



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

MAY 23 1994

OFFICE OF  
SOLID WASTE AND EMERGENCY RESPONSE

**MEMORANDUM**

**SUBJECT:** RCRA Policy Statement: Clarification of the Land Disposal Restrictions' Dilution Prohibition and Combustion of Inorganic Metal-Bearing Hazardous Wastes

**FROM:** Elliott P. Laws  
Assistant Administrator

**TO:** Waste Management Division Directors, Regions I - X

**I. Introduction**

**A. Purpose**

This memorandum sets out a Statement of Policy under the Resource Conservation and Recovery Act (RCRA) clarifying the application of the Land Disposal Restrictions (LDR) prohibition on dilution (see 40 CFR § 268.3) to combustion of certain inorganic metal-bearing hazardous wastes. Because combustion normally does not represent effective treatment of these wastes, such burning can be considered impermissible dilution. In such cases, these hazardous metal-bearing wastes cannot be combusted legally. This Policy Statement clarifies the general situation regarding combustion of these metal-bearing hazardous wastes, but application of this policy will vary depending on particular circumstances.

**B. Regulatory Background**

Under RCRA, the LDR prohibition on dilution states generally that no person "shall in any way dilute a restricted waste ... as a substitute for adequate treatment to achieve compliance with [a treatment standard for that waste]". 40 CFR 268.3(a). This prohibition implements the requirement of section 3004(m) of RCRA, which requires that hazardous constituents in hazardous wastes be destroyed, removed or immobilized before these wastes can be land disposed. Hazardous constituents are not destroyed, removed or immobilized if they are diluted. Chemical Waste Management v. EPA, 976 F.2d 2, 16, 17, 19-20 (D.C. Cir. 1992),

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Combustion for purposes of this memo does not include metal recovery units engaged in metal reclamation or vitrification units engaged in metal stabilization.



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cert. denied 113 S.Ct. 1961 (1993); see also S. Rep. No. 298, 98th Cong. 1st Sess. 17 (1983) ("the dilution of wastes by the addition of other hazardous waste or any other materials during waste handling, transportation, treatment or storage is not an acceptable method of treatment to reduce the concentration of hazardous constituents").

Consistent with these authorities, the Agency has stated that the dilution prohibition<sup>2</sup> serves one chief purpose -- "to ensure that prohibited wastes<sup>2</sup> are treated by methods that are appropriate for that type of waste." 55 FR at 22532 (June 1, 1990). Impermissible dilution can occur under a number of circumstances. The most obvious is when solid wastes are added to a prohibited waste to reduce concentrations but not volumes of hazardous constituents, or to mask their presence. Impermissible dilution also may occur when wastes not amenable to treatment by a certain method (i.e., treated very ineffectively by that treatment method) are nevertheless 'treated' by that method. 55 FR 22666 (June 1, 1990) (biological treatment does not effectively remove toxic metals from wastes; therefore, prohibited wastes with treatment standards for metals ordinarily would be impermissibly diluted if managed in biological treatment systems providing no separate treatment for the metals). See also 52 FR at 25778-79 (July 8, 1987) (impoundments which primarily evaporate hazardous constituents do not qualify as section 3005(j)(11) impoundments which may receive otherwise-prohibited hazardous wastes that have not met the treatment standard).

EPA is providing guidance today clarifying how the LDR dilution prohibition could apply to certain inorganic metal-bearing hazardous wastes that may be placed in combustion units, other than metal recovery furnaces.

## **II. General Distinction Between "Adequate Treatment" and Potential Violations of the Dilution Prohibition**

This memorandum deals with the question of whether combustion of prohibited inorganic hazardous wastes can be a type of impermissible dilution. An "inorganic hazardous waste" is one for which EPA has established treatment standards for metal hazardous constituents, and which does not otherwise contain significant organic or cyanide content (see further discussion, last paragraph page 3, clarifying what constitutes an insignificant organic or cyanide content).

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<sup>2</sup> A "prohibited" hazardous waste is one which is actually subject to a prohibition on land disposal without first being treated, or disposed in a non-migration unit. See 54 FR 36968 (Sept. 6, 1989).

The Agency has evaluated the listed wastes and has determined that 44 of the RCRA listed wastes (as set forth in 40 CFR § 261) typically appear to be such inorganic hazardous wastes; i.e., they typically do not contain organics, or contain only insignificant amounts of organics, and are not regulated for organics<sup>3</sup> (see Appendix A to this memorandum for a list of these wastes). The Best Demonstrated Available Technology (BDAT) for these inorganic, metal-bearing listed wastes is metal recovery or stabilization. Thus, impermissible dilution may result when these wastes are combusted.

There are eight characteristic metal waste codes; however, only wastes that exhibit both the toxicity characteristic (TC) and the extraction procedure (EP) for D004 - D011 are prohibited now (see 55 FR 22660-02, June 1, 1990). Characteristic wastes, of course, cannot be generically characterized as easily as listed wastes because they can be generated from many different types of processes. For example, although some characteristic metal wastes do not contain organics or cyanide or contain only insignificant amounts, others may have organics or cyanide present which justify combustion, such as a used oil exhibiting the TC characteristic for a metal. Thus, it is difficult to say which D004-D011 wastes would be impermissibly diluted when combusted, beyond stating that as a general matter, impermissible dilution would occur if the D004-D011 waste does not have significant organic or cyanide content but is nevertheless combusted.

EPA ordinarily would not consider the following hazardous wastes to be strictly inorganic (or to contain "significant organic or cyanide content") for which combustion would otherwise be impermissible dilution. Combustion of the following wastes is therefore not prohibited under the LDR dilution prohibition: (1) any of the 44 listed wastes and 8 characteristic wastes in Appendix A that, at point of generation, or after any bona fide treatment such as cyanide destruction prior to combustion, contain hazardous organic constituents or cyanide at levels exceeding the constituent-specific treatment standard for F039, which represents a compilation of numerical limits for hazardous constituents; (2) organic, debris-like materials (e.g., wood, paper, plastic, or cloth) contaminated with an inorganic metal-bearing hazardous waste; and (3) any of the 44 listed wastes and 8 characteristic wastes that, at point of generation, have reasonable heating value such as greater than or equal to 5000 Btu (see 48 FR 11157 (March 16, 1983)). The foregoing three categories of waste typically would contain sufficient organic

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<sup>3</sup> To the extent that these wastes or residues of these wastes (i.e., biological treatment sludges) contain significant organic content, combustion may be an appropriate treatment technology. See later discussion regarding this point.

content to indicate that combustion can be a reasonable means of treating the wastes prior to land disposal. However, as noted above, mixing practices such as fuel blending to add organics to inorganic metal-bearing hazardous wastes ordinarily would be considered to be impermissible dilution. This is because the dilution prohibition applies at the point a hazardous waste is generated. Chemical Waste Management v. EPA, 976 F.2d at 22-3; also 48 FR 11158, 11159 and nn. 2 and 4 (March 16, 1983); 53 FR at 522 (Jan. 8, 1988) (determinations of legitimacy of recycling are made on a waste-by-waste basis before any blending occurs).

This Policy Statement is also reflective of the Agency's concerns about the hazard presented by toxic metals in the environment. When an inorganic metal-bearing hazardous waste with insignificant organics is placed in a combustion unit, legitimate treatment for purposes of LDR ordinarily is not occurring. No treatment of the inorganic component occurs during combustion, and therefore, metals are not destroyed, removed, or immobilized. Since there are no significant concentrations of organic compounds in inorganic metal-bearing hazardous wastes, it cannot be maintained that the waste is being properly or effectively treated via combustion (i.e., thermally treated or destroyed, removed, or immobilized).

In terms of the dilution prohibition, if combustion is allowed as a method to achieve a treatment standard for these wastes, metals in these wastes will be dispersed to the ambient air and will be diluted by being mixed in with combustion ash from other waste streams. Adequate treatment (stabilization or metal recovery to meet LDR treatment standards) has not been performed and dilution has occurred. It is also inappropriate to regard eventual stabilizing of such combustion ash as providing adequate treatment for purposes of the LDRs. Simply meeting the numerical BDAT standards for the ash fails to account for metals in the original waste stream that were emitted to the air and for reductions achieved by dilution with other materials in the ash. (In most cases, of course, the metal-bearing wastes will have been mixed with other wastes before combustion, which mixing itself could be viewed as impermissible dilution).

These inorganic, metal-bearing hazardous wastes should be and are usually treated by metal recovery or stabilization technologies. These technologies remove hazardous constituents through recovery in products, or immobilize them, and are therefore permissible BDAT treatment methods. However, EPA believes that this statement of policy clarifying application of LDR dilution prohibition is needed because we have observed that some of these wastes may be going to conventional combustion devices such as incinerators or cement kilns. For example, some owners/operators may be willing to accept inorganic lead wastes with insignificant organics at their combustion facilities (which can still apparently meet their air emissions limits at the

stack). As explained above, land disposal of combustion residuals from these facilities would typically violate the land disposal restrictions prohibition on dilution. Combustion is not usually an appropriate treatment for these wastes because hazardous constituents are not removed, destroyed, or immobilized.

Consequently, the general principles set out in this memorandum, subject to appropriate consideration of individual circumstances, are: (1) that a prohibited inorganic metal-containing hazardous waste (listed in Appendix A to this memorandum) without significant organic content can be considered to be diluted impermissibly when combusted (even if the treatment standards for metals are achieved in part by subsequent treatment of combustion ash); and (2) that the determination of whether a waste is an inorganic metal-bearing hazardous waste is made at the point of generation<sup>4</sup>. This means that, ordinarily, such a waste would be considered to be diluted impermissibly even if it is blended with organic wastes for which combustion would otherwise be an appropriate treatment method.

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<sup>4</sup> This is the point at which the waste becomes hazardous. (See 45 FR 33095-33096, May 19, 1980).

**Appendix A. Description of Wastes Affected by this Policy**

Waste Code	Listed Wastes
F006 <sup>5</sup> *	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.
F007 *	Spent cyanide plating bath solutions from electroplating operations.
F008 *	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.
F009 *	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.
F010 *	Quenching bath residues from oil baths from metal treating operations where cyanides are used in the process.
F011 *	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.
F012 *	Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process.
F019 *	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum car washing when such phosphating is an exclusive conversion coating process.
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments.
K003	Wastewater treatment sludge from the production of molybdate orange pigments.

<sup>5</sup>

\* = Assuming wastes do not contain treatable concentrations of cyanide.

Waste Code	Listed Wastes
K004	Wastewater treatment sludge from the production of zinc yellow pigments.
K005	Wastewater treatment sludge from the production of chrome green pigments.
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).
K007	Wastewater treatment sludge from the production of iron blue pigments.
K008	Oven residue from the production of chrome oxide green pigments.
K061	Emission control dust/sludge from the primary production of steel in electric furnaces.
K069	Emission control dust/sludge from secondary lead smelting.
K071	Brine purification muds from the mercury cell processes in chlorine production, where separately prepurified brine is not used.
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.
K106	Sludges from the mercury cell processes for making chlorine.
P010	Arsenic acid $H_3AsO_4$
P011	Arsenic oxide $As_2O_3$
P012	Arsenic trioxide
P013 *	Barium cyanide
P015	Beryllium
P029 *	Copper cyanide $Cu(CN)$
P074 *	Nickel cyanide $Ni(CN)_2$
P087	Osmium tetroxide
P099	Potassium silver cyanide
P104 *	Silver cyanide

Waste Code	Listed Wastes
P113	Thallic oxide
P114	Thallium (I) selenite
P115	Thallium (I) sulfate
P119	Ammonium vanadate
P120	Vanadium oxide $V_2O_5$
P121 *	Zinc cyanide
P122	Zinc phosphide
U032	Calcium chromate
U145	Lead phosphate
U151	Mercury
U204	Selenious acid
U205	Selenium disulfide
U216	Thallium (I) chloride
U217	Thallium (I) nitrate

Waste Code	Characteristic Wastes
D004	Arsenic
D005	Barium
D006	Cadmium
D007	Chromium
D008	Lead
D009	Mercury
D010	Selenium
D011	Silver



**ENVIRONMENTAL PROTECTION AGENCY**

40 CFR Part 268

[EPA #                      , FRL #                      ]

**Land Disposal Restrictions; Clarification of the Dilution  
Prohibition and Combustion of Inorganic Metal-Bearing Hazardous  
Wastes**

**AGENCY:** Environmental Protection Agency (EPA, the Agency).

**ACTION:** Notice of availability.

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**SUMMARY:** The Environmental Protection Agency announces the availability of a memorandum setting out EPA's policy on the application of the Land Disposal Restrictions (LDR) dilution prohibition to the combustion of inorganic metal-bearing hazardous wastes. Under the existing LDR dilution prohibition, burning inorganic metal-bearing hazardous wastes can be a form of impermissible dilution. The Agency believes it is appropriate to make this information available to the public to emphasize that in individual cases and according to specific circumstances, burning inorganic metal-bearing hazardous wastes may constitute a violation of the LDR dilution prohibition.

**ADDRESSES:** Copies of the memorandum may be obtained by calling or visiting the RCRA docket. The RCRA docket is located in room M2616 at EPA Headquarters, 401 M. Street, S.W., Washington, D.C. 20460. The RCRA docket is available for viewing from 9:00 a.m. to 4:00 p.m., Monday through Friday, except on federal holidays.

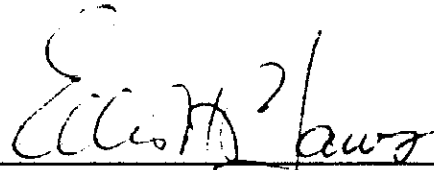
Requests for obtaining the memorandum may be made by calling (202) 260-9327. Copies cost \$ 0.15 per page; however charges under \$ 25.00 are waived.

**FOR FURTHER INFORMATION CONTACT:** For general information, contact the RCRA Hotline at (800) 424-9346 (toll-free); (800) 424-9346 (hearing impaired); or (703) 412-9810 (Washington, D.C. metropolitan area). For technical information, contact Sherri Stevens, Waste Treatment Branch, Office of Solid Waste (mail code 5302-W), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460, (703) 308-8467.

MAY 23 1994

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Date



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Elliott R. Laws

Assistant Administrator

BILLING CODE 6560-50-P

Hanover Counties, VA, Due: July 11, 1994, Contact: Kenneth M. Kimidy (804) 441-7832.

**EIS No. 940188, Draft EIS, NPS, HI,** Haleakala National Park General Management Plan and Conceptual Framework, Implementation, Island of Maui, Maui County, HI, Due: July 30, 1994, Contact: Donald Reeser (808) 572-9306.

**EIS No. 940189, Draft EIS, USA, WA,** Fort Lewis Military Installation Comprehensive Solid Waste Management Program, Implementation, City of DuPont, Pierce and Thurston Counties, WA, Due: July 11, 1994, Contact: Randall W. Hanna (206) 967-5646.

**EIS No. 940190, Draft EIS, USN, IN,** Great Lakes Naval Training Center Realignment of Naval Training Centers in Orlando, Florida; San Diego, California; Treasure Island and Combat Systems Technical Schools Command, Mare Island, California and Relocation of Commander Navy Recruiting Command, Washington, DC, Implementation, Lake County, IN, Due: July 11, 1994, Contact: Matthew D. Hess (703) 325-7344.

**EIS No. 940191, Draft EIS, FHW, AK,** Whittier Access Project, Construction between Port of Whittier and Seward Highway, Funding, Right-of-Way Agreement and COE Section 10 and 404 Permits, Chugach National Forest, Municipality of Anchorage, City of Whittier, AK, Due: July 11, 1994, Contact: Phillip Smith (907) 586-7428.

**EIS No. 940192, Draft EIS, AFS, WY,** Shoshone National Forest Allowable Timber Sale Quantity, Implementation, Fremont, Hot Springs, Park, Sublette and Teton Counties, WY, Due: July 11, 1994, Contact: Bob Rossman (307) 527-6241.

**EIS No. 940193, Draft EIS, DOE, NV,** Pinon Pine Coal-Fired Power Project, Construction, Operation and Maintenance, Funding, Tracy Power Station, Storey County, NV, Due: July 23, 1994, Contact: Suellen Van Ooteghem (304) 284-5443.

**EIS No. 940194, Draft EIS, FHW, WI,** US-151 Transportation Improvement, Belmont to Dodgeville Road, Funding and COE Section 404 Permit, Iowa and Lafayette Counties, WI, Due: July 19, 1994, Contact: Richard C. Madrzak (608) 264-5968.

**EIS No. 940195, Final EIS, AFS, ID,** Savant Sage Resource Area, Land and Resource Management Plan, Implementation, Idaho Panhandle National Forests, Fernan Ranger District, Bonner and Kootenai Counties, ID, Due: June 27, 1994,

Contact: Patrick Sheridan (202) 720-1614.

#### Amended Notices

**EIS No. 940077, Draft EIS, SFW, LA,** Bayou Sauvage National Wildlife Refuge Master Plan, Implementation, Orleans Parish, LA, Due: May 31, 1994, Contact: Howard E. Poitevint (504) 646-7555. Published FR-03-18-94—Review period extended.

Dated: May 24, 1994.

Richard E. Sanderson,

Director, Office of Federal Activities.

[FR Doc. 94-13097 Filed 5-26-94; 8:45 am]

BILLING CODE 6560-60-U

[FRL 4888-9]

#### Land Disposal Restrictions; Clarification of the Dilution Prohibition and Combustion of Inorganic Metal-Bearing Hazardous Wastes

AGENCY: Environmental Protection Agency (EPA, the Agency).

ACTION: Notice of availability.

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Office of Solid Waste (mail code 5302-W), U.S. Environmental Protection Agency, 401 M Street SW., Washington DC 20460, (703) 308-8467.

Dated: May 23, 1994.

Elliott P. Laws,

Assistant Administrator.

[FR Doc. 94-13098 Filed 5-26-94; 8:45 am]

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[OPPTS-00156; FRL-4869-9]

#### Forum on State and Tribal Toxics Action (FOSTTA); Coordinating Committee and Projects; Open Meetings

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of open Meetings.

**SUMMARY:** The Coordinating Committee and the four Projects of the Forum on State and Tribal Toxics Action (FOSTTA) will hold meetings at the time and place listed below in this notice. The meetings are open to the public.

**DATES:** The meetings are scheduled as follows:

1. The Coordinating Committee and the Projects will hold meetings on June 13 and 14, 1994.

2. The Projects will meet June 13 from 8 a.m. to 5 p.m. and June 14 from 8 a.m. to noon. A Plenary Session will be held on June 13 from 1 p.m. until 2:15 p.m. The Coordinating Committee will meet on June 14 from noon to 3 p.m.

**ADDRESSES:** The meetings will be held at: The Holiday Inn, 480 King St., Alexandria VA.

**FOR FURTHER INFORMATION CONTACT:** Shirley Pate, Office of Compliance Monitoring (7202), Environmental Protection Agency, 401 M St., SW., Washington, DC 20460, telephone: (202) 260-8318, or Jim King, Office of Pollution Prevention and Toxics (7401) at the same address, telephone: (202) 260-6581.

**SUPPLEMENTARY INFORMATION:** FOSTTA, a group of state and tribal toxics environmental managers, is intended to foster the exchange of toxics-related program and enforcement information among the states/tribes and between the states/tribes and U.S. EPA's Office of Prevention, Pesticides and Toxic Substances (OPPTS). FOSTTA currently consists of the Coordinating Committee and four issue-specific Projects. The Projects are: (1) The Toxic Release Inventory Project; (2) The State and Tribal Enhancement Project; (3) The Chemical Management Project; and (4) The Lead (Pb) Project.