Title 40—Protection of the Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

SUBCHAPTER N—EFFLUENT GUIDELINES AND STANDARDS

[FRL 338-4]

PART 421—NONFERROUS METALS MANUFACTURING POINT SOURCE CATEGORY

Interim Regulations

Notice is hereby given that effluent limitations and guidelines for existing sources set forth in interim final form below are promulgated by the Environmental Protection Agency (EPA). On March 26, 1974, EPA promulgated a regulation adding Part 421 to Chapter 40 of the Code of Federal Regulations (39 FR 12822). That regulation with subsequent amendments established effluent limitations and guidelines for existing sources and standards of performance and pretreatment standards for new sources for the nonferrous metals manufacturing point source category. The regulation set forth below will amend 40 CFR 421—Nonferrous metals manufacturing point source category, by adding thereto effluent limitations and guidelines for existing sources for the primary copper smelting subcategory (Subpart D), the primary copper refining subcategory (Subpart E), the secondary copper subcategory (Subpart F), the primary lead subcategory (Subpart G) and the primary zinc subcategory (Subpart H) pursuant to sections 301, 304(b) and (c), of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251, 1311, 1314 (b) and (c), 86 Stat. 816 et seq.: Pub. L. 92-500) (the Act). Simultaneously, the Agency is publishing in proposed form standards of performance for new point sources and pretreatment standards for existing sources and for new sources.

(a) *Legal authority.* Section 301(b) of the Act requires the achievement by not later than July 1, 1977, of effluent limitations for point sources, other than publicly owned treatment works, which require the application of the best practicable control technology currently available as defined by the Administrator pursuant to section 304(b) of the Act. Section 301(b) also requires the achievement by not later than July 1, 1983, of effluent limitations for point sources, other than publicly owned treatment works, which require the application of best available technology economically achievable which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants, as determined in accordance with regulations issued by the Administrator pursuant to section 304 (b) of the Act.

Section 304(b) of the Act requires the Administrator to publish regulations providing guidelines for effluent limitations setting forth the degree of effluent reduction attainable through the application of the best practicable control technology currently available and the degree of effluent reduction attainable through the application of the best control measures and practices achievable including treatment techniques, process and procedural innovations, operating methods and other alternatives. The regulation herein sets forth effluent limitations and guidelines, pursuant to sections 301 and 304(b) of the Act, for the primary copper smelting subcategory (Subpart D), the primary copper refining subcategory (Subpart E), the secondary copper subcategory (Subpart F), the primary lead subcategory (Subpart G) and the primary zinc subcategory (Subpart H) of the nonferrous metals manufacturing point source category.

Section 304(c) of the Act requires the Administrator to issue to the States and appropriate water pollution control agencies information on the processes, procedures or operating methods which result in the elimination or reduction of the discharge of pollutants to implement standards of performance under section 306 of the Act. The reports or "Development Documents" referred to below provide, pursuant to section 304(c) of the Act, information on such processes, procedures or operating methods.

Section 306 of the Act requires the achievement by new sources of a Federal standard of performance providing for the control of the discharge of pollutants which reflects the greatest degree of effluent reduction which the Administrator determines to be achievable through application of the best available demonstrated control technology, processes, operating methods, or other alternatives, including, where practicable, a standard permitting no discharge of pollutants. Section 307(c) of the Act requires the Administrator to promulgate pretreatment standards for new sources at the same time that standards of performance for new sources are promulgated pursuant to section 306. Section 307(b) of the Act requires the establishment of pretreatment standards for pollutants introduced into publicly owned treatment works and 40 CFR 128 establishes that the Agency will propose specific pretreatment standards at the time effluent limitations are established for point source discharges. In another section of the FEDERAL REGISTER regulations are proposed in fulfillment of these requirements.

(b) *Summary and basis of interim final effluent limitations and guidelines for existing sources and proposed standards of performance and pretreatment standards for new sources*—(1) *General methodology.* The effluent limitations and guidelines set forth herein were developed in the following manner. The point source category was first studied for the purpose of determining whether separate limitations are appropriate for different segments within the category. This analysis included a determination of whether differences in raw material used, product produced, manufacturing process employed, age, size, waste water constituents and other factors require development of separate limitations for different segments of the point source category. The raw waste characteristics for each such segment were then identified. This included an analysis of the source, flow and volume of water used in the process employed, the sources of waste and waste waters in the operation and the constituents of all waste water. The constituents of the waste waters which should be subject to effluent limitations were identified.

The control and treatment technologies existing within each segment were identified. This included an identification of each distinct control and treatment technology, including both in-plant and end-of-process technologies, which is existent or capable of being designed for each segment. It also included an identification of, in terms of the amount of constituents and the chemical, physical, and biological characteristics of pollutants, the effluent level resulting from the application of each of the technologies. The problems, limitations and reliability of each treatment and control technology were also identified. In addition, the nonwater quality environmental impact, such as the effects of the application of such technologies upon other pollution problems, including air, solid waste, noise and radiation were identified. The energy requirements of each control and treatment technology were determined as well as the cost of the application of such technologies.

The information, as outlined above, was then evaluated in order to determine what levels of technology constitute the "best practicable control technology currently available." In identifying such technologies, various factors were considered. These included the total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application, the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, nonwater quality environmental impact (including energy requirements) and other factors.

The data upon which the above analysis was performed included EPA permit applications, EPA sampling and inspections, consultant reports, and industry submissions.

(2) Summary of conclusions with respect to the primary copper smelting subcategory (Subpart D), the primary copper refining subcategory (Subpart E), the secondary copper subcategory (Subpart F), the primary lead subcategory (Subpart G), and the primary zinc subcategory (Subpart H) of the nonferrous metals manufacturing point source category.

(i) *Categorization.* (1) *Subpart D.* Primary copper smelting subcategory: Primary copper smelting is a single subcategory for the purpose of establishing effluent limitations guidelines and standards of performance. The consideration of factors such as manufacturing process, raw materials, products produced, wastes generated, plant size and age, plant location, and air pollution control supports this conclusion. This subcategory has been defined to include all primary copper smelting operations and does not discern among those smelters which are integrated with mining and/or milling operations or have on-site electrolytic refining operations. One hydrometallurgical primary copper facility, currently under construction, is not considered at this time to be a part of this subcategory, since data are presently insufficient for possible categorization.

(2) *Subpart E.* Primary copper refining subcategory: Primary copper refining is a single subcategory for the purpose of establishing effluent limitations guidelines and standards of performance. The consideration of factors such as manufacturing process, raw materials, products produced, wastes generated, plant size and age, plant location, and air pollution control supports this conclusion. This subcategory has been defined to include all primary copper refining operations, which are not located on-site with a primary copper smelter. Those remaining primary copper refineries, which are located on-site with a primary copper smelter, are considered as a part of the primary copper smelting subcategory. The primary copper refining subcategory is further divided into those facilities geographically located in areas of net evaporation and those facilities geographically located in areas of net precipitation. This differentiation is primarily based on water usage and waste water control and treatment technology as practiced by the currently operating facilities.

(3) *Subpart F.* Secondary copper subcategory: Secondary copper is a single subcategory for the purpose of establishing effluent limitations guidelines and standards of performance. However, five principal waste streams resulting from five distinct water uses within the secondary copper industry have been identified and are subject to individual effluent limitations and standards of performance. These are: (a) Waste water from metal cooling, (b) waste water from slag quenching and granulation, (c) waste water from slag milling and classification, (d) waste water from furnace exhaust scrubbing, and (e) waste water from electrolytic refining operations. Plants using water for metal cooling only will be subject to one series of effluent limitations; plants using water for both metal cooling and slag quenching and granulation will be subject to two series of effluent limitations, etc. The consideration of such factors as raw materials processed, products produced, processes employed, plant age, plant size, air pollution control techniques, and plant location supports the conclusion that effluent limitations should be based on the specific water uses within a plant.

(4) *Subpart G.* Primary lead subcategory: Primary lead is a single subcategory for the purposes of establishing effluent limitations guidelines and standards of performance. The consideration of factors such as manufacturing process, age of plant, plant size, raw materials and products, plant location, and air pollution control techniques supports this conclusion. Plant location is considered to have a bearing on specific limitations and standards for this subcategory. Thus, this subcategory is further divided into those facilities geographically located in areas of net evaporation and those facilities geographically located in areas of net precipitation. One of the currently operating primary lead industry facilities, a primary lead refinery, not located on-site with a primary lead smelter, is not considered as a part of the primary lead subcategory since, due to process, no process waste water (as defined for this subcategory) is produced at this facility.

(5) *Subpart H.* Primary zinc subcategory: Primary zinc is a single subcategory for the purposes of establishing effluent limitations guidelines and standards of performance. The consideration of factors such as processes employed, age and size of plant, plant location, raw materials, waste characteristics, and byproducts and ancillary operations supports this conclusion.

(ii) *Waste characteristics.* (1) *Subpart D.* Primary copper smelting subcategory: The pollutants contained in the raw waste water from the facilities of the primary copper smelting subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, arsenic, cadmium, copper, lead, selenium, zinc, and acidity and alkalinity. Raw process waste water from the primary refining of copper, when such an activity is conducted onsite at a primary copper smelter, contains significant quantities of total suspended solids, arsenic, zinc, selenium, copper, and acidity and alkalinity. Raw waste load data have been collected on each process waste stream, and information has been assembled on the treatment procedures required for each waste water effluent.

(2) *Subpart E.* Primary copper refining subcategory: The pollutants contained in the raw waste water from the facilities of the primary copper refining subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, arsenic, zinc, selenium, copper, oil and grease, and acidity and alkalinity.

(3) *Subpart F.* Secondary copper subcategory: The pollutants contained in the raw waste water from the facilities of the secondary copper subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, copper, zinc, oil and grease, and acidity and alkalinity.

(4) *Subpart G.* Primary lead subcategory: The pollutants contained in the raw waste water from the facilities of the primary lead subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, cadmium, lead, zinc, and acidity and alkalinity.

(5) *Subpart H.* Primary zinc subcategory: The pollutants contained in the raw waste water from the facilities of the primary zinc subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, arsenic, cadmium, selenium, zinc, and acidity and alkalinity.

Other pollutants are found in the process waste waters of these five subcategories and include dissolved solids for all subcategories; iron and nickel for the primary copper smelting and refining subcategories; chemical oxygen demand, phosphorus, aluminum, magnesium, and boron for the secondary copper subcategory; bismuth, arsenic, calcium, and magnesium for the primary lead subcategory; and lead, nickel, and copper for the primary zinc subcategory. These pollutants are not considered, at this time, to be significant, primarily due to their concurrent control with the treatment technologies applied to the significant pollutants, to the lack of sufficient data on which to base effluent limitations and standards of performance, to their intermittent discharge and small concentration in the process waste water, or to current economic prohibition of known treatment methods for their removal from waste waters.

(iii) *Origin of waste water pollutants.* (1) *Subpart D.* Primary copper smelting subcategory: Process waste waters evolved from facilities within this subcategory include effluents from slag granulation; acid plant blowdown; fire-refined copper, anode copper, shot copper, and various forms of cathode copper casting (metal cooling); refining operations, when such operations are conducted on-site with a primary copper smelter, such as the disposal of spent electrolyte, electrolytic refinery washing, and slimes recovery; and miscellaneous operations such as dimethylaniline plant blowdown and purge, slurry overflow from dust collection systems and wet fluid-bed roaster charge systems, arsenic plant washdown, as well as general plant washdown, and byproduct scrubbing, as in rhenium recovery from molybdenum roaster offgases. Dissolved metals, such as the salts of cadmium, zinc, copper, arsenic, lead, iron, nickel, and selenium, are found in the highly acidic sulfuric acid plant blowdown and dimethylaniline plant blowdown. Total suspended solids are readily found in the process waste water generated during metal cooling and slag granulation. Arsenic concentrations are extremely high in arsenic plant washdown water.

(2) *Subpart E.* Primary copper refining subcategory: Process waste waters evolved from facilities within this subcategory include effluents from the disposal of spent electrolyte, the direct contact cooling of anode copper and various forms of cathode copper, electrolytic refinery washing, and slimes recovery. Oil and grease, as well as total suspended solids are constituents of the metal casting water generated at these facilities. The dissolved metals of arsenic, zinc, selenium, and copper are primary constituents found in the process waste waters produced in the acidic spent electrolyte and the small volume solutions from slime recovery.

(3) *Subpart F.* Secondary copper subcategory: Process waste waters evolved from facilities within this subcategory

include effluents from metal cooling, from slag quenching and granulation, from slag milling and classification, from furnace exhaust scrubbing, and from electrolytic refining operations. The pollutants of total suspended solids, oil and grease, and small amounts of metal oxides are found in metal cooling water. Slag granulation and slag milling and classification generate waste waters with high pH values, high levels of total suspended solids, and the heavy metal components of the slags such as soluble amounts of antimony, cadmium, copper, chromium, iron, lead, manganese, nickel, and zinc. Oil and grease is picked up during the wet milling of slag, but is not present in slag granulation water. The large volume of water used to operate wet air scrubbers contains large amounts of total suspended solids, most of which is zinc oxide, and dissolved solids of metals. Waste water from electrolytic operations contains high acid and copper values. Cementation of this effluent reduces the copper concentration, but increases that of iron.

(4) *Subpart G.* Primary lead subcategory: Process waste waters evolved from facilities within this subcategory include effluents from acid plant blowdown; from slag, speiss, and/or dross granulation; and from furnace exhaust scrubbing. The acidic waste effluent of acid plant blowdown contains salts of trace metals such as lead, zinc, cadmium, and to a lesser extent, mercury. Slag granulation water contains total suspended solids and minor quantities of metal oxides. Speiss granulation water contains copper and arsenic. Metal oxides of cadmium, lead, and zinc are primarily found in furnace fume scrubber waste effluents.

(5) *Subpart H.* Primary zinc subcategory: Process waste waters evolved from facilities within this subcategory include effluents from acid plant blowdown; reduction furnace gas cleaning operations; metal casting cooling; cadmium production; auxiliary air pollution control operations; electrolyte purification, wash water, and spills; and preleaching of zinc concentrates. The major waste effluent, acid plant blowdown, contains high levels of sulfates, low pH, and high levels of arsenic, lead, cadmium, selenium, zinc, and, depending upon the zinc concentrates used for processing, mercury. Total suspended soils and zinc appear as constituents of metal cooling water. Cadmium, lead, zinc, and dissolved and suspended solids are collected in waste waters from gas scrubbing and reduction furnace gas cleaning operations.

Storm water runoff at all of the facilities of the above five subcategories is considered as a process waste water only when it commingles with process waste water, as discussed above, or when it is intentionally collected because of pollutant pickup on plant property.

(iv) *Treatment and control technology.* Waste water treatment and control technologies have been studied for each subcategory of the industry to determine what is the best practicable control technology currently available.

(1) *Subpart D.* Primary copper smelting subcategory: The best practicable control technology currently available for the process waste water effluents within this subcategory includes the recycle and reuse of this waste water after, as needed, neutralization and settling. This technology is primarily based on both the disposal and reusage sources existing and readily available at the primary copper smelting facilities. The numerous pyrometallurgical processing operations produce hot offgases, which can be used as a disposal source of waste water through thermal consumption, as a cooling media, and as a reusage source of waste water through gas preconditioning prior to hot electrostatic precipitators. Many of the primary copper smelting facilities are physically integrated with mining and/or milling operations. Reusage of process waste water as a part of the influent water requirement to the mill flotation circuit is currently a common practice at many of the integrated primary facilities. The hydrometallurgical leaching operation, if such an operation exists at a primary smelting facility, provides an excellent reusage source of process waste water. Maximization of the recycle of process waste water is achieveable through the use of well-designed and operated cooling towers and/or cooling ponds, both with sufficient retention time for the settling of solids, as needed for recycle. The best practicable control technology currently available for this subcategory also includes, but to a lesser extent, the disposal of process waste water through impoundment and solar evaporation. This technique could be employed as a disposal method for all process waste waters or for just a portion of these waters. A discussion of the best practicable control and treatment technologies applied to specific process waste water sources generated within this subcategory follows:

(a) The best practicable control technology currently available for process waste water generated during slag granulation includes the complete recycle and reuse of this water after treating the effluent, if necessary, to reduce suspended solids by settling and filtration, as well as temperature; conversion from slag granulation to air cooling of slag (i.e., waste dumping); and the impoundment of this source of waste water with disposal by solar evaporation.

(b) The best practicable control technology currently available for the process waste water source of acid plant blowdown includes the complete recycle and reuse of this water after treating, if necessary, to neutralize and settle and the impoundment of this source of waste water with disposal by solar evaporation. Minimization of acid plant blowdown can be achieved by the usage of highly-efficient primary particulate control devices, as well as efficiently operated cooling towers and/or ponds.

(c) The best practicable control technology currently available for process waste water generated during the contact cooling of blister copper, shot copper, anode copper, fire-refined copper, and cathode-shape copper includes the complete recycle and reuse of this water after treating, if necessary, for solids removal and cooling; the use of air cooling for blister copper; and the impoundment of this source of waste water with disposal by solar evaporation.

(d) The best practicable control technology currently available for process waste water generated during the electrolytic refining of copper, if such an operation is conducted on-site with a primary copper smelter, includes, for spent electrolyte, the complete recycle and reuse after copper removal by means of liberator cells, electrowinning cells, and cementation, recovery of nickel values through evaporation, if nickel concentration is sufficient, the sale of spent electrolyte for commercial recovery of nickel sulfate, if nickel concentration warrants, copper sulfate, and black acid, and the impoundment of this source of waste water with disposal by solar evaporation; for electrolytic refining washing, the complete recycle and reuse of this wash water by collection in a holding area, if necessary, and direct reuse as electrolytic makeup water, or recycle as wash water and the impoundment of this source of waste water with disposal by solar evaporation; for slimes recovery waste water, the shipment of the slimes to other off-site locations for recovery of contained elements and the impoundment of this source of waste water with disposal by solar evaporation; and for waste water generated by the usage of nickel sulfate vacuum evaporators, the application of efficient mist eliminators and proper operating and maintenance procedures to minimize or eliminate entrainment, the sale of spent electrolyte to other facilities for nickel sulfate recovery, conversion to open evaporators without a need for barometric condensers, the use of cooling towers, and the impoundment of this source of waste water with disposal by solar evaporation.

(e) The best practicable control technology currently available for process waste water generated by miscellaneous sources at primary copper smelting facilities, if such operations are conducted at the primary copper smelter, include, for dimethylaniline plant blowdown and purge, the complete recycle and reuse of this water after treating, if necessary, to neutralize and settle and the impoundment of this source of waste water with disposal by solar evaporation, and for other miscellaneous sources, as defined for this subcategory, the complete recycle and reuse of all waste water after, if necessary, neutralization, settling, and temperature control and the impoundment of these sources of waste water with disposal by solar evaporation.

(f) The best practicable control technology currently available for storm water runoff which commingles with process waste water (as defined by the regulation) is to discharge that volume of water, after the treatment, if necessary, of neutralization and settling, accountable to the net precipitation during each one month period.

The best available technology economically achievable and the best available demonstrated control technology, processes, operating methods, or other alternatives are identical to the best practicable control technology currently available for those facilities included in the primary copper smelting subcategory.

(2) *Subpart E.* Primary copper refining subcategory: For facilities geographically located in areas of net evaporation, the best practicable control technology currently available for the process waste water effluents includes the recycle and reuse of this waste water after, as needed, neutralization and settling and disposal through impoundment and solar evaporation. The best practicable control technology currently available for storm water runoff which commingles with process waste water (as defined by the regulation) is to discharge that volume of water, after the treatment, if necessary, of neutralization and settling, accountable to the net precipitation during each one month period.

For the remainder of the primary copper refineries of this subcategory not located on-site with a primary copper smelter, but geographically located in an area of net precipitation, the best practicable control technology currently available includes the maximization of recycle and reuse of process waste water to achieve levels of water usage demonstrated by the average of the best of these same facilities. Subsequent liming and settling of the resultant effluent, with concentration values for significant pollutants and pollutant parameters (as considered to be best practicable), results in effluent loadings based upon refined copper production.

A discussion of the best practicable control and treatment practices for specific process waste water sources generated at facilities geographically located in areas of net precipitation follows:

(a) The best practicable control technology currently available for process waste water generated during the contact cooling of anode, fire-refined, and cathode-shape copper includes the reuse or recycle of at least 90 percent of this contact cooling water. The amount of bleed is determined by the capacity of the cooling tower and/or pond and its settling and cooling ability. The discharge of the bleed after treatment for settling suspended solids is considered as best practicable.

(b) The best practicable control technology currently available for spent electrolyte is the removal of contained materials for byproduct recovery, as warranted, and the return to the electrolytic cell or the reuse of the spent electrolyte. This is a current practice within this industry.

(c) The best practicable control technology currently available for those few waste water sources generated during slimes recovery is the discharge of the small flow volumes, but only after neutralization.

(d) The best practicable control technology currently available for electrolytic refinery washing water is the reuse and recycle as either electrolytic make-up or make-up for copper sulfate production.

(e) The best practicable control technology currently available for process waste water generated from the usage of nickel sulfate vacuum evaporators is the elimination of entrainment by the application of efficient mist eliminators and proper operating and maintenance procedures. Conversion to open evaporators or the use of cooling towers also represents best practicable control technology for this large source of process waste water.

The resultant best practicable flow from the above sources of process waste water averages to about 2000 l/kkg (480 gal/ton) of copper. The treatment of this flow of water by liming and settling, considered as the best practicable treatment approach, permits the achievement of the best practicable pollutant characteristic concentrations.

The best available technology economically achievable and the best available demonstrated control technology, processes, operating methods, or other alternatives are identical to the best practicable control technology currently available for those facilities of the primary copper refining subcategory which are geographically located in areas of net evaporation.

The best available technology economically achievable for those remaining facilities of this subcategory, which are geographically located in areas of net precipitation, includes a 90 percent reduction in flow volumes from the 2000 l/kkg (480 gal/ton) best practicable value. This best available value is 200 l/kkg (48 gal/ton).

The allocation of best available components to this composite flow includes 100 l/kkg (24 gal/ton) as bleed from contact cooling; 40 l/kkg (10 gal/ton) from spent electrolyte and electrolytic refinery washing; and 60 l/kkg (14 gal/ton) from slimes recovery. The use of well-designed cooling towers or ponds, and, possibly, the application of side-stream filtration will reduce the bleed from contact cooling for the maintenance of acceptable salt concentrations. Additional waste water can be disposed of by using the heat evolved in cooling either anode or cathode copper as evaporative energy. Conversion of vacuum evaporators to open evaporators, the application of well operated and maintained mist eliminators, or the use of cooling towers, would also be required. The treatment technology of lime and settle, as recommended for the best practicable treatment technology, is also considered as the best available treatment technology.

The best available demonstrated control technology, processes, operating methods, or other alternatives for those primary copper refineries geographically located in areas of net precipitation are identical to the best available technology economically achievable as described above.

(3) *Subpart F.* Secondary copper subcategory: The best practicable control technology currently available for the process waste water effluents generated by the sources of the secondary copper subcategory include the complete recycle and reuse after settling preceded by pH adjustment, if necessary. A discussion of the best practicable control and treatment technology currently available applied to the specific process waste water sources generated within this subcategory follows:

(a) The best practicable control technology currently available for process waste water generated during the contact cooling of copper ingots, anodes, billets, or shot is the complete elimination of water discharge by the recycling and reuse of all waste waters. With the reuse and recycle of water, the need for solids and oil removal would be dictated by plant operational procedures. Removal of solids such as the charcoal used to cover copper alloy ingots and the oxide scale and mold wash from anode casting requires settling and filtration before the water is reused. The pond used for settling will provide cooling. Alternatively, a cooling tower circuit can provide settling capacity. Of the plants within this subcategory, which use water for direct contact cooling of metal, 25 percent recycle this process waste water with no discharge, 22 percent recycle with periodic discharge, and 12 percent recycle with a continuous discharge. The remaining 41 percent of the 37 plants do not recycle any metal casting cooling water.

(b) The best practicable control technology currently available for process waste water generated from the quenching and granulation of copper-rich slags is the elimination of water discharge by the recycle and reuse of waste water after treating this stream to reduce suspended solids by settling and filtration or by air cooling this molten slag after it has been cast into slag pots for subsequent metal recovery by dry processes. When quenching and granulating depleted (waste) slags, the best practicable control technology currently available is the recycle and reuse of this waste water after treatment to reduce suspended solids by settling and filtration. Eleven percent of the 37 copper-alloy producers use water to quench their copper-rich slags; all four of these plants report no discharge of waste water after settling. The remaining 33 plants air cool those copper-rich slags in slag pots. Of the seven unalloyed copper plants, four use water to quench depleted slags; three of these four plants recycle this water after settling.

(c) The best practicable control technology currently available for the process waste water generated during copper-rich slag milling and classifying is the elimination of this discharge by either recycling and reusing all of this water after treatment to reduce solids content by pH adjustment to between eight and nine, if necessary, and settling, followed by filtration or by melt-agglomerating the metal in a blast, cupola, or rotary furnace. In the former technology, lagoons or settling tanks followed by filtration are used to remove solids. The pH is maintained near a value of eight with acid to control the extent of hydrolysis of the basic metal oxides of the slag. Twenty-one secondary copper plants process copper-rich slags, six by wet milling and classifications and the remaining 21 by melt-agglomerating in a furnace. Three of the six wet milling operations have no discharge of process waste water, while the other three recycle water and discharge only periodically.

(d) The best practicable control technology currently available for process faste water from furnace exhaust scrubbing is the elimination of this discharge by recycling all of the waste water from this source after pH adjustment to between eight and nine, and removal of solids by settling and filtration or centrifugation. The use of cooling towers may be necessary, depending upon the waste water storage capacity available, the size of the emission control system, and the period of time that it is operated per day. Another alternative to the elimination of this waste water effluent is by conversion to dry air pollution control equipment. Thirteen of the 44 plants use wet air pollution control; of these 13 users, eight recycle all of their water. All of the remaining plants employ dry air pollution controls on furnace offgases.

(e) The best practicable control technology currently available for waste water from electrolytic refining is the elimination of this discharge by treating the bleed or breakdown stream from electrolytic cell operations, so that it is suitable for reuse in other plant processes. The treatment consists of removal of copper by cementation with iron metal, line neutralization to a pH of between eight and nine, and sand filtering this stream to remove solids before discharge into a combined process water reservoir serving other plant water needs. Of the four producers of secondary unalloyed metal, one employs the above technology, one has a market for the spent electrolyte, one treats the electrolyte by cementation and the resulting iron sulfate solution is discharged into a joint treatment plant, and the last one evaporates this solution during metal (i.e., nickel) sulfate recovery. Only one plant is known to recover precious metals on-site, and the small production of process waste water can easily be reused for hot offgas cooling prior to baghouse entrance, or for other plant uses, after, as needed, neutralization and precipitation.

(f) The best practicable control technology currently available for storm water runoff which commingles with process waste water (as defined by the regulation) is to discharge that volume of water, after the treatment, if necessary, of neutralization and settling, accountable to the net precipitation during each one month period.

The best available technology economically achievable and the best available demonstrated control technology, processes, operating methods, or other alternatives are identical to the best practicable control technology currently available for those facilities included in the secondary copper subcategory.

(4) *Subpart G*. Primary lead subcategory: For those primary lead facilities geographically located in areas of net evaporation, the best practicable control technology currently available includes the recycle and reuse of this waste water after, as needed, neutralization and settling and disposal through impoundment and solar evaporation. The best practicable control technology currently available for storm water runoff which commingles with process waste water (as defined by the regulation) is to discharge that volume of water, after the treatment, if necessary, of neutralization and settling, accountable to the net precipitation during each one month period.

For the remainder of the primary lead facilities of this subcategory, which are geographically located in areas of net precipitation, the best practicable control technology currently available includes the maximization of recycle and reuse of process waste water to achieve levels of water usage demonstrated by the average of the best of the same facilities. Subsequent liming and settling of the resultant effluent, with concentration values of significant pollutants and pollutant parameters (as considered to be best practicable), result in effluent loadings based upon lead bullion production.

A discussion of the best practicable control and treatment practices for specific process waste water sources generated at facilities geographically located in areas of net precipitation follows:

(a) The best practicable control technology currently available for process waste water generated during wet offgas scrubbing is the elimination of this water by complete recycle and reuse. The best practicable control technology currently available for process waste water generated during the granulation of slag is the minimization or complete elimination of this water by various recycle and reuse means. One alternate method of the handling and disposing of slag without the use of water would be by tapping the slag into a pot and then pouring the slag onto the customary slag disposal site. The usage of some slag granulation water as a cooling media for the hot smelter offgases prior to entrance into baghouse is considered as an excellent disposal source for this process waste water. Cascading of process waste water, such as the usage of acid plant blowdown as slag granulation water with a resultant effluent from the slag granulation—acid plant blowdown circuit, is also considered as best practicable control technology currently available.

(b) The best practicable control technology currently available for acid plant blowdown is the treatment of this volume, calculated to be 825 l/kkg (200 gal/ton) as determined from the flow usage within the current industry, by lime and settle. The resultant effluent pollutant parameter concentrations were selected from available data on effluents as contained in documents of record, field analyses, and projected effluent concentrations as described by information submitted by the industry. The combination of neutralization and clarification is required to achieve the best practicable control technology currently available. Clarification alone will reduce only total suspended solids; neutralization without clarification will reduce dissolved metals, but not suspended ones, and will not provide an effluent of satisfactory quality. Neutralization with lime to a pH in the eight to ten range will reduce the concentrations of those metals precipitable as hydroxides, and with properly designed retention facilities will also reduce total suspended solids to below the recommended effluent limitations guideline.

The best available technology economically achievable and the best available demonstrated control technology, processes, operating methods, or other alternatives are identical to the best practical control technology currently available for those facilities included in the primary lead subcategory.

(5) *Subpart H*. Primary zinc subcategory: The best practicable control technology currently available for the process waste water generated by the facilities of the primary zinc subcategory is considered to include measures to achieve the reuse and recycle of these waters to minimize discharge, and the treatment of the remaining waste water by liming and settling before discharge. A review of water use practices in various zinc plant systems has shown that in specific cases, some process waste waters are currently being used on a once-through basis; whereas, in other existing plants, the discharge from the same process operation is considerably lower on a unit-product basis by virtue of recycle. Further, various examples of reuse of process waste water (e.g., acid plant blowdown used for cadmium leaching) were also identified. Potential reductions in process waste water volume are given in various proposed plans for decreased discharge of process waste waters.

Internal streams in primary zinc plants vary considerably with differences in plant operations, and no specific list of control measures may be presented for all plants. Those measures that have been identified include:

(a) The minimization of acid plant blowdown by appropriate proper operation of prescrubber gas cleaning facilities to minimize particulate loadings into the wet scrubbers, cooling capacity and provisions for settling in the scrubber liquor recycle circuit, and, possibly, the reuse of the scrubber bleed stream in other plant operations.

(b) The minimization of metal casting cooling water discharge by recycling, possibly including provisions in the circuit for removal of suspended solids, oil and grease, and thermal load.

(c) The exploitation of the evaporative capacity of hot gases or hot metal for in-plant disposal of waste water.

The flow rates of process waste water discharges at the domestic primary zinc plants were inspected to determine the best practicable water usage rate. This value was determined to be 8,350 l/kkg (2,000 gal/ton) and was calculated as the average value of six primary plants.

The end-of-pipe treatment identified as part of the best practicable control technology currently available is the lime and settle treatment. Currently, some form of this treatment is being applied to some portion of process waste water at five of the six plants in this industry. Current lime and settle treatment facilities achieve the concentration of significant pollutant parameters for this subcategory and are considered as best practicable values for the calculation of effluent limitations. Thus these demonstrated levels of concentrations were applied, together with the selected flow value, to derive the recommended effluent limitations based upon the best practicable control technology currently available.

The identification of the best available technology economically achievable is analogous to the best practicable control technology currently available and includes control measures to further minimize the volume of process waste water streams by additional recycle, reuse, and segregation, as well as the application of chemical treatment to achieve controlled precipitation followed by sedimentation. As with the best practicable technology, the current and potential discharges of process waste water were inspected to determine the best available technology flow value. This value was determined to be 5,425 1/kkg (1,300 gal/ton) and was calculated as the average of the five best discharge rates. The same treatment technology pollutant concentrations, as were used in the calculations of the best practicable effluent limitations, were considered as those achievable through the application of the best available technology economically achievable. These concentrations are achievable by means of lime and settle technology. Thus, these levels of concentrations were applied, together with the selected best available technology flow value, to derive the recommended effluent limitations based upon the best available technology economically achievable.

The best available demonstrated control technology, processes, operating methods, or other alternatives are identical to the best available technology economically achievable for the facilities included in the primary zinc subcategory.

Solid waste control must be considered. The treatment technology of lime and settle produces solid waste as an adjunct to its operation. The resulting solids will contain precipitated insoluble metal hydroxides, as well as calcium and magnesium sulfate.

The proper management of solid wastes resulting from pollution control systems must be practiced. Pollution control technologies generate many different amounts and types of solid wastes and liquid concentrates through the removal of pollutants. These substances vary greatly in their chemical and physical composition and may be either hazardous or non-hazardous. A variety of techniques may be employed to dispose of these substances depending on the degree of hazard.

If thermal processing (incineration) is the choice for disposal, provisions must be made to ensure against entry of hazardous pollutants into the atmosphere. Consideration should also be given to recovery of materials of value in the wastes.

For those waste materials considered to be non-hazardous where land disposal is the choice for disposal, practices similar to proper sanitary landfill technology may be followed. The principles set forth in the EPA's Land Disposal of Solid Wastes Guidelines 40 CFR 241 may be used as guidance for acceptable land disposal techniques.

For those waste materials considered to be hazardous, disposal will require special precautions. In order to ensure long-term protection of public health and the environment, special preparation and pretreatment may be required prior to disposal. If land disposal is to be practiced, these sites must not allow movement of pollutants to either ground or surface waters. Sites should be selected that have natural soil and geological conditions to prevent such contamination or, if such conditions do not exist, artificial means (e.g. liners) must be provided to ensure long-term protection of the environment from hazardous materials. Where appropriate, the location of solid hazardous materials disposal sites should be permanently recorded in the appropriate office of the legal jurisdiction in which the site is located.

(v) *Cost estimates for control of waste water pollutants.* (1) *Subpart D.* Primary copper smelting subcategory: For the existing facilities in the primary copper smelting subcategory to achieve the level of control of process waste water pollutants, as recommended, would require an approximated total capital cost and annual operating cost of $1,212,000 and $284,000, respectively.

(2) *Subpart E.* Primary copper refining subcategory: For the existing plants of the primary copper refining subcategory to achieve the levels of control of process waste water pollutants recommended for July 1977, the capital cost required will approximate $334,000 and the annual operating cost required will be about $118,000. Incremental control and/or treatment costs of approximately $1,581,000 capital and $805,000 annual operating will be required of three plants to achieve the further reductions in discharge of process waste water pollutants recommended for the best available technology economically achievable effluent limitations of 1983. Therefore, the total estimated capital and annual operating costs for the primary copper refining subcategory are $1,915,000 and $923,000, respectively.

(3) *Subpart F.* Secondary copper subcategory: It has been estimated that for the existing plants within this subcategory to achieve the recommended limitation of no discharge of process waste water pollutants to navigable waters would require a capital cost and annual operating cost of $538,000 and $270,000, respectively. The vast majority of these estimated costs have been allocated to the control of process waste water pollutants at one plant.

(4) *Subpart G.* Primary lead subcategory: For the existing facilities within the primary lead subcategory to achieve the levels of control of process waste water pollutants, as recommended, would require an estimated capital cost and annual operating costs of $1,275,000 and $570,000, respectively, most of which is attributable to additional control and treatment technology required at one plant.

(5) *Subpart H.* Primary zinc subcategory: It has been estimated that for the existing plants in the primary zinc subcategory to achieve the levels of control of process waste water pollutants recommended for July 1, 1977, the capital costs required will approximate $1,515,000 and annual operating costs required will be about $458,000. Incremental control and/or treatment costs of approximately $1,054,000 capital and $450,000 annual operating will be required of two plants to achieve the further reductions in discharge of process waste water pollutants recommended for the best available technology effluent limitations of 1983. Therefore, the total estimated capital and annual operating costs to this industry are $2,569,000 and $908,000, respectively.

(vi) *Energy requirements and non-water quality environmental impacts.* Specific data on energy requirements were not available for the vast majority of the plants surveyed. Electrical energy is consumed in the waste water treatment for the operation of process equipment, such as pumps, blowers, centrifuges, and filters. Mechanical operations totaling 50 horsepower or less would be typical; the required amount of fuel or electricity consumption for treatment of process waste water would be negligible when compared to the total energy consumption in the industries of this category. For the secondary copper subcategory, energy requirements would amount to only 14.9 kwhr/annual kkg (13.5 kwhr/annual ton) (for 7,200 hr/yr and 18,000 kkg (19,800 tons) annual secondary copper production) or $0.15/kkg ($0.14/ton) (at $0.01/kwhr). Similar estimates from one primary zinc producer indicated a power consumption of about 4.3 kwhr/kkg (3.9 kwhr/ton) of zinc production, or $0.04/kkg ($0.04/ton) at $0.01/kwhr.

Solid wastes are generated from the neutralization and settling of the process waste waters of the primary copper, lead, and zinc and the secondary copper industries. The volume of the sludge is principally determined by the desired pH adjustment. One domestic primary zinc plant is currently investigating treatment techniques for its process waste waters. One of the design parameters is solid waste generation. The direct treatment approach of lime and settle is anticipated to produce about 222 kkg (245 tons)/day (41 kkg (45 tons)/day dry weight) of solid waste. This waste will consist mostly of calcium sulfate and magnesium sulfate, as gypsum. Basic research studies on the usage of different flocculents indicate the possible usage of a lower pH and the subsequent generation of about one-third as much sludge. One currently operating lime and settle treatment facility at a primary zinc plant ships its sludge, after solar drying, to one of its lead smelters for zinc recovery in a zinc fuming furnace. A domestic primary copper facility is currently starting up a lime and settle facility, which will treat much of the commingled plant effluent. Sludge generation is anticipated to be about 36 kkg (40 tons)/day and will be stored in a nearby site. Generated solid waste from a lime and settle facility at one primary zinc-lead smelting complex will be disposed of by storing in the plant's tailings pond.

(vii) *Economic impact analysis.* The general conclusion of this study is that the guidelines will have little economic impact on the nonferrous metals industry. In primary copper, fourteen of the industry's twenty-two plants already meet the BPCTCA guidelines. Plants already in BPCTCA compliance account, collectively, for 58 percent of total employment in primary copper, 63 percent of total smelter capacity and 70 percent of total refinery capacity. To achieve BPCTCA compliance, incremental capital costs to primary copper producers will reach only about $1.6 million while incremental operating costs will run at about $0.4 million annually (1972 dollars). The increment to operating costs amounts to an increase over base operating costs of less than 0.4 percent or 0.03¢ per pound of metal currently selling for 76¢ per pound. BPCTCA and BATEA are identical for smelters but not for refineries. Hence only three plants, all refineries, will confront additional costs to meet BATEA once the industry has achieved BPCTCA compliance. For these plants, incremental capital costs are estimated at $1.6 million and incremental operating costs at $0.8 million annually. In both BPCTCA and BAT, analysis indicates that cost increments are too modest to imply significant internal or external economic impacts. In particular, it is not expected that primary copper prices will rise as a consequence of BPCTCA and BATEA implementation.

Of the forty-four plants in the secondary copper industry, all but one are already in compliance with the BPCTCA/BATEA guidelines, which are identical. There are several additional plants which will have to make minor waste water treatment adjustments to achieve compliance with the guidelines, but the costs involved are trivial. Hence these plants are treated here as though they were already in compliance. Estimated incremental capital costs for the remaining plant to achieve BPCTCA and BATEA are approximately $0.5 million while incremental operating costs will be about $0.3 million annually. No significant internal or external economic impacts are anticipated. In particular, no increases in secondary copper prices are expected since the market is dominated, in the aggregate, by producers already in compliance with the guidelines.

BPCTCA and BATEA are also identical in primary lead. In this industry, five of the present seven plants are already in compliance with the guidelines. These plants account for 53 percent of the industry's capacity and 70 percent of its total employment. Incremental capital costs for the remaining plants are estimated at $1.3 million while incremental operating costs are about $0.6 million annually. The increment to operating costs represents less than 0.1¢ per pound of refined lead, which currently sells for 24½¢ per pound. Thus no significant internal or external economic impacts are anticipated in this industry.

In primary zinc, three of the seven plants in the industry are already in compliance with the BPCTCA guidelines. Estimated incremental capital costs to achieve compliance for the remaining four plants approximate $1.6 million while incremental operating costs will run about $0.5 million annually. The increment to operating costs is less than half of one percent of 1972 base operating costs for this industry and would add approximately 0.04¢ per pound to the cost of producing zinc. Zinc sells currently for 38 to 40¢ per pound. Accordingly, no significant internal or external economic impacts are anticipated to follow from BPCTCA implementation in this industry.

Achievement of the BPCTCA guidelines would leave only two primary zinc plants not in compliance with BATEA guidelines. Total incremental capital costs to achieve BATEA compliance for these plants is estimated at $1.1 million while incremental operating costs will run to about $0.5 million annually. Approximately 90% of the incremental capital and operating costs will impact on a single plant. Even so, the increment to operating costs adds less than 0.1¢ per pound to the 1972 base operating cost of about 8 to 10¢ per pound. Analysis indicates that, while these costs are not negligible, the plant in question will not be threatened with closure or curtailment of output. No significant price increases are anticipated.

In conclusion, it should be noted that impact of the incremental capital costs will probably be minimized by project execution over several years. Further, in several cases (e.g., zinc) incremental costs have been estimated on a "worst case" basis in situations in which managements have several less expensive compliance options.

For the industry as a whole, no closures or curtailments in output or employment are anticipated as consequences of guidelines implementation.

The reports entitled "Development Document for Interim Final Effluent Limitations Guidelines and Proposed New Source Performance Standards for the Primary Copper Smelting Subcategory and the Primary Copper Refining Subcategory of the Copper Segment of the Nonferrous Metals Manufacturing Point Source Category", "Development Document for Interim Final Effluent Limitations Guidelines and Proposed New Source Performance Standards for the Secondary Copper Subcategory of the Copper Segment of the Nonferrous Metals Manufacturing Point Source Category," "Development Document for Interim Final Effluent Limitations Guidelines and Proposed New Source Performance Standards for the Lead Segment of the Nonferrous Metals Manufacturing Point Source Category," and "Development Document for Interim Final Effluent Limitations Guidelines and Proposed New Source Performance Standards for the Zinc Segment of the Nonferrous Metals Manufacturing Point Source Category," detail the analyses undertaken in support of the interim final regulation set forth herein and are available for inspection in the EPA Freedom of Information Center, Room 204, West Tower, Waterside Mall, Washington, D.C., at all EPA regional offices, and at State water pollution control offices. A supplementary analysis prepared for EPA of the possible economic effects of the regulation is also available for inspection at these locations. Copies of these documents are being sent to persons or institutions affected by the proposed regulation or who have placed themselves on a mailing list for this purpose (see EPA's advance notice of public review procedures, 38 FR 21202, August 6, 1973). An additional limited number of copies of these reports are available. Persons wishing to obtain a copy may write the EPA Office of Public Affairs, Environmental Protection Agency, Washington, D.C. 20460, Attention: Ms. Ruth Brown, A-107.

When this regulation is promulgated in final rather than interim form, revised copies of the Development Documents will be available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Copies of the economic analysis document will be available through the National Technical Information Service, Springfield, VA 22151.

(c) *Summary of public participation.* Prior to this publication, the agencies and groups listed below were consulted and given an opportunity to participate in the development of effluent limitations, guidelines and standards proposed for the nonferrous metals manufacturing category. All participating agencies have been informed of project developments. Initial drafts of the Development Documents were sent to all participants and comments were solicited on those reports. The following are the principal agencies and groups consulted: (1) Effluent Standards and Water Quality Information Advisory Committee (established under section 515 of the Act); (2) all State and U.S. Territory Pollution Control Agencies; (3) The American Society of Mechanical Engineers; (4) The Conservation Foundation; (5) Environmental Defense Fund, Inc.; (6) National Resources Defense Council; (7) The American Society of Civil Engineers; (8) Water Pollution Control Federation; (9) National Wildlife Federation; (10) American Institute of Chemical Engineers; (11) Hudson River Sloop Restoration, Inc.; (12) U.S. Department of Housing and Urban Development; (13) U.S. Department of the Interior; (14) U.S. Department of Commerce; (15) Water Resources Commission; (16) Atomic Energy Commission; (17) U.S. Department of Defense; (18) Office of Management and Budget; (19) Aluminum Smelting and Recycling Institute; (20) American Mining Congress; (21) The Aluminum Association; (22) Copper and Brass Fabricators Council;

(23) Institute of Printed Circuits; and
(24) Master Electroplating Association.

The following responded with comments: United States Water Resources Council; American Mining Congress; New York State Department of Environmental Conservation; Parsons, Behle, and Latimer on behalf of Kennecott Copper Corporation; Anaconda Company; State of Delaware, Department of National Resources and Environmental Control; National Zinc Company, Inc.; American Institute of Chemical Engineers; Fennenore, Craig, Von Ammon and Udall on behalf of Kennecott Copper Corporation (Ray Mines Division); Arizona State Department of Health; U.S. Department of the Interior; St. Joe Minerals Corporation; Texas Water Quality Board; AMAX American Metal Climax, Inc.; and the Bunker Hill Company.

The primary issues raised in the development of the interim final effluent limitations and guidelines and the treatment of these issues herein are as follows:

(1) A common criticism was that hydrometallurgical operations, specifically leaching, should not be considered as part of the copper segment. The commenters felt that the discharges from such hydrometallurgical operations should be regulated as part of the ore mining and milling category.

Leaching operations, as discussed in the contractor's draft report, are not part of the primary copper smelting and refining industry for the purpose of establishing effluent limitations. This source of waste water will be covered by a pending study of the ore mining and dressing industry, from which effluent limitations will be derived.

(2) Several commenters stated that the setting of regulations for waste water effluents from the primary copper smelting and refining industry should be delayed to coincide with pending regulations on ore mining and milling. They indicated that the process flows are cross-connected and abatement systems are common to both types of discharge.

A building block approach is being applied to regulate the mining and milling sources of process waste water and the smelting and refining sources of the copper industry. In developing effluent limitations for the primary copper industry, there has been a full awareness of the existence of the integrated mining and milling operations.

(3) Many commenters felt that the geographical area, specified for Category I in the contractor's report on the primary copper industry and requiring no discharge of process waste water pollutants for facilities in this same area, is water, based upon a state-wide solar evaporation rate, impracticable include (a) near-zero evaporation rates during cold winter weather, (b) large acreage of level impoundment land which is not available in mountainous terrains, (c) current State law stipulates that, after usage, water must not be wasted or interdicted, and (d) nonwater quality problems related with "huge" evaporation ponds.

The development document for the primary copper industry has been rewritten and now places most of its emphasis upon recycle and reuse of process waste water. The primary copper smelter, when integrated with an ore milling or leaching operation, can reuse much of its smelter waste water (and refinery waste water, if a refinery is located on-site) within the milling or leaching processes. The high processing temperatures employed in each pyrometallurgical operation at the primary copper smelters produce high temperature offgases which provide a disposal route for some waste water. Each source of waste water was investigated, and the development document tabulates current and anticipated control and treatment practices for each of these sources. From these tabulations and their discussion in the text of the document, the conclusion regarding no discharge of process waste water pollutants to navigable waters was reached. Thus, impoundment, with solar evaporation is only part of the rationale. In specific reference to the four subcomments above, the net evaporation-precipitation rain water discharge provision, contained in the proposed regulation, will alleviate problems associated with near-zero evaporation rates during cold weather; the maximization of recycle and reuse of process waste water will produce a minimum-sized "level" impoundment area, so that mountainous terrain locations are not adversely affected; current State laws prohibiting the "wasting" of water will not be violated since the regulation places its emphasis on reuse and recycle (as shown by the smelter operators of the Southwest); and, finally, nonwater quality problems related to the application of "huge" evaporation ponds to smelter waste water effluents will be minimized since disposal by solar evaporation is only considered as an alternate approach to the achievement of no discharge of process waste water pollutants to navigable waters.

(4) One commenter stated that the contractor's primary copper development document did not encourage treatment, recycle, and reuse of process waste waters from category I (i.e., contractor's nomenclature for copper facilities located in areas of net evaporation).

The rewritten edition of the contractor's document places nearly all of the emphasis on control and treatment practices used within this industry. Methods of recycle and reuse have been tabulated, so that the rationale for the best practicable control technology currently available of effluent segregation, recycle, reuse, and treatment, if needed, supports a no discharge of process waste water pollutants to navigable waters limitation. Impoundment, with solar evaporation, is considered as a disposal means for process waste water pollutants where such factors as land availability, local law, and climate permit such an application as practicable.

(5) Another common criticism was that the contractor's report on primary copper smelting and refining did not provide any recommendations for the problem of storm water runoff.

Special provisions for storm water runoff have been provided in the proposed regulations for all sources in the primary copper smelting subcategory and certain sources in the primary copper refining subcategory.

(6) Several commenters stated that the contractor's report on primary copper did not provide sufficient information to evaluate whether the reduction in effluent volumetric flow rate, required to meet the 1983 recommendations, could be achieved. They also indicated that if a large magnitude of recycle is necessary and if an ore milling operation is part of the smelting complex, there must be further assessment of the effect of process waste water recycle upon the copper recovery values in the flotation process.

For the primary copper refining subcategory, the flow reduction used in the derivation of the 1983 limitations was based upon the flow values discussed in the development document; the usage of once-through contact cooling water will no longer be permitted. For the primary copper smelting subcategory, the ability for integrated sources to reuse process waste water in milling operations is factual. Firm evidence that the copper recovery value of some ores, such as chalcopyrite, will be effected if milling is practiced with "reused" smelter process waste water, even after treatment, must be presented. If such a recovery loss does exist, its economic value must be weighed against environmental gains.

(7) A comment received from several parties was that the contractor's draft documents did not consider the disposal problems of solids and sludges generated by the proposed treatment practices.

Issues of nonwater quality environmental impact, such as sludge generation from lime neutralization, have been addressed in the proposed editions of the development documents. The primary copper, lead, and zinc industries currently use lime treatment. One primary lead-zinc complex is currently in the start-up phase of its new lime treatment plant, which will treat waste water effluents from its mining, milling, electrolytic zinc, and lead smelting operations. This complex plans to impound its sludge in its tailings pond. An electrolytic zinc plant in the Southwest, also operating a lime neutralization facility, currently eliminates some contained moisture from its lime treatment sludge and then ships the "dried" sludge to its lead smelter for recovery of zinc values (the sludge is reported to contain an average of 25 percent zinc). The volume of generated sludge is very small in comparison to the product-type solid wastes (i.e., slags and tailings) produced at these plants. One new lime and settle treatment facility at a domestic copper smelter will produce about 36 kkg (40 tons)/day of sludge which represents about 0.04 percent of the total daily production of solid waste at this plant. The industry is currently performing research on flocculent additives, which should enable neutralization at lower pH and, likewise, a much smaller volume of generated sludge. The EPA is aware of land usage and sludge generation; it has found and recommended methods of sludge-value recovery and sludge volume minimization.

(8) One commenter stated that arsenic should be deleted from the list of selected pollutant parameters for the primary lead industry since there is insufficient information available on which to base an effluent limitation for this parameter.

Arsenic has been deleted from the significant pollutant list for the primary lead subcategory. Effluent data regarding arsenic concentrations are insufficient, and it is believed that most of the arsenic present in the lead concentrates proceeds with the contained copper to form speiss.

(9) Two parties submitted a comment stating that the contractor's draft documents for the primary lead industry and the primary zinc industry listed incorrect effluent concentration data for specific pollutant parameters as anticipated from the proposed treatment facility of Plant D. They stated that these incorrect values were used as a prime consideration in the development of the 1983, and to some extent the 1977, effluent limitations. Their comments contained the correct values. These same two commenters also stated that the contractor had used an incorrect process waste water discharge rate for Plant D (400 gpm), and that the correct rate (745 gpm) should be used in the zinc document rationale.

In the case of primary lead, the best available technology has been changed and is now identical to the best practicable technology. The resultant 1983 limitations are identical to the 1977 limitations. This technology is based on best practicable control practices and a composite of data on pollutant concentrations from lime and settle treatment practice. For primary zinc, the incorrect values of both pollutant parameter concentrations and the process waste water discharge rate for Plant D, as used in the contractor's document, have been dismissed and new 1983 limitations have been derived. These new limitations are based on additional reuse, recycle, and segregation of process waste water and the best available treatment technology of lime and settle, identical to that used in the development of the 1977 limitations.

(10) Another common criticism was that the zinc document rationale for the 1983 effluent limitations used the anticipated results of a sulfide precipitation treatment scheme, for possible application at one domestic electrolytic zinc plant, which was not only technically misinterpreted by the contractor, but was also based on basic research, and should, therefore, not be considered as best available technology.

After an EPA review of this specific case, it was found that the contractor had misinterpreted a proposed treatment scheme at one domestic zinc plant. A correct narrative of the possible treatment schemes, which this same facility may use, is contained in the new zinc development document. The technology discussed in this narrative is presented solely for possible application after further industry investigation and is not intended for use as a basis for either the best practicable or the best available technology.

(11) A question was raised concerning the efficacy of lime and settle treatment for the removal of mercury from primary zinc and lead plant wastewaters.

The Agency has determined that no standards for mercury will be promulgated at this time and will continue to evaluate all available information on this pollutant. We therefore solicit any information regarding the importance of mercury as a pollutant from these plants, the feasibility of removal by lime and settle or by other treatment, the economics of such treatment, and other pertinent information which would assist the Agency in making a final decision regarding this matter.

(12) Some commenters felt that the minimum flow requirements for zinc plants, as used by the contractor, should be reevaluated, since the contractor used the lower part of several ranges of water usage, as supplied by the industry. They also stated that by requiring the application of the lowest water usage value, the purity of byproduct sulfuric acid would be impaired.

In calculating the best practicable effluent limitations for the primary zinc subcategory, the average of the indicated range of water usage was used. The water usage value used in the computation of the best available limitations was based upon the lower part of the range. By 1983, the lower values should readily be achievable by the usage of efficient electrostatic precipitators and cooling towers for acid plant blowdown, as well as the maximization of recycle and reuse of other effluents.

(13) Several commenters submitted cost data and stated that the contractor's document on the primary zinc subcategory had serious omissions of substantial cost data.

These cost data have been included in the new development document for the proposed effluent limitations for the primary zinc subcategory.

(14) Two responders felt that large clarification areas would be necessary for the primary lead and zinc plants to comply with the effluent limitations on total suspended solids and that the mountainous terrain of the Coeur d'Alene Mining District would prohibit the construction of such necessary facilities. The commenters stated that special provisions should be given to the one plant (Plant D) in this terrain.

Plant D very recently began operation of a new treatment facility, which uses clarifiers to reduce the suspended solids level. It is well known that clarifiers require minimal land area and much less land than do settling ponds. The facility was designed for an effluent suspended solids level over twice that used as the basis for the suspended solids limitation; however, actual plant experience has shown effluent values well below 25 mg/l. Should any difficulties be encountered in complying with the regulation, because of high flow values counterbalancing the low concentration, the flow might be reduced by recirculation of water to the on-site fertilizer plant or to the ore mining and dressing operation.

The Agency is subject to an order of the United States District Court for the District of Columbia entered in Natural Resources Defense Council v Train et al. (Cv. No. 1609–73) which requires the promulgation of regulations for this industry category no later than January 30, 1975. This order also requires that such regulations become effective immediately upon publication. In addition, it is necessary to promulgate regulations establishing limitations on the discharge of pollutants from point sources in this category so that the process of issuing permits to individual dischargers under section 402 of the Act is not delayed.

It has not been practicable to develop and publish regulations for this category in proposed form, to provide a 30 day comment period, and to make any necessary revisions in light of the comments received within the time constraints imposed by the court order referred to above. Accordingly, the Agency has determined pursuant to 5 U.S.C. 553(b) that notice and comment on the interim final regulations would be impracticable and contrary to the public interest. Good cause is also found for these regulations to become effective immediately upon publication.

Interested persons are encouraged to submit written comments. Comments should be submitted in triplicate to the EPA Office of Public Affairs, Environmental Protection Agency, Washington, D.C. 20460, Attention: Ms. Ruth Brown, A–107. Comments on all aspects of the regulation are solicited. In the event comments are in the nature of criticisms as to the adequacy of data which are available, or which may be relied upon by the Agency, comments should identify and, if possible, provide any additional data which may be available and should indicate why such data are essential to the amendment or modification of the regulation. In the event comments address the approach taken by the Agency in establishing an effluent limitation or guideline EPA solicits suggestions as to what alternative approach should be taken and why and how this alternative better satisfies the detailed requirements of sections 301 and 304(b) of the Act.

A copy of all public comments will be available for inspection and copying at the EPA Freedom of Information Center, Room 204, West Tower, Waterside Mall, 401 M Street SW., Washington, D.C. A copy of preliminary draft contractor reports, the Development Documents and economic study referred to above, and certain supplementary materials supporting the study of the industry concerned will also be maintained at this location for public review and copying. The EPA information regulation, 40 CFR Part 2, provides that a reasonable fee may be charged for copying.

All comments received within thirty days of publication of this interim final regulation in the FEDERAL REGISTER will be considered. Steps previously taken by the Environmental Protection Agency to facilitate public response within this time period are outlined in the advance notice concerning public review procedures published on August 6, 1973 (38 FR 21202). In the event that the final regulation differs substantially from the interim final regulation set forth herein the Agency will consider peitions for reconsideration of any permits issued in accordance with the interim final regulation.

In consideration of the foregoing, 40 CFR Part 421 is hereby amended as set forth below.

Dated: February 18, 1975.

RUSSELL E. TRAIN,
Administrator.

PART 421—NONFERROUS METALS POINT SOURCE CATEGORY

Subpart D—Primary Copper Smelting Subcategory

§ 421.40 Applicability; description of the primary copper smelting subcategory.

The provisions of this subpart are applicable to discharges resulting from the primary smelting and refining, when refining is performed on-site with a primary copper smelter, of copper. The primary refining of copper, not performed on-site with a primary copper smelter, is a part of the primary copper refining subcategory. Facilities recovering copper from the ore by hydrometallurgical methods are not a part of this subcategory.

§ 421.41 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) For all impoundments constructed prior to the effective date of this regulation, the term "within the impoundment" when used for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity plus the surface area of the inside and outside slopes of the impoundment dam as well as the surface area between the outside edge of the impoundment dam and any seepage ditch immediately adjacent to the dam upon which rain falls and is returned to the impoundment. For the purpose of such calculations, the surface area allowances set forth above shall not be more than 30 percent of the water surface area within the impoundment dam at maximum capacity.

(c) For all impoundments constructed on or after the effective date of this regulation, the term "within the impoundment" for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity.

(d) The term "pond water surface area" when used for the purpose of calculating the volume of waste water which may be discharged shall mean the water surface area of the pond created by the impoundment for storage of process waste water at normal operating level. This surface shall in no case be less than one-third of the surface area of the maximum amount of water which could be contained by the impoundment. The normal operating level shall be the average level of the pond during the preceding calendar month.

§ 421.42 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NDPES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations. The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 10 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 10 year, 24 hour rainfall event, when such event occurs.

(c) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for that month that falls within the impoundment and either the evaporation from the pond water surface area for that month, or a volume of process waste water equal to the difference between the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located (or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(d) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

Effluent characteristic	Effluent limitations: Maximum for any one day	Effluent limitations: Average of daily values for thirty consecutive days shall not exceed—
Metric units (mg/l)		
TSS	50	25
As	20	10
Cu	0.5	0.25
Pb	1.0	0.5
Cd	1.0	0.5
Se	10	5
Zn	10	5
pH	Within the range 6.0 to 9.0.	
English units (ppm)		
TSS	50	25
As	20	10
Cu	0.5	0.25
Pb	1.0	0.5
Cd	1.0	0.5
Se	10	5
Zn	10	5
pH	Within the range 6.0 to 9.0.	

§ 421.43 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best available technology economically achievable:

(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 25 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 25 year, 24 hour rainfall event, when such event occurs.

(c) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for that month that falls within the impoundment and either the evaporation from the pond water surface area for that month, or a volume of process waste water equal to the difference between the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located (or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(d) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

Effluent characteristic	Effluent limitations: Maximum for any one day	Effluent limitations: Average of daily values for thirty consecutive days shall not exceed—
Metric units (mg/l)		
TSS	50	25
As	20	10
Cu	0.5	0.25
Pb	1.0	0.5
Cd	1.0	0.5
Se	10	5
Zn	10	5
pH	Within the range 6.0 to 9.0.	
English units (ppm)		
TSS	50	25
As	20	10
Cu	0.5	0.25
Pb	1.0	0.5
Cd	1.0	0.5
Se	10	5
Zn	10	5
pH	Within the range 6.0 to 9.0.	

Subpart E—Primary Copper Refining Subcategory

§ 421.50 Applicability; description of the primary copper refining subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of copper at primary copper refineries not located on-site with a primary copper smelter. Primary copper refineries located on-site with a primary copper smelter are a part of the primary copper smelting subcategory.

§ 421.51 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) For all impoundments constructed prior to the effective date of this regulation, the term "within the impoundment" when used for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity plus the surface area of the inside and outside slopes of the impoundment dam as well as the surface area between the outside edge of the impoundment dam and any seepage ditch immediately adjacent to the dam upon which rain falls and is returned to the impoundment. For the purpose of such calculations, the surface area allowances set forth above shall not be more than 30 percent of the water surface area within the impoundment dam at maximum capacity.

(c) For all impoundments constructed on or after the effective date of this regulation, the term "within the impoundment" for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity.

(d) The term "pond water surface area" when used for the purpose of calculating the volume of waste water which may be discharged shall mean the water surface area of the pond created by the impoundment for storage of process waste water at normal operating level. This surface shall in no case be less than one-third of the surface area of the maximum amount of water which could be contained by the impoundment. The normal operating level shall be the average level of the pond during the preceding calendar month.

(e) The term "product" shall mean electrolytically refined copper.

(f) The term "net evaporation" shall mean that the evaporation rate exceeds the precipitation rate during a one year period.

(g) The term "net precipitation" shall mean that the precipitation rate exceeds the evaporation rate during a one year period.

§ 421.52 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can effect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharged effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations. The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an historic area of net evaporation, after application of the best practicable control technology currently available:

(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 10 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 10 year, 24 hour rainfall event, when such event occurs.

(c) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for that month that falls within the impoundment and either the evaporation from the pond water surface area for that month, or a volume of process waste water equal to the difference between the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impound is located (or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(d) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

Effluent characteristic	Effluent limitations	
	Maximum for any one day	Average of daily values for thirty consecutive days shall not exceed—
Metric units (mg/l)		
TSS	50	25
As	20	10
Cu	0.5	0.25
Se	10	5
Zn	10	5
Oil and grease	20	10
pH	Within the range 6.0 to 9.0.	
English units (ppm)		
TSS	50	25
As	20	10
Cu	0.5	0.25
Se	10	5
Zn	10	5
Oil and grease	20	10
pH	Within the range 6.0 to 9.0.	

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an historical area of net precipitation, after application of the best practicable control technology currently available:

Effluent characteristic	Effluent limitations	
	Maximum for any one day	Average of daily values for thirty consecutive days shall not exceed—
Metric units (kg/kkg of product)		
TSS	0.10	0.05
As	0.04	0.02
Zn	0.02	0.01
Se	0.02	0.01
Cu	0.001	0.0005
Oil and grease	0.04	0.02
pH	Within the range 6.0 to 9.0.	
English units (lb/1000 lb of product)		
TSS	0.10	0.05
As	0.04	0.02
Zn	0.02	0.01
Se	0.02	0.01
Cu	0.001	0.0005
Oil and grease	0.04	0.02
pH	Within the range 6.0 to 9.0.	

§ 421.53 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an historical area of net evaporation, after application of the best available technology economically achievable:

(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 25 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 25 year, 24 hour rainfall event, when such event occurs.

(c) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for that month that falls within the impoundment and either the evaporation from the pond water surface area for that month, or a volume of process waste water equal to the difference between the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located (or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(d) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

Effluent characteristic	Effluent limitations	
	Maximum for any one day	Average of daily values for thirty consecutive days shall not exceed—
Metric units (mg/l)		
TSS	50	25
As	20	10
Cu	0.5	0.25
Se	10	5
Zn	10	5
Oil and grease	20	10
pH	Within the range 6.0 to 9.0.	
English units (ppm)		
TSS	50	25
As	20	10
Cu	0.5	0.25
Se	10	5
Zn	10	5
Oil and grease	20	10
pH	Within the range 6.0 to 9.0.	

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an historical area of net precipitation, after application of the best available technology economically achievable:

Effluent characteristic	Effluent limitations	
	Maximum for any one day	Average of daily values for thirty consecutive days shall not exceed—
Metric units (kg/kkg of product)		
TSS	0.01	0.005
As	0.004	0.002
Zn	0.002	0.001
Se	0.002	0.001
Cu	0.0001	0.00005
Oil and grease	0.004	0.002
pH	Within the range 6.0 to 9.0.	
English units (lb/1000 lb of product)		
TSS	0.01	0.005
As	0.004	0.002
Zn	0.002	0.001
Se	0.002	0.001
Cu	0.0001	0.00005
Oil and grease	0.004	0.002
pH	Within the range 6.0 to 9.0.	

Subpart F—Secondary Copper Subcategory

§ 421.60 Applicability; description of the secondary copper subcategory.

The provisions of this subpart are applicable to discharges resulting from the recovery, processing, and remelting of new and used copper scrap and residues to produce copper metal and copper alloys.

§ 421.61 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) For all impoundments constructed prior to the effective date of this regulation, the term "within the impoundment" when used for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity plus the surface area of the inside and outside slopes of the impoundment dam as well as the surface area between the outside edge of the impoundment dam and any seepage ditch immediately adjacent to the dam upon which rain falls and is returned to the impoundment. For the purpose of such calculations, the surface area allowances set forth above shall not be more than 30 percent of the water surface area within the impoundment dam at maximum capacity.

(c) For all impoundments constructed on or after the effective date of this regulation, the term "within the impoundment" for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity.

(d) The term "pond water surface area" when used for the purpose of calculating the volume of waste water which may be discharged shall mean the water surface area of the pond created by the impoundment for storage of process waste water at normal operating level. This surface shall in no case be less than one-third of the surface area of the maximum amount of water which could be contained by the impoundment. The normal operating level shall be the average level of the pond during the preceding calendar month.

§ 421.62 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations. The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 10 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 10 year, 24 hour rainfall event, when such event occurs.

(c) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for the month that falls within the impoundment and either the evaporation from the pond water surface area for that month, or a volume of process waste water equal to the difference between the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located (or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(d) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

Effluent characteristic	Effluent limitations	
	Maximum for any one day	Average of daily values for thirty consecutive days shall not exceed
Metric units (mg/l)		
TSS	50	25
Cu	0.5	0.25
Zn	10	5
Oil and grease	20	10
pH	Within the range 6.0 to 9.0.	
English units (ppm)		
TSS	50	25
Cu	0.5	0.25
Zn	10	5
Oil and grease	20	10
pH	Within the range 6.0 to 9.0.	

§ 421.63 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best available technology economically achievable:

(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 25 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 25 year, 24 hour rainfall event, when such event occurs.

(c) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for that month that falls within the impoundment and either the evaporation from the pond water surface area for that month, or a volume of process waste water equal to the difference between the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located (or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(d) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

Effluent characteristic	Effluent limitations	
	Maximum for any one day	Average of daily values for thirty consecutive days shall not exceed—
Metric units (mg/l)		
TSS	50	25
Cu	0.5	0.25
Zn	10	5
Oil and grease	20	10
pH	Within the range 6.0 to 9.0.	
English units (ppm)		
TSS	50	25
Cu	0.5	0.25
Zn	10	.5
Oil and grease	20	10
pH	Within the range 6.0 to 9.0.	

Subpart G—Primary Lead Subcategory

§ 421.70 Applicability; description of the primary lead subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of lead at primary lead smelters and refineries. Primary lead refineries, not located on-site with a primary lead smelter, are not a part of this subcategory.

§ 421.71 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) For all impoundments constructed prior to the effective date of this regulation, the term "within the impoundment" when used for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity plus the surface area of the inside and outside slopes of the impoundment dam as well as the surface area between the outside edge of the impoundment dam and any seepage ditch immediately adjacent to the dam upon which rain falls and is returned to the impoundment. For the purpose of such calculations, the surface area allowances set forth above shall not be more than 30 percent of the water surface area within the impoundment dam at maximum capacity.

(c) For all impoundments constructed on or after the effective date of this regulation, the term "within the impoundment" for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity.

(d) The term "pond water surface area" when used for the purpose of calculating the volume of waste water which may be discharged shall mean the water surface area of the pond created by the impoundment for storage of process waste water at normal operating level. This surface shall in no case be less than one-third of the surface area of the maximum amount of water which could be contained by the impoundment. The normal operating level shall be the average level of the pond during the preceding calendar month.

(e) The term "product" shall mean lead bullion.

(f) The term "net evaporation" shall mean that the evaporation rate exceeds the precipitation rate during a one year period.

(g) The term "net precipitation" shall mean that the precipitation rate exceeds the evaporation rate during a one year period.

§ 421.72 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations. The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an historical area of net evaporation, after application of the best practicable control technology currently available.

(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 10 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 10 year, 24 hour rainfall event, when such event occurs.

(c) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for that month that falls within the impoundment and either the evaporation from the pond water surface area for that month, or a volume of process waste water equal to the difference between the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area as established by the National Climatic

Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located (or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(d) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

Effluent characteristic	Effluent limitations	
	Maximum for any one day	Average of daily values for thirty consecutive days shall not exceed—
Metric units (mg/l)		
TSS	50	25
Cd	1.0	0.5
Pb	1.0	0.5
Zn	10	5
pH	Within the range 6.0 to 9.0.	
English units (ppm)		
TSS	50	25
Cd	1.0	0.5
Pb	1.0	0.5
Zn	10	5
pH	Within the range 6.0 to 9.0.	

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an historical area of net precipitation, after application of the best practicable control technology currently abailable:

Effluent characteristic	Effluent limitations	
	Maximum for any one day	Average of daily values for thirty consecutive days shall not exceed—
Metric units (kg/kkg of product)		
TSS	0.042	0.021
Cd	0.0008	0.0004
Pb	0.0008	0.0004
Zn	0.008	0.004
pH	Within the range 6.0 to 9.0.	
English units (lb/1000 lb of product)		
TSS	0.042	0.021
Cd	0.0003	0.0004
Pb	0.0003	0.0004
Zn	0.008	0.004
pH	Within the range 6.0 to 9.0.	

§ 421.73 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an historical area of net evaporation, after application of the best available technology economically achievable:

(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 25 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 25 year, 24 hour rainfall event, when such event occurs.

(c) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for that month that falls within the impoundment and either the evaporation from the pond water surface area for that month, or a volume of process waste water equal to the difference between the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located (or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(d) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

Effluent characteristic	Effluent limitations	
	Maximum for any one day	Average of daily values for thirty consecutive days shall not exceed—
Metric units (mg/l)		
TSS	50	25
Cd	1.0	0.5
Pb	1.0	0.5
Zn	10	5
pH	Within the range 6.0 to 9.0.	
English units (ppm)		
TSS	50	25
Cd	1.0	0.5
Pb	1.0	0.5
Zn	10	5
pH	Within the range 6.0 to 9.0.	

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an historical area of net precipitation, after application of the best available technology economically achievable:

Effluent characteristic	Effluent limitations	
	Maximum for any one day	Average of daily values for thirty consecutive days shall not exceed—
Metric units (kg/kkg of product)		
TSS	0.042	0.021
Cd	0.0008	0.0004
Pb	0.0008	0.0004
Zn	0.008	0.004
pH	Within the range 6.0 to 9.0.	
English units (lb/1000 lb of product)		
TSS	0.042	0.021
Cd	0.0008	0.0004
Pb	0.0008	0.0004
Zn	0.008	0.004
pH	Within the range 6.0 to 9.0.	

Subpart H—Primary Zinc Subcategory

§ 421.80 Applicability; description of the primary zinc subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of primary zinc by either electrolytic or pyrolytic means.

§ 421.81 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "product" shall mean zinc metal.

§ 421.82 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations. The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

Effluent characteristic	Effluent limitations: Maximum for any one day	Effluent limitations: Average of daily values for thirty consecutive days shall not exceed—
Metric units (kg/kkg of product)		
TSS	0.42	0.21
As	1.6×10^{-3}	8×10^{-4}
Cd	0.008	0.004
Se	0.08	0.04
Zn	0.08	0.04
pH	Within the range 6.0 to 9.0.	
English units (lb/1000 lb of product)		
TSS	0.42	0.21
As	1.6×10^{-3}	8×10^{-4}
Cd	0.008	0.004
Se	0.08	0.04
Zn	0.08	0.04
pH	Within the range 6.0 to 9.0.	

§ 421.83 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best available technology economically achievable:

Effluent characteristic	Effluent limitations: Maximum for any one day	Effluent limitations: Average of daily values for thirty consecutive days shall not exceed—
Metric units (kg/kkg of product)		
TSS	0.23	0.14
As	1.1×10^{-3}	5.4×10^{-4}
Cd	5.4×10^{-3}	2.7×10^{-3}
Se	0.054	0.027
Zn	0.054	0.027
pH	Within the range 6.0 to 9.0.	
English units (lb/1000 lb of product)		
TSS	0.23	0.14
As	1.1×10^{-3}	5.4×10^{-4}
Cd	5.4×10^{-3}	2.7×10^{-3}
Se	0.054	0.027
Zn	0.054	0.027
pH	Within the range 6.0 to 9.0.	

(Secs. 301, 304 (b) and (c), 306 (b) and (c) and 307(c) of the Federal Water Pollution Control Act as amended, (the Act); (33 U.S.C. 1251, 1311, 1314 (b) and (c), 1316 (b) and (c) and 1317(c)); 86 Stat. 816 et seq.; Pub. L. 92-500)

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