatory burden to the generator. Generators who solely generate lamps would not be subject to the

regulatory and reporting requirements that they are currently unknowingly and illegally avoiding.

AETC concurs with the USEPA's statement that there is increasing awareness that many everyday activities may collectively cause significant environmental impacts and that a system is needed to remove unnecessary regulatory impediments to the safe and efficient management of hazardous wastes. To this end, AETC supports the inclusion of mercury-containing lighting devices in the Universal waste option. AETC supports that compliance with a reduced set of Part 273 requirements would be optional and believes that the system would be widely utilized provided certain aspects of the proposal are implemented and existing regulatory exemptions maintained.

By including lamps in the Universal waste program, all authorities having jurisdiction under the solid waste flows will be equal. It is essential that the USEPA not contribute to the confusion and inconsistency with the solid waste programs throughout the country.

The Universal waste proposal provides generators of hazardous waste with various options for the safe and environmentally sound handling of hazardous materials. In addition, the Universal waste regulation program provides administrative relief for materials handled through recycling options. AETC believes these positive forces will absolutely encourage compliance and recycling- as viable options for the included materials. The overwhelming result of this compliance will reduce emissions to both ground, water, and air.

AETC greatly appreciates the opportunity to comment on this innovative proposal. Regulatory reform such as this will ease the burden of compliance activities and provide better protection of human health and the environment. The Universal Waste approach for fluorescent lamps is consistent with this effort.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e.,

universal waste rule is less stringent than full Subtitle C management standards).

Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

Today's final rule may reduce much of the current confusion over the regulatory status of spent lamps, at least at the federal level; however, individual states may have more stringent requirements for the management of this waste. Today's rule becomes effective in states that are not authorized for the Federal full Subtitle C hazardous waste program, but will not be immediately effective in authorized states since the requirements are not promulgated pursuant to HSWA. These requirements will not be effective in authorized states until such states revise their solid waste management programs to adopt equivalent requirements. However, EPA is strongly encouraging states to do so, not only to achieve the most benefits of the universal waste program but also to reduce the complexity of interstate transportation of these universal wastes.

DCN FLEP- 00175
COMMENTER AT&T
SUBJECT UNWAS1
COMMENT On the other hand, the Universal waste rule (Universal waste R) approach includes a number of conditions that we find objectionable and unnecessarily burdensome, do not add significantly to the overall objective of reducing mercury emissions into the environment, and are more costly to manage than the alternative conditional exclusion. The Universal waste R offers recovery/recycle as the only alternative to Subtitle C management. EPA studies [2] [Footnote 2: Management of Used Flourescent Lamps, RTI Project No. 94U-5400-010, October 1992 (Revised May 14, 1993). Prepared by Research Triangle Institute for U.S. EPA Office of Solid Waste Characterization and Assessment Division.] have shown that mercury does not leach in significant amounts from municipal landfills, making the need for Subtitle C landfill precautions

unnecessary when MSW landfilling is more than adequate. In addition, with respect to air emissions, Subtitle C disposal does not offer significant protection over that offered by Subtitle D, making the expense of disposal disproportional to the environmental benefit achieved. In fact, the aforementioned study shows that lamps contain less than 0.20/o of total mercury in the environment and account for only 3.8% of total mercury in

municipal waste. The quantity of mercury potentially released from landfilling of lamps (0.04 to 0.31 tons) is considerably less than the mercury emissions attributable to combustion sources in the United States, estimated at 261 tons per year. Clearly resources can be better spent addressing mercury emissions from combustion rather than in unnecessarily regulating a minor mercury source such as fluorescent lamps.

RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The Agency has determined that hazardous waste lamps meet the criteria established for designating a material as universal waste. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency believes that management controls under RCRA are needed to minimize the release of mercury from lamps into the environment. Although most mercury emissions are associated with combustion, all releases contribute to the mercury reservoirs in land, water and air. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes. The Agency published a Notice of Data Availability on July 11, 1997 (62 FR 37183). This notice presented data collected by the Agency and an assessment of potential mercury emissions from the management of hazardous waste-containing lamps under several regulatory approaches.

DCN SCSP-00175

COMMENTER Hazardous Waste Treatment Council

SUBJECT UNWAS1

COMMENT As discussed below, the HWTC believes that the rule as proposed contains several shortcomings and must be revised to include additional safeguards. In addition, EPA should expand the scope of the proposal beyond batteries and certain pesticides. EPA already has sufficient information to include several other hazardous waste categories in this rule, such as used oil and used mercury-containing fluorescent bulbs. These issues are discussed in greater detail below.

Specifically, the rule should be expanded to include

mercury-containing discarded articles such as fluorescent light bulbs, thermostats, thermometers and switches. In addition, used oil, used antifreeze and paint wastes are appropriate for Part 273 regulation. All these wastes are often characteristic hazardous wastes, but are usually disposed of in the municipal waste stream due to generator lack of knowledge of that fact.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those wastes mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN SCSP-00175

COMMENTER Hazardous Waste Treatment Council

SUBJECT UNWAS1

COMMENT FLUORESCENT LIGHT BULBS Discarded mercury-containing fluorescent light bulbs deserve special attention here. The Treatment Councils understanding is that in the original draft of this proposal, dated May 29, 1992, EPA had included fluorescent light bulbs in the special collection system. We also understand that these wastes were withdrawn from the rulemaking because of concerns of the Office of Management and Budget. In that draft proposed rule, EPA stated that "it appears that [fluorescent] light bulbs fit many of the criteria proposed today for special collection system wastes. EPA hopes to encourage the efficient collection of waste light bulbs while at the same time minimizing the hazards posed by used light bulb management." May 29, 1992 Draft Proposal at 172 (pertinent excerpts of the Draft Proposal attached as Exhibit C). As EPA acknowledged, used fluorescent light bulbs may exhibit the toxicity characteristic (TC) for mercury. Id. EPA also stated that inclusion of mercury-containing fluorescent light bulbs in the special

collection system regulations is "particularly important at this time because of shifts in common lighting maintenance practices." at 73. EPA concluded that "special collection system regulations for light bulbs would simplify management of these wastes, and would reduce existing barriers to the movement toward more energy-efficient lighting systems." Id.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency determined that hazardous waste lamps meet the criteria for inclusion under the universal waste program. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00177

COMMENTER Philips Lighting Company

SUBJECT UNWAS1

COMMENT Including lamps in the universal waste rule is not an environmentally sound management option for a product as fragile as spent lamps. An item that is four to eight feet long, made almost entirely of glass with a wall thickness of approximately .020", requires far different handling than dry batteries or pesticides. Quality recycling can easily be permitted and enforced outside the Subtitle C regime. Additionally, there is likely to be little, if any, difference in air or leachate emissions whether lamps are disposed in a Subtitle D landfill meeting new requirements with NEMA recommended BMPs or in a Subtitle C landfill.

RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The Agency has determined that hazardous waste lamps meet the criteria established for designating a material as universal waste. Hazardous waste lamps conform to a number of factors that were used to determine if a hazardous waste would fit into a universal waste management regulatory program and if the streamlined standards of the universal waste program would improve the overall management of the waste. The factors, which are codified at 40 CFR 273.81, include a) the waste must be a hazardous waste generated by a wide variety of

generators; b) the waste, or category of waste, should not be exclusive to a particular industry but must be generated by a wide variety of establishments; c) the waste should be generated frequently, but in relatively small quantities; d) systems to be used for collecting the waste should ensure close stewardship of the waste; e) the risks posed by the waste during accumulation and transport should be relatively low compared to the risks posed by other hazardous waste and specific management standards would be protective of human health and the environment during accumulation and transport; f) regulation of the waste under the universal waste rule should result in the diversion of the waste from management with non-hazardous waste streams; g) regulation of the waste as a universal waste should improve implementation of and compliance with the hazardous waste regulatory program.

The Agency believes that management controls under RCRA are needed to minimize the release of mercury from lamps into the environment. Although most mercury emissions are associated with combustion, all releases contribute to the mercury reservoirs in land, water and air. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes. The Agency published a Notice of Data Availability on July 11, 1997 (62 FR 37183). This notice presented data collected by the Agency and an assessment of potential mercury emissions from the management of hazardous waste-containing lamps under several regulatory approaches.

DCN SCSP-00177
COMMENTER Massachusetts Dept. of Environ. Prot.
SUBJECT UNWAS1
COMMENT B. Types of Wastes Subject to These Regulations 1. We believe that there is a need to tailor the requirements for specific waste streams. One approach may be to cluster, e.g. automotive wastes destined for recycling - oil, oil filters, brake fluid and antifreeze, with possible addition of tires and automotive batteries, and mercury-bearing wastes - thermometers, thermostats, fluorescent lamps, hearing aid batteries and paints - latex and oil-based which can be recycled. (We would like very much to add spent antifreeze to the list of special collection wastes. See attachment in favor of this.)
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste

approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those wastes mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-00178
COMMENTER General Electric Company
SUBJECT UNWAS1
COMMENT The Subtitle C framework (either as currently applied to lamps or under a "Universal waste" system) is not designed to control the risks associated with uncontrolled product breakage or to control inorganic air emissions at generator sites or other locations where lamps are being managed. Because of the relatively limited number of Subtitle C TSDF facilities compared to municipal landfills, Subtitle C management encourages long distance off-site transportation which increases the likelihood of mercury emissions. Management under the Universal waste approach encourages long-term storage at centralized facilities. Both storage and transportation are the primary situations in which uncontrolled releases of mercury can occur. Subtitle C regulation, therefore, adds significant costs to the management of spent lamps. While potentially increasing risk of mercury emissions due to long term storage and long distance transportation.

In making the above points, NEMA identifies the problems with the Universal waste option. While the Universal waste system modifies Subtitle C requirements, it does so without the appropriate tailoring to the risk scenario for lamps. The primary risks from spent lamps are air emissions due to product breakage during disposal or recycling and the storage and handling of spent lamps prior to disposal or recycling. Subtitle C, including the Universal waste approach, is designed primarily

to prevent soil and groundwater contamination from improper waste management--which are essentially negligible risks for mercury containing lamps. Therefore, both Subtitle C and Universal waste over regulate spent mercury containing lamps resulting in unnecessary management costs.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency agrees with the commenter that storage and transportation pose the greatest risks of uncontrolled emissions since studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal waste rule ensures that mercury emissions and release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term

studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN SCSP-00178
COMMENTER American Telephone and Telegraph (AT&T)
SUBJECT UNWAS1
COMMENT The Agency is deliberately eliminating fluorescent lamps from the proposed rule while information and data is being gathered to assess the landfill disposal risks. AT&T is of the opinion that fluorescent and other mercury vapor lamps are prime candidates for application of this rule and should be included if and when the rule is formally promulgated.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00179
COMMENTER Environmental Defense Fund
SUBJECT UNWAS1
COMMENT As several environmental groups including EDF previously state in our letter of December 30, 1993 to OSWER Assistant Administrator Elliot P. Laws, we strongly favor environmentally-sound recycling over municipal solid waste landfill disposal for spent mercury-containing lamps. Given that the proposal's option one--conditional exclusion from RCRA Subtitle C--is not likely to enhance the number of spent lamps undergoing environmentally-sound recycling significantly and may actually decrease these numbers, in addition to the hazards of mercury releases to air posed by unregulated transport of spent lamps to disposal facilities, we support the proposal's modifications discussed in the following comments. To protect the environment and human health, the U.S. must minimize additional releases of mercury, a persistent, bioaccumulative

metal, first through source reduction and second, through recovery of mercury from recyclable wastes.

Conclusion The key rationale for our position in support of option two is the well-recognized immaturity of understanding of the behavior of mercury in the environment. This uncertainty strongly mitigates against any waste management option that could allow future dispersal of today's wastes, either during waste transport or disposal. Additionally, we do not believe there is evidence from Minnesota and other states with spent lamp recycling requirement that shows that such a mandate is a disincentive to use energy efficient lighting. In summary, we strongly recommend that EPA adopt option two, a special collection system under the "Universal waste rule," with the specific changes to the rule detailed above.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00180
COMMENTER Food Marketing Institute
SUBJECT UNWAS1

COMMENT Option II: Universal waste rule Continuing to classify mercury lamps as hazardous waste under the proposed universal waste rule would mean a lost opportunity to reduce a needless regulatory burden and its cost, and it would a further drag on relamping. While FMI has no specific figures, we do not argue with EPA's, which indicate a greater financial burden for compliance under a universal waste approach.

With current data indicating that spent mercury lamps are not a threat to the environment, FMI believes there is no need to include them in a universal waste rule. EPA suggests that including them might "ensure consistency with the more comprehensive universal waste final rule." Consistency for what sake? In addition to the lack of risks cited by EPA, the relamping process is probably unique as a collection mechanism in the way that large quantities of spent [Next page missing from hard copy of comment.]

RESPONSE

The Agency believes that some management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish. As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats

over the long term. The Agency has concluded that some management controls are essential for these wastes.

Today=s rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00181
COMMENTER Exxon Chemical Americas
SUBJECT UNWAS1
COMMENT The Universal waste Management approach is significantly more costly and, as EPA indicates, in treating the lamps as a hazardous waste this second option "would not change any of the requirements applicable to the ultimate treatment and disposal or recycling of any wastes collected".
RESPONSE
Today's final rule adds hazardous waste lamps to the universal waste rule regulations under 40 CFR Part 273. By removing some of the barriers to full Subtitle C management for lamps, a universal waste approach should minimize concerns about decreased participation in energy-efficient lighting programs by simplifying and clarifying the requirements for hazardous waste lamp collection while maintaining full Subtitle C control over final treatment and disposal (or recycling) for these lamps. Management costs under the universal waste approach will be lower than full Subtitle C management because hazardous waste transporters and manifests will not be required for lamp shipments between hazardous waste lamp generators and disposal or recycling facilities. In addition, permits will not be required for storage at interim collection facilities. Such an approach should help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation.

A change to the requirements for destination facilities that treat, dispose, or recycle universal waste is beyond the scope of this regulation which is intended to focus on the collection phase of universal waste lamp management rather than the final treatment, disposal, or recycling phase.

DCN SCSP-00181
COMMENTER General Electric Company
SUBJECT UNWAS1
COMMENT IX. Fluorescent Lamps Should Not Be Regulated As Universal Wastes EPA sought comment on whether fluorescent lamps should be designated as a universal waste. It would be inappropriate at this time to include fluorescent lamps in the universal waste

management scheme. Before the universal waste question determination is made, a more fundamental question must be addressed: whether fluorescent lamps should be classified as hazardous waste in the first instance. GE believes they should not. The premise of the universal waste rule is that certain types of hazardous post-consumer items are generated widely by persons who are subject to Subtitle C controls and others who are not regulated under Subtitle C. Wastes that pose identical levels of hazard are sometimes managed in Subtitle D facilities in lieu of recycling or treatment/disposal in a Subtitle C facility. In the two cases that EPA has proposed for coverage, batteries and pesticides, a driving force in developing the universal waste rule is to facilitate collection of these wastes from all generators and, therefore, divert them from municipal waste landfills.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency has determined that hazardous waste lamps meet the criteria established for designating a material as universal waste. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments

document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes. The Agency published a Notice of Data Availability on July 11, 1997 (62 FR 37183). This notice presented data collected by the Agency and an assessment of potential mercury emissions from the management of hazardous waste-containing lamps under several regulatory approaches.

DCN FLEP-00182
COMMENTER Eastman Kodak Company
SUBJECT UNWAS1
COMMENT IV. Management Options: Universal waste Option Provides Little Relief Kodak recognizes that there are some similarities between mercury-containing lamps and the other materials proposed as Universal wastes, but we do not believe that this is the best option presented by the Agency. The proposed Universal waste management standards for mercury-containing lamps do little to provide relief from the burden and stigma of hazardous waste management. The biggest burdens: transportation to recycling or disposal sites via hazardous waste transporters, disposal in a Subtitle C landfill and compliance with the land disposal restrictions, are still maintained. This is inappropriate in light of the persuasive evidence presented which indicates that mercury is relatively immobile in landfills. We strongly support the conditional exclusion option for the reasons cited above, but should the Agency choose to incorporate mercury-containing lamps in the Universal waste Management System (once it is promulgated) there are several important conditions which the Agency has proposed which need to be changed.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the

toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN FLEP-00183
COMMENTER Chemical Manufacturers Association
SUBJECT UNWAS1
COMMENT Encouraging Recycling Makes Treatment/Disposal Capacity Available
For More Deserving Wastes On the other hand if spent lamps that exhibit the toxicity characteristic remain within Subtitle C, CMA believes that most generators would continue to send their spent lamps to permitted treatment and disposal facilities for stabilization or immobilization prior to land disposal, even if streamlined Universal waste management requirements are promulgated.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have

several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN SCSP-00183
COMMENTER Rollins Environmental Services, Inc.
SUBJECT UNWAS1
COMMENT We believe that the Part 273 rule should be expanded to cover the following post-user waste streams: *spent antifreeze *fluorescent and halogen light bulbs *mercury thermostats *fluorescent light ballasts containing PCBs and chlorinated solvent dielectrics.
RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds all hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those wastes mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-00185
COMMENTER British Things, Inc.
SUBJECT UNWAS1
COMMENT In addressing the lamp issue, EPA must be careful to neither over regulate or to under regulate. If EPA over regulates, it will unnecessarily increase the costs of managing spent mercury lamps and discourage their use. Conversely, if EPA fails to adequately address an important mercury release scenario, it will not be providing sufficient protection of human health and the environment. The Universal waste approach--one of EPA's two options in its proposed rule--as well as the current regulatory system under Subtitle C, both over regulates and under regulates lamps. Universal waste would significantly increase the costs associated with lamp management over the exclusion option without providing protection for the most important release scenario: air emissions from uncontrolled breakage. It precludes the use of on-site controlled crushing technologies, thereby prohibiting the most efficient and effective method of preventing uncontrolled breakage. The traditional Subtitle C system also includes significant disincentives for the use of

on-site controlled crushing systems including the imposition of waste analysis plans and land disposal restriction paperwork.

The following sections discuss these points in more detail. A. The Universal waste Approach Would Increase Costs without improving Environmental Performance The Universal waste proposal if applied to mercury containing lamps would preclude the cost-effective application of the BTI system technology because it prohibits on-site treatment at generator, transporter, and consolidation points. The regulation also encourages cheap, long- term storage which would further reduce the incentive to use safe, on-site technologies such as BTI Systems. Furthermore, Universal waste would require full Subtitle C permitting at any central location or landfill with a mobile unit and would trigger collective action and other requirements at these facilities.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency believes that the majority of owners recognize that lamp disposal costs are minimal when viewed in terms of the lamp's life-cycle costs. This view is supported by cost analyses conducted by EPA on typical light upgrades. For example, the cost of operating a lamp (including the ballast losses) for its 20,000-hour life is $64 at the national average electric rate of seven cents per kilowatt-hour. Assuming a $0.50/lamp disposal fee, disposal costs would be less than one percent of its operating costs. See the February 1997 edition of "Lighting Waste Disposal" (EPA 430-B-95-004) for additional information on upgrading costs. EPA has also conducted a number of independent analyses of the internal rate of return (IRR) of various lighting upgrades. The Agency has found that, holding all other lamp operating costs constant, the cost of lamp disposal had minimal impacts on an upgrading project's IRR. At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years was 51 percent. At a $1.00/lamp transportation and recycling cost, the IRR was 50 percent **C** only a slight decrease in IRR despite a 100 percent increase in waste management costs. Because of these reasons, EPA continues to believe that use of energy efficient lamps is independent of the policy options.

The universal waste rule standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and

that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272. The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management.

The current universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). The final rule for hazardous waste lamps retains the treatment prohibition for universal waste handlers and applies the prohibition to handlers of hazardous waste lamps. The definition of treatment under RCRA includes Aany method, technique, or process...designed to change the physical, chemical, or biological character or composition of any hazardous waste, so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.@ The shredding or crushing of hazardous waste lamps clearly falls within the definition of treatment under RCRA (40 CFR 260.10).

DCN SCSP-00186
COMMENTER Nine West Technologies, Inc.
SUBJECT UNWAS1
COMMENT A barrier to enlarging the lamp recycling industry is the current ambiguity as to their status. We believe that including lamps in the "Universal waste rule" would help to encourage the industry by easing shipping requirements and reducing costs relating to shipping.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of

universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN SCSP-00186
COMMENTER Nine West Technologies, Inc.
SUBJECT UNWAS1
COMMENT NWT believes that recycling of fluorescent (and high intensity discharge lamps) within the "Universal waste" rule will result in a significant plus for the environment. European experience has shown that this is a viable, acceptable route for reducing mercury availability. Nine West urges your Agency to encourage recycling of mercury-containing material, especially lighting products.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). EPA believes the universal waste approach will encourage the environmentally sound management of hazardous waste lamps, whether that is recycling or treatment and disposal April 21, 1999

DCN FLEP-00187
COMMENTER PacifiCorp
SUBJECT UNWAS1
COMMENT IV. THE Universal waste OPTION IS NOT THE BEST SOLUTION FOR MERCURY-CONTAINING LAMPS The alternative to the conditional exclusion option for the management of mercury-containing lamps is including all lamps (including mercury-containing lamps) in the universal waste option. 59 Fed. Reg. at 38295. Under this alternative, spent lamps would remain within the Subtitle C hazardous waste system (assuming the lamps tested hazardous to begin with) but would be subject to a reduced set of generation, collection and transportation requirements. The universal waste approach would also authorize the collection of lamps by generators at "consolidated facilities" without triggering RCRA's hazardous waste permit requirement provided generators compiled with certain management standards. Full Subtitle C requirements -- including all applicable land disposal restriction ("LDR") and disposal requirements -- would attach when the lamps are sent off-site for disposal or recycling. Id. at 38302-04. A. Mercury-Containing Lamps Do Not Warrant Inclusion

> In the Universal waste Option Because They Do Not Qualify as Hazardous Wastes PacifiCorp is opposed to including mercury-containing lamps in any Subtitle C management scheme. The technical record simply does not justify regulating these lamps as hazardous wastes, because they do not pose a threat to human health and the environment when managed in qualifying MSWLFs. Thus, while the universal waste option would offer a more streamlined approach for the management of lamps under the Subtitle C system, it incorrectly assumes that mercury-containing lamps warrant hazardous waste regulation to begin with. While PacifiCorp agrees that the universal waste option may be appropriate, for the time being, for lamps that do not fall within the definition of "mercury-containing lamp" ("see id. at 38289), there is no technical or legal basis for retaining mercury-containing lamps under any hazardous waste regime, including the universal waste option.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste

lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN FLEP-00187
COMMENTER PacifiCorp
SUBJECT UNWAS1
COMMENT In short, regulating mercury-containing lamps under the universal waste option will not eliminate the most problematic elements of the RCRA program that have effectively prevented electric utilities and their customers from participating in energy-efficient relamping programs. While the universal waste concept is a step in the right direction for a number of waste streams, it is not the best option for mercury-containing lamps. Rather, the conditional exclusion is the clearly the preferable option in the case of mercury-containing lamps because it will remove the regulatory' barriers that have inhibited participation in Green Lights and similar programs while at the same time ensuring that such materials are handled in a manner that is fully protective of, human health and the environment. [7] [Footnote 7: PacifiCorp wishes to point out that EPA has misinterpreted the scope of its support, expressed in previous comments, for the universal waste exclusion. EPA has construed PacifiCorp's comments as supporting, as a first option, incorporating lighting wastes into the universal waste rule. On the contrary, PacifiCorp feels strongly that lighting wastes should be included in the universal waste rule only as a last resort if the Agency did not adopt the conditional exclusion

option.]
RESPONSE
The Agency notes the commenters support of the conditional exclusion option but does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency believes that the majority of owners recognize that lamp disposal costs are minimal when viewed in terms of the lamp's life-cycle costs. This view is supported by cost analyses conducted by EPA on typical light upgrades. For example, the cost of operating a lamp (including the ballast losses) for its 20,000-hour life is $64 at the national average electric rate of seven cents per kilowatt-hour. Assuming a $0.50/lamp disposal fee, disposal costs would be less than one percent of its operating costs. See the February 1997 edition of "Lighting Waste Disposal" (EPA 430-B-95-004) for additional information on upgrading costs. EPA has also conducted a number of independent analyses of the internal rate of return (IRR) of various lighting upgrades. The Agency has found that, holding all other lamp operating costs constant, the cost of lamp disposal had minimal impacts on an upgrading project's IRR. At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years was 51 percent. At a $1.00/lamp transportation and recycling cost, the IRR was 50 percent **C** only a slight decrease in IRR despite a 100 percent increase in waste management costs. Because of these reasons, EPA continues to believe that use of energy efficient lamps is independent of the policy options under consideration for today=s rule.

DCN FLEP-00188
COMMENTER Westinghouse Electric Corporation
SUBJECT UNWAS1
COMMENT Option 2: Universal waste rule Westinghouse does not support incorporating mercury-containing lamps in the Universal waste Rule. The purpose of the proposed regulations is to promote Green Lights and other energy conservation/relamping programs while providing maximum protection to human health and the environment. The special collection system option would only marginally support such energy conservation efforts and provide little incentive for industry to relamp their facilities. Since the proposed special collection system option addresses only storage (or accumulation) of mercury- containing lamps, it would

not provide the additional incentive for industry to participate in relamping programs that the Agency anticipates. The regulated community needs less regulatory burden that results in more cost-effective recycling, treatment, and disposal.

RESPONSE

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00189

COMMENTER National Aeronautics and Space Admin.

SUBJECT UNWAS1

COMMENT Kennedy Space Center has reviewed the proposed rule "Hazardous Waste Management System; Modification of the Hazardous Waste Program; Mercury-Containing Lamps," 59 FR 38288. Of the two proposed options, Kennedy Space Center recommends that mercury containing lamps be included in a modified Universal waste Management System. The recommendation is based on the following:

Inclusion of mercury-containing lamps in the Universal waste Management System will help promote EPA's waste hierarchy and recycling agenda. In addition to mercury, the glass, metals, and containers are recyclable.

Kennedy Space Center has been collecting and recycling mercury-containing lamps for more than a year and will continue to do so even if the lamps are excluded. The Universal waste option will clearly provide some regulatory relief that is currently not available to large quantity generators under RCRA as well as decreased costs.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency

since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00190
COMMENTER Browning-Ferris Industries
SUBJECT UNWAS1
COMMENT 5.0 The Universal waste rule Does Not Address The Practical Aspects of Managing Mercury-Containing Lamps On A Day-To-Day Basis As proposed, BFI does not believe that the Universal waste rule concept will go very far in encouraging generators to comply with the current hazardous waste regulations. While the rule may offer relief in manifesting, transportation and storage issues, the rule does address the high costs of hazardous waste treatment and disposal. To the extent that generators are hesitant to embrace the Green Lights program because of the costs of compliance with the existing hazardous waste program, it is doubtful that the modest costs savings that may or may not result from the Universal waste rule will encourage compliance.
RESPONSE
Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency believes that the majority of owners recognize that lamp disposal costs are minimal when viewed in terms of the lamp's life-cycle costs. This view is supported by cost analyses conducted by EPA on typical light upgrades. For example, the cost of operating a lamp (including the ballast losses) for its 20,000-hour life is $64 at the national average electric rate of seven cents per kilowatt-hour. Assuming a $0.50/lamp disposal fee, disposal costs would be less than one percent of its operating costs. See the February 1997 edition of "Lighting Waste Disposal" (EPA 430-B-95-004) for additional information on upgrading costs. EPA has also conducted a number of independent analyses of the internal rate of return (IRR) of various lighting upgrades. The Agency has found that, holding all other lamp operating costs constant, the cost of lamp disposal had minimal impacts on an upgrading project's IRR. At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years was 51 percent. At a $1.00/lamp transportation and recycling cost, the IRR was 50 percent **C** only a slight decrease in IRR despite a 100 percent increase in waste management costs. Because of these reasons, EPA continues to believe that use of energy efficient lamps is independent of the policy options.

DCN FLEP-00191
COMMENTER Utility Solid Waste Activities Group

SUBJECT UNWAS1

COMMENT Even more daunting LDR regulatory complications will soon confront recyclers (though it is unclear whether the recycling community understands this) and waste disposal facilities handling mercury-containing lamps under the universal waste option. Again, under the recently promulgated "Phase II" LDR rule, the Agency has signaled that the ultimate LDR treatment standards for all characteristic wastes will be removal of the hazardous waste characteristic and treatment for all underlying hazardous waste constituents present in the waste at levels above the UTS. 59 Fed. Reg. at 47987 (requiring treatment for all underlying hazardous constituents in TC organic wastes, even after the LDR waste is rendered nonhazardous). Therefore, when similar standards are imposed on metal-bearing hazardous wastes in June 1996 (see 59 Fed. Reg. 21042, 21096 (April 25,1994)), lighting waste recyclers will have to ensure that any treatment residuals from such operations -- including recyclable materials that are used in a manner constituting disposal -- meet all applicable UTS standards. USWAG respectfully suggests that neither EPA nor the lighting waste recycling industry fully appreciates the impact this requirement will have on the continued viability of many recycling operations. This is especially significant in view of the fact that one of the primary recycling outlets identified by lighting waste recyclers for recovered glass is reuse of such materials as roadbase material. These recycling activities constitute "use constituting disposal" and thus subjects the recyclable glass to all applicable LDR treatment standards. See 40 C.F.R. ' 266.20.

RESPONSE

Handlers and transporters of universal waste also are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but are not required to comply with the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

The commenter is correct in stating that the treatment standard for residuals from lamp recycling would include meeting levels for underlying hazardous constituents (see the LDR Phase IV rulemaking promulgated on May 26, 1998; 63 FR 28556). Issues pertaining to the LDR treatment standards for TC metal wastes are beyond the scope of today=s rulemaking, since today=s rule addresses only the collection phase of universal waste lamp management. However, it should be noted that the Agency is currently considering revising the LDR treatment standard

for mercury.

DCN FLEP-00191
COMMENTER Utility Solid Waste Activities Group
SUBJECT UNWAS1
COMMENT IV. THE Universal waste OPTION IS NOT THE BEST SOLUTION FOR MERCURY-CONTAINING LAMPS The alternative to the MSWLF option for the management of mercury-containing lamps is including all lamps (including mercury-containing lamps) in the universal waste option. 59 Fed. Reg. at 38295. Under this alternative, spent lamps would remain within the Subtitle C hazardous waste system (assuming the lamps tested hazardous to begin with) but would be subject to a reduced set of generation, collection and transportation requirements. The universal waste approach would also authorize the collection of lamps by generators at "consolidated facilities" without triggering RCRA's hazardous waste permit requirement provided generators compiled with certain management standards. Full Subtitle C requirements - including all applicable land disposal restriction ("LDR") and disposal requirements - would attach when the lamps are sent off-site for disposal or recycling. Id. at 38302-04. A. Mercury-Containing Lamps Do Not Warrant Inclusion In the Universal waste Option Because They Do Not Qualify as Hazardous Wastes As an initial point, USWAG is opposed to including mercury-containing lamps in my Subtitle C management scheme. As discussed in detail above, the technical record simply does not justify regulating this particular category of lamps as hazardous wastes because they do not pose a threat to human health and the environment when managed in qualifying MSWLFs. [11] [Footnote 11: USWAG believes that the same position is true with regard to other spent lamps. Nonetheless, we realize that the technical record to this rulemaking is limited to mercury-containing lamps.] Thus, while the universal waste option would offer a more streamlined approach for the management of lamps under the Subtitle C system, this option incorrectly assumes that mercury-containing lamps warrant hazardous waste regulation to begin with. While USWAG agrees that the universal waste option may be appropriate -- for the time being -- for lamps that do not fall within the definition of mercury-containing lamp" (see id. at 38289), there is no technical or legal basis for retaining mercury-containing lamps under any hazardous waste regime, including the universal waste option.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills

and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN FLEP-00191
COMMENTER Utility Solid Waste Activities Group
SUBJECT UNWAS1
COMMENT In short, regulating mercury-containing lamps under the universal waste option will not eliminate the most problematic elements of the RCRA program that have effectively prevented electric utilities and their customers from participating in energy- efficient relamping programs. While the universal waste concept is a step in the right direction for a number of waste streams, it is not the best option for mercury-containing lamps.
RESPONSE
The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00191
COMMENTER Utility Solid Waste Activities Group
SUBJECT UNWAS1
COMMENT C. The Agency Has Mischaracterized USWAGs and Individual Utilities Comments From the Original Universal waste Proposal on Including All Lighting Wastes Within the Universal waste rule In EPA's Summary of Public Comments Received on the Universal Wastes Proposed Rule That Address Fluorescent Lamps (April 1, 1994), Docket No. FLEP- S0024 ("Summary"), which is now part of

the docket for the lighting waste rulemaking, EPA incorrectly contends that USWAG and several individual utilities "support the inclusion of fluorescent lamps in Part 273" (i.e., the universal waste proposal). Summary at 1-2. USWAG wishes to correct this mistake in the record. EPA has construed USWAG's and the individual utilities' comments as supporting, as a first option, incorporating lighting wastes into the universal waste rule. However, all of the commentors **B** USWAG, Niagara Mohawk, Northeast Utilities, Oklahoma Gas and Electric Company, and PacifiCorp **B** have taken the strong position that lighting wastes should be included in the universal waste rule only as a last resort if the Agency did not adopt the MSWLF option. See Comments submitted to EPA on the Hazardous Waste Management System; Modification of the Hazardous Waste Recycling Regulatory Program; Proposed Rule, 58 Fed. Reg. 8102 (Feb. 11, 1993), Docket No. F-93-SCSP-FFFFF by:, USWAG (May 12,1993); Niagara Mohawk Power Corp. (April 5, 1993); Northeast Utilities (April 12, 1993); Oklahoma Gas & Electric Co. (April 9,1993); and PacifiCorp (May 11, 1993). As EPA notes in the Summary, USWAG and several utilities "believed that EPA should promulgate a specific exemption for fluorescent lamps from Subtitle C regulation if the Agency decides not to include these lamps in the universal wastes regulations." Id. at 4 (emphasis added). Therefore, EPA has this point completely backwards. EPA must revise its incorrect assumption in the record to reflect USWAG's and the utilities correct position on this issue.

RESPONSE

The Agency acknowledges the commenter=s position on the preferred lamp management option. However, the Agency does not believe the proposed conditional exclusion approach would sufficiently protect human health and the environment. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA has decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00191

COMMENTER Utility Solid Waste Activities Group

SUBJECT UNWAS1

COMMENT In addition to compliance with the LDR notification and treatment standards, another regulatory complication associated with the LDR program that will frustrate participation in energy-efficient relamping programs is the LDR storage

prohibition. See RCRA ' 3004(j). That provision bars the storage of any LDR wastes in circumstances where storage is compelled because there is inadequate treatment (including recycling) or disposal capacity See Edison Electric Institute v. Environmental Protection Agency 996 F.2d 326 (D.C. Cir. 1993). In fact, the storage prohibition contemplates the storage of LDR wastes only when storage "is intended to build up an amount of waste that can be readily transported, treated, or disposed -- as, for example, when storage is used to meet minimum volume requirements imposed by waste transporters or treatment facilities." id. at 335. Thus, storage of LDR wastes - including LDR lighting wastes - cannot occur "while treatment methods [including recycling capacity] or disposal capacity is developed." Unfortunately, as long as lighting wastes remain subject to Subtitle C regulation, companies participating in relamping programs may be caught in precisely this predicament. While there is continuing concern over the amount of legitimate recycling and treatment capacity, there will undoubtedly be instances where a large "change out" leaves a generator with no option but to store at least some lighting wastes on-site until recycling or disposal capacity becomes available (for example, when a recycling facility experiences a backup and cannot take a company's bulbs until capacity becomes available). (See section V, infra, discussing the shortfall in qualified recycling capacity.) Generators will be reluctant to participate in any relamping program that may propel them into immediate noncompliance with the law. The electric utilities are acutely aware of the implications of the LDR storage prohibition and understand fully its potential impact on relamping programs. USWAG believes that as others in the regulated community become familiar with the full implications of the prohibition, they too will be reluctant to participate in major relamping programs.

RESPONSE

Universal waste handlers may accumulate universal waste lamps for one year. The regulations also allow for accumulation for more than one year if such accumulation is solely for accumulating such quantities of universal waste as are necessary to facilitate proper recovery, treatment, or disposal. For any accumulation longer than one year, the handler must be able to prove that such accumulation is solely for accumulating quantities necessary to facilitate proper recovery, treatment, or disposal (it is assumed that any accumulation up to one year is for this purpose). This accumulation time limitation was designed to implement, for universal wastes, the LDR storage prohibition under 40 CFR '268.50(c). The Agency believes that this provision will ensure that any universal waste accumulation will meet the statutory LDR storage prohibition and provide enough flexibility to respond to capacity issues.

DCN FLEP-00192
COMMENTER Certified Maintenance Services, Inc.
SUBJECT UNWAS1
COMMENT The proposed universal waste approach would not solve the current problems associated with lamp disposal. Certified Maintenance Services, Inc. does not believe the universal waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep the cost of lamp replacement high. The universal waste approach was not designed for fragile wastes whose risks arrived from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that could withstand the rigors of large-scale accumulation and transport. Our company is particularly concerned about the lack of regulatory requirements for consolidation points and is likely to send our spent lamps to them due to liability concerns. An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a worthwhile goal, in our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place. There are two negative resulting impacts from the implementation of the universal waste approach for which we are deeply concerned. The first is the creation of 658,000 new small-quantity generators and 64,000 new large-quantity generators based on classifying flourescent and HID lamps as hazardous waste. This estimate is based on our experience in maintaining lighting systems and the volume of lamps generated by various facilities for both group relamping and spot relamping. The other concern is that it will severely decrease the amount of energy-saving lighting upgrades as well as the maintenance function of group relamping. The result of reducing the number of energy-saving lighting upgrades is obvious. The result of greatly reducing the practice of group relamping will be an increase in energy consumption by lighting systems due to the fact that additional lamps and fixtures will need to be added to offset the light loss. This will increase the national power demand and will result in significant increase in air pollution.

RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA has decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards. By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased without an increase in risk. The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Hazardous waste lamps conform to a number of factors that were used to determine if a hazardous waste would fit into a universal waste management regulatory program and if the streamlined standards of the universal waste program would improve the overall management of the waste. The factors, which are codified at 40 CFR 273.81, include a) the waste must be a hazardous waste generated by a wide variety of generators; b) the waste, or category of waste, should not be exclusive to a particular industry but must be generated by a wide variety of establishments; c) the waste should be generated frequently, but in relatively small quantities; d) systems to be used for collecting the waste should ensure close stewardship of the waste; e) the risks posed by the waste during accumulation and transport should be relatively low compared to the risks posed by other hazardous waste and specific management standards would be protective of human health and the environment during accumulation and transport; f) regulation of the waste under the universal waste rule should result in the diversion of the waste from management with non-hazardous waste streams; g) regulation of the waste as a universal waste should improve implementation of and compliance with the hazardous waste regulatory program. Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

Today-s rulemaking will not necessarily create a large number of new generators since facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility-s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the

provisions under '261.5 are met.

Furthermore, today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00193
COMMENTER Sunset Lighting Services
SUBJECT UNWAS1
COMMENT Sunset Lighting also does not believe the universal waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the environmental problems. And we are very concerned regarding the lack of regulatory requirements for consolidation points and it is unlikely to send out spent lamps to them due to liability concerns. Another major concern is the creation of 658,000 new small quantity generators and 64,000 new large-quantity generators based an classifying fluorescent and HID lamps as hazardous waste. This estimate is based on our experience in maintenance and the volume of lamps generated by various facilities for group and spot relamping
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards. By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased without an increase in risk. The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

Today=s rulemaking will not necessarily create a large number of new generators since facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility=s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small

quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under '261.5 are met.

DCN FLEP-00195
COMMENTER South Carolina Electric and Gas Company
SUBJECT UNWAS1
COMMENT Additionally, we believe that promulgating regulations using the universal waste option would only add to the burdensome and expensive disposal requirements of Subtitle C regulations. Retaining lighting wastes in the hazardous waste system is not as desirable as reducing air emissions (including mercury) by encouraging full participation in energy efficient relamping programs.
RESPONSE
The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. Under the universal waste regulations, the storage, transportation, and recordkeeping requirements are less stringent than full Subtitle C regulation. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00195
COMMENTER Robert M. Quintal
SUBJECT UNWAS1
COMMENT I have reviewed the subject Proposed Rule and am very concerned with the removal of fluorescent lamps from the Rule. My concern is that removal of this hazardous waste from the proposed rule will again derail ongoing efforts by many potential collectors and recyclers to establish businesses that would manage this waste. As you are aware, each lamp contains 25 mg - 65 mg of mercury. The draft language of the Special Collection Rule addressed the proper handling of fluorescent. However, at the

last minute, and after much influence and lobbying by the lamp manufacturers, fluorescent were pulled from the draft. The lamp manufacturers lobbying efforts are an attempt to portray recycling and/or environmentally safe disposal costs as an economic deterrent to programs that encourage conversion to energy efficient light sources, like EPA's own Green Lights Program.

It is apparent that a special handling rule that de-regulates lamps from hazardous waste status is a viable solution, and in total agreement with the spirit of this proposed rule. Furthermore, it is being proven in states that exempt lamps from municipal waste landfill and incineration, that the so-called economic impact is not a deterrent to energy saving upgrades. It is therefore important to encourage continued formation of the "infrastructure" necessary to handle the safe, proper disposal (recycling) of fluorescent lamps. With the inclusion of this waste in a ruling such as the Universal waste rule, this industry will continue to evolve. I ask that you consider placing fluorescent lamps back into the proposal, as was originally intended. The technology and the ingenuity exists today to minimize the land disposal and airborne emissions of this hazardous waste.

RESPONSE

EPA agrees with the commenter that the universal waste rule will not deter efforts under the Green Lights program. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN SCSP-00196

COMMENTER Texas Water Commission

SUBJECT UNWAS1

COMMENT C. We would like to request that EPA consider including fluorescent light ballasts, small capacitors containing PCBs, and antifreeze, in this type of program.

RESPONSE

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future,

the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today's rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as spent antifreeze, to their individual state universal waste programs through the petition process.

DCN FLEP-00198
COMMENTER U.S. Department of Defense
SUBJECT UNWAS1
COMMENT Of the two proposed options, the Department of Defense supports the addition of Mercury Containing Lamps to the universal waste system.

3. Associated Costs - Since the majority of these lamps fail TCLP, they meet the definition and are already being treated as a hazardous waste. The Universal waste Option will provide regulatory relief for generators, while still preventing the release of mercury and encouraging recycling. Cost associated with recycling will continue to decrease as more lamps am recycled.

RESPONSE
EPA agrees with the commenter regarding the advantages of the universal waste approach. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN SCSP-00198
COMMENTER Chemical Manufacturers Association
SUBJECT UNWAS1
COMMENT C. CMA recommends that fluorescent light bulbs be included in

the promulgated Part 273 special collection system program, if they continue to be subject to Subtitle C regulations. As a preliminary matter, CMA suggests that EPA should reexamine the classification of fluorescent bulbs as hazardous waste, especially given the results of EPA's recent study showing that mercury does not migrate in hazardous quantities from municipal landfills. Given that fluorescent light bulbs do meet EPA's criteria for inclusion in the special waste collections system, EPA should include them in the special collection program. Fluorescent bulbs are generated from a large number of sources on an intermittent basis. Effective lighting management programs replace a large number of lamps on a periodic basis. In addition, a key principle in the EPA Green Lights program is the wholesale replacement of less efficient bulbs with more efficient fluorescent bulbs to conserve energy and reduce air emissions from power plants. Consequently, a significant number of bulbs are periodically removed from service. The number of discarded bulbs can be sufficiently large to make the facility a regulated generator, even if the facility is only a medium-sized office. Typically, these bulbs are disposed of in the municipal waste stream and have the potential to be the source of releases to the environment. Again, the RCRA requirements are so difficult to comply with, that most generators are unwilling to commit resources to recycle fluorescent bulbs. The imposition of certain minimum standards for storage and transportation would be appropriately included in the regulations.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00199
COMMENTER National Association of Electric Dist.
SUBJECT UNWAS1
COMMENT Position on Universal waste The proposed Universal waste approach would not solve the current problems associated with lamp disposal. NAED does not believe that Universal waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep costs of lamp replacement very high. The Universal waste approach was not designed for fragile wastes whose risks derive from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that could withstand the rigors of large-scale accumulation and transport.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.
Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be

stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Examples of acceptable packaging could include placing the lamps evenly spaced in double or triple-ply cardboard containers with closed lids. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. An example of such containment could include placing unintentionally broken lamps in closed wax fiberboard drums.

The Agency points out that in addition to these container and packaging provisions, universal waste handlers, including handlers of universal waste lamps, must comply with the provisions of 40 CFR ''273.17 and 273.37 for responding to releases of universal waste. Handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste and, if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR Parts 260 through 268, as well as all other applicable statutory provisions.

The universal waste rule is expected to result in cost reductions over full Subtitle C management requirements for generators, collectors, and transporters, yet it ensures that lamps are managed in an environmentally protective manner and are properly recycled or treated at full Subtitle C facilities prior to disposal.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00200
COMMENTER Duquesne Light Company
SUBJECT UNWAS1
COMMENT We do not believe the universal waste option is the correct solution to this issue. Subtitle C imposes significant economic burdens. Under the universal waste option, lighting wastes would remain subject to the most onerous elements of the RCRA Subtitle C program, i.e., the land disposal restrictions program and the costs of Subtitle C disposal.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set

forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

The universal waste rule is expected to result in cost reductions over full Subtitle C management requirements for generators, collectors, and transporters, yet it ensures that lamps are managed in an environmentally protective manner and are properly recycled or treated at full Subtitle C facilities prior to disposal.

DCN SCSP-00200
COMMENTER Wisconsin Dept. of Natural Resources
SUBJECT UNWAS1
COMMENT Expansion of Proposed Universal waste rule to Other Wastes. The Department believes that there are numerous other wastes that EPA should consider incorporating into the universal waste rule as a part of the current effort. These wastes include mercury thermometers, switches, thermostats and other liquid mercury-containing devices, antifreeze, fluorescent and high-intensity discharge lamps, incandescent light bulbs and non-banned pesticides collected at agricultural clean sweep programs. All of these wastes are currently posing some significant management problems and could be readily incorporated into a more comprehensive universal waste rule.

Expansion of Universal waste List. EPA should consider additional wastes for inclusion under the proposed universal waste rule. These wastes could include, but are not limited to, lead-acid batteries, mercury thermometers, mercury switches and thermostats, antifreeze, fluorescent and high-intensity discharge lamps, incandescent light bulbs and non-banned pesticides.

RESPONSE

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as spent antifreeze, to their individual state universal waste programs through the petition process.

DCN SCSP-00200

COMMENTER Wisconsin Dept. of Natural Resources

SUBJECT UNWAS1

COMMENT Specific Comments P. 8106, 'I.F.3, [Paragraph]2: "EPA requests comment on whether there are other reasons why universal hazardous wastes are managed as municipal wastes. Commenters should provide specific examples of instances where they believe hazardous wastes are being managed in the municipal waste stream." Department believes there are numerous hazardous wastes managed as part of the municipal waste stream. The biggest reason is because most people do not recognize that hazardous waste regulations apply. For example, no one knew until recently that fluorescent lamps are potential hazardous wastes. A Wisconsin-specific example is the management of other mercury-containing wastes. (Since Wisconsin does not have the same precious metal exclusion as the EPA, wastes that contain liquid mercury, such as thermometers and mercury switches, are hazardous wastes.) If a person is aware that a material is a hazardous waste, but everyone else manages it with their other municipal waste, then there is an economic incentive to not comply. The proposed universal waste rule will help to make compliance easier and reduce the economic incentive to not comply.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste

approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Today's final rule may reduce much of the current confusion over the regulatory status of spent lamps, at least at the federal level; however, individual states may have more stringent requirements for the management of this waste. Today's rule becomes effective in states that are not authorized for the Federal full Subtitle C hazardous waste program, but will not be immediately effective in authorized states since the requirements are not promulgated pursuant to HSWA. These requirements will not be effective in authorized states until such states revise their solid waste management programs to adopt equivalent requirements. States are not required to adopt less stringent regulations, and therefore, need not adopt the universal waste regulations for spent lamps. However, EPA strongly encourages them to do so, not only to achieve the most benefits of the universal waste program but also to reduce the complexity of interstate transportation of these wastes.

DCN SCSP-00201
COMMENTER Northeast Utilities
SUBJECT UNWAS1
COMMENT I. Full Subtitle C Regulation of Lamps Hampers Participation in Green Lights and Other Energy Conservation Programs. NUSCO recognizes the environmental dangers of mercury pollution from lamp wastes and, accordingly, believes that mercury lamp wastes should be recycled if practicable. However, full imposition of RCRA Subtitle C regulation severely hampers energy conservation programs. Complying with satellite accumulation regulations, storage time limits and the prohibition on intra-company transport (where the receiving facility lacks a TSD permit) make it highly difficult to conduct energy conservation programs at customer facilities and at NU system companies own facilities. Accordingly, NUSCO believes that generators of lamp waste should be exempt from full regulation and should be permitted to handle waste under less rigorous management standards akin to those recently proposed for universal wastes. See 58 FR 8102 (February 11, 1993). This rule would require generators to: (1) comply with a one- year storage limit; (2) comply with marking and

inventory requirements; and (3) notify EPA of waste management activities when storing more than 20,000 kilograms of waste at any one time. See 8115-8117. Generators would be exempt from manifest requirements. No substantive management standards would apply.

RESPONSE

The Agency agrees with the commenter and based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The universal waste rule is expected to result in cost reductions over full Subtitle C management requirements for generators, collectors, and transporters, yet it ensures that lamps are managed in an environmentally protective manner and are properly recycled or treated at full Subtitle C facilities prior to disposal.

DCN FLEP-00202

COMMENTER Union Camp Corporation

SUBJECT UNWAS1

COMMENT THE Universal waste APPROACH WILL AGGRAVATE DISPOSAL PROBLEMS

UCC does not believe the proposed Universal waste approach will solve the current problems associated with lamp disposal. UCC does not believe that Universal waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep costs of lamp replacement very high. The Universal waste approach was not designed for fragile wastes whose risks derive from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that can withstand the rigors of large scale accumulation and transport. We are particularly concerned about the lack of regulatory requirements for Consolidation Points and are unlikely to send our spent lamps to them due to liability concerns.

RESPONSE

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set

forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Examples of acceptable packaging could include placing the lamps evenly spaced in double or triple-ply cardboard containers with closed lids. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. An example of such containment could include placing unintentionally broken lamps in closed wax fiberboard drums.

The Agency points out that in addition to these container and packaging provisions, universal waste handlers, including handlers of universal waste lamps, must comply with the provisions of 40 CFR ''273.17 and 273.37 for responding to releases of universal waste. Handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste and, if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR Parts 260 through 268, as well as all other applicable statutory provisions.

The universal waste rule is expected to result in cost reductions over full Subtitle C management requirements for generators, collectors, and transporters, yet it ensures that lamps are managed in an environmentally protective manner and are properly recycled or treated at full Subtitle C facilities prior to disposal.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

DCN SCSP-00202
COMMENTER Oregon Dept. of Environmental Quality
SUBJECT UNWAS1
COMMENT The Task Force recommends that USEPA consider other wastes a potential universal wastes to be regulated under the new Part 273 or other special waste provisions. The Task Force believes that the wastes listed below are good candidates for inclusion in special waste framework due to their widespread use and/or because they are routinely disposed of in the municipal waste stream. Additionally, the Task Force has determined that some of the wastes which we are proposing for special consideration are simply not amenable to "full-scale" RCRA Subtitle C regulation due to their physical characteristics. The Task Force realizes that some of the wastes listed below may require special management standards or flexibility above and beyond the proposed Part 273 provisions. The Task Force recommends that the following wastes be considered: -Thermostats and thermometers -Antifreeze -Sandblasting debris -Fluorescent lamps and other High Intensity Discharge (HID) bulbs -Construction/demolition debris -Contaminated rags -Toner/inks -Used lead-acid batteries -Used oil -Auto shredder fluff -Spent treated poles -Lead paint abatement contaminated soils and debris
RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as the types of waste suggested by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-00204
COMMENTER American Lamp Recycling, Ltd.
SUBJECT UNWAS1
COMMENT ALR, Ltd. supports the Agency's proposed Option 2 for management of mercury- containing lamps, inclusion of this waste stream within the "universal waste" regulatory program.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste

approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00204
COMMENTER American Lamp Recycling, Ltd.
SUBJECT UNWAS1
COMMENT We believe the full regulatory burden of RCRA on generators of lamps is a factor in Green Lights participation, not the low percentage cost impact. Reducing the regulatory burden on companies generating hazardous lamps through the classification of this waste stream as a universal waste will maintain controls over improper management and disposal, and increase the incentive for participation in the Green Lights program. The Agency's implication, within the proposal, that continued regulation of mercury-containing lamps as a hazardous waste will attach a disincentive to energy efficiency upgrades sounds like a repeat of the used oil "stigma" issue that we thought the courts settled a few years ago.
RESPONSE
The Agency agrees with the commenter that the universal waste approach will not deter efforts under the Green Lights program. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase. The Agency performed calculations on the impact of disposal costs on a lighting upgrade's internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.
DCN FLEP-00204
COMMENTER American Lamp Recycling, Ltd.
SUBJECT UNWAS1
COMMENT While my Company supports option 2 of the proposal, we believe

several changes and clarifications are required to ensure a workable system.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00205

COMMENTER Pacific Gas and Electric Company

SUBJECT UNWAS1

COMMENT The environmental benefits are clear but the economics of handling lamp waste as hazardous are not. Regulating lamp waste under the Subtitle C program is not cost effective nor beneficial. Continuing to regulate a waste that poses no threat to human health or the environment will deter utilities from supporting the very programs EPA is trying to endorse (Research Triangle Institute, RTI report entitled "Management of Used Fluorescent Lamps: Preliminary Risk Assessment," Docket No. FLEP-SO019). The RTI report sponsored by EPA, provides a detailed analysis of the "magnitude and impacts of environment releases of mercury that are occurring during the management (i.e. landfill disposal, incineration and recycling) of used fluorescent lamps" and concludes that lighting waste can be managed safely at municipal solid waste landfills.

The concerns mentioned are also PG&E's reasons for not endorsing the Universal waste rule. This rule would not eliminate the cost associated with hazardous waste, but only provide some relief in the collection and storage of the lamps. It is PG&E's determination that approximately 55 percent of all eligible customers and facilities would not participate in the Green Lights Program because of the high costs associated with handling the resulting waste lamp material. Full compliance with Subtitle C eliminates or reduces the amount of participation in otherwise environmentally sound programs endorsed by EPA.

RESPONSE

The Agency appreciates the commenter=s acknowledgment of EPA=s energy-efficient lighting program. Replacing energy inefficient lighting systems under one of the energy-efficient lighting programs could require the use and eventual disposal of hazardous waste lamps.

Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00205
COMMENTER Florida Dept. of Environ. Regulation
SUBJECT UNWAS1
COMMENT Enclosed are our comments on EPA's proposed rule on "Modification of the Hazardous Waste Recycling Regulatory Program", 40 CFR Part 273, which was published on February 11, pp. 8102 et seq. This rule should greatly benefit developing collection and recycling programs for hazardous batteries, mercury-containing lamps, other mercury-containing devices (thermostats, thermometers, mercury switches, manometers, etc.) and canceled or suspended and recalled pesticides. Removal of these wastes from the municipal waste stream will be encouraged while environmental safeguards are maintained.
RESPONSE
EPA thanks the commenter for the information provided. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN SCSP-00205
COMMENTER Florida Dept. of Environ. Regulation
SUBJECT UNWAS1
COMMENT The proposed rule should be broadened to encompass other wastes

that already pose regulatory problems and meet the proposed criteria for universal wastes. Inclusion in this rulemaking is prudent, particularly "since EPA has only limited resources to undertake special rulemaking." There are several other waste streams that could be sufficiently managed using the Part 273 approach. These wastes are generated by a multitude of facilities that do not typically generate hazardous waste. EPA is requested to add the following additional wastes to the special collection system wastes under Part 273.
Mercury-containing lamps and other mercury-containing devices (thermostats, thermometers, mercury switches, various pressure gauges, manometers and dental amalgam) should all be included under these regulations. These sources of mercury will be responsible for most of the mercury contamination in municipal solid waste (MSW) according to EPA's April 1992 report "Characterization of Products Containing mercury in MSW in the U.S., 1970 to 2000" especially since mercury is being phased out of the battery manufacturing process.

RESPONSE

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as other hazardous waste waste not currently included under the universal waste rule, to their individual state universal waste programs through the petition process.

DCN SCSP-00206
COMMENTER New Hampshire Dept. of Env. Services
SUBJECT UNWAS1
COMMENT Recommendation I NHDES recommends including more wastes than those covered under the proposed rule. Other wastes which may fit the "universal waste" criteria are lead paint and lead paint contaminated debris (unless exempted as a "special Subtitle D waste"); fluorescent lamps (unless exempt when sent for recycle, an action NHDES endorses); automotive antifreeze; mercury thermostats and thermometers; and contaminated rags (unless exempt when destined for a commercial laundry).

RESPONSE

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of

the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the Universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-00207
COMMENTER City of Phoenix, AZ
SUBJECT UNWAS1
COMMENT We support Option 2, collection through the Universal waste Management System for the following reasons; Recycling or disposing of RCRA hazardous waste at a permitted facility will reduce the risk for future environmental contamination posed by disposal in a municipal landfill.
RESPONSE
The Agency agrees with the commenter that the universal waste option is preferable to the conditional exclusion. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00208
COMMENTER Safety-Kleen Corporation
SUBJECT UNWAS1
COMMENT Safety-Kleen generally supports the premise underlying the proposed rule, particularly the recognition that discarded mercury lamps are wastes that are not readily managed under the existing hazardous waste management program. However, Safety-Kleen does not agree that spent mercury lamps should be managed as "universal wastes," even though they are generated in a wide variety of settings, are generated by a very large number of generators, and are present in significant volumes in the municipal waste stream. As discussed below, the universal waste system does not provide for use of commercial mobile technology to recycle wastes at the generator location. Safety-Kleen does agree that using a "special collection" approach for lamps that are hazardous waste has the potential to allow environmental protection that would not be expected for lamps that am managed outside the hazardous waste regulatory

system.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The current universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). The final rule for hazardous waste lamps retains the treatment prohibition for universal waste handlers and applies the prohibition to handlers of hazardous waste lamps. The definition of treatment under RCRA includes Aany method, technique, or process...designed to change the physical, chemical, or biological character or composition of any hazardous waste, so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.@ The shredding or crushing of hazardous waste lamps clearly falls within the definition of treatment under RCRA (40 CFR 260.10).

The Agency is not allowing uncontrolled crushing of hazardous waste lamps under federal regulations, however, generators located in a state with an authorized universal waste program may be allowed to treat, or crush, universal waste lamps, if within the state authorization process the Agency determines that a state=s program allowing generators to treat lamps under controlled or restricted conditions is equivalent (per RCRA '3006) to the federal prohibition. EPA believes

that this approach both ensures protection of human health and the environment while allowing for the development of state regulatory programs that include specific standards for the safe crushing of hazardous waste lamps.

DCN FLEP-00209
COMMENTER Lincoln Electric System
SUBJECT UNWAS1
COMMENT LES opposes the management of waste mercury-containing lamps under either current Subtitle C requirements or the proposed "Universal waste Management System" option. Current Subtitle C requirements or the universal waste option would significantly discourage participation in energy efficient lighting programs.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds all hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Replacing energy inefficient lighting systems under one of the energy-efficient lighting programs could require the use and eventual disposal of hazardous waste lamps. Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00209
COMMENTER Eastman Chemical Company
SUBJECT UNWAS1
COMMENT Hazardous Light Bulbs Should be Added to the List of Universal

Wastes ECC is aware that the Agency has considered including hazardous fluorescent light bulbs to the list of universal wastes but chose not to include them in the proposed rule, stating only that it is examining whether these light bulbs pose a risk when managed in landfills (58 FR 8110). ECC believes that fluorescent bulbs meet the part 273 special collection program criteria. They are generated in large quantities by a large number of sources and will likely be generated at even higher rates as more people participate in EPA's Green Lights program. Many used fluorescent bulbs are generated by households or small quantity generators who, because of the burdensome and costly requirements of full Subtitle C, find it most convenient to dispose of them along with general trash. Therefore, most of the used bulbs end up in municipal landfills.

ECC has found that approximately 25 percent of the fluorescent bulbs it has tested exceed the Toxicity Characteristic level of mercury. Disposal of hazardous fluorescent bulbs, even for a TSD facility, is difficult because of the limited capacity that exists for mercury recovery (necessary to meet land ban standards) and the high cost of such operations.

Addition of fluorescent light bulbs to the universal waste list, and development of appropriate management standards, should help achieve EPA's objectives of removing these hazardous wastes from the municipal waste stream and insuring that they are properly managed in more protective recycling, treatment, or disposal facilities. ECC encourages the Agency to proceed with development of part 273 standards for hazardous fluorescent light bulbs.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Today-s rule does not affect the regulatory status of household hazardous waste (excluded under 40 CFR '261.4(b)(1)) or conditionally exempt small quantity generators (CESQGs) (those generators that produce less than 100 kg of hazardous waste per month) that are conditionally exempt from full Subtitle C regulation under 40 CFR'261.5. However, persons managing hazardous waste lamps that are household waste or CESQG waste may choose to manage the

lamps as universal waste.

DCN FLEP-00210
COMMENTER Tampa Electric Company
SUBJECT UNWAS1
COMMENT Tampa Electric also believes that the Universal waste option does not resolve the problem. The Universal waste option would not exempt lighting waste from Subtitle C regulation. The economic disincentives to energy efficient relamping projects would remain in place.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Replacing energy inefficient lighting systems under one of the energy-efficient lighting programs could require the use and eventual disposal of hazardous waste lamps. Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN SCSP-00211
COMMENTER Minnesota Pollution Control Agency
SUBJECT UNWAS1
COMMENT 1. Mercury-bearing waste products. Specifically, thermostats, thermometers. fluorescent lamps, switches, relays, manometers, and gauges should be included under the universal waste

framework.

RESPONSE

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as other mercury-bearing waste mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-00212

COMMENTER Pennzoil Company

SUBJECT UNWAS1

COMMENT In making the decision of which option to adopt, EPA must of course weigh the costs and benefits presented by these options. The regulatory exclusion option will simplify the process of managing replaced lighting, resulting in significant cost savings. The management-program associated with the Universal Wastes Program is not substantially different from the current hazardous waste management standards and would be much more burdensome than the regulatory exclusion option. Besides reducing the profitability of installing energy-efficient lighting to Green Light program members, Universal waste program option also may serve as a disincentive to those who would otherwise consider joining the Green Lights program.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Replacing energy inefficient lighting systems under one of the energy-efficient lighting programs could require the use and eventual disposal of hazardous waste lamps. Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage,

transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00213
COMMENTER Consolidated Edison Company (Con Edison)
SUBJECT UNWAS1
COMMENT In our opinion, the universal waste option contained in the EPA July 27, 1994 proposed rule is not the answer to the current problem with the management of lighting waste. Under this option, the management of lighting waste, with the exception of removing and transporting lighting waste to a first collection center, would remain under the umbrella of Subtitle C. Significant regulatory and economic burdens associated with storing, transporting, and disposing of this waste would remain in place. Under the universal rule option, lighting waste would remain subject to the most onerous components of the Subtitle C program, including the ever more stringent land disposal restriction program, and the costly disposal at RCRA-permitted facilities.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The universal waste rule represents a significant cost and regulatory burden reduction over full Subtitle C management requirements for generators, collectors, and transporters, yet ensures that lamps are recycled or treated in an environmentally protective manner at full Subtitle C facilities. Fewer hazardous waste lamps will be managed in the municipal solid waste stream, therefore

reducing the number of lamps going to municipal combustors and decreasing the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks).

Handlers and transporters of universal waste also are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but are not required to comply with the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00214
COMMENTER American Municipal Power-Ohio, Inc.
SUBJECT UNWAS1
COMMENT AMP-Ohio appreciates the opportunity to comment in favor of the conditional exclusion from hazardous waste regulation for mercury- containing lamps and in opposition to the "universal waste option" as a solution for environmentally sound disposal of spent lighting wastes.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00215
COMMENTER Sterling Chemicals, Inc.
SUBJECT UNWAS1
COMMENT II. Universal-WASTE MANAGEMENT SYSTEM For the reasons articulated above, Sterling believes that mercury-containing lamps can be managed in permitted MSW landfills or reclamation facilities in a way that adequately protects human health and the environment. Requiring continued management in Subtitle C facilities, even with the reduced requirements proposed for the universal wastes, is unwarranted. EPA's own data demonstrate that the amount of mercury found in the leachate of Subtitle D

facilities (88% of which may come from other wastes, like batteries, and 3.8% of which may come from mercury-containing lamps) is insignificant. Removing the insubstantial contribution from lamps from the insignificant level of mercury in leachate (0.01%) does not make statistical sense nor would it be supported by EPA's own risk assessment policies.

RESPONSE

Today's final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The Agency has determined that hazardous waste lamps meet the criteria established for designating a material as universal waste. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency believes that management controls under RCRA are needed to minimize the release of mercury from lamps into the environment. Although most mercury emissions are associated with combustion, all releases contribute to the mercury reservoirs in land, water and air. Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN FLEP-00216

COMMENTER Recyclights, Inc.

SUBJECT UNWAS1

COMMENT We support the handling, treatment and regulations governing the recycling of fluorescent lamps and high intensity discharge devices under the Universal waste Management System (Universal waste MS) or option B.

RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00216
COMMENTER Recyclights, Inc.
SUBJECT UNWAS1
COMMENT If we were in a utopian world, then we would not need these rules since each and every business would always do "the right thing" in disposal of their waste stream. However, we live in a very competitive marketplace where keeping a business competitive often conflicts with the most righteous intentions because of the additional cost. We believe that placing lamps under the Universal waste Management System would continue EPA's direction of providing consistent environmental regulation without excessive and undue costs. Essentially, we believe that the Universal waste MS would provide "the best management option" for those companies who are in business to recycle as well as those disposing of fluorescent lamps. It appears to us that there are numerous reasons to foster the recycling of a known hazardous material and only a few reasons to not handle the lamps property. There are many arguments on both sides of the table on this issue with facts, computations and calculations supporting both proponents and opponents to the Universal waste MS. We believe that hazardous materials should be controlled unless it can be proven that they do not pose a threat to human health and the environment because it is harder to clean up a problem versus preventing it from the start. Based on all the reports, documentation and opinions we have reviewed, we have not seen any conclusive evidence that the mercury contained in fluorescent lamps should be exempted from the Universal waste MS. In fact, we believe that most of the arguments against using the Universal waste MS are based on the wrong assumptions. Finally, the only two recent objections that we have heard repeatedly voiced by the opponents to this Universal waste MS approach are (a) that there is not much mercury vapor which escapes when the lamps are crushed and (b) the residue levels of mercury on glass may contaminate the environment. We will refute these two issues in the Coalition of Lamp Recyclers detailed comments. Instead of debating

inconclusive details, we believe that EPA should look it the global perspective of recovering over 99% of the mercury. We believe that this 99% goal can be accomplished under the Universal waste MS without creating a new problem in the process. In fact, we are not aware of any recyclers that can not meet this goal.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00218

COMMENTER Louisiana Dept. of Environmental Quality

SUBJECT UNWAS1

COMMENT 1. Louisiana supports the second option. We favor any rule which will a) remove regulatory obstacles to lamp reclamation, b) minimize breakage, and c) keep fluorescent bulbs out of landfills and incinerators. We endorse EPA's proposal to govern transportation, collection, and recycling of discarded lamps under the universal waste approach.

9.In Summary: Of the two options proposed, the second one makes better environmental and regulatory sense, but only if it represents part of a larger effort in reducing mercury emissions from all sources.

In the larger scheme of things, the Clean Air Act continues to exempt emissions from coal-fired utility boilers from the requirements of Subsection 112(c)(6). RCRA, however, does give EPA authority to reduce coal emissions by reducing coal combustion through the promotion of energy conservation. EPA should not use the present magnitude of these emissions as an excuse to neglect lesser sources. These comments focus to a large extent on mercury emissions from other sources and on regulations in other programs. This is entirely appropriate for

> an element like mercury which violates many common-sense notions by its tendency to bioaccumulate. Used lamps fall into the hazardous waste program solely because they can leach mercury to the groundwater, but much of our interest in them arises from their ability to pollute the air. EPA needs a holistic approach to mercury regulation, one which extends across all regulatory programs. Adoption of the second option in the proposed rule represents a worthwhile step in that direction.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

The Agency-s primary goal of the final rule is to promulgate management standards for hazardous waste lamps that minimize mercury emissions to the environment, while encouraging the collection and environmentally-sound management of spent lamps. In addition, EPA wants to promote, to the extent possible, industry source reduction initiatives for reducing the quantity of mercury in hazardous waste devices such as fluorescent lamps, therefore reducing the amount of mercury that is available for environmental loading.

In 1995, EPA's Office of Air Quality Planning and Standards (OAQPS) promulgated new standards for new municipal waste combustors of a certain capacity. This rule is expected to reduce mercury emissions from 1990 levels by 90 percent when implemented fully by December 2000 (December 19, 1995; 60 *FR* 65387). Municipal waste combustors account for almost 19 percent of the national man-made emissions of mercury. These regulations, in addition to today-s final rule which will encourage the collection and management of hazardous waste lamps at hazardous waste management facilities, may go a long way toward reducing potential emissions of mercury from municipal waste combustion facilities.

In addition to the regulation of air emissions from municipal waste combustors, the Agency has been considering the regulation of air emissions from other combustion sources. The Agency finalized a rulemaking for hospital, medical, and infectious waste incinerators on September 15,

1997 (62 *FR* 48348). When implemented fully by September 2002, this rule is expected to reduce mercury emissions by 95 percent. These sources account for 10 percent of the national man-made emissions of mercury. The Agency has proposed rulemakings that limit emissions of various air pollutants including mercury from hazardous waste incinerators, cement kilns, and lightweight aggregate kilns, and off-site waste operations. EPA is planning to propose rulemakings addressing air emissions from industrial and commercial waste incinerators and boilers in the near future. By including hazardous waste lamps within the scope of the universal waste rule, the Agency is ensuring that any additional standards developed by the Agency to control mercury emissions at hazardous waste management facilities will be applicable to destination facilities managing universal waste lamps and will facilitate the reduction of mercury emissions from the incineration of lamps.

DCN FLEP-00220
COMMENTER Farmington Electric Utility System
SUBJECT UNWAS1
COMMENT "The universal waste option" proposed is the most expensive, onerous, and ridiculous option procurable. Lamps contain very minute quantities of mercury, neon, or other elements. The mercury vapor lamp and others should be disposed of in landfills as is normally done. We just do not have the resources available to execute another non-federally funded regulation. We would probably stop removal of mercury vapor lighting if these ridiculous regulations are implemented. You are in direct conflict with DOE policy to provide energy efficiency!
RESPONSE
The Agency appreciates the commenter-s input however, based upon other commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are

less stringent than those in the RCRA Subtitle C management program.

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

DCN FLEP-00222
COMMENTER Columbus Southern Power & OH Power Co.
SUBJECT UNWAS1
COMMENT Columbus Southern Power and Ohio Power do not favor the universal waste option or exclusive recycling of lighting waste because of the additional requirements they would place on lighting waste disposal.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.
Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of

universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00223
COMMENTER Owens-Corning Fiberglass Corporation
SUBJECT UNWAS1
COMMENT Owens Corning supports the Universal waste rule option of the proposed regulation. Our reasons for this are as follows: 1. Owens Corning is dedicated to environmental stewardship in that we feel it is appropriate to reuse or recycle hazardous wastes as much as availability of treatment facilities makes possible. We do not believe it is appropriate to discard D009 hazardous wastes in municipal solid waste landfills.
RESPONSE
The Agency thanks the commenter for their support. Today=s rule adds hazardous waste lamps to the scope of the universal waste rule (40 CFR Part 273). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00224
COMMENTER Amtech Lighting Services
SUBJECT UNWAS1
COMMENT Position on Universal waste Amtech Lighting Services does not believe that the proposed universal waste approach will overcome the stigma of concern put down with the association of hazardous waste designation. It will only increase the risks as large quantities of lamps are accumulated, increasing the possibility of environmental problems and driving up the cost of lamp replacement.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set

forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment.

In addition, the universal waste rule is expected to result in cost reductions over full Subtitle C management requirements for generators, collectors, and transporters, yet it ensures that lamps are managed in an environmentally protective manner and are properly recycled or treated at full Subtitle C facilities prior to disposal.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00225
COMMENTER Imperial Lighting Maintenance Company
SUBJECT UNWAS1
COMMENT If the universal waste approach is implemented, more than 650,000 new small- quantity generators and more than 60,000 new large-quantity generators would be created (based on the volume of lamps generated from relampings).
RESPONSE
Spent lamps that exhibit a hazardous waste toxicity characteristic are subject to today's

rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

DCN FLEP-00226
COMMENTER FMS Lighting Management Systems, Inc.
SUBJECT UNWAS1
COMMENT 3. FMS Lighting Management does not feel that the proposed universal waste approach would solve any of the existing problems associated with lamp disposal. One major problem is the stigma of hazard waste presently associated with fluorescent and HID lamps. We do not believe that the universal waste approach would remove this stigma. We do feel that it will severely decrease the energy-saving lighting upgrades resulting in larger energy consumption and prevent the government from meeting the congressional mandate issued in the National Energy Policy Act of 1992.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.
Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project

over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00227
COMMENTER Page Electric Utility
SUBJECT UNWAS1
COMMENT The "universal waste option" is not the proper resolution to the lighting waste issue because, under that option, lighting wastes are subject to the most onerous and expensive components of Subtitle C regulation, namely the land ban program and Subtitle C disposal costs.

Clearly, in many cases, municipal solid waste landfills are more protective of human health and environment than recycling centers. Thus, the universal waste option is not adequate for mercury-containing lighting wastes.

RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

The Agency believes that some minimum technical controls are needed under RCRA to minimize

the release of mercury from lamps into the environment. Although most mercury emissions are associated with combustion, all releases contribute to the mercury reservoirs in land, water and air.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN FLEP-00228
COMMENTER STAPPA/ALAPCO
SUBJECT UNWAS1
COMMENT We strongly support the option of including waste lamps containing mercury in the proposed Universal wastes Rule (Universal waste R).

Management of fluorescent lamps as a Universal waste would encourage recycling by providing a cost incentive to recycle, which is consistent with EPA's hierarchy of recycling over disposal established in the Pollution Prevention Act of 1990.

If the second option, the Universal waste R, were chosen, the large-quantity generators would be required to dispose of their bulbs in a more environmentally protective manner. The Universal waste R would provide an implementable mechanism to enforce proper disposal and recycling.

Conclusion In conclusion, we strongly support the option of including mercury-containing waste lamps in the proposed Universal wastes Rule. This option lessens the burdensome nature of the handling requirements, but retains the hazardous waste designation and encourages recycling, which we believe will decrease releases of mercury to the environment.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps.

Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00229
COMMENTER Global Recycling Technologies, Inc.
SUBJECT UNWAS1
COMMENT Based upon our knowledge and considerable experience, we urge the Department to include mercury containing lamps in the Universal waste rule. We feel that the Rule should be modified to include management standards for recycling facilities instead of permits for storage prior to recycling. The proposed Rule provides the best protection of human health and the environment, and provides a mechanism to encourage recycling. We believe that it is of critical importance to foster the continued development of the recycling industry in the U.S. for this and other aspects of recycling.

This document will provide information supportive of inclusion of mercury-containing lamps into the Universal waste rule.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). However, this rule does not change the full Subtitle C requirements for destination facilities, such as recycling facilities. Recycling facilities would be subject to RCRA permitting if the facility stores hazardous waste lamps prior to recycling.

DCN FLEP-00230
COMMENTER BellSouth Corporation
SUBJECT UNWAS1
COMMENT 1. In the proposal published in the July 27, 1994 Federal Register, two alternative approaches for the management of mercury-containing lamps are offered. The first approach offers an exclusion for these lamps from regulation as hazardous waste provided they are disposed in permitted municipal landfills in states/tribes with EPA approved municipal solid waste (MSW) permitting programs or managed in properly permitted, licensed or registered mercury reclamation facilities. The second approach would add mercury lamps to EPA's Universal waste

Proposal (2-11-93, 58 FR 8102). BellSouth favors regulation of mercury-containing lamps according to the streamlined, reduced regulatory structure offered in the Universal waste plan. Several states already have pending or final legislation and regulations concerning the proper disposition of these items, and/or banning them from disposal in municipal landfills. Federal level regulation of mercury-containing lamps under the Universal waste rule would allow for greater consistency in company program administration across our operating regions.

Finally, we feel that the proposed Universal waste rule can be a benefit to industry in its streamlining of RCRA requirements, as well as to the community and environment. We appreciate the opportunity to comment on the July 27, 1994 proposal.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency notes that many States have already adopted or are considering adopting universal waste standards for spent lamps. Since this rule is not promulgated pursuant to HSWA it is applicable on the effective date only in States that do not have final RCRA authorization. Authorized states that wish to adopt this rule will have to seek authorization for the adoption of spent lamps to their universal waste programs. States are not required to adopt less stringent regulations, and therefore, need not adopt the universal waste regulations for spent lamps. However, EPA strongly encourages them to do so, not only to achieve the most benefits of the universal waste program but also to reduce the complexity of interstate transportation of these universal wastes.

DCN FLEP-00232

COMMENTER Houston Lighting and Power Company

SUBJECT UNWAS1

COMMENT The alternative Universal waste Option for disposal of mercury-containing lighting wastes would continue to subject generators to RCRA's onerous Land Disposal Restriction (LDR) requirements, regardless of whether the lamps are disposed of or recycled. The LDR requirements for notification, treatment standards and storage limitations would impose operational and economic burdens to energy-efficient relighting programs, which have been developed and endorsed by the EPA .

RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00233
COMMENTER Uniroyal Chemical Company, Inc.
SUBJECT UNWAS1
COMMENT If Option 2 were promulgated, a facility could test for mercury content via the TCLP, declare its light bulbs nonhazardous and manage mercury containing light bulbs in less protective manner than the option 1 proposal.

As written, the Option 2 alternative does not seem significantly less burdensome. It requires significant training and management.

RESPONSE
Today=s rule adds hazardous waste lamps that are hazardous waste because the lamps exhibit a hazardous waste characteristic to the scope of the universal waste rule (40 CFR Part 273). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost and

regulatory burden reduction over full Subtitle C management requirements for generators, collectors, and transporters. Universal waste handlers of hazardous waste lamps are subject to less stringent management requirements such as extended storage time periods and no manifesting requirements. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

EPA studies have determined that the majority of hazardous waste lamps fail the TCLP for mercury and other hazardous waste constituents. Hazardous waste lamps that are household waste are exempt from regulations. CESQGs are excluded from the RCRA hazardous waste management requirements per 40 CFR 261.5. Persons managing hazardous waste lamps that are household or CESQG waste may manage their lamps as universal waste if they so choose. Today-s rulemaking does not change the status of hazardous waste lamps that do not exhibit a hazardous waste characteristic. Lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation.

The universal waste rule does not require formal training for facility employees, but does require that employees at large quantity handler facilities are thoroughly familiar with proper waste handling and emergency procedures related to their responsibilities, and employees at small quantity handler facilities be informed of the proper handling and emergency procedures appropriate to the types of universal waste being handled. The Agency believes that a basic employee training requirement is necessary to ensure that employees are specifically familiar with waste handling procedures. Training that is required under other programs (e.g., OSHA, RCRA Subtitle C) will most likely meet the Part 273 training requirements.

DCN FLEP-00235
COMMENTER N'novated Concept Systems
SUBJECT UNWAS1
COMMENT In addition, the Universal waste rule and the newly required documentation and record-keeping that current proposed changes would demand, if implemented, make us believe that the entire package would have a "chilling effect" on the ENTIRE lighting management industry, as well as YOUR OWN Green Lights program!
RESPONSE
Before today-s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping

requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00236
COMMENTER Conservation Lighting, Inc.
SUBJECT UNWAS1
COMMENT The proposed universal waste approach would not solve the current problems associated with lamp disposal. The Conservation Lighting Company does not believe the universal waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep the cost of lamp replacement high. The universal waste approach was not designed for fragile wastes whose risks arrived from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that could withstand the rigors of large-scale accumulation and transport. Our company is particularly concerned about the lack-regulatory requirements for consolidation points and is unlikely to send our spent lamps to them due to liability concerns.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Examples of acceptable packaging could include placing the lamps evenly spaced in double or triple-ply cardboard containers with closed lids. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. An example of such containment could include placing unintentionally broken lamps in closed wax fiberboard drums.

The Agency points out that in addition to these container and packaging provisions, universal waste handlers, including handlers of universal waste lamps, must comply with the provisions of 40 CFR ''273.17 and 273.37 for responding to releases of universal waste. Handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste and, if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR Parts 260 through 268, as well as all other applicable statutory provisions.

In addition, the universal waste rule is expected to result in cost reductions over full Subtitle C management requirements for generators, collectors, and transporters, yet it ensures that lamps are managed in an environmentally protective manner and are properly recycled or treated at full Subtitle C facilities prior to disposal.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

DCN FLEP-00236
COMMENTER Conservation Lighting, Inc.
SUBJECT UNWAS1
COMMENT There are two negative resulting impacts from the implementation of the universal waste approach for which we are deeply

concerned. The first is the creation of 658,000 new small-quantity generators and 64,000 new large-quantity generators based on classifying fluorescent and HID lamps as hazardous waste. This estimate is based on our experience in maintaining lighting systems and the volume of lamps generated by various facilities for both group relamping and spot relamping. The other concern is that it will severely decrease the amount of energy-saving lighting upgrades as well as the maintenance function of group relamping. The result of reducing the number of energy-saving lighting upgrades is obvious. The result of greatly reducing the practice of group relamping will be an increase in energy consumption by lighting systems due to the fact that additional lamps and fixtures will need to be added to offset the light loss. This will increase the national power demand and will result in significant increase in air pollution.

RESPONSE

Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00237
COMMENTER Sherry L. Schilling

SUBJECT UNWAS1
COMMENT I am convinced that the data gathered by the environmental protection agency as well as our own Louisiana Dept. of Environmental Quality supports the need for regulated waste lamp management such as option 2 the "universal waste rule" proposal.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00238
COMMENTER Energy Specialties, Inc.
SUBJECT UNWAS1
COMMENT Regarding universal waste, ESI does not believe it would solve effectively the current mercury issue. Our understanding is that universal waste was intended for heavy duty wastes that could withstand large scale accumulation and storage. Fluorescent lamps are fragile and difficult to store and transport. Adding them to the universal waste provision would increase costs of lamp replacement. Any provision that causes a significant increase in the cost of lamp replacement will do more harm than good, given energy efficient lamp replacement is a source for significant reductions in air pollution.
RESPONSE
The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Examples of acceptable packaging could include placing the lamps evenly spaced in double or triple-ply cardboard containers with closed lids. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. An example of such containment could include placing unintentionally broken lamps in closed wax fiberboard drums.

The Agency points out that in addition to these container and packaging provisions, universal waste handlers, including handlers of universal waste lamps, must comply with the provisions of 40 CFR ''273.17 and 273.37 for responding to releases of universal waste. Handlers of universal

waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste and, if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR Parts 260 through 268, as well as all other applicable statutory provisions. EPA believes these provisions will be protective of human health and the environment.

Hazardous waste lamps conform to a number of factors that were used to determine if a hazardous waste would fit into a universal waste management regulatory program and if the streamlined standards of the universal waste program would improve the overall management of the waste. These factors are codified at 40 CFR 273.81.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00239
COMMENTER National Sign Association
SUBJECT UNWAS1
COMMENT IV. Specific Comments on Alternative II (the "Universal waste System") NESA opposes Alternative II, which would incorporate mercury- containing lamps into the proposed Universal waste collection system. See 58 Fed. Reg. 8012 (February 11, 1993). The available data do not appear to indicate that mercury-containing lamps pose any significant threat to human health or the environment. Furthermore, NESA believes that even the reduced RCRA Subtitle C requirements f or record keeping, storage, notice, management and disposal enunciated in the proposed Universal waste System are unnecessary, a waste of scarce resources and do not justify adopting this Alternative. In addition, NESA is concerned that establishing a Universal Waste System may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental

problems The Universal waste approach was not designed for fragile wastes whose risks derive from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that could withstand the rigors of large scale accumulation and transport. In sum, while NESA believes that Alternative II is some improvement over the current requirement that mercury-containing lamp waste be treated in full compliance with RCRA Subtitle C, Alternative II is not good enough--especially given the significant advantages of Alternative I. NESA therefore believes that the only reason to adopt Alternative II is if Alternative I (the "Conditional Exclusion" alternative) will not be adopted by EPA.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in

different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Examples of acceptable packaging could include placing the lamps evenly spaced in double or triple-ply cardboard containers with closed lids. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. An example of such containment could include placing unintentionally broken lamps in closed wax fiberboard drums.

The Agency points out that in addition to these container and packaging provisions, universal waste handlers, including handlers of universal waste lamps, must comply with the provisions of 40 CFR ''273.17 and 273.37 for responding to releases of universal waste. Handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste and, if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR Parts 260 through 268, as well as all other applicable statutory provisions. EPA believes these provisions will be protective of human health and the environment.

Hazardous waste lamps conform to a number of factors that were used to determine if a hazardous waste would fit into a universal waste management regulatory program and if the streamlined standards of the universal waste program would improve the overall management of the waste. The factors are codified at 40 CFR 273.81.

DCN FLEP-00240
COMMENTER Luminaire Service, Inc.
SUBJECT UNWAS1
COMMENT The universal waste approach would not solve the problems associated with lamp disposal. Luminaire Service believes that universal waste could increase risk by allowing the accumulation

of large quantities of intact lamps. This will not remove the stigma of hazardous waste designation from lamps and may actually increase the instances and magnitude of environmental dangers. The universal waste approach was designed for sturdy wastes that could hold up under transportation and accumulation. Breakage of lamps causes the air emission risks. Consolidation points are not regulated in the care of fragile wastes, therefore, we would be unlikely to handle our lamp disposal in this manner for fear of liability. While the universal waste rule appears to encourage recycling of mercury-containing lamps, I feel that the EPA's regulation of lamp disposal should offer a variety of options for disposal of spent lamps. These options would offer safe and cost-effective options until a national recycling program is in place.

The implementation of the universal waste approach will classify fluorescent and HID lamps as hazardous waste. This will create hundreds of thousands of new small-quantity generators and tens of thousands of new large-quantity generators. These generators will be created through various sized facilities performing group or spot relamping. The concern about becoming a large or small quantity generator will greatly effect the facility managers' decision to perform these energy-saving projects. A decrease in these kinds of projects will result in an increase in national power demand and consequently increase air pollution. The added cost of disposal and the confusion about how it should be done stopped Hook Drugs from group relamping 100 stores.

RESPONSE

Today's final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage

of lamps. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under '261.5 are met.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00243
COMMENTER Recycling Advocates of Middle Tennessee
SUBJECT UNWAS1
COMMENT Of the 2 options under consideration for the proposed rule, the preferred approach is to add mercury-containing lamps to the universal waste management system which was proposed for batteries and pesticides on February 11, 1993 (58 FR 8102). This option is deficient, however, in that it would still allow for mercury- containing lamps to be disposed of. These lamps should not be landfilled or incinerated. The U.S. EPA is being irresponsible by refusing to ban such disposal. Further, the quantity allowed for exclusion from the rule (less than 100 kg per month) is too high. Less that 1 kg would be more appropriate.

Please consider the option of putting lamps destined for recycling facilities under the universal waste management system but keeping those destined for disposal under full Subtitle C regulations. It would be much better, and much simpler, to simply ban the disposal of Hg-containing lamps. A realistic time- table would be appropriate for this, since factories can not be built overnight. Since the technology developed to date for recycling Hg-containing lamps appears to be far safer than disposal, there seems to be no reason why such a ban wouldn't work at this time. A maximum of 2 years should be a reasonable timetable. One year might work just fine, except that it might result in some extra shipping.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards) for handlers and transporters. However, destination facilities (i.e., recycling, treatment, or disposal facilities) are still required to comply with all applicable RCRA Subtitle C requirements.

Today-s final rule was developed to provide alternative management standards for hazardous waste lamps prior to treatment, disposal, or recycling. The request to ban disposal of hazardous waste lamps is beyond the scope of this rulemaking. In addition, the request to amend the conditional exempt small quantity generator waste generation limit is beyond the scope of today-s rulemaking. EPA notes that some states may have lower limits for CESQGs.

DCN FLEP-00245

COMMENTER American Iron and Steel Institute

SUBJECT UNWAS1

COMMENT We do not believe the Universal waste option will provide significant environmental benefits. Instead, it will discourage lighting system conversions that are an important part of attaining national energy, efficiency and greenhouse gas emission goals because it is likely to keep disposal costs high and will not remove the stigma of a hazardous waste designation.

RESPONSE

Replacing energy inefficient lighting systems under one of the energy-efficient lighting programs could require the use and eventual disposal of hazardous waste lamps. Before today-s rulemaking, hazardous waste lamps that exhibited a hazardous waste characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage,

transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00246
COMMENTER Efficient Lighting and Maintenance, Inc.
SUBJECT UNWAS1
COMMENT Efficient Lighting does not believe that the universal waste approach would solve current lamp disposal problems. We believe that it will encourage the accumulation of large quantities of intact lamps; thereby increasing environmental risks. Lamps are fragile and the risk is there that leaks from breakage will occur during transport. We have concerns that the regulations for consolidation points are not stringent enough which would lead to liability concerns on our part.
RESPONSE
Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous waste constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps.

The Agency notes that all parties can still be held liable for releases of hazardous constituents from hazardous waste, regardless of the management requirements under RCRA.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

DCN FLEP-00247
COMMENTER Total Lighting Service
SUBJECT UNWAS1
COMMENT The proposed universal waste approach would not solve the current problems associated with lamp disposal. Total Lighting Service does not believe the universal waste will get rid of the stigma associated with the hazardous waste designation and also believes it could actually work to increase risks.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps. The Agency notes that all parties can still be held liable for releases of hazardous constituents from hazardous waste, regardless of the management requirements under RCRA.

DCN FLEP-00250
COMMENTER International Assn. of Lighting Man. Co.
SUBJECT UNWAS1
COMMENT NALMCO does not believe the universal waste approach will solve the lamp disposal problem. This approach will classify fluorescent and HID lamps as hazardous waste and may increase risks by encouraging stockpiling of large quantities of intact lamps which, will increase the opportunities and magnitude of

environmental problems. The universal waste approach was designed for sturdy wastes that could hold up under large-scale accumulation and transportation. Lamps are fragile and the air emission risks come from breakage. Based on the lack of regulatory requirements for the storage points, NALMCO would not recommend our members send spent lamps to them because of liability concerns. By imposing the stigma of the hazardous waste designation to mercury-containing lamps, the universal waste approach will create 658,000 new small-quantity generators and 64,000 new large-quantity generators. This estimate is based on information on and experience in maintaining lighting systems and the volume of lamps generated by facilities for both group relamping and spot relamping. Another concern is that the expense involved in this approach will greatly decrease the number of energy-saving lighting upgrades and the maintenance function of group relamping. Both of these situations will result in an increase of energy consumption. The result from decreased energy-saving upgrades is obvious. The reduced group relamping will increase energy consumption due to additional lamps being used to offset the light loss from old and inefficient lamps. The national power demand will increase as will the air pollution. While the underlying goal of the universal waste rule appears to encourage recycling of mercury-containing lamps is worthwhile, NALMCO feels that EPA's regulation of lamp disposal will assure a variety of safe and cost-effective options are available until a national recycling infrastructure is in place.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Studies conducted by the Agency indicate that significant potential for mercury emissions and the release of other hazardous constituents from spent lamps occurs during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.
EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve

waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps. The Agency notes that all parties can still be held liable for releases of hazardous constituents from hazardous waste, regardless of the management requirements under RCRA.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project

over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00251
COMMENTER Nelson Electric Company
SUBJECT UNWAS1
COMMENT Nelson Electric does not support the proposed universal waste approach. We feel that it may encourage the accumulation of large quantities of mercury lamps, which would increase our liability concerns for large-scale storage and transportation. It will also have a negative effect on the number of energy-saving lighting retrofit projects. It will increase the national power demand rather than decrease our- power usage, which will result in more air pollution.
RESPONSE
Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps. The Agency notes that all parties can still be held liable for releases of hazardous constituents from hazardous waste, regardless of the management requirements under RCRA.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of

return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00253
COMMENTER Kelly H. Glover
SUBJECT UNWAS1
COMMENT As a concerned citizen of Louisiana I would like to offer my comments on the proposed ruling for mercury containing waste lamp management. I am convinced that the data gathered by the environmental protection agency as well as out own Louisiana Dept. of Environmental Quality supports the need for regulated waste lamp management such as option 2 of the "universal waste rule" proposal. With all fairness to the states with vast coastline and interior water bodies I believe that it is imperative the EPA enact waste lamp management legislation to protect the natural resources yielded by these water bodies. In Louisiana the potential loss of recreation and tourism, as well as, losses in the commercial seafood industries from mercury poisoning in the long term could be devastating. It is obvious to me that the potential for these losses will greatly decrease with some form of lamp management program. I think waste lamp management is most cost effective when viewed relative to the natural resources that will be protected from long term exposure, the development of new job creating industries, the recycling of tons of usable glass and aluminum, the reduction of required landfill space, through waste minimization, and the decreased health risk associated with mercury poisoning. I would strongly urge the EPA the adopt some form of mercury containing waste lamp management. I would support a compromised version of lamp management or a possible test pilot program, anything but absolute exclusion of these waste lamps. Data indicates these lamps are toxic 4 to 8 times the allowable limit 99 percent of the time. I appreciate this opportunity to comment and I trust that you will take the position that will protect the health and well being of the American people as a whole.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part

273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards), yet ensures that mercury emissions and releases from hazardous waste lamps are minimized.

DCN FLEP-00255
COMMENTER Arthur shilling
SUBJECT UNWAS1
COMMENT As a concerned citizen of Louisiana I would like to offer my comments on the proposed ruling for mercury containing waste lamp management. I am convinced that the data gathered by the environmental protection agency as well as out own Louisiana Dept. of Environmental Quality supports the need for regulated waste lamp management such as option 2 of the "universal waste rule" proposal. With all fairness to the states with vast coastline and interior water bodies I believe that it is imperative the EPA enact waste lamp management legislation to protect the natural resources yielded by these water bodies. In Louisiana the potential loss of recreation and tourism, as well as, losses in the commercial seafood industries from mercury poisoning in the long term could be devastating. It is obvious to me that the potential for these losses will greatly decrease with some form of lamp management program. I think waste lamp management is most cost effective when viewed relative to the natural resources that will be protected from long term exposure, the development of new job creating industries, the recycling of tons of usable glass and aluminum, the reduction of required landfill space, through waste minimization, and the decreased health risk associated with mercury poisoning. I would strongly urge the EPA the adopt some form of mercury containing

waste lamp management. I would support a compromised version of lamp management or a possible test pilot program, anything but absolute exclusion of these waste lamps. Data indicates these lamps are toxic 4 to 8 times the allowable limit 99 percent of the time. I appreciate this opportunity to comment and I trust that you will take the position that will protect the health and well being of the American people as a whole.

RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e.,

universal waste rule is less stringent than full Subtitle C management standards), yet ensures that mercury emissions and releases from hazardous waste lamps are minimized. .

DCN FLEP-00257
COMMENTER Tri-County Lighting Services, Inc.
SUBJECT UNWAS1
COMMENT Tri-County Lighting Services, Inc. does not believe that the proposed Universal waste idea will resolve prevalent concerns regarding lamp disposal. We feel this idea will, in actuality, increase risks associated with the hazardous waste designation. Also, by designating Fluorescent and HID lamps as hazardous waste, will create a significant paperwork burden and cost for many facilities that would not usually be considered hazardous waste generators. There are extreme amounts of 1-2 man operations who could not deal with the paperwork involved in designating these lamps is hazardous waste.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

The Agency believes that the recordkeeping requirements under the universal waste regulations are not unduly burdensome to handlers of universal waste. The universal waste rule includes a basic recordkeeping requirement to track waste shipments arriving at and leaving from handlers of large quantities of universal waste (i.e., handlers who accumulate greater than 5,000 kg total universal waste at one time). The required records may take the form of a log, invoice, manifest, bill of lading, or other shipping document and are to be maintained for three years. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement.

The Agency notes that today-s rulemaking does not specifically list hazardous waste lamps as hazardous waste. Only those hazardous waste lamps that exhibit a hazardous waste characteristic are subject to today-s rulemaking. Lamps that do not exhibit any characteristic of hazardous

waste are not subject to any hazardous waste regulation.

Under the universal waste system, conditionally-exempt quantity generators can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273 (40 CFR 273.8(a)(2)). Facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility-s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in Part 262.

DCN FLEP-00257
COMMENTER Tri-County Lighting Services, Inc.
SUBJECT UNWAS1
COMMENT The Universal waste as proposed would result in greatly reducing group relamping, ultimately increasing energy consumption by lighting systems because there will be a need for additional lamps and fixtures to compensate for light loss. This will increase the National power demand and add to air pollution because of the further energy used. This defeats the purpose relative to contamination or exposure to harmful contagions to the environment and to human health.
RESPONSE
Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. By removing some of the barriers to full Subtitle C management for lamps, a universal waste system approach could minimize concerns about decreased participation in energy-efficient lighting programs by simplifying and clarifying the requirements for hazardous waste lamp collection while maintaining full Subtitle C control over final treatment and disposal (or recycling) for these lamps. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities. Such an approach could help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation. In addition, corporations that make the commitment to these programs profit by lowering electricity bills and improving lighting quality. Participation in energy-efficient lighting programs also reduces emissions of carbon dioxide, sulfur dioxide, and nitrogen oxides, in addition to metals such as mercury from power plants that are generating electricity.

DCN FLEP-00258
COMMENTER Colorado Lighting, Inc.
SUBJECT UNWAS1
COMMENT Another concern we have for the universal waste rule, would be

> the disposal of the lamps and our concern that there is not an information structure in place to handle this disposal. We encourage recycling, but are limited to the recyclers available to handle the lamps. As we review the implications from our customers standpoint, what would happen with universal waste paperwork if all of a sudden EPA has created many new small quantity generators and new large quantity generators based on classifying fluorescent HID lamps as hazardous waste. The other concern is the fact that this would have a negative effect on the industry maintenance decreasing the amount of energy saving lighting upgrades as well as group relamping in the future, which is the backbone of our company.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR 261.5 are met.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00260
COMMENTER Salt River Project
SUBJECT UNWAS1
COMMENT SRP maintains that the universal waste option is not the answer to this regulatory dilemma. As long as lighting wastes remain subject under the Subtitle C regulatory program, there will be significant economic disincentives associated with relamping programs. Under the universal waste option, lighting wastes would remain under the most onerous and costly components of Subtitle C regulation, namely the land disposal restrictions program and hazardous waste disposal expenditures.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities. Such an approach could help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under

the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

DCN FLEP-00261
COMMENTER New Hampshire Dept. of Env. Services
SUBJECT UNWAS1
COMMENT Recommendations NHDES supports including spent mercury-containing lamps in the universal waste rule, but only if the universal rule as it is currently written is modified as described below.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility. Destination facilities (i.e., treatment, recycling, disposal facilities) remain subject to full Subtitle C regulation.

DCN FLEP-00262
COMMENTER OG&E Electric Services
SUBJECT UNWAS1
COMMENT Should the Agency decide not to promulgate the conditional exclusion, thus subjecting mercury-containing lamps to continued Subtitle C regulation, the result will be continued reluctance by the utilities and their customers to participate in, any future energy-efficient lighting programs. The costs associated with managing mercury-containing lamps under this scenario would likely cause OG&E and its customers not to actively move forward with implementation of an energy savings program such as Green Lights.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently

protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities. Such an approach could help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00264
COMMENTER Lighting Maintenance, Inc.
SUBJECT UNWAS1
COMMENT Lighting Maintenance does not believe the universal waste will remove the stigma associated with the hazardous waste designation. An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a worthwhile goal, EPA's regulation of lamp disposal should assure that a variety of safe and cost effective options are available for the disposition of spent lamps.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set

forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00264
COMMENTER Lighting Maintenance, Inc.
SUBJECT UNWAS1
COMMENT There are negative results from the implementation of the universal waste approach. First is the creation of new small-quantity generators and new large-quantity generators based on classifying fluorescent and HID lamps as hazardous waste. Based on our experience in maintaining lighting systems and the volume of lamps generated by various facilities for both group, relamping and spot relamping. The other concern is that it will severely decrease the amount of energy-saving lighting upgrades as well as the maintenance function of group relamping. The result of reducing the number of energy-saving lighting upgrades is obvious. The result if greatly reducing the practice of group relamping will be an increase in energy consumption by lighting systems due to the fact that additional lamps and fixtures will need to added to off set the light loss. This will increase the national power demand and will result in significant increase in air pollution.
RESPONSE
Under the universal waste system, conditionally-exempt quantity generators, (i.e., those generators who produce less than 100 kg of waste per month) can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273 (40 CFR 273.8(a)(2)). Facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility-s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the

generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other full Subtitle C hazardous waste management regulations, such as the regulations in Part 262.

A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between mercury lamp generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities. Such an approach could help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00265
COMMENTER Indiana Manufacturers Association
SUBJECT UNWAS1
COMMENT On behalf of the nearly 2,000 members of the Indiana Manufacturers Association (IMA), I would like to offer the following comments for consideration as the agency develops rules for managing mercury-containing lamps. The IMA strongly supports the conditional exclusion from Subtitle C regulation for mercury-containing lamps. This exclusion is essential if industry is to get past regulatory obstacles and broadly participate in the Green Lights and other demand side management programs.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the

universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities. Such an approach could help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00266
COMMENTER Power Savers, Inc.
SUBJECT UNWAS1
COMMENT Universal waste We do not believe the universal wave would solve the lamp disposal problem. This will be very costly. As you are aware, this universal waste approach was designed for relatively stable waste and not for fragile items. Power Savers is concerned about the regulating of these consolidation points and would be unlikely to use these facilities due to liability concerns. The cost involved in the small and large generators will push costs higher and will be a detriment to companies performing lighting retrofits and group relamping programs. This will increase both power demand and air pollution.
RESPONSE
Today's final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

The universal waste rule will encourage participation in energy-efficient lighting programs

because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

DCN FLEP-00267
COMMENTER ABD Lighting Management Co., Inc.
SUBJECT UNWAS1
COMMENT The proposed universal waste approach would not solve the current problems associated with lamp disposal. ABD Lighting Management Company does not believe the universal waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep the cost of lamp replacement high. The universal waste approach was not designed for fragile wastes whose risks arrived from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that could withstand the rigors of large-scale accumulation and transport. Our company is particularly concerned about the lack regulatory requirements for consolidation points and is unlikely to send our spent lamps to them due to liability concerns. An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a worthwhile goal, in our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost effective options axe available for the disposition of spent lamps, at least until a national recycling infrastructure is in place. There are two negative resulting impacts from the implementation of the universal waste approach for which we are deeply concerned. The first is the creation of 658,000 new small-quantity generators and 64,000 new large-quantity generators based on classifying fluorescent and HID lamps as hazardous waste. This estimate is based an our experience in maintaining lighting systems and the volume of lamps generated by various facilities for both group relamping and spot relamping. The other concern is that it will severely decrease the amount of energy-saving lighting upgrades as well

as the maintenance function of group relamping. The result of reducing the number of energy-saving lighting upgrades is obvious. The result of greatly reducing the practice of group dislamping will be an increase in energy consumption by lighting systems due to the fact that additional lamps and fixtures will need to be added to offset the light loss. This will increase the national power demand and will result in significant increase in air pollution.

RESPONSE

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste

management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

DCN FLEP-00268
COMMENTER Indiana Chamber of Commerce
SUBJECT UNWAS1
COMMENT We are encouraged by the Agency=s progress in educating and assisting businesses through the AGreen Lights@ program. We believe EPA=s selection of a regulatory option under the Auniversal wastes@ proposal with regard to mercury lamps runs counter to the purpose and intent of Green Lights and would prove to set back EPA=s efforts to find cost-effective alternatives to lamp disposal.
RESPONSE
The Agency appreciates the commenter=s acknowledgment of EPA=s energy-efficient lighting program. Replacing energy inefficient lighting systems under one of the energy-efficient lighting programs could require the use and eventual disposal of hazardous waste lamps.

Before today=s rulemaking, hazardous waste lamps that exhibited a toxicity characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and recordkeeping requirements are less stringent than the full Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and recordkeeping requirements. A significant number of commenters indicated that savings from reduced energy

usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00268
COMMENTER Indiana Chamber of Commerce
SUBJECT UNWAS1
COMMENT Selection of the "universal wastes" proposal will lead to excess cost for no environmentally beneficial reason and will unnecessarily draw more and more business sectors into the hazardous waste compliance scheme. This comes at a time when EPA appears to be making real progress in implementing its Green Lights program, a cooperative effort to encourage responsible but not unduly burdensome management of lighting wastes. The universal wastes option would amount to inefficient and ineffective micro-management of wastes and diverts business resources away from more pressing waste concerns. At a time when businesses may be realizing cost savings through Green Lights type initiatives, it makes little sense to add costs through further paperwork burdens that do not result in meaningful environmental improvements. The Indiana Chamber urges EPA to choose the conditional exclusion option as the wisest and most effective means of managing mercury lamps. Please make these comments a part of the record of EPA's rulemaking proceedings.
RESPONSE
The Agency appreciates the commenter=s suggestion for the management of hazardous waste lamps. All comments received by the Agency pertaining to this rulemaking, in addition to the Response to Comments Document, are found in the docket to this rulemaking.

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Management costs under the universal

waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamps generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities. Such an approach could help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR '261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262.

DCN FLEP-00270
COMMENTER The Barney Roth Company
SUBJECT UNWAS1
COMMENT The proposed universal waste approach would not solve the current problems associated with lamp disposal. The Barney Roth Company does not believe the universal waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep the cost of lamp replacement high. The universal waste approach was not designed for fragile wastes whose risks arrived from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that could withstand the rigors of large-scale accumulation and transport. Our company is particularly concerned about the lack regulatory requirements for consolidation points and is unlikely to send our spent lamps to them due to liability concerns. An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this a worthwhile goal, in our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place. An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a worthwhile goal, EPA's regulation of lamp disposal should assure

> that a variety of safe and cost effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place. These are two negative resulting impacts from the implementation of the universal waste approach for which we are deeply concerned. The first is the creation of 651,000 new small- quantity generators and 64,000 hew large-quantity generators based on classifying fluorescent and HID lamps as hazardous waste. The estimate is based on our experience in maintaining lighting systems and the volume of lamps generated by various facilities for both group relamping and spot relamping. The result of reducing the number of energy-saving lighting upgrades is obvious. The result of greatly reducing the practice of group releasing will be an increase in energy consumption by lighting systems due to the fact that additional lamps and fixtures will need to be added to offset the light loss. This will increase the national power demand and will result in significant increase in air pollution.

RESPONSE

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment.

The universal waste rule will encourage participation in energy-efficient lighting programs

because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

DCN FLEP-00271
COMMENTER RTC Marketing of Ohio
SUBJECT UNWAS1
COMMENT IT IS MY OPINION THAT THE Universal waste APPROACH WOULD NOT SOLVE THE CURRENT PROBLEMS ASSOCIATED WITH LAMP DISPOSAL. MY COMPANY DOES NOT BELIEVE THAT Universal waste WILL REMOVE THE STIGMA ASSOCIATED WITH THE HAZARDOUS WASTE DESIGNATION AND ALSO BELIEVES IT MAY ACTUALLY WORK TO INCREASE THE RISKS BY ENCOURAGING THE ACCUMULATION OF VERY LARGE QUANTITIES OF INTACT LAMPS, INCREASING THE OPPORTUNITIES FOR AND MAXIMIZING THE ENVIRONMENTAL PROBLEMS. RELAMPING CONTINUES TO KEEP THE

COST OF LAMP REPLACEMENT HIGH. THE Universal waste APPROACH WAS NOT DESIGNED FOR FRAGILE WASTES WHOSE RISKS ARRIVED FROM AIR EMISSIONS DUE TO BREAKAGE. RATHER, IT WAS DESIGNED FOR STURDY WASTES THAT COULD WITHSTAND THE RIGORS OF LARGE-SCALE ACCUMULATION AND TRANSPORTATION.

AN UNDERLYING GOAL OF THE Universal waste rule APPEARS TO BE TO ENCOURAGE THE RECYCLING OF MERCURY CONTAINING LAMPS. WHILE THIS IS A WORTHWHILE GOAL, IN MY OPINION, EPA'S REGULATION OF LAMP DISPOSAL SHOULD ASSURE THAT A VARIETY OF SAFE AND COST EFFECTIVE OPTIONS ARE AVAILABLE FOR THE DISPOSITION OF SPENT LAMPS UNTIL A NATIONAL RECYCLING INFRASTRUCTURE IS IN PLACE.
I HAVE TWO AREAS OF CONCERN FROM THE IMPLEMENTATION OF THE Universal waste APPROACH. FIRST IS THE CREATION OF 658,000 NEW SMALL QUANTITY GENERATORS AND 64,000 NEW LARGE QUANTITY GENERATORS BASED ON CLASSIFYING FLUORESCENT AND HID LAMPS AS HAZARDOUS WASTE. THIS ESTIMATE IS BASED ON OUR EXPERIENCE IN MAINTAINING LIGHTING SYSTEMS AND THE VOLUME OF LAMPS GENERATED BY VARIOUS FACILITIES FOR BOTH GROUP RELAMPING AND SPOT RELAMPING. THE RESULT OF REDUCING THE NUMBER OF ENERGY SAVING LIGHTING UPGRADES IS OBVIOUS. THE RESULT OF GREATLY REDUCING THE PRACTICE OF GROUP RELAMPING WILL BE AN INCREASE IN ENERGY CONSUMPTION BY LIGHTING SYSTEMS DUE TO THE FACT THAT ADDITIONAL LAMPS AND FIXTURES WILL BE NEEDED TO OFFSET THE LIGHT LOSS. THIS WILL INCREASE THE NATIONAL POWER DEMAND AND WILL RESULT IN A SIGNIFICANT INCREASE IN POLLUTION. MANY OF MY CUSTOMERS ARE RELUCTANT TO DO GROUP RELAMPING BECAUSE OF THE ISSUE.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste

rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps.

Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition,

today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

DCN FLEP-00272
COMMENTER Detroit Edison Company
SUBJECT UNWAS1
COMMENT Although a universal waste regulatory system may help this situation, it will not relieve many of the most onerous burdens, primarily the upcoming land disposal restriction requirements. This burden will also be felt by the lighting waste recyclers, although they probably do not yet understand that issue. Although most single aspects of the hazardous waste regulatory scheme are not unduly burdensome, when taken as a whole, inclusion in the system is economically staggering. It is not appropriate for lighting waste, that can be disposed of outside of the hazardous waste system in an environmentally sound manner, to draw facilities into this system.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and

fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN FLEP-00273
COMMENTER Lighting Maintenance, Inc.
SUBJECT UNWAS1
COMMENT The proposed universal waste approach would not solve the current problems associated with lamp disposal. LMI does not believe the universal waste rule will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for a magnitude of environmental problems. It also continues to keep the cost of lamp replacement high. The universal waste approach was not designated for relatively sturdy wastes that could withstand the rigors of large scale accumulation and transport. Our company is particularly concerned about the lack of regulatory requirements for consolidation points and is unlikely to send our spent lamps to them due to liability concerns. An underlying goal of the universal waste rule appears to be to encourage the recycling of lamps containing mercury. While this is a worthwhile goal, in our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place. There are two negative impacts resulting from the implementation of the universal waste approach for which we are deeply concerned. The first is the creation of 658,000 new small quantity generators

> and 64,000 new large quantity generators based on classifying fluorescent and HID lamps as hazardous waste. The estimate is based on our experience in maintaining lighting systems and the volume of lamps generated by various facilities for both group relamping and spot relamping. The other concern is that it will severely decrease the amount of energy saving lighting upgrades as well as the maintenance function of group relamping. The result of greatly reducing the practice of group relamping will be an increase in energy consumption by lighting systems due to the fact that additional lamps and fixtures will need to be added to offset the light loss. This will increase the national power demand and will result in a significant increase in air pollution. Therefore, this impact could dramatically result in a major cut back in our volume of business and potentially in our demise if these costs are to be passed onto the end user.

RESPONSE

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps.

Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. The final rule requires universal waste handlers to manage universal waste lamps in a way that prevents releases of the lamps or the components of the lamps to the environment. Spent lamps must be packed to minimize breakage and packaging materials must be designed to contain potential releases due to breakage during transport. Universal waste lamps must be stored in containers or packages that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to

the environment.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

DCN FLEP-00274
COMMENTER Master Lighting Service Co., Inc.
SUBJECT UNWAS1
COMMENT The proposed universal waste approach will not solve the current problems associated with lamp disposal. We feel this will work toward an increased risk, by encouraging the accumulation of large quantities of spent lamps, possible increasing the contamination of mercury at one given time and location. We at

MLS are very concerned about the lack of regulatory requirements for consolidation points and are unlikely to send our spent lamps to them due to the liability exposure. If the EPA is attempting to encourage or mandate the recycling of mercury containing lamps, then it must also be assured that a safe and cost effective infrastructure is in place to handle them. There are two negative resulting impacts from the implementation of the universal waste approach for which we are deeply concerned. The first is the creation of 658,000 new small-quantity generators and 64,000 new large-quantity generators bases on classifying fluorescent and HID lamps as hazardous waste. This estimate is based on our experience. In maintaining lighting systems and the volume of lamps generated by various facilities for both group relamping and spot relamping. The other concern is that it will severely decrease the amount of energy-saving lighting upgrades as well as the maintenance function of group relamping. The result of reducing the number of energy-saving lighting upgrades is obvious. The result of greatly reducing the practice of group relamping will be an increase in energy consumption by lighting systems due to the fact that additional lamps and fixtures will need to be added to offset the light loss. This will increase the national power demand and will result in significant increase in air pollution. It is also MLS' opinion that the record keeping of the transportation, packing, etc. of mercury containing lamps can and will become a nightmare. Resulting in increased overhead of operating our business and possible increased liability.

RESPONSE

Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste

management, recycling being one of them.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

DCN FLEP-00275
COMMENTER Aetna Corporation
SUBJECT UNWAS1
COMMENT Aetna Corporation also has some concerns about the proposed universal waste approach. We do not feel that it will solve the problems which are currently associated with lamp disposal. By encouraging the accumulation of enormous amounts of lamps, the universal waste approach actually increases the opportunity for environmental problems, as well as imposing the stigma of a

hazardous waste designation. In addition, this approach was originally designed for wastes which are sturdy enough to withstand the processes of accumulation and transport in large quantities; not for relatively fragile forms of waste whose risks are associated with emissions resulting from breakage. We would also be reluctant to send our spent lamps to consolidation points due to liability concerns arising from the lack of regulatory requirements developed for these institutions. While we consider the recycling of lamps encouraged by the universal waste rule to be a worthwhile goal, we feel that until a national recycling infrastructure is developed the EPA should provide a variety of options for safe and cost effective disposal of spent lamps. There are two particular issues resulting from the implementation of the universal waste approach, which we feel need to be addressed. First is the fact that, based on our experiences maintaining lighting systems and the vast amounts of lamps generated as a result of group and spot relamping, we estimate that approximately 658,000 new small-quantity generators and 64,000 new large-quantity generators will be created by classifying fluorescent and HID lamps as hazardous waste. Second is the decrease in both the maintenance function of group relamping and the amount of upgrades to energy-saving lighting due to lamp disposal concerns resulting from their classification as hazardous waste. As a result, energy consumption from lighting systems will increase as additional lamps are added to offset the loss of light, increasing the power demand on a national level and resulting in higher levels of air pollution.

RESPONSE

Today's final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal

waste system to the recycling of waste. Generators have several options with regard to waste management, recycling being one of them.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Spent lamps that exhibit the toxicity characteristic are subject to today's rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under '261.5 are met.

DCN FLEP-00276
COMMENTER Nine West Technologies, Inc.
SUBJECT UNWAS1
COMMENT Nine West believes that the Option II Proposal - "The Universal Waste Rule" - applies well to these lamps. Recycling is a viable option. On the other hand, non hazardous landfilling and MSW incineration do not seem to be applicable to this particular waste stream. HID lamps typically fail TCLP for lead (Siva, CA

EPA) while containing relatively large amounts of mercury. Because the mercury is contained in the inner arc tube (which will fail TCLP for mercury) the outer glass can be cleanly remelted without concern for the possibility that mercury will adhere no the glass. Other present metals - brass, stainless steel, nickel, and niobium are all recyclable. The arc tubes can be processed to recover mercury by retort or chemical means. Washed quartz arc tubes do not contain mercury and can also be recycled.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00277

COMMENTER Taunton Municipal Lighting Plant

SUBJECT UNWAS1

COMMENT TMLP's demand side management programs currently include "Lightwaves" (commercial/industrial) and "Smartlights" (residential). The "universal waste option" is not the proper resolution to the lighting waste issue because, under that option, lighting wastes are subject to the most stringent and expensive components of Subtitle C regulation, namely the land ban program and Subtitle C disposal costs.

TMLP appreciates the opportunity provided during this public comment period to submit these views in favor of the conditional exclusion from hazardous waste regulation for mercury-containing lamps and in opposition to the "universal waste option" as a solution for proper disposal of spent lighting wastes.

RESPONSE

The Agency appreciated the commenter=s submission of comments on the management of hazardous waste lamps. The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable

weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and administrative requirements for universal waste.

DCN FLEP-00278
COMMENTER Imperial Lighting Maintenance Co.
SUBJECT UNWAS1
COMMENT If the universal waste approach is implemented, more than 650,000 new small-quantity generators and more than 60,000 new large-quantity generators would be created (based on the volume of lamps generated from relampings). In addition, it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, thereby increasing the chance for greater environmental problems. The universal waste approach was not designed for fragile wastes whose risks arrive from air emissions due to breakage, but rather for sturdy wastes that could withstand the rigors of accumulation and transport. A secondary goal of the universal waste rule appears to be to encourage the recycling of mercury containing fluorescent lamps. While this is an admirable goal, in our opinion, the EPA's regulation of lamp disposal should assure that there are a variety of viable alternatives in place for the disposition of spent lamps, at least until a national recycling program is set up.
RESPONSE
Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e.,

universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

DCN FLEP-00279
COMMENTER Consumers Power Company
SUBJECT UNWAS1
COMMENT 5. The universal waste option is not the answer. As long as lighting wastes remain under the umbrella of Subtitle C regulation, there will be significant economic burdens associated with relamping programs. Under the universal waste option, lighting wastes would remain subject to the most onerous components of the Subtitle C program; the land disposal restrictions program - which is only becoming more onerous - and the costs of Subtitle C disposal.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e.,

universal waste rule is less stringent than full Subtitle C management standards).

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and administrative requirements for universal waste.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost and regulatory burden reduction (including LDR requirements) over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00280
COMMENTER Marathon Oil Company
SUBJECT UNWAS1
COMMENT Marathon does not believe that the proposed Universal waste management option is the best approach, although it is a better approach than the current system. This option still has the stigma of regulation under Subtitle C of RCRA, without the necessary justification.
RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the

toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA full C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

DCN FLEP-00281
COMMENTER Michigan Dept. of Natural Resources
SUBJECT UNWAS1
COMMENT The primary concern we have is that the proposed Universal waste R may require lamp recyclers to obtain a full RCRA permit. This requirement may be viewed as excessive by recyclers and act as a disincentive to establish new recycling facilities. In our view, the Universal waste R as proposed may not encourage recycling, as stated in paragraph 5 on page 2 of the draft letter. This paragraph indicates that the Universal waste R would encourage the establishment of recyclers. Currently 16 of the 24 known lamp recyclers are located in four states, MN (7), CA (2), WI (4), MI (3). It is unknown what the permitting processes are, if any, or what the recycling mandates are in these states. We do not think any of the states require a full RCRA permit for these facilities.
RESPONSE
Today-s rulemaking adds hazardous waste lamps to the universal waste regulations under Part 273. Today-s rule does not include permitting requirements for facilities recycling hazardous waste lamps. Under the universal waste rule, destination facilities (i.e., recycling facilities and treatment facilities) are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment and storage facilities. Although destination facilities are subject to RCRA Subtitle C hazardous waste management requirements for treatment and storage activities, the Agency does not have the authority to regulate the specific process of reclamation under the scope of this rulemaking. EPA believes that with adequate state oversight, hazardous waste lamps can be safely recycled and the hazardous constituents reclaimed.

DCN FLEP-00281
COMMENTER Michigan Dept. of Natural Resources
SUBJECT UNWAS1
COMMENT The draft letter also indicates that the conditional exemption option would cause the creation of a resource intensive regulatory system, a system difficult to enforce, and one that would require tracking of whether the lamps went to a landfill or an incinerator. The Universal waste R provides a regulatory mechanism to

enforce proper disposal and recycling of the lamps but the Universal waste R still requires waste stream tracking. It is unlikely that there is a simple way to implement a system to manage the fate of fluorescent light bulbs from every commercial building in the country within the RCRA system.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The universal waste rule includes a basic recordkeeping requirement to track waste shipments arriving at and leaving from handlers of large quantities of universal waste (i.e., handlers who accumulate greater than 5,000 kg total universal waste at one time). The required records may take the form of a log, invoice, manifest, bill of lading, or other shipping document and are to be maintained for three years. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement.

DCN FLEP-00282

COMMENTER Michigan Dept. of Natural Resources

SUBJECT UNWAS1

COMMENT The conditional exemption option assumes that RCRA generators would ensure that the lamps would be sent to land disposal facilities as opposed to incinerators. Unless the generator specifically contracts with a waste hauler to dispose of the lamps in a municipal solid waste landfill, they would not be able to ensure that the ultimate disposition is an incinerator. Tracking this disposal would be resource intensive and difficult to enforce. If the Universal waste R option were chosen, the large quantity generators would be required to dispose of their lamps in a more environmentally protective manner. The Universal waste R would provide a mechanism to enforce proper disposal and recycling of the lamps. However, the Universal waste R option should include a provision that allows recycling facilities storage of mercury-containing lamps for a limited time period without being required to obtain a RCRA permit. This would help alleviate the biggest impediment for the operation of new recycling facilities, which is the RCRA permit

requirement.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps.

Destination facilities, including recycling facilities, remain subject to full hazardous waste regulation. A recycling facility that does not store universal waste lamps prior to recycling lamps is subject only to 40 CFR Part 261.6(c)(2).

DCN FLEP-00284

COMMENTER Virginia Power

SUBJECT UNWAS1

COMMENT Management of lamp waste as hazardous waste under the current Subtitle C regulations or inclusion of lamp waste in the universal waste rule, will significantly increase project costs and likely make most retrofits fail the Green lights economic criteria. As a result, Virginia Power will have to reevaluate the benefits of participation in Green Lights. Virginia Power has also incorporated energy efficient lighting retrofits into programs promoting economic commercial building energy efficiency options to customers. The method and extent of lighting retrofit promotion in these programs will also have to be reevaluated if lamp waste continues to be managed under current Subtitle C regulations or included under the universal waste rule.

RESPONSE

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency

performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00285
COMMENTER Legislative Commission on Waste Mgmt.
SUBJECT UNWAS1
COMMENT The EPA has the opportunity to include these lamps in the Universal waste rule (Universal waste R). Allowing for the easy recycling of these lamps, without exempting them completely, would be a wise and proper move for the EPA to make. Lamp recycling is a growing and successful business in Minnesota; in fact, we have three operating facilities. The Universal waste R is a pro-business alternative, that still allows for the protection of the environment. The State of Minnesota has worked hard to protect its environment from mercury and other hazardous materials. It would be a tragedy for the EPA to negate these efforts by passing rules that would allow other states to impact the quality of Minnesota's environment. Mercury does not recognize state boundaries and will often travel long distances from the source. The EPA cannot depend on, nor expect, one state's government to protect another state's environment; that is your responsibility.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency notes that many States have already adopted or are considering adopting universal waste standards for spent lamps. Since this rule is not promulgated pursuant to HSWA it is applicable on the effective date only in States that do not have final RCRA authorization. Authorized states that wish to adopt this rule will have to seek authorization for the adoption of spent lamps to their universal waste programs. States are not required to adopt less stringent regulations, and therefore, need not adopt the universal waste regulations for spent lamps. However, EPA strongly encourages them to do so, not only to achieve the most benefits of the universal waste program but also to reduce the complexity of interstate transportation of these universal wastes.

DCN FLEP-00285
COMMENTER Legislative Commission on Waste Mgmt.
SUBJECT UNWAS1
COMMENT In conclusion, we respectfully request that you not exempt mercury-containing lamps from hazardous waste regulation and, instead, include them in the Universal waste rule.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00286
COMMENTER Creative Lighting, Inc.
SUBJECT UNWAS1
COMMENT Creative Lighting does not believe the universal waste approach is the answer. It is impractical if not ridiculous to believe that the recycling industry is capable of removing a significant amount of mercury from spent lamps. We must have cost effective means of lamps disposal if compliance is expected and to be insured. The universal waste approach will most likely cause large quantities of lamps spent to be stock piled which could create additional hazards. These type of requirements will vastly accelerate the cost of retrofit and energy saving conversion measures which will delay our energy goals and significantly increase combustion of fossil fuels which will in turn generate significantly more dangerous emissions of mercury into the atmosphere totally overcoming the benefit expected by universal waste approach. Everyday more and more of our customers delay retrofit due to the liability and regulation issues of lamps disposal rules.

RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities. Such an approach could help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00287
COMMENTER E.F. Friesenhahn
SUBJECT UNWAS1
COMMENT E.F. Friesenhahn appreciates the opportunity to comment on the

proposed rule, "Hazardous Waste Management System; Modification of the Hazardous Waste Program; Mercury-Containing Lamps", Federal Register July 27, 1994 (59 FR 38288). Of the two proposed options, E.F. Friesenhahn supports the inclusion of mercury-containing lamps in a modified Universal waste Management System. This recommendation is based on the following considerations. Mercury increase in the environment. With the available technology for the recycling of mercury-containing lamps, is not environmentally sound to allow these lamps to be disposed of at Subtitle D, non-hazardous waste landfills. It is clear, even with management practices at the landfill facilities, a substantial airborne release of mercury will occur during normal landfill operations. This fact is also proven at contaminated sites, such as two landfills in New York State. In addition, we cannot base a decision on the potential release of memory through landfill leachate on the fact that no substantial data appears at this time. The potential clearly exists for groundwater contamination of mercury if allowed to be disposed of at these facilities. Many states have taken an aggressive approach to the mercury problem. This has identified rivers, lakes, and animal contamination of mercury. There are many methods to reduce the amount of mercury released to the environment. The Universal waste concept for mercury-containing lamps will drastically reduce one source of mercury emissions. Therefore, the EPA should adopt the Universal waste program with mercury-containing lamps concurrently while addressing other sources.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency believes that some minimum technical controls are needed under RCRA to minimize the release of mercury from lamps into the environment. Although most mercury emissions are associated with combustion, all releases contribute to the mercury reservoirs in land, water and air.

As the commenter notes, The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from

municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes. The Agency published a Notice of Data Availability on July 11, 1997 (62 FR 37183). This notice presented data collected by the Agency and an assessment of potential mercury emissions from the management of hazardous waste-containing lamps under several regulatory approaches.

DCN FLEP-00287
COMMENTER E.F. Friesenhahn
SUBJECT UNWAS1
COMMENT Associated costs. In considering the comparison between the actual cost of disposal and recycling, combined with the short and long-term liabilities associated with the landfilling of these materials, the Universal waste option is clearly justified. Since a high-majority of lamps fail TCLP, they meet the definition of a hazardous waste. The Universal waste option will provide regulatory relief for generators of these materials. Cost associated with recycling will continue to decrease based on the capacity of the facilities, competitive issues, and overall efficiencies. The financial analysis conducted by the EPA has been short sighted, since it is based on existing conditions rather than future facility operations.

For all the reasons stated above, E.F. Friesenhahn again supports the Universal waste option for mercury-containing lighting devices.

RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00296
COMMENTER State of Ohio EPA
SUBJECT UNWAS1
COMMENT To reiterate, the Ohio EPA is not in favor of a conditional exclusion but would like to see lamps managed under a Universal Waste rule provision establishing sound-management standards for the storage, handling, transportation, and recycling of lamps, that would require that lamps be managed under Subtitle C requirements when shipped to the end destination or require recyclers to obtain a hazardous waste permit.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards) for generators, storage facilities, and transporters, but also allows the Agency to set specific management standards. Destination facilities (i.e., treatment, recycling, and disposal facilities) remain subject to full Subtitle C regulation. Recycling facilities, however, are exempt from hazardous waste permitting under 40 CFR'261.6(c)(2). Today-s rule does not require facilities that recycle hazardous waste lamps to obtain a permit on a federal level (individual states may have more stringent requirements for recycling facilities).

DCN FLEP-00296
COMMENTER State of Ohio EPA
SUBJECT UNWAS1
COMMENT Inclusion of a recycling requirement - The Universal waste rule should incorporate a condition that lamps are recycled. Under the recycling provision, lamps should not require manifesting to the receiving facility. The recycling facility should not have to obtain a hazardous waste permit to process/handle lamps. Furthermore, lamps should not be subject to Subtitle C standards from generation through recycling, provided the Universal waste management requirements are satisfied and any waste generated at the site is managed in accordance with all applicable requirements. The recycling facility should follow the generator/consolidation point storage/handling standards. A sunset provision can be used to determine or measure if these reduced standards are working. If not, more appropriate requirements can be added. Requiring recycling facilities to go through the permitting process is time- consuming and places an additional load on Ohio's permitting process. If the U.S. EPA

feels that the management of fluorescent lamps does not pose a threat to human health and the environment, it is not clear why it would be necessary to require recyclers to obtain a hazardous waste permit to recycle mercury lamps. If recycling is not possible, the lamps must be delivered to a permitted, treatment, storage, and disposal facility (TSDF) and must be handled in compliance with all applicable hazardous waste requirements.

RESPONSE

Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of spent mercury-containing lamps. Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility. Under the universal waste rule, destination facilities (i.e., recycling facilities and treatment facilities) are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment and storage facilities. Although destination facilities are subject to RCRA Subtitle C hazardous waste management requirements for treatment and storage activities, the Agency does not have the authority to regulate the specific process of mercury reclamation under the scope of this rulemaking. EPA believes that with adequate state oversight, hazardous waste lamps can be safely recycled and the mercury and other hazardous constituents reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions since fact that it is in the recycling facility's best economical interest to strive to limit mercury releases since mercury is essentially the product of the recovery process.

The final rule does not affect a facility=s status related to other federal and state statutes and regulations. Lamp recycling facilities must still comply with all applicable Clean Air Act requirements and all applicable worker safety standards under OSHA. Residuals from recovery operations must be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed as hazardous waste.

DCN FLEP-00297
COMMENTER Florida Dept. of Environ. Protection
SUBJECT UNWAS1
COMMENT The Department prefers the second option of including mercury-containing lamps in the proposed Universal waste System

Rule. While the conditional exclusion has some merit, it is believed that it would be unwise to issue a precedent-setting exclusion from the hazardous waste regulations for a waste that is characteristically hazardous most of the time! In addition, it is thought that a universal waste system approach can address the hazardous waste concerns of those considering relamping under utility demand side management or the EPA's Green Lights programs. Even though mercury emissions from MSW landfill leachate and gas to the environment appear to be small, more study is needed to verify these assumptions based on the existing limited data. Also very little data exists that depicts the emissions from broken lamps during collection (e.g. a dumpster), transportation in a garbage truck, or disposal at the landfill face. This is of particular significance due to Florida's year round warm temperatures.

CONCLUSION In conclusion, the Department supports the Universal Waste System Option Proposed by the EPA with the above qualifications. In addition to Promulgating such a rule, however, it is recommended that the EPA also take action to encourage the development of recycling markets for the recovered mercury. As has been done for paper and other recyclables, encouraging the purchase of fluorescent or HID lamps containing a certain percentage of recycled mercury through government procurement standards should be initiated By helping to create closed loop recycling markets for the recovered mercury from MCLs and MCDs, we can reduce the potential for mismanagement of the recovered mercury either in or out of the U.S. and help ensure that it does not contribute to the global or regional mercury burdens.

While the Department prefers the second option of including mercury-containing lamps under the Universal waste System approach above, it believes that EPA's proposals in this regard need to be modified as follows. However, the Department does support the prohibition on shipping mercury-containing lamps, whether or not they are characteristically hazardous for mercury, to MWCS and thinks that this should be added to the universal waste system approach.

MANAGEMENT STANDARDS While the EPA indicated that mercury-containing lamps (MCLs) would be regulated under the general framework proposed under the Universal waste rule, it

did not include specific provisions under 40 CFR 261.9, 264.1 and 265.1 that would exempt generators from counting MCLs as part of their hazardous waste generation if they follow the special collection system requirements set up for then under this rule. This provision should be added.

RESPONSE

Today=s rule adds hazardous waste lamps that are hazardous waste because the lamps exhibit a hazardous waste characteristic for mercury and other hazardous constituents to the scope of the universal waste rule (40 CFR Part 273). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

The Agency believes that some minimum technical controls are needed under RCRA to minimize the release of mercury from lamps into the environment. Although most mercury emissions are associated with combustion, all releases contribute to the mercury reservoirs in land, water and air.

The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes. The Agency published a Notice of Data Availability on July 11, 1997 (62 FR 37183). This notice presented data collected by the Agency and an assessment of potential mercury emissions from the management of hazardous waste-containing lamps under several regulatory approaches.

Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CRF'261.5 are met.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A

significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs. Although the Agency has not included hazardous waste lamps as a designated item under the federal government procurement program, EPA believes that today-s rulemaking will increase recycling of lamps.

DCN FLEP-00298
COMMENTER New York Power Authority
SUBJECT UNWAS1
COMMENT NYPA concludes that the "universal waste option" is not the most comprehensive solution for lighting waste because that would unjustly subjugate all lighting waste (including incandescent and neon) to the most rigid provisions of Subtitle C RCRA regulation, especially the land disposal restriction program. The regulatory burden presented by overly stringent regulation would have a negative impact on all lighting programs across the country. if the benefits of efficient lighting are weighed against the potential harm presented by the 3.8% of mercury in qualified municipal solid waste landfills due to lighting waste, then facilitating the promotion of efficient lighting programs clearly makes sense from an environmental, human health and regulatory point of view.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards. By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased. The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a

threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and administrative requirements for universal waste.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00300
COMMENTER ElectricSave Company
SUBJECT UNWAS1
COMMENT C POSITION ON Universal waste The proposed universal waste approach would not solve the current problems associated with lamp disposal. The Company does not believe the universal waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep the cost of lamp replacement high. The universal waste approach was not designed for fragile wastes whose risks arrived from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that could withstand the rigors of large-scale accumulation and transport. Our company is particularly concerned about the lack regulatory requirements for consolidation points and is unlikely to send our spent lamps to them due to liability concerns. An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a worthwhile goal, in our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place. There are two negative resulting impacts from the implementation of the universal waste approach for which we are deeply concerned. The first is the creation of 658,000 new small-quantity generators and 64,000 new

large-quantity generators based on classifying fluorescent and HID lamps as hazardous waste. This estimate is based on our experience in maintaining lighting systems and the volume of lamps generated by various facilities for both group relamping and spot relamping. The other concern is that it will severely decrease the amount of energy-saving lighting upgrades as well as the maintenance function of group relamping. The result of reducing the number of energy-saving lighting upgrades is obvious. The result of greatly reducing the practice of group relamping will be an increase of energy consumption by lighting systems due to the fact tat additional lamps and fixtures will need to be added to offset the light loss. This will increase the national power demand and will result in significant increase in air pollution. (Any example of particular customers delaying or stopping lighting upgrades or group relamping due to lamp disposal concerns would be very helpful)

RESPONSE

Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal

waste system to the recycling of waste. Generators have several options with regard to waste management, recycling being one of them.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps.

Consolidators are subject to the standards for universal waste handlers. A handler may choose to send his waste directly to a destination facility if he so desires.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Spent lamps that exhibit a hazardous waste characteristic are subject to today's rulemaking. Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

DCN FLEP-00301
COMMENTER Minnesota Pollution Control Agency/MOEA
SUBJECT UNWAS1
COMMENT The MPCA and MOEA strongly support the Universal waste (Universal waste)

Management alternative for lamps and strongly oppose the Conditional Exemption (CE) alternative. Our specific detailed comments in support of this position are provided as Enclosure

1. To assist EPA in reviewing our comments, the remainder of this cover letter provides a brief summary of our detailed comments in the order they appear in Enclosure 1. We provide twelve comment areas. The first eight comment areas involve general issues raised by the rulemaking. The final four areas provide specific comments to the proposed rule.

2.The Universal waste Alternative Allows Nation to Address Mercury Pollution from Lamps. The Universal waste alternative addresses local acute health effects from local release concentrations as well as the environmental and health effects related to total mercury releases. The Universal waste alternative allows the nation to work to eliminate releases from lamps properly promotes recycling disposal, spurs development of lamp recycling facilities and new lamp technology, and allows generators to lower management costs making lighting upgrades more attractive. A few minor changes should be made to the Universal waste rule to: a) permit the shipment of lamps to final destination facilities through avenues other than a hazardous waste transporter; b) prohibit lamp crushing; and c) regulate lamp recycling facilities under the Category D requirements of EPA's Definition of Solid Waste Roundtable process.

4. Consistency with Pollution Prevention Waste Hierarchy. The federal Pollution Prevention Act of 1990 gives priority to recycling over disposal. The Universal waste alternative is consistent with that hierarchy. The CE alternative is not.

We appreciate this opportunity to express our position regarding an issue of great concern to the nation's environment. By including lamps under the Universal waste regulatory framework, EPA will be taking an important step towards ensuring that lamps do not become a part of the solid waste stream, where they represent a significant environmental concern.

2. The Universal waste (Universal waste) Alternative Allows Nation to Address Mercury Pollution from Lamps We strongly support the Universal waste alternative for lamps. The Universal waste alternative puts the nation in a position to address this significant source of mercury contamination. As explained previously, total mercury releases are just as important as local release concentrations in order to protect both human health and the environment. The Universal waste alternative addresses local acute health effects from local

release concentrations and the environmental and health effects related to total mercury releases. Lamps also fit all of the criteria (e.g., waste characteristics, generation patterns, recyclability) for management as Universal waste, as described in U.S. EPA's Universal waste Proposal (58 FR 8102). Including them in the Universal waste rule will address many business concerns. A. Universal waste rule Benefits. Managing lamps as Universal waste will have many benefits: (1) The Universal waste alternative properly promotes recycling over disposal according to the federal waste management hierarchy and President Clinton's Executive Order on Recycling. (2) The Universal waste alternative will spur development of lamp recycling facilities around the country and commercialize proven lamp recycling technology.

(5) Lamps will not affect a business's hazardous waste generator status. Businesses will not become hazardous waste generators solely due to lamps and other Universal wastes.

(4) We recommend that lamp recycling facilities be regulated according to the Category D (commercial off-site recycling facility) requirements that have been developed in EPA's Definition of Solid Waste Roundtable process. The MPCA is currently regulating Minnesota's lamp recycling facilities under individually negotiated Subpart X Compliance Agreements and has deferred rule development until a federal rule framework is developed.

4. Consistency with Pollution Prevention (P2) Waste Hierarchy. The federal Pollution Prevention Act of 1990 gives priority to recycling over disposal. The Universal waste alternative is consistent with that waste management hierarchy. The CE alternative is not. Under the Universal waste alternative, recycling and hazardous waste disposal are both lamp management alternatives. Under the CE alternative, recycling and solid waste land filling are lamp management alternatives. Proponents of the CE alternative may argue that both alternatives are, therefore, equal in terms of promoting recycling over disposal. However, under scrutiny, the flaws of this argument are apparent. Lamps are not like some other hazardous wastes (e.g., lead-acid batteries) that have an inherent value after use. Lamps, when generated as waste, have a negative value. The cost to recycle a lamp at a lamp recycling facility is far greater than the cost of disposal in a solid

waste landfill if generators are allowed to discard lamps with normal trash. Lamp recycling cannot compete in the marketplace with this solid waste landfill option. Where disposal in a solid waste landfill is an acceptable option, lamp recycling capacity will fail to materialize or cease to exist. Some have argued that special collection systems could be established under the CE alternative to ensure that collected lamps are not mismanaged and only go to solid waste landfills or recycling facilities, making recycling more competitive with solid waste land filling. However, this argument assumes that adequate and competitive recycling capacity will even exist once the solid waste landfill option is allowed. Making the extensive capital investment necessary to build and operate a lamp recycling facility requires certainty that adequate feedstock can be obtained and the investment will be recovered. A landfill's business does not hinge on receiving lamps. Landfills will continue to operate whether they receive lamps or not. Given the uncertainties associated with competing with a landfill option, our experience in Minnesota with these types of waste (e.g., used oil filters, waste tires) has shown that the private sector is unwilling to make such a risky investment.

Including Universal waste as a fully developed alternative would be consistent with many other EPA activities. EPA has established a surface water standard that is designed to protect against mercury bioaccumulation. EPA is developing new mercury emission standards under the Clean Air Act Amendments. EPA's Green Lights Program has always included the cost of lamp recycling or hazardous waste disposal in its cost and savings estimates and these are estimated to be one percent of lighting life cycle costs ("Lighting Waste Disposal," January 1994). EPA Regions II, III, and V are aggressively addressing mercury as a Great Lakes Priority Pollutant. This is not a regional issue, but is a pilot project for national mercury reduction and control efforts. The Minnesota Pollution Control Agency has received a one-year grant from the EPA to develop innovative lamp and PCB education and management programs in the Lake Superior basin states of Minnesota, Wisconsin, and Michigan. This program is dependent on a regulatory framework that promotes consistent management practices in the three states.

In closing, I thank you for including my staff in the May 4, 1994, meeting and again urge that OMB and EPA issue a full

proposal for Universal waste as a lamp management alternative. Minnesota has demonstrated that large scale lamp collection and recycling is feasible, cost effective, and keeps mercury out of the environment. Rechargeable battery and mercury thermostat collection programs are being successfully implemented in the state under an EPA-approved Special Waste Pilot project that mirrors the federal Universal waste Proposal. These programs can work on a national level and it is time to start developing and operating them.

(4) Including lamps in the Universal waste management system will raise awareness of the energy conservation benefits of mercury lighting and the need to properly manage mercury-containing wastes.

12. Impact on Lighting Upgrades and Energy Efficiency In several places. The proposal contains statements regarding the negative impact of lamp regulation on EPA's Green Lights Program and states that the costs of lamp regulation provide a financial barrier to upgrades. The EPA Green Lights Program has always based its cost and savings estimates on managing lamps as hazardous waste. [Note 25:"Lighting Waste Disposal." EPA Green Lights Program. January 1994.] Subtitle C management of lamps or lamp recycling represent 1 to 2 percent of the total cost of electric lighting. Labor and electricity each represent a much larger portion of total lighting cost. The cost of lamp recycling is minor compared to the energy savings associated with lighting upgrades. Businesses, whether involved in the Green Lights Program or not, have been concerned about becoming hazardous waste generators solely due to lamps. This is precisely the concern that the Universal waste Proposal has been designed to address and will resolve when it is promulgated. The Universal waste alternative for lamps should be chosen because it addresses this concern and ensures that mercury releases from waste lamps will be controlled. The proposal provides some estimates of avoided mercury releases associated with lighting efficiency upgrades. Mercury emissions from fossil fuel electric generation plants are estimated to be 0.0428 mg/kWh. Full implementation of Green Lights is estimated to reduce emission of mercury by 9.7 metric tons by the year 2000. We are unable to find this information in the cited document [Note 26:"Green Lights Program: The First Year." U.S. EPA. Office of Air and Radiation. Washington, D.C. (U.S. EPA 1992b)] or otherwise verify them.

However, it must be pointed out that a reduction of 9.7 metric tons in the ten years between 1991 and 2000 is dwarfed by the potential release of 20 to 60 metric tons of mercury per year in discarded lamps. Supporters of the CE alternative argue that the liability associated with hazardous waste management is a major impediment to lighting upgrades and point to mercury reclamation facilities on the Superfund National Priority List (NPL). However, even under the CE alternative lamps are still a hazardous waste. The CE alternative simply proposes to allow this hazardous waste to be disposed of in a solid waste landfill. Therefore the liabilities would remain. Supporters of the CE alternative fail to recognize the number of solid waste landfills on the NPL. The mercury reclamation facilities on the NPL often referred to by supporters of the CE alternative are not lamp recycling facilities. Finally, one cannot ignore mercury releases from discarded lamps no matter how small since they may contain more mercury than they reduce via energy conservation. The average mercury content of a four-foot fluorescent lamp is 42 milligrams (mg). The mercury content of coal is between 0.02 and 0.2 mg per kilogram of coal. Assuming coal provides 2.860 watt-hours of electricity per kilogram, powering a 40-watt fluorescent lamp for 20,000 hours emits between 5.6 and 56 mg of mercury. Producing an equivalent amount of light from an incandescent lamp consumes four times as much electricity, emitting four times as much mercury, or between 22.4 and 224 mg, from a coal-fired power plant. The mercury contained in the 40-watt lamp has the potential to release an additional 42 mg to the environment unless it is recovered through recycling. A four-foot fluorescent lamp that is not recycled has the potential to release a total of between 47.6 and 98 mg of mercury to the environment. Without recycling the used lamp, the use of the fluorescent lamp will result in greater release of mercury than the use of incandescent lighting whenever the mercury content of coal is less than 0.06 mg/kg, which is about equal to the U.S. average for sub-bituminous coal. [Note 27: "Green Lights Program: The First Year." U.S. EPA. Office of Air and Radiation. Washington, D.C. (U.S. EPA 1992b)] These estimates assume 100 percent of the nation's electricity is generated by coal. Actual releases from electric generation will be less than the estimates provided here since coal and other fossil fuels account for only a portion of the nation's electricity.

RESPONSE

EPA thanks the commenter for the information provided and the support for the universal waste option. Today=s rule adds hazardous waste lamps that are hazardous waste because the lamps exhibit a hazardous waste characteristic to the scope of the universal waste rule (40 CFR Part 273). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps. The Agency has determined that spent hazardous waste lamps meet most of the criteria established for designating a material as universal waste including: hazardous waste lamps frequently exhibit the hazardous waste toxicity characteristic for mercury; spent lamps are frequently generated in a wide variety of settings other than the industrial setting usually associated with hazardous waste generation; spent lamps are generated by a large number of generators; and the addition of hazardous waste lamps to the scope of the universal waste regulations may facilitate the removal of spent lamps from the municipal waste stream.

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The current universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). The final rule for hazardous waste lamps retains the treatment prohibition for universal waste handlers and applies the prohibition to handlers of hazardous waste lamps. The definition of treatment under RCRA includes Aany method, technique, or process...designed to change the physical, chemical, or biological character or composition of any hazardous waste, so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.@ The shredding or crushing of hazardous waste lamps clearly falls within the definition of treatment under RCRA (40 CFR 260.10).

Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR '261.5 are met.

Energy-efficient lighting consumes less electricity, therefore reducing the amount of mercury emissions from utility boilers. Electric utility plants are one of the biggest sources of mercury emissions. Corporations that make the commitment to participate in energy efficient lighting programs benefit by lowering electricity bills and improving lighting quality. If energy-efficient lighting were fully implemented in all facility space in the United States, it would save over 150 billion kilowatt hours of electricity annually. In addition to a reduction in mercury emissions, this would result in reductions in carbon dioxide, sulfur dioxide and nitrogen dioxides equivalent to 5 percent of U.S. utility emissions, curbing acid rain and smog and helping to slow the greenhouse effect. The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today-s final rule, which retains requirements for hazardous waste lamps to ultimately be managed in accordance with the full Subtitle C hazardous waste management requirements, may provide incentives for lamp manufacturers to pursue additional source reduction efforts to reduce or eliminate the amount of mercury used in the manufacture of fluorescent tubes. If source reduction is pursued aggressively by the fluorescent lamp manufacturing industry, the overall contribution of mercury from fluorescent lamps to municipal solid waste could continue to decrease over time.

DCN FLEP-00301
COMMENTER Minnesota Pollution Control Agency/MOEA
SUBJECT MERC
COMMENT If there is disagreement about whether lamps represent a minor threat or a major threat to the environment, we should err on the side of the environment. With the renewed commitment to environmental protection of the Clinton-Gore administration, the time is right to publish the universal waste Proposal for lamps and allow it to be fully considered and debated.
RESPONSE

In today=s rule, EPA is adding hazardous waste lamps to the universal waste regulations. The universal waste rule represents a significant cost reduction over Subtitle C management requirements for generators, collectors, and transporters, yet ensures that lamps are recycled or treated in an environmentally protective manner at Subtitle C facilities. Fewer hazardous waste lamps will be managed in the municipal solid waste stream, therefore reducing the number of lamps going to municipal combustors and decreasing the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks).

The Agency believes that the data and information provided to the Agency and the Agency=s own studies and analyses that were conducted during the period of time since the mercury-containing lamps rulemaking was proposed provide adequate evidence of the behavior of mercury in the environment and the potential releases of mercury to the environment to support today=s final rule. The Agency notes, however, that should sufficient and compelling information related to the behavior of mercury become available in the future, the Agency can always re-evaluate the standards promulgated in today=s final rule.

DCN FLEP-00302
COMMENTER Conserve Electric Company, Inc.
SUBJECT UNWAS1
COMMENT The proposed universal waste approach would not solve the current problems associated with lamp disposal. The Conserve Electric Company, Inc. does not believe the universal waste will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, increasing the opportunities for and magnitude of environmental problems. It also continues to keep the cost of lamp replacement high.

There are two negative impacts from the implementation of the universal waste approach for which we are deeply concerned. The first is the creation of 658,000 new small-quantity generators and 64,000 new large-quantity generators based on classifying fluorescent and HID lamps as hazardous waste. This estimate is based on our experience in maintaining lighting systems and the volume of lamps generated by various facilities for both group relamping and spot relamping.

RESPONSE
Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to

the full RCRA Subtitle C management standards.
By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps. The Agency notes that all parties can still be held liable for releases of hazardous constituents from hazardous waste, regardless of the management requirements under RCRA.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

DCN FLEP-00303
COMMENTER IllumElex Corporation
SUBJECT UNWAS1
COMMENT The proposed universal waste approach would not solve the current problems with lamp disposal. IllumElex Corporation does

not believe that the universal waste approach will remove the stigma associated with the hazardous waste designation and also believes it may actually work to increase risks by encouraging the accumulation of large quantities of lamps, increasing the opportunities for environmental problems. There are two negative aspects of the implementation of the universal waste approach. The first is the addition of approximately 658,000 new small quantity generators and 64,000 new large quantity generators based upon the classification of flourescent and HID lamps as hazardous waste.

RESPONSE

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule will greatly facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps. The Agency notes that all parties can still be held liable for releases of hazardous constituents from hazardous waste, regardless of the management requirements under RCRA.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status (40 CFR'261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR'261.5 are met.

DCN FLEP-00305
COMMENTER Sierra Club National Solid Waste Comm.
SUBJECT UNWAS1
COMMENT The Sierra Club National Committee on Solid Waste supports the management of mercury-containing lamps under the universal waste management system.

In summary, the Sierra Club National Committee on Solid Waste strongly urges management of waste lamps under the universal waste management system. Further, the EPA should take additional steps to promote recovery and recycling of mercury from lamps and regulate facilities involved in this process.

RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than Subtitle C management standards).

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00306
COMMENTER Lighting Maintenance and Service, Inc.
SUBJECT UNWAS1
COMMENT LMS concludes that current lamp disposal problems would not be solved using the proposed universal waste approach. The stigma associated with the hazardous waste designation would actually

work to increase risks by encouraging the accumulation of enormous quantities of intact lamps, increasing the possibility for and magnitude of environmental problems. It would also elevate lamp replacement costs. The universal waste approach was not designed for fragile wastes whose risks are derived from air emissions due to breakage, but for sturdier wastes which could withstand the rigors of large-scale accumulation and transport. We are very troubled about the lack of regulatory requirements for consolidation points and would be apprehensive to send our spent lamps to them based on liability concerns.

The implementation of the universal waste approach would have two negative impacts which distress our company. The first is the creation of 658,000 new small-quantity generators and 64,000 new large-quantity generators based on classifying fluorescent and HID lamps as hazardous waste. We base this estimate on our experience in lighting maintenance and the volume of lamps generated by group and spot relamping various facilities.

RESPONSE

Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full recordkeeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, have been subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased. The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste

rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency notes that all parties can still be held liable for releases of hazardous constituents from hazardous waste, regardless of the management requirements under RCRA.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Spent lamps that are managed as universal waste under 40 CFR Part 273 are not included in a facility's determination of hazardous waste generator status ('261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the Universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under 40 CFR '261.5 are met.

DCN FLEP-00307
COMMENTER Associated Industries of Massachusetts
SUBJECT UNWAS1
COMMENT Adding mercury-containing lamps to the EPA's Universal waste Proposal would also be a step in the right direction, albeit a small one. Nevertheless, any attempt to streamline the present complex regulatory structure should be commended. Adopting option #2 would ease the burden of disposing of the lamps by doing away with the necessity of certain reporting obligations as well as the need to obtain certain hazardous waste transporting permits.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00308
COMMENTER All-Phase Construction

SUBJECT UNWAS1
COMMENT The proposed universal waste approach would further complicate the current lamp disposal issue and consequently put businesses struggling with various regulations into an even worse state.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased. The transportation, accumulation, notification and recordkeeping requirements are less stringent than those in the RCRA Subtitle C management program.

DCN FLEP-00309
COMMENTER Bethlehem Apparatus Company
SUBJECT UNWAS1
COMMENT In summary, Bethlehem recommends the continued regulation of Lamps as hazardous waste and is in favor of EPA implementing the regulatory structure defined as Option 2 in the Proposed Rule, subject to several modifications proposed herein. Option 2 will provide a greater degree of environmental protection than Option 1 and will still permit the EPA to foster the goals of the Green Lights Program while reducing the current regulatory burden and costs associated with recycling and/or disposal of the Lamps.

III. ADOPTION OF OPTION 2 - THE Universal waste MANAGEMENT SYSTEM FOR LAMPS FULFILLS THE GOALS OF RCRA. Of the two options presented, there is little question that Option 2, inclusion of Lamps in the proposed Universal waste Management System, is the option which directly conforms with RCRA's statutory mandate to protect human health and the environment by fostering the recovery of hazardous waste materials. Indeed, it is arguable that Option 1 could be directly violative of RCRA's statutory mandate. As detailed below, Bethlehem believes that several minor modifications to Option 2 will provide for a fully functional, cost-effective and environmentally sound system which will minimize the releases of mercury into the environment.

2. Promotion of EPA's Green Lights Program Option 2 would

act to promote participation in the Green Lights Program to the same, if not greater extent as Option 1. The additional cost estimated by EPA to be attributable to compliance with the record-keeping and labeling requirements attendant with Option 1 are offset by the potential cost savings, in terms of reduced liability, associated with management of the wastes as hazardous wastes. A specific, yet potentially unlimited liability under CERCLA is associated with the disposal of hazardous substances at MSW landfills. Liability could attach to generators of the Lamps by virtue of the presence of a discrete liquid hazardous substances, which heretofore have also been regulated as hazardous wastes. A property regulated and maintained hazardous waste recycling facility is less likely to become a CERCLA site than are the numerous MSW facilities across the country. The transaction costs alone, which arise from a CERCLA site, far outweigh the additional costs of generator requirements in the Universal waste Management System. For example, EPA estimates that the annual average cost for a large quantity generator under Option 2 would be $2,000-$2,250. This amount would not even cover the cost of responding to a CERCLA information request letter. Thus, large quantity generators will feel more secure by undertaking the large scale relampings necessary for participation in the Green Lights Program if the hazardous waste constituents in the Lamps are required to be processed for recovery rather than permitted to be disposed of indiscriminately. EPA has concluded that the cost of recycling/disposal in a properly permitted hazardous waste landfill does little to diminish the economic return inherent in participation in the EPA Green Lights Program. EPA reached this conclusion by using a value three times greater than the average cost of recycling. In such a case the internal rate of return and the net percent value of a typical relamping project were only slightly impacted. "Lighting Waste Disposal," EPA Green Lights Program, January 1994, at p.11. This is because the cost of recycling/disposal is only a small fraction of the cost of the Lamp over its lifetime. Id., at 11-12. Thus, selection of Option 2 will not serve as a disincentive to participate in the Green Lights Program.

RESPONSE

EPA thanks the commenter for the cost information. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the

universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards

Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities. Such an approach could help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-L0001
COMMENTER Environmental Technology Council
SUBJECT UNWAS1
COMMENT On the other hand, the universal waste option, which the ETC strongly supports, is specifically tailored to widely generated, post-consumer hazardous wastes such as used fluorescent lamps. Under this option; EPA and the states would impose controls to minimize releases of mercury during transport, storage,

recycling and disposal of lamps, but would do so under streamlined rules that alleviate compliance burdens and costs for lamp generators. At the same time, the universal waste approach would increase beneficial recycling of the mercury, glass and metal components of used lamps.

The Council submitted extensive comments on EPA's universal waste proposal, 58 Fed. Reg. 8,102 (Feb. 11, 1993), urging the Agency to expand the scope of the proposed streamlined collection system to include mercury-containing fluorescent lamps. In those comments, we stated that inclusion of these lamps would encourage companies to relamp with more energy-efficient lighting by largely eliminating the costs of complying with hazardous waste controls for generators, transporters, and certain storage facilities. We supported EPA's proposal to impose full Subtitle C requirements on final consolidation points and on treatment, recycling and disposal facilities, to ensure that when large quantities of discarded lamps are handled, human health and the environment are adequately protected.

Congress did intend for EPA to exercise some discretion in developing the substantive standards under Subtitle C as necessary to protect human health and the environment. Id. at '' 6922-24. Thus; the universal waste option in the proposed rule is consistent with the statutory scheme.

VI. INCLUSION OF FLUORESCENT LAMPS IN THE Universal waste RULE WILL NOT CAUSE A REDUCTION IN RELAMPING EPA expresses concern that potential relampers will abandon or reduce their relamping -- against their own economic self- interest -- if EPA does not exempt fluorescent lamps from hazardous waste regulations. This concern is not only unsupported speculation, but it also is irrational. A. Not Exempting Fluorescent Lamps from Hazardous Waste Regulation is Not a Change in the Present Requirements, and Therefore Should Not Change Relamping Practices. EPA Should Not Cater to Illegal Dumpers. As discussed above, used fluorescent lamps are generally hazardous wastes. Therefore, they are presently required to be disposed of or recycled as hazardous wastes in full compliance with Subtitle C. Not granting an exemption will maintain the status quo. Therefore, it is simply not logical to argue that continuing the current status will cause a change -- specifically a reduction -- in

relamping practice. Moreover, including fluorescent lamps in the universal waste rule will actually decrease current requirements and make disposal easier and cheaper. Thus, it should result in increase relamping. The only circumstance in which including fluorescent lamps in the universal waste rule, and enforcing those requirements, might arguably slow relamping would be if relampers are illegally disposing of fluorescent lamps now as nonhazardous solid waste. EPA, however, should not allow its regulations to be shaped by those who dispose of their wastes illegally.

C. In Practice, State "Universal waste" Rules for Fluorescent Lamps Have Not Delayed Relamping. Several states have initiated programs for fluorescent lamps based on the "universal waste" approach or other, more stringent hazardous waste regulations. There is no indication that these programs and requirements have caused any reduction in relamping. To the contrary, the State of Minnesota, for example which has perhaps the most aggressive program for assuring hazardous waste management of fluorescent lamps, has indicated that there was no reduction in relamping in that state when its program was implemented. [22] [Footnote 22: Statement by representative of MN PCA at meeting on the proposed regulation at OMB, May 4, 1994.]

VIII. INCLUDING FLUORESCENT LAMPS IN THE Universal waste RULE IS THE BEST WAY TO ELIMINATE ANY CONFUSION THAT MAY EXIST REGARDING LAMP DISPOSAL, AND THEREBY INCREASE RELAMPING

Proponents of the exclusion option have asserted that there is "massive confusion" regarding proper disposal of fluorescent lamps, and that this alleged confusion is slowing relamping. This assertion is unsupported, however. Indeed, the proposed conditional exclusion would significantly increase any confusion that may exist. Including fluorescent lamps in the universal waste rule is most likely to eliminate any confusion on the matter.

IX. THE Universal waste OPTION WILL ENCOURAGE RECYCLING, A MAJOR ENVIRONMENTAL GOAL; AN EXEMPTION WOULD GREATLY DISCOURAGE LAMP RECYCLING AND SERIOUSLY DAMAGE THE LAMP RECYCLING INDUSTRY

X. THERE IS MORE THAN ADEQUATE CAPACITY TO MANAGE USED FLUORESCENT LAMPS AS HAZARDOUS WASTE Under the universal waste option, used fluorescent lamps could be recycled, or disposed of

in hazardous waste landfills after being treated to meet the LDR treatment standard of 0.2 mg/l in the TCLP extract. There is more than adequate hazardous waste treatment and landfill capacity to manage the lamps. In addition, if the universal waste option were selected, there would soon also be adequate recycling capacity to recycle all of these lamps. A. Hazardous Waste Treatment and Landfill Disposal Capacity Greatly Exceed Needed capacity Approximately 23.6 Mg of mercury from fluorescent lamps were disposed of as municipal solid waste in 1989; approximately 29.6 Mg are expected to be disposed in this way in 1995 in the absence of enforcement of hazardous waste requirements. [36] [Footnote 36: Risk Assessment, p.78.] If this volume were shifted to disposal in hazardous waste landfills, under the universal waste option, the mercury would first have to be treated, through chemical stabilization or other means, to 0.2 mg/l or less in the TCLP extract, in accordance with the LDR requirements. [37] [Footnote 37: 40 CFR 268.41 (low mercury subcategory- less than 260 mg/kg mercury).] In establishing treatment standards for newly listed wastes, in August 1992, EPA found that there was available chemical stabilization capacity of 1,204,000 tons per year. [38] [Footnote 38: 57 Federal Register 37245.] This amount is many orders of magnitude larger than the 29.6 Mg of added capacity that EPA's risk assessment estimates would be needed in 1995 if the universal waste option were selected. Thus, there is more than enough capacity to treat and landfill as hazardous waste the mercury in all fluorescent lamps being disposed annually.

XI. CONCLUSION For the reasons discussed above, the ETC strongly opposes the conditional exclusion option, and strongly urges EPA to adopt the universal waste option for managing mercury-containing lamps. We appreciate the opportunity to comment on this proposal.

RESPONSE

EPA thanks the commenter for its support of the universal waste approach. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards. Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that

mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility. Destination facilities (i.e., treatment, recycling, and disposal facilities) remain subject to full Subtitle C regulation.

Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between mercury lamp generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities. Such an approach could help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-L0002
COMMENTER Memphis Light, Gas and Waste Division
SUBJECT UNWAS1
COMMENT EPA's second alternative, the universal waste option, is not the proper solution of the lighting waste issue. Under this option,

lighting wastes are subject to the most onerous and expensive components of Subtitle C regulation, namely the land ban program and the Subtitle C disposal costs.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and administrative requirements for universal waste.

DCN SCSP-L0003

COMMENTER Coors Brewing Company

SUBJECT UNWAS1

COMMENT Coors believes that the environment would be best served if the definition of "universal wastes" was expanded beyond batteries and pesticides to include several additional wastes. We suggest light bulbs, (all kinds including fluorescent), used anti-freeze, mercury-containing devices, waste non-empty aerosol cans, waste paint residues (any type of coating), waste applicator tools and rags associated with coating operations and waste janitorial chemicals should also be included in the universal waste category. Coors strongly suggests that fluorescent light bulbs be included in the system. Coors has tested different types of light bulbs and has discovered that when disposed of a number of specific brands are hazardous waste based on TCLP analysis which documents for example that concentrations exceed the regulated mercury limit of 0.2 mg/l. Since many incandescent and fluorescent light bulbs are hazardous wastes, they meet the criteria and should be included in the special collection system standard rule.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting the toxicity characteristic for mercury or any other hazardous constituent fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-L0007
COMMENTER Office of the Under Secretary of Defense
SUBJECT UNWAS1
COMMENT 5. Proposed Option 2 (i.e. Universal waste Management System/Special Collection System) is an extremely undesirable option in that available data does not indicate that the risk to human health and the environment from mercury release from mercury-containing lamps is significant enough to warrant the excess of record keeping, storage, notification, management and disposal requirements contained in this option. Further, this proposed option is even more onerous since it addresses all lamps that are hazardous waste.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting the toxicity characteristic for mercury or any other hazardous constituent fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste

management regulations. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

As required by the Clean Air Act Amendments of 1990, the Agency issued the *Mercury Study Report to Congress*. The study estimates the quantity of mercury emissions to the air from a number of human activities, estimates the health and environmental impacts associated with these mercury emissions, and describes the technologies available to control mercury emissions from these sources. The report concludes that there is cause to seek further reductions in mercury releases and exposures to mercury.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

DCN SCSP-L0007
COMMENTER Large Public Power Council
SUBJECT UNWAS1
COMMENT Wastes Generated by Energy Efficiency and Conservation Programs

An energy efficiency and conservation program can generate wastes which include fluorescent light bulbs, mercury vapor lamps, sodium vapor lamps, lighting system ballast, refrigerators, freezers, air-conditioning units, heat pumps, hot water heaters, and other electrical appliances and equipment. These devices are generated at individual residential homes and

commercial and industrial establishments spread out over the utility's service territory and frequently contain small amounts of various hazardous materials including PCBs, mercury, lead, cadmium, antimony, freon, CFCs, and contaminated used oil. Because they are typically generated in relatively small amounts at widely-dispersed locations, energy efficiency and conservation program wastes are ideal candidates for inclusion in the special collection program proposed by this rule.

Agency-s Green Lights Program. LPPC understands that the Agency, in order to support and facilitate the Green Lights Program, is considering initiating a separate rulemaking for fluorescent lighting wastes which would exclude these wastes from Subtitle C regulation and would instead establish special management standards. The LPPC supports the Agency undertaking such a rulemaking. However, if the Agency for any reason decides not to promulgate such a rule, fluorescent lighting wastes should be included in the wastes subject to the special management requirements proposed in this rule.

Conclusion The LPPC believes the proposal will be beneficial to the management of "universal wastes" but urges the Agency to expand the special collection program to specifically cover energy efficiency and conservation program wastes. The LPPC stands ready to work with the Agency as it proceeds to finalize the rule.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency determined the proposed conditional exclusion would not sufficiently protect human health and the environment. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those mentioned by

the commenter, to their individual state universal waste programs through the petition process.

DCN SCSP-L0009
COMMENTER National Electric Manufacturers Assn.
SUBJECT UNWAS1
COMMENT Even if EPA and the States adopted the Universal waste rule for lamps, it is likely that massive RCRA non-compliance would result. Thus, an abbreviated Subtitle C system like Universal Waste does not appear appropriate for lamps in light of the land ban and the long storage requirements that would be required because of the shortage of qualified storage and recycling/reclamation capacity.

It appears to NEMA, however, that progress in promulgating an exemption has been slowed while the Agency considers the question of whether to use its Universal waste program to create incentives for spent lamp recycling/reclamation and/or to ease the standards for lamp collection, transportation, and storage prior to disposal as hazardous waste. We believe the Universal Waste rule fails to address the real issue in this case.

The goal of including lamps in the Universal waste program would be to ease the regulatory burden on the collection, transportation, and storage of spent lamps in order to facilitate hazardous waste management for the collected waste stream. In NEMA's view, no environmental benefit gained from this approach. EPA's report shows that no additional health or environmental benefit is provided by managing lamps in hazardous waste landfills instead of solid waste landfills. Indeed, if lamps were included in the Universal waste rule, we could expect vast increases in the amounts of lamps stored in bulk and transported to the relatively few hazardous waste management facilities. This activity may actually result in an increase in risks from storage and transportation without any increase in protection from disposal. We believe it is premature to attempt to use the hazardous waste regulations to achieve as yet unknown resource recovery goals when the economic and environmental benefits of relamping are more immediate and compelling, and are being hampered by the hazardous waste designation. We also believe that no environmental benefit is gained by managing lamps destined for disposal under the Universal waste scheme.
RESPONSE
Today=s rule adds hazardous waste lamps that are hazardous waste because the lamps exhibit a

hazardous waste characteristic to the scope of the universal waste rule (40 CFR Part 273). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

The Agency has determined that hazardous waste lamps meet most of the criteria established for designating a material as universal waste. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency believes that management controls under RCRA are needed to minimize the release of mercury from lamps into the environment. Although most mercury emissions are associated with combustion, all releases contribute to the mercury reservoirs in land, water and air. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes. The Agency published a Notice of Data Availability on July 11, 1997 (62 FR 37183). This notice presented data collected by the Agency and an assessment of potential mercury emissions from the management of hazardous waste-containing lamps under several regulatory approaches.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN SCSP-L0010

COMMENTER Robert M. Quintal
SUBJECT UNWAS1
COMMENT I have reviewed the subject Proposed Rule and am very concerned with the removal of fluorescent lamps from the Rule. My concern is that removal of this hazardous waste from the proposed rule will again derail ongoing efforts by many potential collectors and recyclers to establish businesses that would manage this waste. As you are aware, each lamp contains 25mg - 65mg of mercury. The draft language of the Special Collection Rule addressed the proper handling of fluorescent. However, at the last minute, and after much influence and lobbying by the lamp manufacturers, fluorescent were pulled from the draft.

It is apparent that a special handling rule that de-regulates lamps from hazardous waste status is a viable solution, and in total agreement with the spirit of this proposed rule. Furthermore, it is being proven in states that exempt lamps from municipal waste landfill and incineration, that the so-called economic impact is not a deterrent to energy saving upgrades. It is therefore important to encourage continued formation of the "infrastructure" necessary to handle the safe, proper disposal (recycling) of fluorescent lamps. With the inclusion of this waste in a ruling such as the Universal waste rule, this industry will continue to evolve. I ask that you consider placing fluorescent lamps back into the proposal, as was originally intended. The technology and the ingenuity exists today to minimize the land disposal and airborne emissions of this hazardous waste.

RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-L0012
COMMENTER Navajo Tribal Utility Authority
SUBJECT UNWAS1
COMMENT The Authority concludes that the "universal waste option" is not the answer because, under universal waste rules, lighting waste would remain subject to the most rigid provisions of the regulations, including the land disposal restrictions.

RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The purpose of the LDR program is to prohibit the land disposal of hazardous wastes that have not been adequately treated to reduce the threat to human health and the environment. Hazardous waste lamps should be subject to the LDR program since they may still present a threat to human health and the environment at the time of disposal. Handlers and transporters of universal waste are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of the LDR program (e.g., storage prohibition and dilution prohibition) but not the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and administrative requirements for universal waste.

DCN FLEP-L0013
COMMENTER Osram Sylvania
SUBJECT UNWAS1
COMMENT EPA is encouraged to study the information already accumulated in the Docket. Particularly, that most supporters of the Universal waste rule required some relaxations, for transportation, record-keeping and TSD's. Also, there is substantial data provided by Kodak for an unlined landfill whose lamp content is known. This shows little or no significant evidence of mercury in leachate.
RESPONSE
Today-s rule adds hazardous waste lamps that are hazardous waste because the lamps exhibit the toxicity characteristic to the scope of the universal waste rule (40 CFR Part 273). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps. The universal waste rule is less stringent in terms of accumulation, transportation, notification, and recordkeeping.

Based upon additional analyses of the behavior of mercury in the environment, the Agency decided to amend the universal waste management standards (40 CFR Part 273) to include hazardous waste lamps within the scope of this rule. The Agency does not have extensive data characterizing the behavior of mercury released from spent lamps in a landfill environment over

long periods of time. Although available data may support the conclusion that mercury may stay in a stable, non-mobile state over the shorter term and may not migrate from a landfill environment very quickly, EPA continues to be concerned that landfill releases may pose threats over the long term. Studies also show that the greatest threat of mercury releases from the management of lamps is during storage and transport. The universal waste rule provides a reduced, or streamlined set of requirements, but also allows the Agency to set specific management standards to control potential emissions. The potential for mercury emissions occurs when hazardous waste lamps are not managed in a protective manner.

DCN SCSP-L0019
COMMENTER New Jersey Dept. of Env. Prot. and En.
SUBJECT UNWAS1
COMMENT This Department, as well as the Minnesota Office of Solid Waste and Florida Department of Environmental Resources have completed mercury studies. A copy of the NJDEPE final report is attached for your reference. Given that the conclusion of The NJDEPE Mercury Emissions Task Force finds a population at risk from mercury exposure as a result of man-made emissions, mercury-containing discarded products would be a good starting point. Chapter 2 of Volume III of the Report describes some discarded products that would be good candidates for this program including: 1. fluorescent bulbs; 2. thermometers; and 3. mercury switches.
RESPONSE
The Agency appreciates the commenter=s submission of additional information on mercury in the environment. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as thermometers and mercury switches, to their individual state universal waste programs through the petition process.

DCN SCSP-00206

COMMENTER New Hampshire Dept. of Env. Services
SUBJECT UNWAS1
COMMENT Recommendation I: NHDES recommends including more wastes than those covered under the proposed rule. Other wastes which may fit the "universal waste" criteria are lead paint and lead paint contaminated debris (unless exempted as a "special Subtitle D waste"); fluorescent lamps (unless exempt when sent for recycle, an action NHDES endorses); automotive antifreeze; mercury thermostats and thermometers; and contaminated rags (unless exempt when destined for a commercial laundry).
RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today=s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as thermometers and mercury switches, to their individual state universal waste programs through the petition process.

DCN SCSP-00146
COMMENTER Advanced Environmental Recycling Corp.
SUBJECT UNWAS1
COMMENT As detailed in previous sections of these comments, AERC is deeply concerned about the USEPA's apparent consideration of allowing fluorescent lamps to enter Subtitle D landfill facilities. Although it is understood that this is a separate issue from the Universal waste proposal, it must be included in the "big picture" thought process. If the USEPA is satisfied that fluorescent lamps are a hazardous waste and do pose an environmental impact if improperly handled, then the Universal Waste regulation provides an environmentally sound option which will accomplish the USEPA's intent. There is absolutely no justification for allowing fluorescent lamps to be handled in anything but Subtitle C or viable recycling facilities.

AERC has verified that the USEPA's draft Universal waste proposal dated May 29, 1992 included substantial justification for including fluorescent lamps to the proposed rule. This justification was exhibited on Pages 72 through 75. Many other documents prepared by the USEPA also justify that fluorescent lamps must be handled properly. Some of these documents have been included as part of the formal submittal of these comments.

The USEPA's overall recycling perspective must be considered in evaluating an overall focus and direction. Based on this available data, fluorescent lamps should be reintroduced to the Universal waste regulation.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

DCN FLEP-00246

COMMENTER Efficient Lighting and Maintenance, Inc.

SUBJECT UNWAS1

COMMENT We have concerns that the universal waste approach will create 658,000 new small-quantity generators and 64,000 new large-quantity generators based on classifying fluorescent and HID lamps as hazardous waste. This is based on experience in the maintenance of lighting systems and the volume of lamps used in group and spot relamping. We are concerned that the universal waste approach will decrease the number of energy saving upgrades and group relamping that are done. If there is less group relamping there will be more energy consumed with added lamps and fixtures to compensate for light loss. A greater demand in power will add to the air pollution problems we already have.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities. Such an approach could help in assuring that the substantial environmental benefits offered by energy-efficient lighting programs are realized through increased participation.

Today=s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Spent lamps that are managed as universal waste under 40 CFRPart 273 are not included in a facility's determination of hazardous waste generator status ('261.5(c)(6)). Therefore, if a facility manages spent hazardous waste lamps under the universal waste system and does not generate any other hazardous waste, the facility will not be subject to other parts of the full Subtitle C regulations such as the hazardous waste generator regulations in 40 CFR Part 262. In addition, today's final rule does not affect the regulatory status of conditionally exempt small quantity generators (CESQGs) (i.e., those generators that produce less than 100 kg of hazardous waste per month). CESQGs continue to be conditionally exempt from full Subtitle C regulation provided that the provisions under '261.5 are met.

DCN FLEP-00001
COMMENTER Missouri Department of Natural Resources
SUBJECT UNWAS1
COMMENT Option 2 will provide a welcome relief from regulation, reducing workload and saving money for industry and regulators alike. Regulating the waste as hazardous will encourage pollution prevention measures such as recycling and developing low-mercury lamps. There is already an emerging industry, which includes many small businesses, growing up around mercury lamp recycling.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g.,

dumpsters and garbage trucks) will decline.

Source reduction, which is the reduction or elimination of the toxicity and/or volume of a waste, is at the top of EPA=s hierarchy for solid waste management. With regard to mercury, the most significant source reduction achievement has been the trend toward the elimination of mercury from alkaline batteries. Although these batteries are still a significant contributor of mercury to municipal solid waste, discards of mercury from alkaline batteries are dropping dramatically because of source reduction achievement. Hazardous waste lamps are one of the next highest single sources of mercury in the municipal solid waste stream, accounting for 3.8% of mercury now going to MSW landfills. Opportunities exist to reduce mercury content levels in both standard 4-foot fluorescent lamps and the increasingly popular compact fluorescent lamps.

Today=s final rule, which retains requirements for hazardous waste lamps to ultimately be managed in accordance with the full Subtitle C hazardous waste management requirements, may provide incentives for lamp manufacturers to pursue additional source reduction efforts to reduce or eliminate the amount of mercury used in the manufacture of fluorescent tubes. If source reduction is pursued aggressively by the fluorescent lamp manufacturing industry, the overall contribution of mercury from fluorescent lamps to municipal solid waste could continue to decrease over time.

DCN FLEP-00187
COMMENTER PacifiCorp
SUBJECT UNWAS1
COMMENT B. The Universal waste Option Would Continue to Subject Mercury-Containing Lamps to the Most Onerous Elements of The Subtitle C System Neither does the universal waste option offer the policy benefits of the conditional exclusion option. It would continue to subject mercury-containing lamps to the most onerous elements of the hazardous waste program, and thus maintain most of the existing regulatory barriers for electric utilities and their customers to participate in Green Lights and other energy-efficient relamping programs. Under the universal waste approach, mercury- containing lamps would continue to be subject to RCRA's LDR requirements, regardless of whether they are disposed of or recycled. Generators would thus be required, among other things, to continue to prepare LDR notification forms for all mercury-containing lamps sent off-site. This requirement has recently been amended in the case of certain TC organics to require generators to identify all hazardous constituents contained in the lamps at concentrations above the universal waste treatment standards ("UTS"). 59 Fed. Reg. 47980, 48043 (Sept. 19, 1994) (amending 40 C.F.R. ' 268.7(a)). This detailed analytical and notification requirement will eventually

be imposed on TC metal wastes as well; imposing an additional Subtitle C burden on entities engaging in energy-efficient relamping programs. The operational and economic burdens associated with this single aspect of the RCRA Subtitle C system alone will be staggering and will likely be beyond the economic and technical means of many potential participants in Green Lights and similar relamping programs. Even more daunting LDR regulatory complications will soon confront recyclers and waste disposal facilities handling mercury-containing lamps under the universal waste option. Again, under the recently promulgated "Phase II" LDR rule, the Agency has signaled that the ultimate LDR treatment standards for all characteristic wastes will be (a) removal of the hazardous waste characteristic and (b) treatment for all underlying hazardous waste constituents present in the waste at levels above the UTS. 59 Fed. Reg. at 47987. The LDR storage prohibition, RCRA ' 3004(J), will also frustrate participation in energy efficient programs. That provision bars the storage of any LDR wastes in circumstances where storage is compelled because there is inadequate treatment (including recycling) or disposal capacity. In fact, the storage prohibition contemplates the storage of LDR wastes only when storage "is intended to build up an amount of waste that can be readily transported, treated, or disposed -- as, for example, when storage is used to meet minimum volume requirements imposed by waste transporters or treatment facilities." Id. at 335. Thus, storage of LDR wastes --including LDR lighting wastes -- cannot occur "while treatment methods [Including recycling capacity] or disposal capacity is developed." Id.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities.

Handlers and transporters of universal waste also are subject to streamlined land disposal restrictions (LDR) requirements. Under the universal waste regulations, universal waste handlers and transporters must manage universal waste in compliance with the substantive requirements of

the LDR program (e.g., storage prohibition and dilution prohibition) but are not required to comply with the administrative requirements (e.g., notification). Destination facilities remain subject to all of the LDR requirements, including both the substantive and the administrative requirements for universal waste.

The Agency acknowledges that the current LDR treatment standards for characteristic metal wastes do require that underlying hazardous constituents be addressed (see the May 26, 1998 Phase IV rulemaking; 63 FR 28556). The storage time limit under the universal waste regulations is consistent with the LDR storage prohibition. Universal waste handlers may accumulate universal waste lamps for one year. The regulations also allow for accumulation for more than one year if such accumulation is solely for accumulating such quantities of universal waste as are necessary to facilitate proper recovery, treatment, or disposal. For any accumulation longer than one year, the handler must be able to prove that such accumulation is solely for accumulating quantities necessary to facilitate proper recovery, treatment, or disposal (it is assumed that any accumulation up to one year is for this purpose).

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste.

Today-s rulemaking should not act as a deterrent to energy-efficient programs. The Agency performed calculations on the impact of disposal costs on a lighting upgrade-s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

DCN FLEP-00060
COMMENTER New Hampsh. Dept. Of Env. Services
SUBJECT UNWAS1
COMMENT This approach has been implemented successfully with used oil generated in New Hampshire. DES considers used oil as a hazardous waste yet allows used oil destined for recycling to be managed in the same manner as would be required under the proposed Universal waste rule. This policy has fostered an increase in the amount of used oil being recycled in New Hampshire resulting in economic as well as environmental benefits.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste

approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00301
COMMENTER Minnesota Pollution Control Agency/MOEA
SUBJECT UNWAS1
COMMENT (3) The Universal waste alternative will control releases from one of the largest product sources of mercury. A very significant amount of mercury, on an annual basis, will be kept out of the nation's solid waste disposal facilities, and more importantly, out of the environment.

Second, the Universal waste alternative requires lamps to be sent to a hazardous waste disposal or recycling facility. In addition, the Universal waste alternative provides certain storage, transport, and other management standards. The Universal waste alternative is totally consistent with the RCRA regulatory framework. The RCRA framework has already been deemed to be protective of human health and the environment for wastes meeting the definition of a hazardous waste and has been the well-established standard since the beginning of the RCRA program. The Universal waste alternative is being proposed to improve the level of protection of human health and the environment under the RCRA program by promoting the establishment of easily accessible and economical collection/consolidation systems.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e.,

universal waste rule is less stringent than full Subtitle C management standards).

The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00054
COMMENTER U.S. Department of Interior
SUBJECT UNWAS1
COMMENT The following comments are provided to the proposed rules published on July 27, 1994 concerning the modification of the hazardous waste program for mercury-containing lamps. As a Federal organization whose mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner, we are considering significant relighting efforts at a number of our offices to increase energy conservation. As part of this mission reclamation supports the disposal of lamp waste in an environmental-sound manner. Since the risk of potential mercury release from landfills is not well understood, we suggest waste mercury containing lamps be managed under the Universal waste Management System (option B) with sunset provisions and no specific record keeping for lamp shipment.
RESPONSE
Today=s rule adds hazardous waste lamps to the scope of the universal waste rule (40 CFR Part 273). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

The Agency believes that management controls for hazardous waste lamps are necessary to minimize releases of mercury and other hazardous constituents to the environment during lamp accumulation and transport, to ensure safe handling of such lamps, and to keep hazardous waste lamps out of municipal waste facilities (both landfills and solid waste incinerators). Mercury is high on the Agency=s priority list of toxic pollutants, along with other heavy metals such as cadmium and lead. These metals have been identified as constituents of some waste lamps. The primary health effects from mercury are on the neurological development of children exposed through fish consumption and on fetuses exposed through their mother=s consumption of fish.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

The universal waste rule includes a basic recordkeeping requirement to track waste shipments arriving at and leaving from handlers of large quantities of universal waste (i.e., handlers who accumulate greater than 5,000 kg total universal waste at one time). The required records may take the form of a log, invoice, manifest, bill of lading, or other shipping document and are to be maintained for three years. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement.

The Agency is not including a sunset provision with today=s final rule. The Agency believes that the data and information provided to the Agency and the Agency=s own studies and analyses that were conducted during the period of time since the hazardous waste lamps rulemaking was proposed provide adequate evidence of the behavior of mercury in the environment and the potential releases of mercury to the environment to support of today=s final rule. The Agency notes, however, that should sufficient and compelling information related to the behavior of mercury become available in the future, the Agency can always re-evaluate the standards promulgated in today=s final rule.

DCN SCSP-00009
COMMENTER Niagara Mohawk Power Corporation
SUBJECT UNWAS1
COMMENT NMPC strongly endorses EPA's suggestion that other waste streams should be included in the universal waste program. While we have referenced above some waste streams, we also believe the following waste streams, typically generated by utilities, should be included in the universal waste rule: solvents, anti-freeze and clean-out sludges from transformer vaults and substations, equipment containing liquid metallic mercury, lighting waste (if not exempted in other rulemaking), aerosol spray cans, treated wood (if TCLP level changes), rags contaminated with solvents, liquid filled power fuses and laboratory wastes.

RESPONSE
In response to the proposed universal waste rule, a number of commenters suggested additional wastes that they believed should be added to the universal waste regulations. Although many of the wastes suggested may be appropriate candidates for the universal waste system in the future, the Agency decided to include only three wastes (hazardous waste batteries, thermostats, and certain unused pesticides) in the universal waste rule finalized on May 11, 1995 (60 *FR* 25492). Today-s rule adds hazardous waste lamps to the universal waste regulations. States authorized for the universal waste regulations may add additional types of waste, such as those mentioned by the commenter, to their individual state universal waste programs through the petition process.

DCN FLEP-00281
COMMENTER Michigan Dept. of Natural Resources
SUBJECT UNWAS1
COMMENT The Universal waste R provides a regulatory mechanism to enforce proper disposal and recycling of the lamps but the Universal waste R still requires waste stream tracking. It is unlikely that there is a simple way to implement a system to manage the fate of flourescent light bulbs from every commercial building in the country within the RCRA system.

If the Universal waste R option were chosen, the large quantity generators would be required to dispose of their lamps in a more environmentally protective manner. The Universal waste R would provide a mechanism to enforce proper disposal and recycling of the lamps. However, the Universal waste R option should include a provision that allows recycling facilities storage of mercury-containing lamps for a limited time period without being required to obtain a RCRA permit. This would help alleviate the biggest impediment for the operation of new recycling facilities, which is the RCRA permit requirement.
RESPONSE
Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today-s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and

fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

The universal waste rule includes a basic recordkeeping requirement to track waste shipments arriving at and leaving from handlers of large quantities of universal waste (i.e., handlers who accumulate more than 5,000 kg total universal waste at one time). The required records may take the form of a log, invoice, manifest, bill of lading, or other shipping document and are to be maintained for three years. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement.

The commenter=s request to allow storage at the recycling facility without a storage permit is beyond the scope of today=s rulemaking. Today=s rulemaking addresses the management of hazardous waste lamps prior to reaching the destination facility (treatment, recycling, disposal facility), and does not address management of the universal waste lamps at the destination facility.

DCN SCSP-00199
COMMENTER Minnesota Office of Waste Management
SUBJECT UNWAS1

Hazardous waste lamps and Their Importance as a Source of Mercury in Waste
The OWM is disappointed that hazardous waste lamps (fluorescent and high intensity discharge) were deleted from the proposed rule as published in the Federal Register. These are among the most universally generated of all the wastes that have been considered for inclusion in this rule and should be included.

The proposed rule suggests that the choice of management method for these wastes is either as universal hazardous waste or as municipal solid waste, when in fact the choice is between management as universal hazardous waste or as a full Subtitle C hazardous waste.

Since mercury is volatile and toxic, every effort should be made to reduce or capture mercury present in wastes. For fluorescent and HID lamps, this means they must be managed separately from MSW. Attempting to control mercury releases after mixing lamps with MSW is far more difficult and costly than source separation and management. The universal waste rules would provide much more reasonable management options for fluorescent and HID lamps.

Some may defend disposal of hazardous waste wastes as MSW in a Subtitle D landfill as environmentally acceptable. However, given the uncertainties of waste movement there can be little or no assurance that a given load of waste will actually go to a Subtitle D landfill. In summary, hazardous waste lamps and other wastes should be managed separately from MSW to ensure that they are not incinerated, composted, or improperly

disposed.

The Minnesota Office of Waste Management urges the EPA to include hazardous waste lamps in the universal waste rule. This action will clearly acknowledge that hazardous waste lamps are commonly testing as hazardous waste under TCLP and must be managed accordingly. It will facilitate lamp recycling and the reclamation of mercury, which are clearly the preferred management methods for hazardous waste wastes. Lamp recycling is a proven and cost effective method of reclaiming mercury and it can be accomplished without compromising worker safety. Disposal of hazardous waste lamps with MSW or in MSW processing or disposal facilities does not adequately protect public health or the environment.

Changing the regulatory standards for hazardous waste lamps or otherwise exempting them from Subtitle C testing and management requirements would set a bad precedent. EPA should further investigate emissions of mercury resulting from transport to and disposal of lamps in landfills, including air emissions and potential ground water contamination. We believe that the evidence will support management of hazardous waste lamps under the proposed universal waste rule.

RESPONSE

Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting the toxicity characteristic for mercury or any other hazardous constituent fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to full Subtitle C regulation or universal waste management regulations. Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

Studies conducted by the Agency indicate that significant potential for mercury emissions from spent lamps occurs during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills.

(For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes. The Agency published a Notice of Data Availability on July 11, 1997 (62 FR 37183). This notice presented data collected by the Agency and an assessment of potential mercury emissions from the management of hazardous waste-containing lamps under several regulatory approaches.

EPA believes that adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over full Subtitle C management requirements for generators, collectors, and transporters. An added benefit of the universal waste approach is that the reduced cost of managing spent lamps may result in a greater quantity of lamps being collected and recycled and fewer hazardous waste lamps should be managed in the municipal solid waste stream. Therefore, the number of lamps going to municipal combustors should decrease and the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks) will decline.

DCN FLEP-00173
COMMENTER Advanced Environmental Technology Corp.
SUBJECT UNWAS1
COMMENT AETC believes that existing small-quantity generator exclusion that applies to generators of mercury-containing lamps in this category will provide some relief. These generators, if part of this program, will have a variety of options not available to large generators. In addition, the Universal waste will provide generators with increased consolidation capability and more effective and economically efficient transportation options. Therefore, under the Universal waste concept, less populated and other remote locations should have minimal negative impact.
RESPONSE
Today=s final rule adds all hazardous lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. In addition, permits would not be required for storage at interim collection facilities, and handlers may store universal waste for one year.

EPA studies have determined that the majority of hazardous waste lamps fail the TCLP for mercury and other hazardous constituents. Lamps that are generated as household waste or by a generator who generates less than 100 kg of hazardous waste in any given month and therefore qualifies as a conditionally exempt small quantity generator (CESQG) are excluded from the RCRA hazardous waste management requirements per 40 CFR 261.5.