

US EPA ARCHIVE DOCUMENT



**Capacity Analysis for Land  
Disposal Restrictions—Phase IV:  
Newly Identified Toxicity  
Characteristic Metal Wastes and  
Mineral Processing Wastes  
(Final Rule)**

**Comment Summary and  
Response Document**

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## CHAPTER 1 INTRODUCTION

As part of the Land Disposal Restrictions (LDR) Program, the Environmental Protection Agency (EPA) has proposed a series of rules on land disposal restrictions for newly listed and identified wastes known as “Phase IV”. EPA proposed the Phase IV rule in three proposed rules (the “original” proposal, 60 FR 43654, August 22, 1995; the “first supplemental” proposal, 61 FR 2338, January 25, 1996; and the “second supplemental” proposal, 62 FR 26041, May 12, 1997) and two Notices of Data Availability (NODAs) on Phase IV issues (61 FR 21418, May 10, 1996; and 62 FR 60465, November 10, 1997).

This document summarizes those comments received in response to the proposed rules and notices that are related to surface-disposed required and available treatment capacity.<sup>1</sup> Each salient comment that was directly related to capacity issues is represented in two ways: (1) in summary form, and (2) verbatim, i.e., a photocopy of the relevant portion on the commenter’s comment letter. The source of each comment represented is indicated by the commenter name, comment number, and the page number of the comment letter. Comments from the first supplemental, the first NODA, the second NODA, and the second supplemental proposal are denoted by SR, NODA1, NODA2, and 2SR, respectively. For comments on the original proposal, just the commenter number and page number are provided. This document also provides EPA’s responses to capacity-related comments.

The comment summaries are organized in three chapters. Chapter 2 addresses general comments on available treatment capacity. Chapter 3 addresses specific comments on available and required capacity for TC metal wastes, and Chapter 4 addresses specific comments on available and required treatment capacity for mineral processing wastes.

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<sup>1</sup> This document only addresses surface-disposed wastes. Wastes managed in Safe Drinking Water Act (SDWA) underground injection wells are addressed in a separate document.

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## CHAPTER 2 AVAILABLE TREATMENT CAPACITY ISSUES

### 2.1 Stabilization

#### 2.1.1 Stabilization Will Not Be Able to Meet Proposed Treatment Standards for Specific Constituents or Waste Streams

Many commenters stated that EPA's assumption that stabilization will be able to meet the proposed treatment standards for toxicity characteristic (TC) metal wastes is incorrect. Several of these commenters state that stabilization will not be able to meet the proposed treatment standards for specific constituents and/or specific waste streams.

- ! Rollins Environmental is concerned about the proposed treatment standards for nonwastewater selenium. They feel that the standard is not routinely achievable using best operating practices. Due to the different pH/solubility curves for selenium and the other characteristic metals, the treatment standard for selenium should remain at 1.0 mg/l based on the toxicity characteristic leachate procedure (TCLP). (27:4)
- ! The Association of Battery Recyclers believes that the suggestion that the universal treatment standards (UTS) for lead and any underlying hazardous constituents (UHCs) expected to be present in D008 wastes can be achieved using high temperature metals recovery (HTMR) and stabilization is inaccurate. HTMR is not an established best demonstrated available technology (BDAT) for treatment of D008 materials, and they believe that currently demonstrated and available stabilization technology cannot be relied on to consistently achieve the UTS for lead and certain UHCs. (38:6-7)
- ! Battery Council International believes stabilization of D008 nonwastewaters cannot achieve concentration levels of 0.37 mg/l for lead or 0.16 mg/l for selenium. (45:3-4)
- ! Chemical Waste Management Inc. estimates indicate that approximately 5-10% of their currently approved stabilized waste will not be able to meet UTS levels. They believe that arsenic and selenium present technical problems when using stabilization to achieving lower treatment levels. (48:40-41)
- ! The Non-Ferrous Founders Society states that none of the commercially available treatment or stabilization technologies for foundry wastes have been demonstrated to meet HTMR-derived UTS for TC metal wastes. (72:2-3)
- ! American Foundrymen's Society believes that stabilization technologies for lead, chromium, cadmium, and selenium have not been demonstrated to treat foundry sands to the proposed UTS. (77:10)
- ! Brush Wellman stated that EPA needs to demonstrate that stabilization can meet the UTS for beryllium; EPA must assess if stabilization and landfill capacity exist for these wastes. (82:10)



- ! RSR Corporation and the Battery Council International & Association of Battery Recyclers stated that stabilization treatment of D008 nonwastewaters generated from secondary lead recycling activities cannot achieve the proposed treatment standards of 0.37 mg/l or 0.16 mg/l for lead or selenium, respectively. (NODA1 6:2; NODA1 8:2)
- ! INMETCO questioned whether the proposed standard of beryllium can be met by stabilization in the case of higher beryllium content wastes. (2SR 10:7-8)
- ! Battery Council International & Association of Battery Recyclers believes that existing stabilization technologies cannot meet the proposed lead, silver, antimony, beryllium, and thallium standards for secondary smelter slag. (2SR 17:6-7)
- ! Collier, Shannon, Rill & Scott, PLLC for Specialty Steel Industry of North America shares the concerns raised by INMETCO that the proposed standard for beryllium may not be achieved by stabilization for waste streams that contain higher levels of beryllium. (2SR 18:2-3)

Four commenters [TDJ (26); Steel Structures Painting Council (69); Steel Manufacturers Association (83); Specialty Steel Industry of North America (84)] expressed concern that stabilization of wastes containing combinations of metal constituents may not be possible. The commenters believe that EPA did not conduct sufficient research or analysis of such waste matrices. Several commenters provide examples of wastes for which this appears to be a problem.

- ! The TDJ Group states that EPA has completed extensive work on the ability of stabilization technologies to eliminate the leach characteristic of many waste streams with single inorganic constituents. For example, cement stabilization has been shown as an effective method for stabilizing lead, cadmium, and chromium compounds, all near or below the proposed Phase IV standards. It should be noted that the same stabilization chemistry at a given percentage of addition may be more or less effective in stabilizing each of the constituents, and little is known about the effects of combined stabilization processes on a single waste stream. (26:2)
- ! The Steel Structures Painting Council (SSPC) notes that lead-bearing paint wastes may contain chromium or cadmium. SSPC is not aware of any data stating that treatment with Portland cement will reduce chromium and cadmium to the new treatment levels. (69:2)
- ! The Steel Manufacturers Association and the Specialty Steel Industry of North America state that commercial stabilization technologies may not be able to meet the proposed treatment standards for steel-making wastes. One of the problems is that there is a mixture of different metals in these wastes which may preclude stabilization of all the TC metals to below their respective proposed UTS levels. (83:6-7; 84:7)

## Response

The Agency disagrees with the statement made by some commenters that existing treatment technologies cannot meet the UTS levels. The Agency has provided adequate data to show the capability and availability of commercial treatment technologies such as stabilization and HTMR to meet the UTS levels. Nevertheless, to compile additional evidence regarding the treatability of TC metal and other wastes to the UTS, the Agency conducted site visits to several commercial hazardous waste treatment facilities and collected additional stabilization and HTMR treatment performance data that better represent the diversity of metal wastes. The performance data (based on grab samples) constitute a wide range of metal-bearing wastes (both listed and characteristic) that the Agency believes represents the most difficult-to-treat metal-bearing wastes. The types of waste treated included battery slag wastes, mineral processing wastes, baghouse dust, soils, pot solids, recycling by-products, and sludge. Regarding commenters concern for waste streams containing multiple metals, the Agency notes that these waste streams contain multiple metals that are representative of a characteristic waste with UHCs and significant concentrations of potentially difficult combination metals. For example, the waste streams “cadmium sponge residue” and “baghouse dust waste” sampled at Rollins Environmental contain multiple metals including cadmium, lead, and zinc.

EPA then calculated the treatment standards from both stabilization and HTMR data and selected the highest standard (less stringent) for each metal to establish the UTS. EPA selected the less stringent standards to allow for process variability and detection limit difficulties. Based on these data, EPA revised the treatment standards for certain TC metals and re-proposed the standards in the second supplemental proposal. Further, the Agency reviewed additional data submitted by the commenters in response to the second supplemental proposal. EPA determined that the proposed standards for certain metals (e.g., antimony, beryllium) do not represent BDAT with a “most difficult to treat” waste and, therefore, revised the treatment standards for such metals. EPA believes that the revised UTS levels are achievable with grab sampling by both stabilization and HTMR technologies. (See the BDAT Background Document for additional information on the development of the Phase IV treatment standards.)

Notwithstanding this analysis, the Agency recognizes that some wastes could possess unique properties that make them more difficult to treat than the wastes on which the standards are based. In such cases, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44. For newly identified wastes (i.e., wastes that do not fail the EP test and, consequently, are not part of the Third Third LDR Rule), affected parties may also request a capacity variance extension per 40 CFR 268.5 on a case-by-case basis. Wastes regulated in the Third Third LDR Rule (i.e., wastes that fail the EP test) are not eligible for capacity variances because the extension provided in that rulemaking has already expired.

## Comments

- ! Rollins Environmental (27:4)
- ! Association of Battery Recyclers (38:6-7)
- ! Battery Council International (45:3-4)
- ! Chemical Waste Management (48:40-41)
- ! Non-Ferrous Founders Society (72:2-3)
- ! American Foundrymen’s Society (77:10)
- ! Brush Wellman (82:10)
- ! RSR Corporation (NODA1 6:2)
- ! Battery Council International & Association of Battery Recyclers (NODA1 8:2)

- ! INMETCO (2SR 10:7-8)
- ! Battery Council International & Association of Battery Recyclers (2SR 17:6-7)
- ! Collier, Shannon, Rill & Scott, PLLC for Specialty Steel Industry of North America (2SR18:2-3)
- ! TDJ Group (26:2)
- ! Steel Structures Painting Council (69:2)
- ! Steel Manufacturers Association (83:6-7)
- ! Specialty Steel Industry of North America (84:7)

Commenter: Rollins Environmental  
Comment Number: 27  
Page Number: 4

Selenium has a pH/solubility curve that is significantly different from other characteristic metals. Selenium's minimum solubility is at a neutral to mildly acidic PH, while it is highly soluble in the basic PH range (PH 8-12). The other characteristic metals have a minimum solubility in the strongly basic PH range (PH 8-12), while their solubility increases in the neutral and acidic PH's. This difference in solubilities creates a problem for treating wastes with a mixture of characteristic metals which includes Se. Since there is a difference in solubilities for the metals depending on the PH of the stabilized waste, if a neutral PH is maintained in treatment Se won't leach but the other metals will, and if a high PH is maintained the Se will leach while the other metals will not.

Commenter: Association of Battery Recyclers  
Comment Number: 38  
Page Number: 6-7

B. The UTSS Cannot Be Achieved using Current Best Demonstrated and Available Treatment ("BDAT") Technology

The proposed Phase IV Rule suggests that the UTSS for lead and any UHCs reasonably expected to be present in D008 wastes can be achieved using HTMR and stabilization. This suggestion is inaccurate. HTMR is not an established BDAT for treatment of D008 materials, and currently demonstrated and available stabilization technology cannot be relied upon to consistently achieve the UTSS for lead and certain UHCs.

In order to be considered BDAT for a waste, a treatment method must be "demonstrated" based on data from "full scale treatment operations that are currently being used to treat the waste (or a similar waste)." *55 Fed. Reg. 22,536*. In addition, the proposed treatment method must be commercially "available" (i.e., able to be purchased). *Id.* EPA has failed to meet these criteria in asserting that the use of HTMR and stabilization will achieve the UTSS for D008 materials.

Commenter: Battery Council International  
Comment Number: 45  
Page Number: 3-4

Second, D008 nonwastewaters (slags, soils, sludges) cannot be chemically stabilized to the proposed treatment concentrations. As the attached data and letter from Resource Consultants, Inc. (RCI) demonstrates, stabilization treatment of D008 nonwastewaters cannot achieve concentration levels of .37 mg/l for lead or 0.16 mg/l for selenium. Instead, this data shows that based on the 99th percent confidence interval, stabilization treatment of lead and selenium at secondary lead smelters for slag can achieve, at best, concentration levels of 2.97 mg/l for lead and 2.48 mg/l for selenium. Treatment levels for lead contaminated soils are much higher. RCI's data show that stabilization treatment of lead contaminated soil can achieve, at best, a concentration level of 4.69 mg/l level.

This is because the chemistry of D008 wastes are vastly different from the K061 wastes EPA reviewed and apparently relied upon to conclude that stabilization technologies could meet the Treatment standards for lead and selenium. K061 wastes are derived from the steel making process. The chemical constituents of K061 are iron, zinc, chromium, nickel, and lead oxides. K061 wastes typically contain very little antimony, arsenic and selenium. oxygen is the principal anion in the leachable constituents of K061 wastes.

Commenter: Chemical Waste Management  
Comment Number: 48  
Page Number: 40-41

In addition, initial estimates indicate that approximately 5-10% of our currently approved waste streams will not be able to meet these UTS levels even with the development of new recipes (as in text). This is based on current estimates of our waste streams which currently meet Third Third (as in text) treatment levels but do not reach proposed UTS levels.

In consideration of the facts presented above, the most disturbing aspect of this proposal is the Agency's statement in the regulatory impact analysis under the Benefit Estimate Results discussion:

"The Agency has estimated the benefits associated with today's proposed rule to be small".  
(See 60 Fed. Reg. at 43,690)

CWM believes that it is a significant statement that is not supported by the information presented in these comments. To the contrary CWM believes that the potential benefits to the environment from these changes are small while the projected costs are clearly not. For these reasons CWM urges the Agency to maintain the current D004-D011 BDAT levels.

Commenter: Non-Ferrous Founders' Society  
Comment Number: 72  
Page Number: 2-3

UTS Revision for TC Metals (Non wastewater): Since none of the commercially available treatment or stabilization technologies for foundry wastes have been demonstrated to meet HTMR-derived UTS for TC metal wastes, EPA must revise the UTS to reflect the results of technologies that are demonstrated and commercially available for foundry wastes. As stated in the AFS comments to EPA regarding this matter, "Establishing a 'technology forcing standard' for foundries' TC metal wastes violates RCRA and the clear and expressed intent of Congress." Further, NFFS believes that the proposed UTS levels for many of the TC metals are so minimal that many naturally occurring soils would not meet the new UTS levels established by EPA in the LDR IV proposed rulemaking.



Commenter: American Foundrymen's Society  
Comment Number: 77  
Page Number: 10

There is only limited performance data for stabilization technologies in the rulemaking record. Some of the results of stabilization in the LDR Phase IV rulemaking record were submitted by AFS as comments to the proposed LDR Phase III rulemaking. However, the stabilization data submitted by AFS for LDR Phase III is not sufficient to determine treatment standards for TC metals under UTS. For example, one of the sample sets in the record that presumably represents foundry waste would be more appropriately described as "landfill wastes." See *Proposed BDAT Background Document for TC Metal Wastes D004-D011*, July 26, 1995, n. 28 to Table A-4 at A-25. Furthermore, the Agency does not even have information about the untreated characteristics of these "landfill waste" samples. Therefore, any treatment values reported for these wastes would be inconclusive. For example, the wastes could have been diluted during landfill processing, or perhaps the waste samples never had any UHCs in the first place. Either way, the Agency should not rely on these landfill waste samples to determine the performance of stabilization technologies for foundry wastes. Otherwise, the Agency could misinterpret the ability of stabilization technologies to meet UTS for foundry wastes, as the Agency has apparently done with LDR Phase IV.

Commenter: Brush Wellman  
Comment Number: 82  
Page Number: 10

In anticipation of EPA's proposal, Brush Wellman began to make inquiries regarding commercially available HTMR processes for its waste streams. Brush Wellman discussed with Horsehead Resource Development Company ("Horsehead") its ability to process Brush Wellman's beryllium-containing wastes. One such waste stream, a rotary filter sludge with lead concentrations above the toxicity characteristic level, is the hazardous waste with the highest beryllium content currently generated by Brush Wellman. This waste contains more than 14% beryllium. At the time of Brush Wellman's inquiry, Horsehead had a commercially available HTMR process in which it would treat the waste to recover copper values. However, according to Horsehead, it estimated that the beryllium content of the remaining slag would range between 7,800-8,700 ppm TCLP, well above the universal treatment standard for beryllium. A different waste stream, containing only 0.4% beryllium was anticipated to create a HTMR slag ranging between 100-120 ppm TCLP, also above the beryllium standard. Brush Wellman has recently learned that Horsehead has discontinued this process and currently will accept only K061 for HTMR processing. Thus, the only commercial HTMR outlet for Brush Wellman's toxicity characteristic wastes is no longer available and, if it were, it would not be able to process Brush Wellman's waste so as to satisfy the universal treatment standard.

Commenter: RSR Corporation  
Comment Number: NODA1 6  
Page Number: 2

RSR supports BCI's separately submitted comments on this Notice and on the Phase IV proposed rule that the data in the docket and referenced by EPA in the Notice clearly indicate that D008 nonwastewaters (e.g., slags, soils, sludges) generated from secondary lead recycling activities cannot be chemically stabilized to meet the proposed Universal Treatment Standards for D008 wastes. Specifically, these data demonstrate that stabilization treatment of D008 nonwastewaters cannot achieve the proposed treatment standards of 0.37 milligrams per liter (mg/l) or 0.16 mg/l for lead or selenium, respectively. Instead, BCI's comments prove that the data show that based on the 99th confidence interval, stabilization treatment of lead and selenium at secondary lead smelters can achieve only concentration levels of 2.97 mg/l for lead and 2.48 mg/l for selenium.

Commenter: Battery Council International & Association of Battery Recyclers  
Comment Number: NODA1 8  
Page Number: 2

Data referenced by EPA in the NODA clearly indicate that D008 nonwastewaters (e.g., slags, soils, sludges) generated from secondary lead smelting activities cannot be chemically stabilized to meet the proposed Universal Treatment Standards of .37 mg/l for lead and .16 mg/l for selenium. The significance of this conclusion was fully described in our previous comments, submitted in November 1995 on the proposed RCRA LDR Phase IV rulemaking. *See Tab 1.*

Commenter: INMETCO  
Comment Number: 2SR 10  
Page Number: 7-8

**B. The Proposed Standard for Beryllium**

The proposed revised UTS/BDAT standard for beryllium is 0.02 mg/L (rounded from 0.018 mg/L). See 62 Fed. Reg. at 26046/2. This value was derived by applying EPA's "C<sub>99</sub>" BDAT methodology to 40 TCLP measurements of INMETCO's slag, reflecting analyses performed on grab samples collected in 1994.[fn7:See Memorandum to Anita Cummings from Stan Moore of Versar Inc., enclosing Draft Report: Metals Treatment Standards Derived From Data Submitted by Industry (Item S0012 in Docket F-97-2P4P-FFFFF); 62 Fed. Reg. at 26045/2.] EPA's stabilization-based BDAT value for beryllium (0.012 mg/L) reflected just four data points, and the waste streams involved showed very low beryllium TCLP levels even before treatment.[fn8: See March 10, 1997 Memorandum to Anita Cummings from Howard Finkel (Item S0011 in Docket F-97-2P4P-FFFFF), Waste Stream Identifier Table and Attachments 1 and 4. Beryllium was non-detectable in the TCLP extract from 9 of the 11 raw waste stream samples in EPA's overall stabilization database. See id., Attachment 1.] Thus, there is a serious question whether the proposed standard of 0.02 mg/L can be achieved by stabilization when the wastestreams contain higher levels of beryllium.

Commenter: Battery Council International & Association of Battery Recyclers  
Comment Number: 2SR 17  
Page Number: 6-7

B. Existing Stabilization Technologies Cannot Meet the Proposed Treatment Standards

EPA also has not demonstrated that existing stabilization technologies can achieve the treatment standards for lead, silver, antimony, beryllium, and thallium. EPA has proposed treatment standards of 0.75 mg/l for lead, 0.11 mg/l for silver, 0.07 mg/l for antimony, 0.02 mg/l for beryllium and 0.20 mg/l for thallium based upon its analysis of a limited set of data obtained by Rollins Environmental and GNB Technologies Inc.[ fn7: See Memorandum of Howard Finkel to Anita Cummings, *Final Revised Calculation of Treatment Standards Using Data Obtained From Rollins Environmental's Highway 36 Commercial Waste Facility and GNB's Frisco, Texas Waste Treatment Facility (Mar. 10, 1997).*] EPA has erred in three respects in relying on this data: it is not representative; it includes only grab (as distinguished from composite) samples; and it for the most part was not derived from the treatment of secondary smelter slag.

Commenter: Collier, Shannon, Rill & Scott, PLLC for Specialty Steel  
Industry of North America  
Comment Number: 2SR 18  
Page Number: 2-3

111. **PROPOSED STANDARD FOR BERYLLIUM**

SSINA shares the concerns raised by INMETCO that the proposed standard for beryllium of 0.02 mg/l (which is based on INMETCO's slag) may not be achieved by stabilization for wastestreams that contain higher levels of beryllium. This concern is legitimately based on the fact that beryllium was non-detectable in the TCLP extract from nine of the eleven raw waste stream samples in EPA's overall stabilization database. See March 10, 1997 memorandum to Anita Cummings (Item 5001 1 in Docket F-97-2P4P-FFFFF), Waste stream Identification Table. SSINA urges EPA to (1) evaluate the effectiveness of stabilization in treating raw wastestreams with higher and more representative levels of beryllium; and (2) to raise the beryllium UTS level commensurate with this additional data.

Commenter: TDJ Group  
Comment Number: 26  
Page Number: 2

The Agency has completed extensive work on the ability of stabilization technologies to eliminate the leach characteristic of many waste streams with single inorganic constituents. For example, cement stabilization has been shown as an effective method for stabilizing lead, cadmium and chrome compounds, all near or below the proposed Phase Four standards. However, it should be noted that the same stabilization chemistry at a given percentage of addition may be more or less effective in stabilizing each of the constituents, and little is known about the effects of combined stabilization processes on a single waste stream. For example, cement stabilization of foundry baghouse dusts will require a greater overall addition of cement to treat lead, cadmium and chrome constituents (when present) in the same waste stream. In certain cases requiring maximum addition of treatment reagent, effective treatment of chrome creates a condition where the treatment begins to elevate the leachability of lead (due to the amphoteric nature of lead).



Commenter: Steel Structures Painting Council  
Comment Number: 69  
Page Number: 2

The proposed treatment standard requires that when one metal is found to exceed the TCLP level (e.g., lead) the waste must be treated to the new treatment standards for all the heavy metals covered in the rule. Our industry has no experience or data to determine if this is feasible. Lead is most commonly treated with Portland cement. Data have been-acquired (e.g., FHWA RD-94-100) that this method is suitable for treating lead-bearing paint wastes to the new standard of 0.37 mg/l. However, some of these wastes may also contain chromium or cadmium. We are not aware of any data stating that the treatment with Portland cement will also reduce the chromium and cadmium to the new treatment levels.

Commenter: Steel Manufacturers Association  
Comment Number: 83  
Page Number: 6-7

B. There is Currently Inadequate Data in the Rulemaking Record on Commercially Available Stabilization Technologies to Determine the Appropriate UTS for Cadmium, Chromium, and Lead

There is only limited performance data for stabilization technologies in the rulemaking record. The data in the record is not sufficient to address known interferences with stabilization technologies. The Agency has stated that stabilization has been documented "as a process that is highly matrix-dependent and prone to chemical interference." *Final BDAT Background Document (Addendum) For All Nonwastewater Forms of K061 and Alternative BDAT Treatment Standards For F006 and K062 Nonwastewaters* (July 1992) at 7-22. In order to determine "whether stabilization is likely to achieve the same level of performance on an untested waste as on a previously tested waste," the Agency will focus on five characteristics, including other metals and the metals' concentrations. *BDAT Background Document For K061* (Aug. 1988) at 3-19 to 3-20. The Agency has also stated that "when a waste contains a mixture of metals, it may not be possible to chemically stabilize the waste in a manner that optimizes the reduction in leachability for all constituents. The extent to which synergistic effects impact performance will depend on the type and concentration of other metals in the waste." *Id.* More specifically, the Agency has previously found that "[put another way, this means (assuming proper treatment performance) that the performance of the treatment system could achieve concentration levels below the characteristic level for lead but higher than the characteristic level for cadmium." 55 Fed. Reg. 22,520, 22,565 (June 1, 1990). The presence of other heavy metals in a chemically stabilized waste sometimes precludes the stabilization of all the TC metals in the waste to below their respective UTS levels. Therefore, the UTS level for UHCs need to be raised in certain cases to optimize the stabilization treatment technology for other TC metal wastes.

The data in the record for the LDR Phase IV proposed rule are not adequate to address the interferences of other metals on the stabilization technology for cadmium, chromium, and lead in nonwastewaters. Additional information is required to evaluate the effectiveness of stabilization technologies on a broad range of TC metal wastes with both high and low concentrations of heavy metals. A larger and more representative range of stabilization treatment results must be developed and analyzed to assess other likely interferences in the stabilization technologies, e.g., pH and the presence of low concentrations of organics. For example, among some chemically stabilized TC metal wastes, changing the pH to minimize chromium leachate can increase the solubility of lead. Therefore, these other characteristics of TC metal wastes can have a significant impact on stabilization technologies and their ability to treat any UHCs in a waste as well as the characteristic metal.

Commenter: Specialty Steel Industry  
Comment Number: 84  
Page Number: 7

B. There is Currently Inadequate Data in the Rulemaking Record on Commercially Available Stabilization Technologies to Determine the Appropriate UTS for Cadmium, Chromium, and Lead

There is only limited performance data for stabilization technologies in the rulemaking record. The data in the record is not sufficient to address known interferences with stabilization technologies. The Agency has stated that stabilization has been documented "as a process that is highly matrix-dependent and prone to chemical interference." *Final BDAT Background Document (Addendum) For All Nonwastewater Forms of K061 and Alternative BDAT Treatment Standards For F006 and K062 Nonwastewaters* (July 1992) at 7-22. In order to determine "whether stabilization is likely to achieve the same level of performance on an untested waste as on a previously tested waste," the Agency will focus on five characteristics, including other metals and the metals' concentrations. *BDAT Background Document For K061* (Aug. 1988) at 3-19 to 3-20. The Agency has also stated that "when a waste contains a mixture of metals, it may not be possible to chemically stabilize the waste in a manner that optimizes the reduction in leachability for all constituents. The extent to which synergistic effects impact performance will depend on the type and concentration of other metals in the waste." *Id.* More specifically, the Agency has previously found that "[put another way, this means (assuming proper treatment performance) that the performance of the treatment system could achieve concentration levels below the characteristic level for lead but higher than the characteristic level for cadmium." 55 Fed. Reg. 22,520, 22,565 (June 1, 1990). The presence of other heavy metals in a chemically stabilized waste sometimes precludes the stabilization of all the TC metals in the waste to below their respective UTS levels. Therefore, the UTS level for UHCs need to be raised in certain cases to optimize the stabilization treatment technology for other TC metal wastes.

### 2.1.2 There Is Sufficient Capacity to Manage Stabilization Demand

One commenter [Environmental Technology Council (NODA1 14)] stated that there is more than sufficient capacity to manage not only existing wastes but all TC wastes and soils subject to the Phase IV Rule.

- ! Environmental Technology Council (ETC) reported that the total of waste received by all RCRA permitted facilities, mostly in 1994, that required stabilization was 1,306,500 tons (HazSearch Database). This demand for stabilization contrasts with the EPA estimate of 6.0-8.1 million tons/year of stabilization capacity, depending on the year of the estimate. Based on 1994 information, there is more than sufficient capacity to manage not only existing wastes but all TC metal wastes and soils subject to the Phase IV Rule. (NODA1 14:11)

#### Response

EPA appreciates the data provided by the commenter and notes that the data have been considered in the Capacity Analysis Background Document for determining the available treatment capacity. As EPA had noted in that background document, the majority of the wastes are already being stabilized and would only require minor modifications in the stabilization treatment system to meet the proposed standards. Thus, adequate stabilization capacity exists for treating Phase IV wastes. EPA also followed-up with the commenter to obtain additional data to support the Agency's treatment capacity determination. See the Capacity Analysis Background Document for the final Phase IV rule for additional data provided by the commenter supporting EPA's treatment capacity determination.

#### Comments

- ! Environmental Technology Council (NODA1 14:11)

Commenter: Environmental Technology Council  
Comment Number: NODA1 14  
Page Number: 11

This yields a total of 1,306,500 tons of waste received by these facilities, mostly in 1994, that required stabilization. This demand for stabilization contrasts with the EPA estimate of 6.0 - 8.1 million tons/year of stabilization capacity, depending on the year of the estimate. Based on 1994 information, there is more than sufficient capacity to manage not only existing wastes but all TC metal wastes and soils to the Phase IV rule.

### **2.1.3 Lead Battery Slags and Sludges (D008) Can Be Treated by Stabilization to the UTS for Lead and Underlying Metal Hazardous Constituents**

One commenter [Environmental Technology Council (NODA1 14)] stated that stabilization is effective in meeting UTS for lead battery slags and sludges.

- ! The Environmental Technology Council stated that stabilization of lead slag and sludge from the smelting of lead acid batteries (D008) can meet UTS levels for lead and underlying metal constituents. (NODA1 14:6)

#### **Response**

EPA acknowledges the commenters confirmation that stabilization is effective in meeting UTS for lead battery slags and sludges. EPA followed-up with the commenter to obtain additional data to support the Agency's treatment capacity determination. See the Capacity Analysis Background Document for the final Phase IV rule for data provided by the commenter supporting EPA's treatment capacity determination.

#### **Comments**

- ! Environmental Technology Council (NODA1 14:6)

Commenter: Environmental Technology Council  
Comment Number: NODA1 14  
Page Number: 6

Given that the objective of the treatment formulation was to reach the characteristic level that is over 5 times higher than UTS for Cadmium and over 10 times higher than UTS for Lead, the fact that UTS levels were achieved in over 80% of these formulations is strong evidence that stabilization is indeed effective in meeting UTS for slag. Formulations designed with the objective of meeting UTS would not involve inordinate expense or difficulty to bring the remaining 10 to 20% of the stabilized slag values under UTS. Based on these treatability data, ETC believes there can be no doubt regarding the ability of stabilization to meet the UTS for this slag.

#### **2.1.4 Lead-Contaminated Soils Cannot Be Chemically Stabilized to Meet the Proposed Treatment Standard for D008 Non-wastewater**

One commenter [Battery Council International & Association of Battery Recyclers (NODA1 8)] stated that the proposed D008 treatment level cannot be met for lead-contaminated soils.

- ! Battery Council International & the Association of Battery Recyclers stated that stabilization treatment of lead-contaminated soil can achieve, at best, a concentration level of 4.69 mg/l - a level at least 12 times higher than the proposed treatment standard for D008 nonwastewaters. (NODA1 8:6)

#### **Response**

The Agency disagrees with the commenter that the proposed D008 treatment levels cannot be met for lead-contaminated soils. The Agency reviewed available treatment performance data from both listed and characteristic metal wastes while determining the for TC metal wastes. The Agency also conducted site visits to selected TSD facilities and collected treatment performance data on stabilization that show that a well designed stabilization system can effectively treat lead to the proposed standards. The Agency also compiled treatment performance data for contaminated soils from remediation case studies that indicate that the alternative treatment standards (10 times UTS or 90 percent reduction) can be achieved by commercially available treatment technologies. Furthermore, the Agency notes that the waste generator can use any treatment technology, not just stabilization, to achieve the treatment standards. See the BDAT and Capacity Analysis Background Documents for treatment performance data that show that the standards can be achieved.

#### **Comments**

- ! Battery Council International & Association of Battery Recyclers (NODA1 8:6)



Commenter: Battery Council International & Association of Battery Recyclers  
Comment Number: NODA1 8  
Page Number: 6

EPA has requested, in the NODA, additional information on TC metal-contaminated soils that would require treatment to meet the proposed LDR treatment standards. In response to this request, we refer the Agency to data we submitted on November 20, 1995, that showed stabilization treatment (i.e., the BDAT for these D008 nonwastewaters) of lead-contaminated soil can achieve, at best, a concentration level of 4.69 mg/l -- a level at least 12 times higher than the proposed treatment standard.

The proposed D008 treatment level cannot be met for contaminated soils primarily because of their heterogeneity. As EPA has recognized in previous rulemaking efforts and the currently- proposed RCRA HAIR-contaminated media rule, there are substantial physical and chemical differences in the homogeneity of streams between hazardous contaminated media and hazardous "as generated" wastes (that are subject to this proposed LDR rulemaking). This is the reason that, in the HAIR-contaminated media rule, the Agency is proposing a unique LDR treatment standard for managing hazardous contaminated media (i.e., 90 percent treatment or 10 times the Universal Treatment Standard). The HAIR considers the generally heterogeneous characteristic of hazardous contaminated soils, and the potentially problematic soil matrices and varying hazardous contaminant levels associated with the treatment of contaminated soils. In reviewing data on soils in this rulemaking, the Agency similarly should recognize the soils' physical and chemical characteristics, and not be driven to adopt a single numerical standard because of the quantity or volume of soils potentially subject to it.

## 2.2 Metal Recovery

### 2.2.1 EPA Did Not Evaluate HTMR Capacity

In the capacity analysis for the original proposed rule, EPA did not explicitly discuss HTMR capacity. EPA focused on stabilization for meeting the treatment standards for TC metal wastes. Five commenters [TDJ Group (26); DOD (74); Brush Wellman (82); Steel Manufacturers Association (83); Specialty Steel Industry of North America (84)] asked EPA to include HTMR in its capacity analysis, since this technology is the one on which some of the treatment standards are based.

- ! The TDJ Group stated that EPA should perform an in depth review of HTMR capacity. (26:4)
- ! The Non-Ferrous Founder's Society stated that EPA has not proven that HTMR is an appropriate treatment technology for the universe of foundry TC wastes in the Phase IV LDR proposed rule. They also stated that even if HTMR was the appropriate BDAT for foundry TC waste, EPA has not demonstrated that there is sufficient capacity to treat the amount of waste that will become subject to LDR IV UTS standards. (72:2)
- ! The Department of Defense asked EPA to review whether sufficient HTMR (or other treatment) capacity exists for lead -based paint wastes. (74:3)
- ! Brush Wellman stated that EPA's background document provides no information on commercial capacity for HTMR. (82:11)
- ! The Steel Manufacturers Association and the Specialty Steel Industry of North America stated that EPA must include HTMR in its capacity analysis. (83:7-8; 84:8)

#### Response

EPA agrees that it did not explicitly discuss HTMR capacity, choosing instead to focus on stabilization as the predominant treatment. However, HTMR was discussed in the first supplemental proposed rule. Furthermore, EPA has conducted extensive research on commercially available HTMR technologies and developed a compendium of commercial HTMR facilities operating in the United States. (U.S. EPA., Profiles of Metal Recovery Technologies for Mineral Processing Wastes and Other Metal-Bearing Hazardous Wastes, Office of Solid Waste, April 1997). The Agency also refers the commenter to the discussion on HTMR in the Capacity Analysis Background Document for additional information on the commercial availability of HTMR, and the types of waste streams that are typically processed using this technology. The Agency believes that HTMR is a reasonable alternative treatment technology for some TC metal wastes. Several TC metal UTS (cadmium, chromium, silver, and beryllium) are based on HTMR performance and, therefore, EPA has included HTMR in the capacity analysis for the final rule. See the next section for additional discussion of HTMR.

## Comments

- ! TDJ Group (26:4)
- ! Non-Ferrous Founder's Society (72:2)
- ! Department of Defense (74:3)
- ! Brush Wellman (82:11)
- ! Steel Manufacturers Association (83:7-9)
- ! Specialty Steel Industry of North America (84:8)

Commenter: TDJ Group  
Comment Number: 26  
Page Number: 4

We would request that the Agency rescind the proposed rule and gather additional data. We are particularly concerned that these standards, as proposed, will raise future debate on the apparent break between the characteristic limits now in force for TC wastes and the proposed UTS criteria. We fully expect that the Agency will return to this issue in the future and question management practices of wastes that pass the TC standard but fail the UTS, possibly leading to a reduction of the TC standards now in force. Before that is allowed to occur, we strongly urge the Agency to perform a more in-depth review of both complex metals stabilization and HTMR capacity.

Commenter: Non-Ferrous Founder's Society  
Comment Number: 72  
Page Number: 2

HTMR Capacity: Even if HTMR was appropriate BDAT for Foundry TC waste, we conclude, as did AFS, that D.A. has not determined whether there is available capacity of HTMR treatment to address the amount of TC waste that will become subject to LDR IV UTS standards. We also support the AFS contention that EPA arbitrarily determined the amount of TC lead waste that would increase as a result of the LDR IV rulemaking. Clearly under RCRA Section 3004(m) Congress intended to require utilization of available technology. EPA has not proven that HTMR is an appropriate treatment method for the universe of Foundry TC wastes in the LDR IV proposed rule. This issue must be addressed by EPA before the final rule is promulgated.

Commenter: Department of Defense  
Comment Number: 74  
Page Number: 3

DOD routinely addresses lead-based paint issues. It is unclear from the proposed rule if capacity for lead-based paint wastes was considered in this rule. DOD thus requests EPA to review if adequate capacity (for example, high temperature metal recovery) exists for this waste stream.

Oftentimes, lead-based paint in debris and soils is not classified as a hazardous waste, and thus the land-disposal restrictions are not applicable. However, when LDR would apply, lead-based paint should be treated similar to other remediation wastes, and thus distinguished from as-generated waste. DOD thus requests EPA to consider an exemption or variance for this remediation waste. DoD understands that an exemption from LDR for lead-based paint wastes may be consistent with EPA's soon to be released rule on architectural components.

Commenter: Brush Wellman  
Comment Number: 82  
Page Number: 11

EPA suggests that stabilization is an alternative treatment technology that is available for use by generators of toxicity characteristic metal wastes to meet the universal treatment standards. Indeed, EPA's background document evaluating available capacity for treating these wastes focuses solely on stabilization capacity and does not present any information regarding commercial capacity for HTMR. As discussed previously, Brush Wellman is not aware of a commercial HTMR process which is available to treat its beryllium-containing toxicity characteristic metal wastes. It is not reasonable for the Agency to promulgate a BDAT-based standard based on one technology and expect compliance based on use of a different technology which has not been thoroughly evaluated for performance and capacity. Brush Wellman is not aware of any data in the administrative record which demonstrate that the universal treatment standard for beryllium is attainable through stabilization. Without such data, Brush Wellman must question how EPA could make a supportable determination that the beryllium standard is achievable or even desirable with respect to toxicity characteristic metal wastes. For example, has EPA considered how much additional stabilization agent may be necessary to treat beryllium to the required level and how much additional landfill capacity will be necessary in order to accommodate the increased volume of the treated waste? Finally, it is not clear from a review of the capacity background document that EPA even considered the additional stabilization of toxicity characteristic metal wastes which may be necessary in order to meet the universal treatment standards with respect to underlying hazardous constituents such as beryllium.

Commenter: Steel Manufacturers Association  
Comment Number: 83  
Page Number: 7-8

III. THE AGENCY'S CAPACITY ANALYSIS FOR LDR PHASE IV IS INCOMPLETE AND SERIOUSLY FLAWED AS IT RELATES TO TC METAL WASTES

A. Despite the Fact That EPA Has Identified HTMR as BDAT, HTMR is Never Mentioned in the Agency's Capacity Analysis for TC Metal Wastes

As discussed above, EPA inappropriately identified HTMR as the BDAT for all TC metal wastes that exhibit the TC characteristic for lead or cadmium (even if a particular waste contained an unrecoverable amount of metal). Under the proposed rule, large volumes of additional TC metal wastes would have to be processed by HTMR. For this reason, EPA's *Capacity Analysis*,<sup>11</sup> must assess whether there is sufficient excess or unused HTMR capacity to handle the increased volume of TC metal wastes that would have to be processed by HTMR technology. The fact that HTMR is not even mentioned in the *Capacity Analysis* indicates an incomplete and seriously flawed *Capacity Analysis* for LDR Phase IV. The American Foundrymen's Society has collected information related to the capacity of HTMR facilities. See Map and explanatory spreadsheet attached as Exhibit 2. Exhibit 2 illustrates the limited capacity of HTMR facilities. Based on telephone conversations with representatives of the only existing commercial HTMR facilities, there is not sufficient excess HTMR capacity commercially available to process additional TC metal wastes subject to the proposed rule.

If the Agency had done a more competent capacity analysis for LDR Phase IV and determined that there was inadequate capacity for HTMR, then the Agency would probably have become more aware of the technical burdens imposed by LDR Phase IV on TC metal waste streams. These technical burdens include treatment standards derived from the inappropriate transfer of HTMR technology to all TC metal wastes. Therefore, the Agency should have done a more thorough Capacity Analysis, recognized the constraints of HTMR to process TC metal wastes with relatively low concentrations of recoverable metals, and then investigated stabilization technologies more thoroughly. Instead, the Agency has proposed treatment standards derived from HTMR that are not demonstrated for all steel making TC metal wastes.



Commenter: Specialty Steel Industry of North America  
Comment Number: 84  
Page Number: 8

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## 2.2.2 There Is Not Sufficient HTMR Capacity to Treat All TC Metal Wastes

Similarly, eight commenters [TDJ (26); Battery Council International (45); Non-ferrous Founders Society (72); American Foundrymen's Society (77); Bush Wellman (82); Steel Manufacturers Association (83); Specialty Steel Industry of North America (84); INMETCO (96)] state that HTMR is not available for certain types of TC wastes. Therefore, HTMR should not be considered BDAT for such wastes.

- ! The TDJ Group believes that compliance with the proposed UTS standards for lead, cadmium, or chromium wastes requires either the use of stabilization technologies or the use of HTMR. The Agency's analysis of available capacity appears to be incomplete, since facility availability for some D008 waste streams is limited by the amounts of lead present in the waste. Many HTMR facilities are unwilling to receive materials with less than 15% total lead content unless a surcharge is paid. Even then, it is not clear whether there will be adequate capacity to receive an additional 300,000 to 500,000 tons of low lead spent abrasive waste annually. In addition, processes that concentrate the waste for HTMR maximize the potential risk to workers. (26:1-2)
- ! The TDJ Group also stated that it appears that most of the D006, D007, and D008 wastes will not be amenable to HTMR, and it would appear that there is not enough capacity to provide this form of recovery. If the HTMR capacity is not present and if EPA has not adequately researched the efficacy of stabilization technologies, then EPA is establishing a technology forcing standard which is a violation of RCRA 3004. (26:3-4)
- ! Battery Council International states that HTMR technology is not commercially available to treat nonwastewaters to the proposed treatment levels for lead and selenium. The kiln process is a patented and very expensive process that has not been built into any of the lead battery industry's operations. (45:3)
- ! Battery Council International states that secondary smelters currently are unable to achieve the standards for lead and selenium based on HTMR. If smelters are forced to comply with these standards, many will be forced to shut down (because they will not be able to absorb the costs required to comply with the standards). Any loss in secondary smelting capacity could have a detrimental effect on lead-acid battery recycling. (45:11-12)
- ! The Non-Ferrous Foundrymen's Society states that the variability of foundry waste make HTMR an unacceptable treatment technology for these wastes. (72:2)
- ! America Foundrymen's Society (AFS) believes that HTMR technology is only commercially available treatment for TC metal wastes with high metal content. HTMR is not a demonstrated or available technology for TC metal wastes with low metal content such as foundry wastes. AFS states that EPA must include HTMR in its capacity analysis. Based on phone calls to HTMR facilities, however, AFS has concludes that there is not sufficient HTMR capacity to process the additional foundry wastes subject to the proposed rule. (77:5-9)
- ! Brush Wellman states that HTMR would not be able to meet the proposed treatment standards for beryllium in at least one of its waste streams. (82:10-11)

- ! The Steel Manufacturing Association and the Specialty Steel Industry of North America state that HTMR is not commercially available for all steel making wastes, especially those with low metal content. There are no commercial facilities that will accept large volumes of wastes with low metal concentrations. Horsehead can only accept wastes with at least 5 percent zinc. (83:3-6; 84:4-5)
- ! INMETCO states that it currently operates the only pyrometallurgical process designed to recover nickel and chromium from metal-bearing secondary materials. In 1994, INMETCO recycled 58,000 tons of material. (96:3,5-6)

## Response

The Agency agrees with commenters that HTMR may not be the most applicable technology for certain wastes (e.g., foundry sands) containing metals in low concentrations. In such cases, the Agency recommends the use of other treatment technologies such as stabilization. EPA reiterates that the UTS levels can be achieved by either HTMR or stabilization (or, for that matter, any other applicable treatment technology). Therefore, the Agency is not establishing a technology forcing standard and thus is not violating the requirements of RCRA 3004. Also, for the final Phase IV rule, the Agency has revised the treatment standards for certain metals that are based on HTMR performance to better reflect the treatability of the “most difficult to treat” wastes. Based on the Agency’s review of available data and the new data submitted by the commenters, the Agency believes that adequate capacity exists to treat the Phase IV wastes using either one of the technologies. See the Capacity Analysis Background Document for additional information on available commercial treatment capacity for stabilization and HTMR.

Notwithstanding this analysis, the Agency recognizes that some wastes could possess unique properties that make them more difficult to treat than the wastes on which the standards are based. In such cases, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44. For newly identified wastes (i.e., wastes that do not fail the EP test, and, consequently, are not part of the Third Third LDR Rule), the affected party may request a capacity variance extension per 40 CFR 268.5 on a case-by-case basis. Wastes regulated in the Third Third LDR Rule (i.e., wastes that fail the EP test) are not eligible for capacity variances because the extension provided in that rulemaking has already expired.

## Comments

- ! TDJ Group (26:1-2, 3-4)
- ! Battery Council International (45:3, 11-12)
- ! Non-Ferrous Foundrymen’s Society (72:2)
- ! American Foundrymen’s Society (77:5-9)
- ! Brush Wellman (82:10-11)
- ! Steel Manufacturers Association (83:3-6)
- ! Specialty Steel Industry of North America (84:4-5)
- ! INMETCO (96:3,5-6)

Commenter: TDJ Group  
Comment Number: 26  
Page Number: 1-2

1) Reliance on the availability and feasibility of HTMR

At the present time, compliance with the proposed UTS standards for lead, cadmium or chromium wastes requires either the use of stabilization technologies or the use of high temperature metals recovery. The Agency analysis of available capacity appears to be somewhat incomplete, since facility availability for some D005 waste streams is limited by the amounts of lead present in the waste. Leaded paint contaminated abrasive (produced in projects that sandblast structural steel to remove old paint and repair corrosion damage) may contain as little as 0.5% total lead (in the form of lead oxide) that will result in the classification of the waste as hazardous under TCLP. Many available high temperature metals recovery facilities are unwilling to receive materials with less than 15% total lead content unless a substantial surcharge is paid, and even then, it is not clear whether there will be adequate capacity to receive an additional 300,000 to 500,000 tons of low lead spent abrasive waste annually. As a result, roughly 95% (by weight) of the D008 waste volume for the steel delating industry will be forced to use stabilization methods for disposal. The question of whether stabilization processes can perform to the standards of the Agency is an issue that will be addressed later in this document.

Processes that concentrate the waste for HTMR in steel structures lead abatement projects (recycled steel grit systems) allow for waste minimization by volume (with maximum toxicity), but they cause substantial increases in the costs of lead paint removal while maximizing the risks to workers in containment. In general, this method of paint removal may increase surface painting costs by as much as 50% over other processes that do not concentrate the waste lead. Most lead paint has less than 30% total lead, and the diluting effects of grit removal (producing paint chips, spent abrasive, and particles of substrate) will reduce the fraction of lead in the waste to well below the 15% threshold. We estimate that more than 65% of the waste from steel grit systems will fail to meet the minimum lead standard.

Commenter: TDJ Group  
Comment Number: 26  
Page Number: 3-4

5) The proposed rulemaking appears to violate RCRA Section 3004 (M), since the proposed standards are based on technologies that are commercially available.

Our analysis of the markets for D006, D007 and D008 waste management from the iron and steel industry and the steel maintenance industry suggest that 500,000 to 11000,000 tons of solid waste will be covered by these regulations. It appears clear that most of these wastes will not be amenable to HTMR, and it would appear that there is not adequate capacity to provide this form of recovery. This appears to imply that these wastes will require stabilization before disposal. It is not clear that existing stabilization technologies will have the ability to meet these standards. The Agency has not used wastes representative of these industries to establish these standards. The Agency has assumed that there is sufficient capacity to receive these wastes for HTMR, but industry data suggests that these wastes are not amenable to these processes. If HTMR capacity is not present and if the Agency has not adequately researched the efficacy of stabilization technologies, then the Agency is establishing a “technology forcing standard” that is a violation of RCRA 3004 (M).

Commenter: Battery Council International  
Comment Number: 45  
Page Number: 3

This is because, first, the HTMR technology used by EPA to determine the BDAT (known as Horsehead Resource Development Company Inc.'s waelz kiln series process) is not "commercially available" to treat D008 nonwastewaters to the proposed treatment levels for lead and selenium. The waelz kiln process is a patented and very expensive process that has not been built into any of the lead battery industry's operations. Moreover, there is no facility operating a waelz kiln permitted to accept and store D008 wastes. Thus, the HTMR cannot be considered an available technology under the Agency's BDAT principles.

Commenter: Battery Council International  
Comment Number: 45  
Page Number: 11-12

Even if such technologies were available, the secondary smelter industry would either have to spend millions of dollars to acquire/develop them (since the industry is using other stabilization technologies to comply with the current LDR regulations) at an estimated cost of \$29 million per facility, or send its D008 wastes to facilities operated by others to be treated. As the amount of newly identified D008 nonwastewaters requiring treatment or stabilization could approach 21,000,000 tons, this would be prohibitively expensive.

The secondary smelting industry has seen the number of operating secondary smelters decline precipitously over the last several years, as increasingly stringent and expensive regulatory standards have been imposed under RCRA and other environmental statutes. It would be unfair to impose additional costs upon remaining smelters, to achieve little or no benefit. Some likely could not absorb and would close. At the very least, this expense would also further exacerbate the disparity of costs faced by producers of secondary (recycled) lead, rather than virgin lead (slag, sludges, etc. from primary lead producers are generally not subject to regulation under RCRA Subtitle C). This is completely antithetical to sound public policy.

Furthermore, given that the industry is now operating at full capacity, any decrease in secondary smelter capacity may have a detrimental effect on lead battery recycling. Over 100 million lead batteries were produced in 1994. As EPA is well aware, secondary smelters play an integral role in the recycling of lead-acid batteries. In 1994, the most recent year data are available, over 98 percent of the lead available from lead-acid batteries was recycled.

Commenter: Non-Ferrous Foundrymen's Society  
Comment Number: 72  
Page Number: 2

Foundry Waste Variability, Effectiveness of HTMR on Foundry Wastes: As stated by AFS, nonferrous foundry metallic waste constituents and concentrations are highly variable. Typically, the two major types of non-ferrous foundry waste contain a significant amount of non-metallic constituents differentiate foundry waste from K061 wastes which EPA used to establish High Temperature Metal Recovery (HTMR) as the BDAT for TC wastes. As stated by AFS, the variability of foundry wastes may make HTMR and [as in text] inappropriate treatment technology for this material. Therefore, HTMR is not appropriate for the majority of Foundry TC Wastes.



Commenter: American Foundrymen's Society  
Comment Number: 77  
Page Number: 5

The proposed treatment standards for nonwastewaters under UTS would dramatically increase the stringency of the existing treatment standards (by roughly an order of magnitude) for cadmium (from 1.0 to 0.19 mg/L), for chromium (from 5.0 to 0.86 mg/L), for lead (from 5.0 to 0.37 mg/L), and for selenium (from 1.0 to 0.16 mg/L). The proposed treatment standard for chromium under UTS was derived from chemical stabilization of a limited number of chrome-bearing wastes. The more stringent treatment standards for cadmium, lead, and selenium were solely derived from the application of High Temperature Metal Recovery ("HTMR") technology to emission control dust/sludge from the primary production of steel in electric arc furnaces ("K061"). It is entirely inappropriate for EPA to assume that the thousands of diverse and varied wastes that exhibit the TC characteristic for cadmium, lead, or selenium will respond like K061 when subjected to HTMR.

Foundry sand differs from K061 in the following critical respects: (1) K061 typically has a much higher concentration of recoverable heavy metals (primarily zinc), *see* Table attached as Exhibit 3; and (2) K061 does not have an extremely high sand content in its waste matrix. EC dust from foundries also differs from K061 because K061 typically has a much higher overall concentration of recoverable heavy metals (primarily zinc), *see* Table attached as Exhibit 3. Because of these critical differences, HTMR is not available or practical for foundry wastes. For example, HTMR on foundry sand would really be vitrification because of the large amounts of sand. The low concentrations of heavy metals in the sand are essentially rendered unrecoverable at extreme temperatures. EC dust has similar low and essentially unrecoverable concentrations of heavy metals.

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Under LDR Phase IV, AFS member companies would have to achieve UTS levels through either HTMR or stabilization. HTMR is not commercially available for foundry wastes. Therefore, stabilization is the only practical alternative for foundry wastes. Although stabilization is commercially available, stabilization technologies have not been demonstrated to treat foundry wastes to meet the proposed treatment standards in LDR Phase IV. AFS is concerned that foundry wastes will be unable to meet the HTMR-derived UTS with stabilization technologies, the only technologies commercially available for foundry wastes.

These limitations on stabilization technologies need to be resolved by the Agency before promulgating LDR Phase IV as a final rule. Otherwise, foundries generating TC metal wastes will suffer significant economic harm by being forced to develop technologies to treat their wastes to meet inappropriate and overly stringent treatment standards proposed under LDR Phase IV.

The Agency must assess the effects of stabilization technologies on foundry wastes before promulgating new treatment standards for these wastes. The information in the record is inadequate to make this assessment. Unless and until EPA develops adequate data demonstrating foundry and other diverse TC wastes can meet more stringent standards, the applicable treatment standards under UTS for chromium, cadmium, lead, and selenium should remain at the current and appropriate characteristic levels

#### COMMENTS

- I. IN DIRECT VIOLATION OF RCRA SECTION 3004(M), THE PROPOSED LDR PHASE IV RULEMAKING WOULD INAPPROPRIATELY ESTABLISH A "TECHNOLOGY FORCING STANDARD" BECAUSE THE STANDARD IS NOT BASED ON A DEMONSTRATED AND COMMERCIALY AVAILABLE TECHNOLOGY FOR FOUNDRY WASTES
- A. Establishing a "Technology Forcing Standard" Violates RCRA and the Stated Intent of Congress

The Agency's authority to promulgate a treatment standard for hazardous wastes under the LDR program derives from the Resource Conservation and Recovery Act ("RCRA") Section 3004(m). 42 U.S.C. § 6924(m). Section 3004(m) is part of the Hazardous and Solid Waste Amendments ("HSWA") of 1984. Congress indicated in the legislative history accompanying HSWA that the intent of the statute is "to require utilization of *available* technology" and HSWA does not promote a "process which contemplates technology-forcing standards." Vol. 130 Cong. Rec. S9178 (daily ed., July 25, 1984) (emphasis added). The Agency has previously recognized

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this limitation on treatment standards under the LDRs, stating that the requisite levels of treatment should be the "best that has [sic] been demonstrated to be available. This does not require a BAT-type process as under the Clean Air or Clean Water Acts which contemplates technology-forcing standards. The intent here is to require utilization of available technologies in lieu of continued land disposal without prior treatment." 57 Fed. Reg. 37,194, 37,199 (Aug. 18, 1992). Therefore, in the record for LDR Phase IV, the Agency expressly recognizes that the intent of RCRA section 3004(m) is "to base treatment standards on the best technologies commonly in use and thus reasonably available to any generator." *Final BDAT Background Document for Quality Assurance/Quality Control Procedures and Methodology* (October 23, 1991) at 3-1.

The Agency's approach to identifying the applicable technology for wastes involves a determination of whether systems are "demonstrated" and are "available" commercially. *Id.* Therefore, for the Agency to determine that a recovery or stabilization technology is BDAT for TC metal wastes, the recovery or stabilization technology must be commercially "available" and "demonstrated" for all the different types of wastes that will be subject to the technology.

B. HTMR is Not a Commercially "Available" or "Demonstrated" Technology for Foundry Wastes

HTMR is only commercially available and demonstrated technology for TC metal waste-s with a high metal content. HTMR is *not* a "demonstrated," "available," or practical technology for commercial treatment of TC metal wastes with low metal content like foundry wastes. Even the Agency recognizes that "recovery of metals from all wastes is not practical; at some level of metal concentration, recovery efforts typically cease, and the remaining metals must be incorporated into a leach-resistant matrix for safe disposal." *Proposed BDAT Background Document for TC Metal Wastes D004-D011*, July 26, 1995, at 3-6.

The transfer of HTMR technology for K061 (a hazardous waste with high metal content) to TC metal wastes with low metal content like foundry wastes is totally inappropriate. For example, the Agency has previously qualified the transfer of HTMR treatment results for high zinc content K061 to other metal wastes by limiting transfer to circumstances where the "waste material contains high concentrations of metals." *Final BDAT Background Document (Addendum) For All Nonwastewater Forms of K061 and Alternative BDAT Treatment Standards For F006 and K062 Nonwastewaters* (July 1992) at 4-1. In addition, the LDR Phase IV rulemaking record indicates that the Agency only looked at HTMR treatment of TC metal wastes with high heavy metal content (*i.e.*, untreated K061 with 12.9% zinc or higher) when evaluating treated wastes for TCLP results. Foundry wastes typically have considerably lower metal content than K061. Many foundry wastes are TC metal wastes with essentially unrecoverable metal concentrations, almost always having less than 5 percent recoverable zinc or lead in the EC dust and less than 4 percent lead in the foundry sand. See Table attached as Exhibit 3.

Commenter: American Foundrymen's Society  
Comment Number: 77  
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There is not a single national commercial HTMR facility that will accept large volumes of wastes with these low concentrations of heavy metals. For example, the principal HTMR facility of the Horsehead Resource Development Company ("HRD" or "Horsehead") that recovers zinc from the vast majority of K061 generated in the United States can legally only process waste streams that contain at least 5 percent of zinc. Attached hereto as Exhibit 4 are the parameters established by the State of Pennsylvania for K061 that HRD can legally accept at its principal HTMR facility in Palmerton, Pennsylvania. Steel mills sending K061 to HRD must complete the attached Module I Form which specifies that HRD cannot legally accept secondary hazardous materials that contain less than 5 percent zinc. *See* Exhibit 4. According to HRD executives, HRD also cannot accept most *sandy* soils contaminated with TC metals because such soils contain significant quantities of silica which has an adverse impact on the HTMR process. Foundry sand would pose the same type of treatment problems as sandy soils for HRD and other HTMR facilities. Because HTMR is unavailable for TC metal wastes with low concentrations of heavy metals and for waste mixtures containing sand (such as foundry sand), generators of these waste streams will be forced to use chemical stabilization.

The Agency has explicitly recognized that HTMR residues for most TC metal wastes have leachate values that are much lower than comparable residues from stabilization. *Proposed BDAT Background Document for TC Metal Wastes D004-D011*, July 26, 1995, at 3 -5. In addition, the stabilization results presented in the record for this proposed rulemaking indicate that HTMR results are often lower than the stabilization results, especially for wastes that contain low levels of heavy metals. *See* Table A-4 of *Id.* at A- 1 8 to A-27. Therefore, many of the TC metal wastes treated with stabilization technologies, including many foundry wastes, would fail to meet the proposed HTMR-derived UTS levels. For example, the data presented in the rulemaking record indicate that eight out of ten sets of foundry-related waste samples treated by chemical stabilization would not meet the proposed treatment standards under LDR Phase IV. *See, id.*, July 26, 1995, at A-23 to A-25. Therefore, the Agency must change the UTS levels for lead, cadmium, selenium, and chromium so stabilized foundry wastes can consistently meet UTS. Otherwise, applying HTMR-derived treatment standards to foundry wastes that can only use stabilization technology will result in a "technology forcing standard." Establishing a "technology forcing standard" for foundries' TC metal wastes violates RCRA and the clear and expressed intent of Congress.

Although the Agency asserts that the proposed treatment standards for TC metal wastes are not technology forcing, the Agency fails to provide adequate reasoning for its conclusion. In fact, the data provided in the rulemaking record support the opposite conclusion, that HTMR-derived UTS for TC metal wastes will require technical development of treatment technologies for many TC metal wastes, (*i.e.* a technology forcing standard). *See, id.*, July 26, 1995, at A-16 to A-27. In addition, many statements in the rulemaking record conflict with the Agency's unsubstantiated conclusion that the proposed rulemaking is not technology forcing relative to TC metal wastes. For example, the Agency states "the current characteristic standards and the

Commenter: American Foundrymen's Society  
Comment Number: 77  
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proposed LDR standards for nonwastewater TC metals are generally based on stabilization or thermal recovery. Due to the nature of these treatment technologies, adjustments to meet specific concentration levels are usually not possible." *Regulatory Impact Analysis of the Phase IV Land Disposal Restrictions* (Aug. 18, 1995) at ES-19 to ES-20. Because adjustments are not currently possible, foundries will have to conduct extensive research and development ("R&D") on alternative waste treatment technologies to assess whether they will ultimately be able to meet the proposed UTS for TC metal wastes. Nonetheless, significant investments in R&D would still not guarantee technological improvements to ultimately meet the HTMR-derived treatment standards.

The Agency cavalierly suggests that in those circumstances where HTMR is not feasible because the metal content in the waste is too low, that a generator should simply investigate alternative ways to generate wastes that are amenable to recovery or to substitute materials that are suitable for recovery. *Proposed BDAT Background Document for TC Metal Wastes D004-D011*, July 26, 1995, at 3-6. The Agency's recommendation to investigate alternative processes or substitute production materials would require foundries and other industries to make fundamental modifications to their complex production processes. This is not a realistic or reasonable option for foundries. As discussed above in the background section, foundry sand is a critical essential and necessary raw material for the efficient production of quality castings.

Commenter: Brush Wellman  
Comment Number: 82  
Page Number: 10-11

In anticipation of EPA's proposal, Brush Wellman began to make inquiries regarding commercially available HTMR processes for its waste streams. Brush Wellman discussed with Horsehead Resource Development Company ("Horsehead") its ability to process Brush Wellman's beryllium-containing wastes. One such waste stream, a rotary filter sludge with lead concentrations above the toxicity characteristic level, is the hazardous waste with the highest beryllium content currently generated by Brush Wellman. This waste contains more than 14% beryllium. At the time of Brush Wellman's inquiry, Horsehead had a commercially available HTMR process in which it would treat the waste to recover copper values. However, according to Horsehead, it estimated that the beryllium content of the remaining slag would range between 7,800-8,700 ppm TCLP, well above the universal treatment standard for beryllium. A different waste stream, containing only 0.4% beryllium was anticipated to create a HTMR slag ranging between 100-120 ppm TCLP, also above the beryllium standard. Brush Wellman has recently learned that Horsehead has discontinued this process and currently will accept only K061 for HTMR processing. Thus, the only commercial HTMR outlet for Brush Wellman's toxicity characteristic wastes is no longer available and, if it were, it would not be able to process Brush Wellman's waste so as to satisfy the universal treatment standard.

EPA suggests that stabilization is an alternative treatment technology that is available for use by generators of toxicity characteristic metal wastes to meet the universal treatment standards. Indeed, EPA's background document evaluating available capacity for treating these wastes focuses solely on stabilization capacity and does not present any information regarding commercial capacity for HTMR. As discussed previously, Brush Wellman is not aware of a commercial HTMR process which is available to treat its beryllium-containing toxicity characteristic metal wastes. It is not reasonable for the Agency to promulgate a BDAT-based standard based on one technology and expect compliance based on use of a different technology which has not been thoroughly evaluated for performance and capacity. Brush Wellman is not aware of any data in the administrative record which demonstrate that the universal treatment standard for beryllium is attainable through stabilization. Without such data, Brush Wellman must question how EPA could make a supportable determination that the beryllium standard is achievable or even desirable with respect to toxicity characteristic metal wastes. For example, has EPA considered how much additional stabilization agent may be necessary to treat beryllium to the required level and how much additional landfill capacity will be necessary in order to accommodate the increased volume of the treated waste? Finally, it is not clear from a review of the capacity background document that EPA even considered the additional stabilization of toxicity characteristic metal wastes which may be necessary in order to meet the universal treatment standards with respect to underlying hazardous constituents such as beryllium.



Commenter: Steel Manufacturers Association  
Comment Number: 83  
Page Number: 3-4

A. Establishing a "Technology Forcing Standard" Violates RCRA and the Stated Intent of Congress

The Agency's authority to promulgate a treatment standard for hazardous wastes under the LDR program derives from the Resource Conservation and Recovery Act ("RCRA") Section 3004(m). 42 U.S.C. § 6924(m). Section 3004(m) is part of the Hazardous and Solid Waste Amendments ("HSWA") of 1984. Congress indicated in the legislative history accompanying HSWA that the intent of the statute is "to require utilization of *available* technology" and HSWA does not promote a "process which contemplates technology-forcing standards." Vol. 130 Cong. Rec. S9178 (daily ed., July 25, 1984) (emphasis added). The Agency has previously recognized this limitation on treatment standards under the LDRS, stating that the requisite levels of treatment should be the "best that has [sic] been demonstrated to be available. This does not require a BAT-type process as under the Clean Air or Clean Water Acts which contemplates technology-forcing standards. The intent here is to require utilization of available technologies in lieu of continued land disposal without prior treatment." 57 Fed. Reg. 37,194, 37,199 (Aug. 18, 1992). Therefore, in the record for LDR Phase IV, the Agency expressly recognizes that the intent of RCRA section 3004(m) is "to base treatment standards on the best technologies commonly in use and thus reasonably available to any generator." *Final BDAT Background Document for Quality Assurance/Quality Control Procedures and Methodology* (October 23, 1991) at 3-1.

The Agency's approach to identifying the applicable technology for wastes involves a determination of whether systems are "demonstrated" and are "available" commercially. *Id.* Therefore, for the Agency to determine that a recovery or stabilization technology is BDAT for TC metal wastes, the recovery or stabilization technology must be commercially "available" and "demonstrated" for all the different types of wastes that will be subject to the technology.

B. HTMR is Not a Commercially "Available" or "Demonstrated" Technology for All TC Metal Wastes

HTMR is only commercially available and demonstrated technology for TC metal wastes with a high metal content. HTMR is *not* a "demonstrated," "available," or practical technology for commercial treatment of TC metal wastes with low metal content. Even the Agency recognizes that "recovery of metals from all wastes is not practical; at some level of metal concentration, recovery efforts typically cease, and the remaining metals must be incorporated into a leach-resistant matrix for safe disposal." *Proposed BDAT Background Document for TC Metal Wastes D004-D011*, July 26, 1995, at 3-6.

The transfer of HTMR technology for K061 (a hazardous waste with high metal content) to TC metal wastes with low metal content is totally inappropriate. For example, the Agency has previously qualified the transfer of HTMR treatment results for high zinc content K061 to other metal wastes by limiting transfer to circumstances where the "waste material contains high concentrations of metals." *Final BDAT Background Document (Addendum) For All Nonwastewater Forms of K061 and Alternative BDAT Treatment Standards For F006 and K062 Nonwastewaters* (July 1992) at 4-1. In addition, the LDR Phase IV rulemaking record indicates that the Agency only looked at HTMR treatment of TC metal wastes with high heavy metal content (*i.e.*, untreated K061 with 12.9% zinc or higher) when evaluating treated wastes for TCLP results. Many steel making wastes have considerably lower metal content than K061.

Commenter: Steel Manufacturers Association  
Comment Number: 83  
Page Number: 5

There is not a single national commercial HTMR facility that will accept large volumes of wastes with these low concentrations of heavy metals. For example, the principal HTMR facility of the Horsehead Resource Development Company ("HRD" or "Horsehead") that recovers zinc from the vast majority of K061 generated in the United States can legally only process waste streams that contain at least 5 percent of zinc. Attached hereto as Exhibit 1 are the parameters established by the State of Pennsylvania for K061 that HRD can legally accept at its principal HTMR facility in Palmerton, Pennsylvania. Steel mills sending K061 to HRD must complete the attached Module 1 Form which specifies that HRD cannot legally accept secondary hazardous materials that contain less than 5 percent zinc. *See* Exhibit 1. According to HRD executives, HRD also cannot accept most *sandy* soils contaminated with TC metals because such soils contain significant quantities of silica which has an adverse impact on the HTMR process. Because HTMR is unavailable for TC metal wastes with low concentrations of heavy metals and for waste mixtures containing sand, generators of these waste streams will be forced to use chemical stabilization.

The Agency has explicitly recognized that HTMR residues for most TC metal wastes have leachate values that are much lower than comparable residues from stabilization. *Proposed BDAT Background Document for TC Metal Wastes D004-D011*, July 26, 1995, at 3-5. In addition, the stabilization results presented in the record for this proposed rulemaking indicate that HTMR results are often lower than the stabilization results, especially for wastes that contain low levels of heavy metals. *See* Table A4 of *Id.* at A- 18 to A-27. Many of the TC metal wastes treated with stabilization technologies would fail to meet the proposed HTMR-derived UTS levels. Therefore, the Agency must change the UTS levels for lead, cadmium, and chromium so stabilized steel making wastes can consistently meet UTS. Otherwise, applying HTMR-derived treatment standards to steel making wastes that can only use stabilization technology will result in a "technology forcing standard." Establishing a "technology forcing standard" for some steel making TC metal wastes violates RCRA and the clear and expressed intent of Congress.

Although the Agency asserts that the proposed treatment standards for TC metal wastes are not technology forcing, the Agency fails to provide adequate reasoning for its conclusion. In fact, the data provided in the rulemaking record support the opposite conclusion, that HTMR-derived UTS for TC metal wastes will require technical development of treatment technologies for many TC metal wastes, (i.e. a technology forcing standard). *See, id.*, July 26, 1995, at A-16 to A-27. In addition, many statements in the rulemaking record conflict with the Agency's unsubstantiated conclusion that the proposed rulemaking is not technology forcing relative to TC metal wastes. For example, the Agency states "the current characteristic standards and the proposed LDR standards for nonwastewater TC metals are generally based on stabilization or thermal recovery. Due to the nature of these treatment technologies, adjustments to meet specific concentration levels are usually not possible." *Regulatory Impact Analysis of the Phase IV Land Disposal Restrictions* (Aug. 18, 1995) at ES-19 to ES-20. Because adjustments are not currently possible, steel making companies will have to conduct extensive research and development ("R&D") on alternative waste treatment technologies to assess whether they will ultimately be



Commenter: Steel Manufacturers Association  
Comment Number: 83  
Page Number: 6

able to meet the proposed UTS for some TC metal wastes. Nonetheless, significant investments in R&D would still not guarantee technological improvements to ultimately meet the HTMR-derived treatment standards.

The Agency cavalierly suggests that in those circumstances where HTMR is not feasible because the metal content in the waste is too low, that a generator should simply investigate alternative ways to generate wastes that are amenable to recovery or to substitute materials that are suitable for recovery. *Proposed BDAT Background Document for TC Metal Wastes D004-D011*, July 26, 1995, at 3-6. The Agency's recommendation to investigate alternative processes or substitute production materials would require the steel making industry to make fundamental modifications to their complex production processes. This is not realistic or reasonable.

Commenter: Specialty Steel Industry of North America  
Comment Number: 84  
Page Number: 4-5

B. HTMR is Not a Commercially “Available” or “Demonstrated” Technology for all TC Metal Wastes

HTMR is only commercially available and demonstrated technology for TC metal wastes with a high metal content. HTMR is *not* a "demonstrated," "available," or practical technology for commercial treatment of TC metal wastes with low metal content. Even the Agency recognizes that "recovery of metals from all wastes is not practical; at some level of metal concentration, recovery efforts typically cease, and the remaining metals must be incorporated into a leach-resistant matrix for safe disposal." *Proposed BDAT Background Document for TC Metal Wastes D004-D011*, July 26, 1995, at 3-6.

The transfer of HTMR technology for K061 (a hazardous waste with high metal content) to TC metal wastes with low metal content is totally inappropriate. For example, the Agency has previously qualified the transfer of HTMR treatment results for high zinc content K061 to other metal wastes by limiting transfer to circumstances where the "waste material contains high concentrations of metals." *Final BDAT Background Document (Addendum) For All Nonwastewater Forms of K061 and Alternative BDAT Treatment Standards For F006 and K062 Nonwastewaters* (July 1992) at 4-1. In addition, the LDR Phase IV rulemaking record indicates that the Agency only looked at HTMR treatment of TC metal wastes with high heavy metal content (*i.e.*, untreated K061 with 12.9% zinc or higher) when evaluating treated wastes for TCLP results. Many steel making wastes have considerably lower metal content than K061.

There is not a single national commercial HTMR facility that will accept large volumes of wastes with these low concentrations of heavy metals. For example, the principal HTMR facility of the Horsehead Resource Development Company ("HRD" or "Horsehead") that recovers zinc from the vast majority of K061 generated in the United States can legally only process waste streams that contain at least 5 percent of zinc. Attached hereto as Exhibit I are the parameters established by the State of Pennsylvania for K061 that HRD can legally accept at its principal HTMR facility in Palmerton, Pennsylvania. Steel mills sending K061 to HRD must complete the attached Module 1 Form which specifies that HRD cannot legally accept secondary hazardous materials that contain less than 5 percent zinc. *See* Exhibit 1. According to HRD executives, HRD also cannot accept most *sandy* soils contaminated with TC metals because such soils contain significant quantities of silica which has an adverse impact on the HTMR process. Because HTMR is unavailable for TC metal wastes with low concentrations of heavy metals and for waste mixtures containing sand, generators of these waste streams will be forced to use chemical stabilization.

Commenter: INMETCO  
Comment Number: 96  
Page Number: 3

As far as we are aware, INMETCO, located in Ellwood City, Pennsylvania, currently operates the only pyrometallurgical process in the United States designed to recover nickel and chromium from metal-bearing secondary materials. In brief, the process works as follows.

Commenter: INMETCO  
Comment Number: 96  
Page Number: 5-6

In 1994, INMETCO recycled more than 58,000 tons of secondary materials -- including approximately 18,000 tons of K061; 10,600 tons of hazardous and nonhazardous filter cakes; 8,900 tons of swarf; 8,600 tons of mill scale; 2,800 tons of grindings; 2,200 tons of Ni-Cd batteries; and 1,700 tons of nickel and chromium catalysts. From these materials, INMETCO was able to recover for direct reuse (in the case of nickel, chromium, iron, manganese, and molybdenum) or for further processing at an outside HTMR facility (in the case of cadmium, lead, and zinc) approximately 98 percent of the nickel, 86 percent of the chromium, 96 percent of the iron, 60 percent of the manganese, 92 percent of the molybdenum, 97 percent of the cadmium, 87 percent of the lead, and more than 99 percent of the zinc. By the second quarter of 1996, INMETCO expects to be operating newly installed cadmium retort furnaces, so that it will be able to recover the cadmium directly on site.

### 2.2.3 HTMR Capacity Exists to Treat TC Metal Wastes

One commenter [Environmental Technologies, Inc (NODA1 1)] provided data on their annual treatment capacity for TC metal wastes.

- ! Environmental Technologies International, Inc. (ETI) stated that the annual treatment capacity of ETI is 100,000 tons for its fixed units and 40,000 tons for its mobile treatment unit. ETI also stated that additional treatment units can be operational in less than 45 days. (NODA1 1:1)

#### Response

EPA appreciates the data provided by the commenter and notes that the Agency has incorporated the data into the Capacity Analysis Background Document.

#### Comments

- ! Environmental Technologies International, Inc. (NODA1 1:1)

Commenter: Environmental Technologies International, Inc.  
Comment Number: NODA1 1  
Page Number: 1

The Capacity Issues listed in item (4) found on page 21422 of the above referenced Proposed Rule cites the request for a "capacity variance." The need for a variance is technologically and operationally unfounded. The annual treatment capacity provided by ETT's fixed based unit is 100,000 tons. The annual treatment capacity offered by ETT's mobile treatment unit is 40,000 tons. Additional treatment targets can be operational in less than 45 days.

## 2.3 Combustion

### 2.3.1 There Is a Lack of Capacity at Off-Site Incineration Facilities

One commenter [Beazer East, Inc. (NODA1 12)] stated that there is a lack of capacity at off-site incineration facilities to treat F032 wastes.

- ! Beazer East, Inc. stated the selection of incineration as the BDAT will bring cleanups of wood treating sites to a halt due to a lack of capacity at off-site incineration facilities, negative community reaction for on-site incineration facilities, and skyrocketing treatment costs. Beazer East, Inc. also stated that while the incineration/combustion treatment standard may relieve some of the burden on the regulated community to meet the concentration-based standards, it does not completely solve the waste disposal problem. Although, the use of incineration and combustion for limited volumes of process waste streams may be possible under the proposed rule, incineration will never be cost-effective for large volumes of waste, especially remediation wastes. Beazer disagreed with EPA's capacity estimates as they do not account for the approximate 85.3 MM tons of soil impacted by previous wood treatment operations which may require treatment under the proposed Phase IV LDRs. Beazer believes that although, in theory, the combustion alternative may broaden the scope of available facilities, in practice, it remains to be seen whether those facilities will be able to accept the types of wastes generated at remediation sites. (NODA1 12:2,3)

#### Response

The Agency notes that this issue has been addressed in the Phase IV mini rule for wood preserving wastes and refers the commenter to the "Wood Preserving Waste: Final Rule - Comment Response Background Document" for additional information.

#### Comments

- ! Beazer East, Inc. (NODA1 12:2,3)

Commenter: Beazer East, Inc.  
Comment Number: NODA1 12  
Page Number: 2

Specifically, EPA discusses the Penta Task Force's and the American Wood Preserving Institute's concerns that promulgation of concentration limits for dioxin/furan hazardous constituents in Hazardous Waste F032 may discourage commercial incineration facilities from treating this waste. 61 Fed. Reg. 21420. For the record, Beazer also submitted comments which were critical of EPA's proposal to establish dioxin/furan constituent concentration limits as LDRs for F032. It was and continues to be Beazer's belief that selection of incineration as the Best Demonstrated Available Technology ("BDAT") will bring cleanups of wood treating sites to a halt due to a lack of capacity at off-site incineration facilities, negative community reaction for on-site incineration facilities and skyrocketing treatment costs. Beazer recommended that EPA omit the dioxin/furan constituents from the LDR constituents of concern for Hazardous Waste No. F032. Beazer cited several reasons for not including dioxin/furan as part of the F032 LDRS, to wit: (1) EPA's failure to scientifically demonstrate and support the risk from low level exposure to dioxin/furans; (2) the problematic nature of the analytical method used for detecting dioxin/furans; and (3) the non-availability of incineration capacity for treatment of large quantities of soil and debris which may contain F032.



Commenter: Beazer East, Inc.  
Comment Number: NODAI 12  
Page Number: 3

In conclusion, Beazer supports the establishment of the alternative treatment standard, as modified by suboption 1 for F032 wastes. Notwithstanding this position, it is important to note that while the incineration/combustion treatment standard may relieve some of the burden on the regulated community to meet the concentration-based standards, it does not completely solve the waste disposal problem. Although, the use of incineration and combustion for limited volumes of process wastestreams may be possible under the proposed rule, incineration will never be cost-effective for large volumes of wastes, especially remediation wastes. As stated in our previous comments, Beazer disagrees with EPA's capacity estimates insofar as those estimates do not account for the approximate 85.3 MM tons of soil impacted by previous wood treating operations which may require treatment under the proposed Phase IV LDRS. Based on the existing incineration capacity to date, it would take over 200 years to treat this quantity of material. Moreover, most incinerators cannot manage large volumes of impacted media. Although, in theory, the combustion alternative may broaden the scope of available facilities, in practice, it remains to be seen whether those facilities will be able to accept the types of wastes generated at remediation sites. As an ultimate solution, Beazer believes that, consistent with an approach suggested under the proposed HWIR-Media Rule, 61 Fed. Reg. 18780, 18834, April 29, 1996, all media impacted by hazardous wastes which are managed as part of a remediation project should be exempt from Subtitle C jurisdiction altogether, thereby effectively removing the artificial requirements of meeting LDRs for media which are managed as part of a cleanup.

### 2.3.2 Combustion of MGP Wastes Will Limit the Available Combustion Capacity

One commenter [Utility Solid Wastes Activities Group (2SR 35)] stated that combustion of manufactured gas plant (MGP) wastes should not be required because the large amount of material will limit the available combustion capacity, making it unavailable for the treatment of highly concentrated organic wastes.

- ! Utility Solid Wastes Activities Group (USWAG) stated that there are limited numbers of hazardous waste combustion facilities in the country, and therefore requiring the use of combustion for the large volume MGP wastes would mean the transportation of large quantities of material for long distances creating more pollution and increasing the risk of accidents. In addition, requiring combustion for these materials, which often contain concentrations of hazardous constituents only marginally above the treatment standard, also may tie up the available combustion capacity making it unavailable for the treatment of more highly concentrated organic wastes. (2SR 35:10-11)

#### Response

The Agency reiterates that combustion is not a required treatment technology for MGP wastes. The Agency is not proposing any specific technology, but only a concentration-based standard that can be achieved with any treatment technology. Nevertheless, the Agency realizes that it is a common practice for utilities to co-burn MGP wastes when on-site coal-fired boilers are available. According to the data submitted by the commenters, approximately 50 percent of the MGP remediation sites co-burn MGP soils in on-site coal-fired boilers. However, in the final Phase IV rule, the Agency has promulgated alternative treatment standards (10 times UTS or 90 percent reduction) for contaminated soils. The Agency believes that these relaxed standards can be achieved through various treatment technologies besides combustion, and that adequate treatment capacity is available to handle these contaminated soils. See the Capacity Analysis Background Document for additional information on this issue.

#### Comments

- ! Utility Solid Wastes Activities Group (2SR 35:10-11)

Commenter: Utility Solid Wastes Activities Group  
Comment Number: 2SR 35  
Page Number: 10-11

Combustion of these residues [remediation residues] consumes large amounts of fuel and generates large quantities of combustion-related pollutants such as carbon dioxide and nitrogen oxides. Because the material being burned is essentially non-combustible, combustion of these wastes also does little or nothing to reduce the volume of material that ultimately has to be landfilled and may, in fact, increase the volume of material landfilled because of the generation of air pollution control residues. In addition, there are a limited number of hazardous waste combustion facilities in the country, and, therefore, requiring the use of combustion for these large volume wastes would mean the transportation of large quantities of material for long distances creating more pollution and increasing the risk of accident. Requiring combustion for these materials, which often contain concentrations of hazardous constituents only marginally above the treatment standard, also may tie up the available combustion capacity making it unavailable for the treatment of more highly concentrated organic wastes.

### 2.3.3 Incineration Is Not an Appropriate Technology to Treat Contaminated Soil

One commenter [National Mining Association (2SR 48)] stated that incineration cannot be characterized as an available technology to treat contaminated soils.

- ! The National Mining Association stated that incineration is not an appropriate technology for contaminated soils and therefore incineration cannot be properly characterized as “demonstrated” or “available” technology. (2SR 48:123-124)

#### Response

The Agency notes that several commenters (such as USWAG (2SR 35)) have submitted information that indicates that it is a common practice to co-burn contaminated soils high in organic content in utility boilers. The Agency also agrees with the commenter that incineration is not an appropriate technology for contaminated soils, especially those that are primarily inorganic. Since the Agency is not promulgating a technology-based standard, any appropriate treatment technology can be used to meet the treatment standards. In the final Phase IV rule, the Agency has promulgated alternative treatment standards (10 times UTS or 90 percent reduction) for contaminated soils. The Agency believes that these relaxed standards can be achieved through various treatment technologies besides incineration, and adequate treatment capacity is available to handle these contaminated soils. See the Capacity Analysis Background Document for additional information on this issue.

#### Comments

- ! National Mining Association (2SR 48:123-124)

Commenter: National Mining Association  
Comment Number: 2SR 48  
Page Number: 123-124

EPA's general approach to the setting of treatment standards, which has been upheld by the courts, is to base those standards on the Best Demonstrated Available Technology ("BDAT") for each waste, provided such standards do not require treatment beyond the point where threats are minimized. If a technology that has been designated BDAT is actually less protective than an alternative technology, it clearly cannot be considered the "best." See 62 Fed. Reg. at 26,060. [FN 22: Indeed, at the beginning of the LDR program, EPA explicitly stated that a technology should not be deemed "available" if it presents greater total risk than land disposal. See 51 FR 40,572, 40,589 (November 7, 1986). Although the Agency later decided to stop considering risk as part of its availability analysis, it maintained that risk was an important consideration in identifying the "best" technology. See 53 Fed. Reg. 31,138, 31,190-91 (August 17, 1988).] Similarly, if a technology is generally not considered appropriate for a particular waste (as in the case of incineration for wastewaters or contaminated soils), it cannot properly be characterized as "demonstrated" or "available" for the waste.

### 2.3.4 Combustion Will Not Provide Adequate Treatment Capacity for Mixed Radioactive Wastes

One commenter [Molten Metal (49)] commented on EPA's reliance on traditional combustion technologies for the treatment of mixed wastes, and suggested that EPA considers other treatment technologies as BDAT for these wastes.

- ! Molten Metal Technology stated that there is no reasonable basis for assuming that traditional combustion technologies will in the foreseeable future provide adequate or appropriate treatment capacity for mixed wastes. Therefore, EPA should identify and designate as BDAT those new, innovative technologies which address and effectively minimize all the hazards presented by mixed waste, including radioactive hazards. (49:2-4)

#### Response

The Agency agrees with the commenter that combustion capacity is not sufficient to treat Phase IV mixed wastes. However, the Agency notes that the proposed treatment standards are concentration-based and do not require the use of a specific technology. Therefore, treatment technologies other than combustion could be used to meet the treatment standards. Nevertheless, the Agency concluded that sufficient alternative treatment capacity does not exist for Phase IV mixed wastes. The Agency encourages the commenter to submit treatment performance and capacity data on their technology for further evaluation under the BDAT and Capacity Programs.

#### Comments

- ! Molten Metal (49:3-4)

Commenter: Molten Metal  
Comment Number: 49  
Page Number: 3-4

The traditional technologies that can, comply with the LDR standards (e.g., incineration and combustion) are considered to be mature, demonstrated technologies that have been "available" for treatment of hazardous wastes for many years. Nevertheless, as a practical matter, these treatment technologies have not been successfully applied on a large scale to mixed waste. As a result of the lack of suitable treatment capacity, most mixed waste is currently in storage facilities awaiting treatment, which is not permissible under RCRA. This mixed waste storage dilemma was one of the significant drivers leading to enactment of the Federal Facility Compliance Act, which obligates the Department of Energy to develop mixed waste treatment plans and develop mixed waste treatment capacity.

MMT does not understand why EPA apparently continues to believe that traditional treatment technologies such as incineration and combustion are appropriate or realistically will ever be available for mixed waste. There are significant technical, political, and regulatory difficulties associated with these technologies. From a technical standpoint, they do not address or minimize radiological hazards. In fact, they typically disperse radioactive constituents into the air, and create a radioactive ash that requires further treatment prior to disposal as a mixed waste. Also, combustion technologies are meeting with increasing public opposition and EPA, state and local regulatory agencies are implementing programs and policies designed to encourage the use of alternatives to combustion for treatment of hazardous waste (see, e.g., EPA's "Hazardous Waste Combustion Strategy"). When attempts are made to apply combustion technologies to mixed waste, these political and regulatory difficulties are likely to intensify, and MMT does not believe that these technologies can be relied upon to provide any significant treatment capacity for mixed waste.

There is no reasonable basis for assuming that ' traditional combustion technologies will 'in the foreseeable future provide adequate or appropriate treatment capacity for mixed waste. Thus, the continuing practice of granting capacity variances amounts to little more than a holding action which will not allow time for mixed waste combustion capacity to develop, but rather just delays the time when it will become obvious that, these wastes must be treated using new, innovative technologies that specifically address and minimize all the hazards presented by mixed waste, including radioactive hazards. MMT therefore urges EPA to reconsider its practice of assuming that LDR requirements for mixed waste can be achieved by using traditional hazardous waste treatment technologies to treat the hazardous portion of mixed waste, and instead identify and designate as BDAT those technologies which address and effectively minimize all the hazards presented by mixed waste, including radioactive hazards.

## 2.4 Other Issues

### 2.4.1 Sufficient Landfill Capacity Might Not Exist to Accommodate Affected Wastes

One commenter [Brush Wellman (82)] notes that the proposed treatment standards will not only require additional treatment, but may also require additional disposal capacity.

- ! Brush Wellman questions whether there would be enough landfill capacity to accommodate the increased volume of treated waste. (82:11)

#### Response

The Agency does not believe that substantially more landfill capacity is needed. Affected wastes are presently being land disposed and little, if any, increases in landfill capacity are expected. The Agency also notes that the commenter did not provide any data to support the comment. The Agency refers the commenter to EPA's Capacity Assurance Plan (CAP) Report for additional information on landfill capacity.

#### Comments

- ! Brush Wellman (82:11)



Commenter: Brush Wellman  
Comment Number: 82  
Page Number: 11

Brush Wellman is not aware of any data in the administrative record which demonstrate that the universal treatment standard for beryllium is attainable through stabilization. Without such data, Brush Wellman must question how EPA could make a supportable determination that the beryllium standard is achievable or even desirable with respect to toxicity characteristic metal wastes. For example, has EPA considered how much additional stabilization agent may be necessary to treat beryllium to the required level and how much additional landfill capacity will be necessary in order to accommodate the increased volume of the treated waste? Finally, it is not clear from a review of the capacity background document that EPA even considered the additional stabilization of toxicity characteristic metal wastes which may be necessary in order to meet the universal treatment standards with respect to underlying hazardous constituents such as beryllium.

#### 2.4.2 EPA Has Not Addressed Whether Sufficient Available Combustion Capacity Would Remain to Treat the Volume of F024 and F032 Currently Being Generated

One commenter [Dow Chemical Company (NODA1 9)] stated that EPA might have underestimated the available combustion capacity to treat F024 and F032 wastes.

- ! Dow Chemical Company stated that EPA has not addressed whether sufficient available capacity would remain which is licensed to treat the volume of F024 and F032 currently generated. Dow alone currently generates over 50,000 tons per year of F024 at its U.S. facilities. Implementation of the proposed rule (Sub-options 2 or 3) would require a significant portion of that waste volume to be managed off-site in commercial units. According to Dow Chemical Company, EPA must analyze the US wide generation of potentially impacted waste codes and determine how much of the available treatment capacity would be required after the proposed rule goes into effect. (NODA1 9:3)

#### Response

The Agency notes that the treatment standards for these wastes were finalized in the Wood Preserving Waste - Final Rule. Nevertheless, EPA appreciates the waste volume data provided by the commenter. The Agency has used these data to refine available commercial combustion capacity estimates for wastes containing organic UHCs.

#### Comments

- ! Dow Chemical Company (NODA1 9:3)

Commenter: Dow Chemical Company  
Comment Number: NODA1 9  
Page Number: 3

In considering the additional limitations described in Suboptions 2 and 3, EPA has not addressed whether sufficient available capacity would remain which is licensed to treat the volume of F024 and F032 currently generated. Dow alone currently generates over 50,000 tons per year of F024 at its U.S. facilities. Implementation of Suboptions 2 or 3 would require a significant portion of that waste volume to be managed off-site in commercial units. Before proceeding, EPA must analyze the U.S. wide generation of the potentially impacted waste codes considering how much available treatment capacity would be available after such requirements would go into effect.

### 2.4.3 Treatment Standards

#### 2.4.3a Treatment Standards Should Be Revised

Several commenters raised issues regarding soil contaminated with TC metals. In the original proposed rule capacity analysis, EPA did not specifically address soil contaminated with TC metal waste because EPA did not expect such soil to be classified as newly identified. One commenter [DOE Run Company (70)] stated that some soil treatment technologies will not be able to meet the proposed treatment standards.

- ! The DOE Run Company plans to construct a soil washing and leaching treatment system. The proposed treatment standards may not be achievable with this process, especially for lead. These soils would have to be stabilized. (70:2,3-4)

Fifteen commenters [National Mining Association (NODA1 5); Silver Council (NODA1 7); DuPont Engineering (NODA1 16); Chemical Products (2SR 3); INMETCO (2SR 10); Chemical Manufacturers Association (2SR 16); Collier, Shannon, Rill & Scott, PLLC for Specialty Steel Industry of North America (2SR 18); Eastman Kodak Company (2SR 22); Department of Energy (2SR 23); Lead Industries Association, Inc. (2SR 24); RSR Corporation (2SR 25); Laidlaw Environmental Services (2SR 28); Chemical Products Corporation (2SR 30); Savage Zinc, Inc. (2SR 32); American Iron and Steel Institute (2SR 39)] stated that the treatment standards for various metals should be revised.

- ! The National Mining Association (NMA) stated that the proposed UTS for silver is overly stringent. According to N.A., the UTS for silver should be set at the characteristic level (5.0 mg/l) for all wastes subject to the UTS. (NODA1 5:3)
- ! The Silver Council supports the objective of removing silver from the TC list. It also recommends that until the EPA completes its evaluation of such action, the Agency should revise the UTS for silver upward to the TC regulatory level of 5.0 mg/l. (NODA1 7:2)
- ! DuPont Engineering suggested that EPA retains the TC LDR land ban at the TC level of 5.0 mg/l and further that the Agency increase the UTS to that level until such time as it has a basis for regulating silver at a lower level. (NODA1 16:1)
- ! Chemical Products Corporation supports the upward revision of the UTS for barium but believes that a further upward revision is required. The existing UTS level as well as the RCRA TC level for barium are far more stringent than necessary and should be revised dramatically upward to reflect sound science. The existing regulatory limits for barium are based on supposition and incomplete toxicity information. (2SR 3:1,2)
- ! INMETCO believes that the proposed UTS/BDAT standards for antimony, barium, cadmium, chromium, lead, nickel, selenium, thallium, vanadium, and zinc are adequately supported and calculated appropriately. The proposed standard for silver, however, is too low and should be adjusted upward to a level of 0.19 mg/L. (2SR 10:2)

- ! Chemical Manufacturers Association (CMA) believes the LDR treatment standard for silver should not be lowered because silver's low toxicity warrants its removal from the TC list. The D011 silver LDR standard already minimizes threats, so there is no need to reduce it further. (2SR 16:1,2)
- ! Collier, Shannon, Rill & Scott, PLLC for Specialty Steel Industry of North America stated that EPA's proposal to reduce the UTS/BDAT level for silver is inconsistent with the Agency's current plan to either raise the characteristic level for silver or no longer regulate silver as a toxicity characteristic metal because it does not present a significant health risk. EPA should either raise the UTS level for silver to the current TC level or retain the current level. (2SR 18:2)
- ! Eastman Kodak Company stated the D011 silver LDR standard already minimizes risk, so there is no need to reduce it further. The proposed D011 LDR BDAT technology based treatment standards exceed the point at which there could be a threat to human health and the environment from any of the silver-bearing wastes. The LDR treatment standard for silver should not be lowered because silver's low toxicity warrants its removal from the TC list. (NODA1 4:1; 2SR 22:1-2,3)
- ! The Department of Energy (DOE) supports EPA's revised proposal to establish 5.7 mg/l as measured by TCLP as both the LDR treatment standard for D010 nonwastewaters and the UTS for selenium in nonwastewaters. Supports the revised standard for selenium and agrees that it would be inappropriate for selenium to be considered as a UHC. (2SR 23:4-5)
- ! Lead Industries Association, Inc. stated the proposed lead UTS lacks a reasoned explanation and conflicts with EPA's finding in the Hazardous Waste Identification Rule Proceeding. Stated that EPA has not made the necessary findings to show that the existing lead treatment standards are inadequate to minimize threats to human health and the environment and therefore, should withdraw the proposed standards. (2SR 24:2-3)
- ! RSR Corporation cannot support EPA's proposed treatment standards for lead, antimony, silver, beryllium, and thallium because EPA has not demonstrated that existing commercial technologies are capable of achieving the proposed standards or that technologies are otherwise available. (2SR 25:1)
- ! Laidlaw Environmental Services expressed concern over whether EPA can justify the proposed less stringent standards for nine metals (antimony, barium, beryllium, cadmium, lead, nickel, selenium, thallium, and vanadium), since current stabilization technology can achieve lower treatment levels. (2SR 28:1)
- ! Chemical Products Corporation strongly disagreed with the regulatory limit for barium in wastewaters, specifically for D005, F039, and K088. The proposed regulatory limit is unreasonably low and requests that it be set at 60 ppm of soluble barium. (2SR 30:1,2)
- ! Savage Zinc, Inc. urged EPA to remove zinc from the UTS list. (2SR 32:1)
- ! American Iron and Steel Institute believes that EPA must not simply revise the UTS for zinc, but must do away with that standard in its entirety. (2SR 39:1-2)  
Three commenters [Coastal (12); Interstate Natural Gas Association of America (40); American Gas Association (86)] discuss the treatment standards for mercury-contaminated soils.
- ! Coastal states that EPA has proposed a reduction of the TCLP level for D009 to 0.025 mg/l. Coastal

cites a GRI study which states that the lowest achievable level of TCLP for D009 is 0.035 mg/l after a chemical leaching process was applied to the soils. This result was achieved on soil with the optimum characteristics for chemical leaching. Therefore, if the new standard is implemented, the chemical leaching process would be eliminated as a treatment option. (12:1)

- ! INGAA sees the new treatment standards as extremely burdensome to the extent that they will increase costs for waste treatment and disposal without an equivalent reduction to health risk. As a result of increased costs, industry may be less likely to voluntarily undertake mercury remediation projects. The new treatment level of 0.025 mg/l also raises concern regarding the capacity of appropriate disposal facilities. In addition, EPA has underestimated the number of industries that will be affected by this rule. (40:1-2)
  
- ! The American Gas Association questions whether there are reasonable treatment technologies for mercury contaminated soils that may be found at gas metering stations. Thermal treatment or roasting is the only technology that can meet the proposed treatment standards. Due to the remote location and quantity of sites, the cost of removing the soils and shipping them to a central treatment station would be exceedingly expensive. (86:3-4)

### Response

To compile additional evidence regarding the treatability of TC metal wastes to the UTS, the Agency conducted site visits to several commercial hazardous waste treatment facilities and collected additional stabilization and HTMR treatment performance data that better represent the diversity of metal wastes. The performance data (based on grab samples) constitute a wide range of metal-bearing wastes (both listed and characteristic) that the Agency believes represents the most difficult to treat metal-bearing wastes.

EPA then calculated the treatment standards from both stabilization and HTMR data and selected the highest standard (less stringent) for each metal to establish the UTS. EPA selected the less stringent standards to allow for process variability and detection limit difficulties. Based on these data, EPA revised the treatment standards for certain TC metals and re-proposed the standards in the second supplemental proposal. Further, the Agency reviewed additional data submitted by the commenters in response to the second supplemental proposal. EPA determined that the proposed standards for certain metals (e.g., antimony, beryllium) do not represent BDAT with a “most difficult to treat” waste and, therefore, revised the treatment standards for such metals. EPA believes that the revised UTS levels are achievable with grab sampling by both stabilization and HTMR technologies. It is also noted that EPA is not establishing a technology forcing standard and therefore, any appropriate treatment technology can be used to meet the treatment standard. (See the BDAT Background Document for additional information on the development of the Phase IV treatment standards.)

With respect to the comments regarding contaminated soils, the Agency recognizes the unique issues associated with remediation waste including hazardous contaminated soil, and therefore believes that it is appropriate to establish alternative less-stringent LDR treatment standards for hazardous soil, so long as the alternative standards encourage implementation of more aggressive or permanent remedies and result in “substantial” reductions and “minimize threats” contemplated by RCRA section 3004(m). (See 61 FR 18808, April 29, 1996, for additional discussion on this issue.) Therefore, in the final Phase IV rule, the Agency has promulgated alternative treatment standards for hazardous soil, which require that the concentrations of constituents subject to treatment be reduced by 90 percent with treatment for any given constituent capped at ten times the UTS. The data reviewed by the Agency, including remediation case

studies, indicate that these standards can be readily achieved through existing commercial technologies and, therefore, is not granting a national capacity variance. (See the BDAT and Capacity Analysis Background Documents for additional information)

### Comments

- ! DOE Run Company (70:2, 3-4)
- ! National Mining Association (NODA1 5:3)
- ! Silver Council (NODA1 7:2)
- ! DuPont Engineering (NODA1 16:1)
- ! Chemical Products (2SR 3:1,2)
- ! INMETCO (2SR 10:2)
- ! Chemical Manufacturers Association (2SR 16:1,2)
- ! Collier, Shannon, Rill & Scott, PLLC for Specialty Steel Industry of North America (2SR 18:2)
- ! Eastman Kodak Company (NODA1 4:1)
- ! Eastman Kodak Company (2SR 22:1-2,3)
- ! Department of Energy (2SR 23:4-5)
- ! Lead Industries Association, Inc. (2SR 24:2-3)
- ! RSR Corporation (2SR 25:1)
- ! Laidlaw Environmental Services (2SR 28:1)
- ! Chemical Products Corporation (2SR 30:1,2)
- ! Savage Zinc, Inc. (2SR 32:1)
- ! American Iron and Steel Institute (2SR 39:1-2)
- ! Coastal (12:1)
- ! Interstate Natural Gas Association of America (40:1-2)
- ! American Gas Association (86:3-4)

Commenter: DOE Run Company  
Comment Number: 70  
Page Number: 2

The soil washing and leaching process proposed for Doe Run's Buick Facility will mechanically separate soil fractions. Lead and other metals will be chemically leached from each of the separated fractions, thereby meeting the release standards (i.e., acceptable standards for release of soil for other uses) prescribed in the RCRA Part B permit and other criteria imposed by Missouri regulatory agencies for the appropriate use of the cleaned soil, so that the resultant soil is de-regulated. The "concentrate," which consists of the metals removed from the process, will be processed through Doe Run's secondary smelter located at the same facility.



Commenter: DOE Run Company  
Comment Number: 70  
Page Number: 3-4

In effect, the concept behind the proposed soil washing process is to remove and recover the metals, so that stabilization is not required. If the Phase IV LDR proposal is applied to this process, however, stabilization would be required even after the removal and recovery is completed. Thus, as applied to the proposed soil washing process, Doe Run views the proposal to set LDR treatment standards at UTS levels as counterproductive and unnecessary to protect human health and the environment.

Commenter: National Mining Association  
Comment Number: NODA1 5  
Page Number: 3

#### EPA Should Modify The UTS For Silver For All Wastes

Finally, NMA supports EPA's proposal to modify the UTS for silver which, as discussed in NMA's April 24, 1996 comments on the Supplemental Proposal, is overly stringent. 61 Fed. Reg. at 21,420. At a minimum, the UTS for silver should be set at the characteristic level (5.0 mg/l) for all wastes subject to the UTS. Such a revised treatment standard should not be restricted in applicability only to D011 wastes, as EPA has acknowledged that silver does not have any adverse effects on human health. 60 Fed. Reg. 66,344, 66,351 (Dec. 21, 1995). As for environmental risks, the Agency has determined silver does not pose an unacceptable risk to the environment at the levels far in excess of 5.0 mg/l. See, e.g., 60 Fed. Reg. at 66,466. Thus it makes no sense, and is in fact contrary to law, to require hazardous wastes be treated to reduce silver concentrations below 5.0 mg/l -- a level which clearly meets the "minimize threat" mandate of RCRA § 3004(m)(1).

Commenter: Silver Council  
Comment Number: NODA1 7  
Page Number: 2

In summary, The Silver Council urges EPA to finalize the first option set forth in the May, 10 notice concerning the treatment standard for silver-bearing wastes. Specifically, The Silver Council supports the upward revision of the Universal Treatment Standard for silver to a higher level, most preferably the TC regulatory level of 5.0 mg/L. Promulgation of this option will subject all silver-bearing wastes to the same constituent-specific treatment standard, simplifying compliance and administrative requirements for generators and the Agency. In addition, promulgating the UTS level for silver at the TC regulatory level of 5.0 mg/L is a practical approach for dealing with D011 wastes while the Agency continues its review of the removal of silver from the TC list.

Commenter: DuPont Engineering  
Comment Number: NODA1 16  
Page Number: 1

As the Agency notes in the NODA discussion of silver, there remain questions as to the hazards posed by silver and whether the hazards are chemical species specific or generally attributable to all silver compounds. The Agency further notes that the risk to human health from silver is low, and the risks posed by contaminants in downgradient receptors (typically drinking water sources) are the basis of the land disposal restriction program. For those reasons, it is overly burdensome to ascribe a high hazard to silver in a leachate context and therefore regulate it for land ban purposes at the existing UTS level. DuPont therefore suggests that the Agency retain the TC LDR land ban at the TC level of 5 mg/l and further that the Agency increase the UTS to that level until such time as it has a basis for regulating silver at a lower level.

Commenter: Chemical Products  
Comment Number: 2SR 3  
Page Number: 1

In the supplemental proposed rule (FRL 5816-6) published in the Federal Register of May 12, 1997 (62 FR 26041), EPA is proposing to increase the Universal Treatment Standard (UTS) for barium (Waste Code D005) from 7.6 mg/l to 21 mg/l by the TCLP test. Chemical Products Corporation (CPC) supports this upward revision but believes that a further upward revision is required. CPC will herein submit information which demonstrates that this proposed UTS level, as well as the existing RCRA TC level for barium of 100 mg/l, are far more stringent than necessary and should be revised dramatically upward to reflect sound science.

Commenter: Chemical Products  
Comment Number: 2SR 3  
Page Number: 2

In summary, CPC believes that the existing regulatory limits for barium are based on supposition and incomplete toxicity information, and that careful consideration of the most recent data will lead EPA to substantially increase these regulatory limits, including the proposed Universal Treatment Standard. This should be fully supported by the IRIS file on barium as soon as the on-going review is completed.

Commenter: INMETCO  
Comment Number: 2SR 10  
Page Number: 2

In brief, based on the data made available thus far, we believe the proposed revisions of the UTS/BDAT standards for antimony, barium, cadmium, chromium, lead, nickel, selenium, thallium, vanadium, and zinc are adequately supported and calculated appropriately. The proposed standard for silver, however, is too low. Based on the grab sample data submitted with these Comments, it should be adjusted upward to a level of 0.19 mg/L.

Commenter: Chemical Manufacturers Association  
Comment Number: 2SR 16  
Page Number: 1

### **III. THE LDR TREATMENT STANDARD FOR SILVER SHOULD NOT BE LOWERED BECAUSE SILVER'S LOW TOXICITY WARRANTS IT'S REMOVAL FROM THE TC LIST**

CMA urges EPA not to lower the treatment levels for silver any further. As EPA explained in the preamble to this rule, EPA's authority to set technology-based land disposal treatment levels is limited. 62 F.R. 26058/3. Under RCRA § 3004(m), EPA has the duty to set land disposal restriction treatment standards which minimize threats to human health and the environment. In court cases upholding EPA's authority to establish technology-based treatment levels, the D.C. Circuit Court has limited EPA's authority so that it cannot set treatment levels beyond the point where at which there is no threat to human health or the environment." *Hazardous Waste Treatment Council v. EPA*, 886 F.2d 355,362 (D.C. Cir. 1989). While EPA acknowledges this limitation, it has stated that establishing the "no threat" level is a "formidable and controversial" task. 58 FR 48095 (September 14, 1993).

In interpreting this court case and others, EPA has stated that it need not require every conceivable threat to be eliminated. Rather, EPA believes that it is not required to set ever more stringent treatment levels when it can show that remaining threats are "insignificant." 60 F.R. 66344, 66382. In our view, EPA has ample information to make the determination that any additional lowering of the treatment standard is unnecessary because silver is toxic only in concentrations that are much higher than the treatment standard and natural attenuation reduces its threat to human health and the environment even further.



Commenter: Chemical Manufacturers Association  
Comment Number: 2SR 16  
Page Number: 2

The proposed D011 LDR BDAT technology based treatment standards exceed the point at which there could be a threat to human health or the environment from any of the silver-bearing wastes. Indeed, the current D011 silver Toxicity Characteristic (TC) waste LDR treatment standard of 5 mg/l adequately minimizes risk to human health and the environment. Thus, there is no justification to lower the LDR standard to match the Universal Treatment Standards (UTS).

Commenter: Collier, Shannon, Rill & Scott, PLLC for Specialty Steel  
Industry of North America  
Comment Number: 2SR 18  
Page Number: 2

11. **PROPOSED STANDARD FOR SILVER**

EPA's proposal to reduce the UTS/BDAT level for silver is inconsistent with the Agency's current plans either to raise the characteristic level for silver or no longer regulate silver as a toxicity characteristic ("TC") metal because it does not present a significant health risk. *See Inside EPA*, July 11, 1997, p. 11. EPA should either raise the UTS level for silver to the current TC level (5.0 mg/l) or retain the current level of 0.3 mg/l.

Commenter: Eastman Kodak Company  
Comment Number: NODA1 4  
Page Number: 1

**The LDR Treatment Standard for Silver Should Not Be Lowered Because Silver's Low Toxicity Does Not Warrant it,**

The current D011 silver TC waste LDR treatment standard of 5 mg/L adequately minimizes threats to human health and the environment. There is no credible scientific justification for lowering the LDR standard to 0.30 mg/L silver (nonwastewaters) and 0.43 mg/L silver (wastewaters). It is more appropriate to complete the silver TC review and remove silver from the TC list. If silver is not removed from the TC list at this time, the D011 standard should be kept at 5 mg/L and the UTS should be raised to the same 5 mg/L level.

Commenter: Eastman Kodak Company  
Comment Number: 2SR 22  
Page Number: 1-2

LDR standards are designed to minimize threat. The current D011 silver Toxicity Characteristic (TC) waste LDR treatment standard of 5 mg/l adequately minimizes risk to human health and the environment, so there is no justification to lower the LDR standard to match the Universal Treatment Standards (UTS). The proposed D011 LDR BDAT technology based treatment standards exceed the point at which there could be a threat to human health or the environment from any of the silver-bearing wastes.

Commenter: Eastman Kodak Company  
Comment Number: 2SR 22  
Page Number: 3

Kodak and the Silver Council have provided toxicological and environmental fate evidence that is adequate for the removal of silver from the TC list. EPA's Office of Solid Waste has identified the removal of silver from the TC list as one of its projects for regulatory reform. In the spirit of regulatory reform, EPA should not promulgate any technology based LDR treatment standards for silver that are more stringent than the current D011 levels until EPA has acted on its own determination that silver does not pose a potential for adverse health or environmental effects and therefore does not need to be a TC waste.

Commenter: Department of Energy  
Comment Number: 2SR 23  
Page Number: 4-5

DOE supports EPA's revised proposal to establish 5.7 mg/l as measured by the Toxicity Characteristic Leaching Procedure (TCLP) as both the LDR treatment standard for D010 nonwastewaters and the UTS for selenium in nonwastewaters. DOE also agrees that it would be inappropriate for selenium to be considered an underlying hazardous constituent (UHC) if the concentration defining it as such is greater than the concentration defining the toxicity characteristic for selenium. DOE notes, however, that while EPA is proposing corresponding changes to the tables of treatment standards and UTS in 40 CFR Part 268, no change to the definition of UHC [40 CFR 268.2(i)] is proposed. Notwithstanding, EPA has proposed that the selenium entry on the table of universal treatment standards [40 CFR 268.48(a)] be marked with footnote 5 (see p. 26082). In the existing UTS table, the entries for vanadium, zinc and fluoride are already marked with footnote 5. Footnote 5 states, "These constituents are not 'underlying hazardous constituents' in characteristic wastes, according to the definition at §268.2(i)." Consistently, the existing 40 CFR 268.2(i) defines an UHC as follows:

[A]ny constituent listed in §268.48, Table UTS—Universal Treatment Standards, except fluoride, vanadium, and zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a concentration above the constituent-specific UTS treatment standards.

Therefore, for completeness, if the final rule adopts 5.7 mg/l TCLP as the UTS for selenium, DOE suggests that EPA modify the regulatory definition of UHC in 40 CFR 268.2(I) to exclude selenium as follows [redline text indicates addition]:

[A]ny constituent listed in §268.48, Table UTS—Universal Treatment Standards, except fluoride, selenium, vanadium, and zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a concentration above the constituent-specific UTS treatment standards.

Commenter: Lead Industries Association, Inc.  
Comment Number: 2SR 24  
Page Number: 2

In its recent Hazardous Waste Identification Rule (HWIR) proposal, EPA determined that any threats to human health and the environment are minimized by treating lead-bearing wastes to a level of 12.0 Mg/l. [fn3: *Hazardous Waste Identification Rule*, 60 Fed. Reg. 66344 (Dec. 21, 1995) (hereinafter HWIR). See discussion of minimized threat levels at 60 Fed. Reg. 66381-84 and lead minimized threat level of 12.0 mg/l in proposed 40 C.F.R. § 268.80 (Table I - Minimized Threat Levels) at 60 Fed. Reg. 66465.] When it stated that a lead treatment level of 12.0 mg/l would minimize such threats, EPA was well aware of the holdings in the *Hazardous Waste Treatment Council* and *Chemical Waste Management* cases that the minimization language section 3004(m) did not permit EPA to require treatment beyond the level where there is threat to human health or the environment. Indeed, the Agency specifically referred to those holdings (60 Fed. Reg. 66381-84). In view of these findings, it is obvious that an LDR level of 0.75 mg/l would require treatment "beyond the point where there is no threat to human health and the environment."

While EPA failed to finalize the HWIR, there is nothing to indicate that EPA has made a further assessment demonstrating that a 12.0 mg/l lead standard would not minimize threats. Instead, the proposed 0.75 mg/l standard is based on EPA's view of treatment capabilities, which is obviously no substitute for a determination that risks exist under the present 5.0 mg/l TC level and that an 0.75 mg/l standard is necessary to minimize them.

Commenter: RSR Corporation  
Comment Number: 2SR 25  
Page Number: 1

RSR Corporation (RSR) submits these comments on the Environmental Protection Agency's (EPA) Land Disposal Restrictions Phase IV Second Supplemental Proposal. 62 Fed Reg. 26041 (May 12, 1997). RSR supports and incorporates by reference comments on the rule separately submitted by the Battery Council International (BCI) and the Association of Battery Recyclers (ABR). Like BCI and ABR, RSR cannot support EPA's proposed treatment standards for lead, antimony, silver, beryllium, and thallium because EPA has not demonstrated that existing commercial technologies are capable of achieving the proposed standards or that technologies are otherwise available.



Commenter: Laidlaw Environmental Services  
Comment Number: 2SR 28  
Page Number: 1

Laidlaw generally supports the establishment of treatment standards for TC metal wastes at the proposed levels. On p. 26043, however, the Agency proposes to modify the Universal Treatment Standards for nine metals (antimony, barium, beryllium, cadmium, lead, nickel, selenium, thallium and vanadium) so that they would be less stringent than the current standards. We are concerned over whether the EPA can justify this action since current stabilization technology can achieve lower treatment levels. We are also concerned about the practical aspects of establishing less stringent treatment standards. As stated on p. 26065, these standards, if adopted, would not become effective in authorized states until the state adopted the rule as a matter of state law. As the largest hazardous waste management company in North America with facilities located in over 30 states, we are concerned about the practical ramifications of EPA's strategy when it comes to what is essentially deregulatory action. Despite the Agency's best efforts in expediting program modification and approval, it still takes most states between 6 months and 2 years to enact regulations which reduce stringency. Some States, however, base their regulations entirely on reference to Federal requirements which go into effect as soon as the Federal one's do. What we are left with then is the familiar "patchwork" effect; neighboring states having different regulatory standards. This is extremely burdensome for generators as well as for companies such as Laidlaw that have operations in many states.

Commenter: Chemical Products Corporation  
Comment Number: 2SR 30  
Page Number: 1

The following comments address Chemical Products Corporation's strong disagreement with the regulatory limit for barium in wastewaters which is included in the table, "Treatment Standards for Hazardous Wastes" in Subpart D - "Treatment Standards" published in the May 12, 1997 Proposed Rule (62 FR 26041 - 26084), specifically at page 26073 for D005, at page 26077 for F039, and again at page 26080 for K088. Each of the above entries shows a proposed regulatory limit for barium in wastewaters of 1.2 mg/L. This proposed regulatory limit is unreasonably low in light of EPA's Primary Drinking Water Standard of 2 mg/l soluble barium and in light of the fact that the suspended solids in the wastewater could contain up to 5000 mg/l of barium in the form of harmless, insoluble barium sulfate. Sound science dictates that any regulatory limit for barium (D005, CAS No. 7440-39-3) in wastewaters exclude any suspended barium sulfate and recognize that soluble barium is not harmful until high concentrations are reached.

Commenter: Chemical Products Corporation  
Comment Number: 2SR 30  
Page Number: 2

CPC requests that the regulatory limit for barium in Wastewaters be set at 60 ppm of soluble barium (the wastewater sample must be ultrafiltered prior to analysis to remove colloidal insoluble barium sulfate which is harmless to humans and the environment). The level of 60 ppm of soluble barium is in line with what the EPA's drinking water standard for barium would be expected to be when the drinking water standard is based on the LOAEL of 180 mg/kg/day recognized by EPA in the January 3, 1997 Federal Register (62 FR 366).

Commenter: Savage Zinc, Inc.  
Comment Number: 2SR 32  
Page Number: 1

Savage Zinc, Incorporated has participated in the efforts of the National Mining Association ("NMA") to review and comment on this broad and complex rule from the perspective of the mining industry. Savage Zinc adopts and incorporates by reference the comments of the NMA upon the '97 Phase IV Rule. We are also commenting on one additional issue which was not addressed by NMA, i.e. the proposal to add zinc as a constituent in the Universal Treatment Standards for hazardous waste which is treated for disposal in land-based units. To require that all hazardous waste destined for land disposal be treated to meet standards for zinc has the effect of expanding the definition of hazardous waste by including a non-TCLP constituent. We urge EPA to remove zinc from the Universal Treatment Standards.

Commenter: American Iron and Steel Institute  
Comment Number: 2SR 39  
Page Number: 1-2

Universal Treatment Standard Issues. AISI believes that EPA must not simply revise the universal treatment standard for zinc, but must do away with that standard in its entirety. Although the U.S. Court of Appeals for the District of Columbia Circuit (“D.C. Circuit”) upheld the establishment of a zinc standard for electric arc furnace dust in 1991, the basis for the Court’s decision is no longer valid. AISI also believes that compliance with LDR treatment standards should be based on composite sampling, rather than grab sampling, because composite sampling reflects better the environmental performance of different treatment technologies. If EPA, nevertheless, persists in judging compliance with most treatment standards on the basis of grab samples, AISI urges the Agency to at least allow composite sampling for all K061, K062, and F006 wastes.

Commenter: Coastal  
Comment Number: 12  
Page Number: 1

In particular, Coastal is concerned with the Agency's proposal for Toxicity Characteristic (TC) metal wastes and, in particular, the proposed 87.5 percent reduction of the toxicity characteristic leaching procedure (TCLP) level for mercury contaminated nonwastewaters (D009) from 0.20 milligrams per liter (mg/l) to 0.025 mg/l.

In a May 1995 report by the Gas Research Institute (GRI) titled Remediation of Mercury-Contaminated Soils: Development and Testing of Technologies, it was reported that the lowest achievable level of TCLP for mercury contaminated soils is 0.035 mg/l after a chemical leaching procedure was applied to the soils. This TCLP result was on sandy soil with fine grains. This type of soil is optimum for achieving a low TCLP result. Other soils with coarse grains and higher clay content did not yield this low TCLP result after treatment by chemical leaching. These test results ranged from 1.5 mg/l to 0.13 mg/l TCLP mercury.

Commenter: Interstate Natural Gas Association of America  
Comment Number: 40  
Page Number: 1-2

INGAA believes the proposed change in treatment standards for mercury wastes should be considered a major change and should be set out separately by the Agency for comment by the natural gas industry. Like many industries, the natural gas industry in the past has used mercury in instrumentation. INGAA sees the new treatment standards as extremely burdensome to the extent that they will increase costs for waste treatment and disposal without an equivalent reduction to health risk. The new standards do not appear to be based on any assessment of health risk, but rather appear to be established because the "best demonstrated available technology" ("BDAT") can treat to levels below the level at which the waste is characteristically hazardous. It is our position that this rationale is an insufficient basis for decreasing the treatment level.

INGAA believes that the scope of potentially affected industries will be more widespread than indicated in the proposed rule. INGAA's member companies have a critical interest in the far reaching effects that this rule will have on industry and the public. INGAA feels that the proposed changes in treatment standards have not been addressed to the public for comment in the proper manner. For this reason, INGAA requests that the Agency set out proposed changes in TC metals for further comment.

Commenter: American Gas Association  
Comment Number: 86  
Page Number: 3

EPA is proposing an 87.5 percent reduction of the TCLP level for mercury contaminated nonwastewaters (D009) from 0.20 mg/l to 0.025 mg/l. We question whether there are reasonable treatment technologies for the mercury contaminated soils that may be found at natural gas metering and regulating stations. These sites are typically small scale projects (two tons of low level contaminated soil per site) in remote areas. As discussed below, in a May 1995 report by the Gas Research Institute (GRI) titled "Remediation of Mercury-Contaminated Soils: Development and Testing Technologies", three currently available or developing technologies were identified that have application for remediation of mercury-contaminated gas-metering sites within the natural gas industry: 1) a physical separation process in conjunction with chemical leaching; 2) an oxidative chemical leaching demonstration; and, 3) a portable thermal treatment standard.

While the physical separation and chemical leaching process appears to be technically sound, this process is not yet fully developed. A high degree of systems engineering prior to commercial application integrating the individual components or unit operations is still necessary. According to the GRI report, the lowest achievable level of TCLP for mercury contaminated soils is 0.035 mg/l after a chemical leaching procedure was applied to soils. This result was obtained using optimum circumstances. Thus the chemical treatment process would be excluded as a treatment technology for achieving the levels proposed, leaving only the Best Demonstrated Available Technology (BDAT) for mercury contaminated soils -- thermal roasting or retorting.



Commenter: American Gas Association  
Comment Number: 86  
Page Number: 4

Under most circumstances, the cost for using a portable thermal treatment for our small scale projects will be prohibitive. Although GRI estimates that the cost to remove and recover mercury from gas-metering site soils will range from \$500 - \$750 per ton, this cost estimate is based on an average throughput of 2000 tons per year. To take advantage of these economies of scale, companies would need to either transport their small volume wastes to these centrally located facilities or attempt to combine wastes from a large number of sites, which may be located in numerous states. As noted earlier, our sites typically have one to two tons per site in remote areas. One company estimates that the cost of mercury treatment for the limited quantity typical of a gas utility would be in the range of \$4000-6000 per ton.

In summary, if the treatment standard for mercury were reduced from 0.2 mg/l to 0.025 mg/l, physical separation and chemical leaching methods could not be used without substantial process modifications that could render the technologies uneconomical. This would leave thermal treatment as the only methodology available to meet the proposed standard. Before the Agency commits to such a standard, a health and risk assessment should be required to confirm that such an impractical and expensive treatment is necessary.

### 2.4.3b The UTS for Lead Exceeds Current Analytical Capability

One commenter [Battery Council International (45)] stated that the UTS for lead exceeds current analytical capability.

- ! Battery Council International stated that EPA's proposed concentration-based limits for lead do not reflect the level of analytical performance achievable for the wastes. They are below the practical quantitation limits (PQLs) for the TCLP extracts of most secondary lead slags. State-of-the-art testing methods cannot accurately detect lead concentration levels as low as 0.37 mg/l in some D008 nonwastewaters. (45:5-6)

#### Response

The Agency collected additional treatment performance data that represents the "most difficult-to-treat" wastes and revised the BDAT treatment standard for lead and re-proposed a treatment standard of 0.75 mg/l in the second supplemental proposal. The Agency believes that the new standard reflects the level of analytical performance that can be achieved by commercially available treatment technologies (see the BDAT Background Document for additional information on the revised lead treatment standard).

#### Comments

- ! Battery Council International (45:5-6)

Commenter: Battery Council International  
Comment Number: 45  
Page Number: 5-6

Third, EPA's proposed concentration-based limits for lead do not reflect the level of analytical performance "achievable" for the wastes. They are below the practical quantification limits (PQLs) for the TCLP extracts of most secondary lead slags.<sup>9/</sup> State-of-the-art testing methods cannot accurately detect lead concentration levels as low as 0.37 mg/l in some D008 nonwastewaters.<sup>10/</sup>

This inability to accurately detect extremely low levels of lead is particularly a problem where, as often is the case, D008 wastes contain large quantities of sodium salts and other metallics soluble in water.<sup>11/</sup> These soluble salts are extracted in the TCLP. This results in very high total dissolved solids (TDS) in the analytical samples. The level of TDSs can result in considerable matrix interference at the proposed regulated LDR limits, where analyses are performed by approved test methods. Thus, the sensitivity of the instruments is reduced. This in turn results in higher minimum detection limits (MDLs) and corresponding increases in PQLs <sup>12/</sup> and regulated facilities having this character of D008 wastes simply will not be able to determine whether or not they are in compliance with standards set at the 0.37 mg/l level. <sup>13/</sup>

### **2.4.3c EPA Has Not Conducted a Risk Analysis for Silver to Support Weaker Treatment Standard**

One commenter [Environmental Defense Fund (NODA1 10)] stated that EPA provided no risk analysis in its rulemaking supporting a weaker treatment standard for silver and that failure to do so violates both RCRA and the Administrative Procedures Act.

- ! The Environmental Defense Fund stated that EPA provided no risk analysis in its rulemaking supporting a weaker treatment standard. According to the commenter, EPA seems to be ignoring the fact that silver is extremely toxic to environmental receptors. This toxicity caused EPA to recently rank silver among the highest hazard metals in the RCRA universe. Failure to assess the ecological risk posed by silver, and/or proposed a treatment standard based upon any relevant methodology, violates both RCRA and the Administrative Procedures Act. (NODA1 10:2,3)

#### **Response**

The Agency reminds the commenter that the LDR BDAT program is a technology-based program and not risk-based, and therefore EPA has not violated any RCRA regulations by proposing concentration-based standards achievable through commercially demonstrated and available treatment technologies.

#### **Comments**

- ! Environmental Defense Fund (NODA1 10:2,3)

Commenter: Environmental Defense Fund  
Comment Number: NODA1 10  
Page Number: 2

Yet EPA provides no risk analysis in this rulemaking supporting a weaker treatment standard. Instead, EPA merely notes it received risk data from other parties. See 61 FR 21420. Accordingly, there is no evidence in the record indicating the methodology EPA would employ to set a higher treatment standard, and on what toxicity information the decision would be reached. EPA cannot use the NODA process to bypass its obligation to properly propose its position for public comment.

Commenter: Environmental Defense Fund  
Comment Number: NODA1 10  
Page Number: 3

As noted above, no ecological risk assessment is provided or even discussed in the instant NODA. This abject failure to assess the ecological risk posed by silver, and/or propose a treatment standard based upon any relevant methodology, violates both Section 3004(m) of RCRA and the Administrative Procedures Act.

#### 2.4.3d There Is No Technical or Legal Basis for Changing the UTS for Silver

One commenter [Environmental Technology Council (NODA1 14)] stated that EPA does not have an adequate technical or legal basis to change the UTS for silver.

- ! The Environmental Technology Council stated that neither the NODA1 nor the Administrative Record provides any adequate technical or legal basis for the “possibility” of changing the UTS for silver for all hazardous wastes or setting the UTS for D011 wastes only to the TC regulatory level of 5.0 mg/l. (NODA1 14:9)

#### Response

In the second supplemental Phase IV proposed rule, EPA proposed a treatment standard of 0.11 for silver. In response to the second supplemental proposal, the Agency obtained additional treatment performance data that represents the “most difficult to treat” wastes, and therefore has revised the BDAT treatment standard for silver at 0.14 mg/l. The Agency believes that this standard represents the “most difficult to treat” silver wastes, and can be achieved by commercially available treatment technologies (see the BDAT Background Document for additional information on the revised silver treatment standard).

#### Comments

- ! Environmental Technology Council (NODA1 14:9)

Commenter: Environmental Technology Council  
Comment Number: NODA1 14  
Page Number: 9

In this NODA, however, EPA discusses the "possibility" of changing the UTS for silver for all hazardous wastes, or setting the UTS for D011 wastes only, to the TC regulatory level of 5.0 mg/l. 61 FR 21420, col. 1. Neither the NODA, nor the administrative record, provides any adequate technical basis for these "options." Although silver poses significant ecological toxicity risks, EPA asserts that "human health effects are not major." Id. Based on this unsupported statement, the agency would take the ill-conceived step of abandoning the technology-based UTS for silver-bearing wastes and setting a new apparently "risk-based" standard at the TC regulatory level.

Regrettably, for EPA to announce this major departure from the BDAT methodology in a Notice of Data Availability - without technical justification or discussion of the implications for the LDR program - is plainly irresponsible. There is no discussion in the NODA of the following significant issues:

- ! EPA does not discuss how a treatment standard based simply on the TC regulatory level would meet the "minimize threat" standard in RCRA 3004(m)(l).
- ! There is no discussion, or supporting data, showing that the TC level for silver would "substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste" as required by the statute. Indeed, the TC level is the concentration at which a waste is "clearly hazardous" warranting Subtitle C control, not the level at which the toxicity and/or mobility of this hazardous constituent has been "substantially" reduced.
- ! Nor is there any discussion in the NODA of the relationship of the Hazardous Waste Identification Rule (HWIR), and its multi-pathway risk assessment approach, to this ostensible risk-based treatment level for D011 wastes (and potentially all hazardous wastes that contain silver as an underlying hazardous constituent). Ironically, the HWIR multi-pathway risk analysis for silver resulted in a risk-based level of 0.134 mg/kg total for nonwastewater. 60 FR 66431 (Table C-1).
- ! Given that silver poses significant aquatic toxicity risks, EPA does not explain how setting the LDR treatment standard at the TC toxicity level would minimize threats to the environment, as the statute requires.

Because the current UTS levels have a sound technology basis, and the NODA "alternative" to substitute the TC silver level does not have an adequate technical or legal basis in the record, it should be rejected.



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## CHAPTER 3 TC METAL WASTES

Several commenters addressed issues related to available and required commercial treatment capacity for TC metal wastes. Specifically, commenters addressed the appropriateness of a capacity variance for TC metal wastes and whether available stabilization capacity will be able to meet the proposed treatment standards for particular TC metal constituents, waste streams, or streams containing multiple TC metal constituents. Commenters also discussed HTMR capacity as well as required capacity for soil contaminated with TC metals.

### 3.1 Estimates of Required Capacity

#### 3.1.1 EPA May Have Underestimated the Required Capacity for TC Metal Wastes

Six commenters [TDJ Group (26); Association of Battery Recyclers (38); Battery Council International (45); Department of Defense (74); American Foundrymen's Society (77); Brush Wellman (82)] provided data on the quantity of TC metals affected by the proposed rule.

- ! The TDJ Group stated that approximately 500,000 to 1,000,000 tons of D006-D008 will be affected by Phase IV. (26:3-4)
- ! ABR stated that an estimated 260,000 tons per year of D008 slag will require treatment. (38:8)
- ! BCI stated that the amount of newly identified lead slag requiring treatment is 255,000 tons per year, six times the EPA-estimated quantity; contaminated soils requiring treatment for lead could approach 21,000,000 tons at NPL sites alone. (45:6-7)
- ! The Department of Defense asks EPA to clarify whether it included lead-based paint wastes in its capacity analysis. DOD routinely addresses lead-based paint issues. It is unclear from the proposed rule if capacity for lead-based paint wastes are considered. (74:3-4)
- ! The American Foundrymen's Society provided data on the quantity of emission control dust and foundry sand generated by the foundry industry each year that exhibit the TC for various metal constituents and the costs to treat these wastes (approximately 410,000 tons per year at a cost of \$62-82 million dollars). (77:3)
- ! Brush Wellman believes EPA should consider the additional stabilization necessary to meet the proposed TC metal standards. (82:10-11)

## Response

The Agency notes that the required capacity estimates were determined by reviewing all available data on waste generation and management (see the required capacity section of the Capacity Analysis Background Document). The Agency clarifies that available waste generation data on lead-based paint wastes are also included in the capacity analysis. Additional data provided by the commenters along with the data reviewed by the Agency indicate that the existing treatment systems would only need relatively minor changes to optimize the systems to meet the UTS levels (see the Capacity Analysis Background Document for supporting data provided by the commenters). The Agency appreciates the additional data on required capacity provided by the commenters, and has incorporated the data into the capacity analysis.

## Comments

- ! TDJ Group (26:3-4)
- ! Association of Battery Recyclers (38:8)
- ! Battery Council International (45:6-7)
- ! Department of Defense (74:3-4)
- ! American Foundrymen's Society (77:3)
- ! Brush Wellman (82:10-11)

Commenter: TDJ Group  
Comment Number: 26  
Page Number: 3-4

5) The proposed rulemaking appears to violate RCRA Section 3004 (M), since the proposed standards are based on technologies that are commercially available.

Our analysis of the markets for D006, D007 and D008 waste management from the iron and steel industry and the steel maintenance industry suggest that 500,000 to 1,000,000 tons of solid waste will be covered by these regulations. It appears clear that most of these wastes will not be amenable to HTMR, and it would appear that there is not adequate capacity to provide this form of recovery. This appears to imply that these wastes will require stabilization before disposal. It is not clear that existing stabilization technologies will have the ability to meet these standards. The Agency has not used wastes representative of these industries to establish these standards. The Agency has assumed that there is sufficient capacity to receive these wastes for HTMR, but industry data suggests that these wastes are not amenable to these processes. If HTMR capacity is not present and if the Agency has not adequately researched the efficacy of stabilization technologies, then the Agency is establishing a "technology forcing standard that is a violation of RCRA 3004 (M).

Commenter: Association of Battery Recyclers  
Comment Number: 38  
Page Number: 8

Similarly, EPA has not demonstrated that HTMR is commercially "available" to treat the potential volume of D008 material that would be subject to LDRs if the UTSs were applied. This technology, as applied to D008 wastes, still is in a developmental stage.<sup>7</sup> Moreover, the ABR estimates that over 260,000 tons of D008 slag per year will require treatment if the

Commenter: Battery Council International  
Comment Number: 45  
Page Number: 6-7

B. There is Lack Of Adequate Capacity For Treatment Of D008 Wastes

Even if existing HTMR/stabilization technologies were "Commercially available" and capable of treating the D008 nonwastewaters to the proposed treatment standards (which EPA has not demonstrated), there is a lack of adequate available treatment capacity to manage these wastes.<sup>14/</sup> According to RCI, the amount of newly identified lead slag requiring treatment or stabilization would be at least 255,000 tons per year.<sup>15/</sup> This is at least 6 times more than the amount predicted by the Agency in the proposed rule (i.e., 41, 250 tons per year). Furthermore, this estimate does not include contaminated soils, emission control dusts, and sludges, among other D008 wastes, that also would be newly identified as requiring treatment.

The amount of contaminated soils requiring treatment at 157 National Priority List (NPL) sites alone could approach 21,000,000 tons.<sup>16/</sup> As RCI states in the attached letter, this figure does not account for the amount of contaminated soil requiring treatment that will be generated from RCRA corrective action cleanups, state Superfund cleanups or for that matter, from the cleanup of residential soils.<sup>17/</sup>

Treating these large quantities of D008 wastes to the UTS level for lead and selenium will place an enormous burden on the lead recycling industry. It certainly will require much more than 1 million tons of stabilization capacity predicted by the Agency in the proposed LDR Phase IV rule.

Commenter: Department of Defense  
Comment Number: 74  
Page Number: 3-4

DOD routinely addresses lead-based paint issues. It is unclear from the proposed rule if capacity for lead-based paint wastes was considered in this rule. DOD thus requests EPA to review if adequate capacity (for example, high temperature metal recovery) exists for this waste stream.

Oftentimes, lead-based paint in debris and soils is not classified as a hazardous waste, and thus the land-disposal restrictions are not applicable. However, when LDR would apply, lead-based paint should be treated similar to other remediation wastes, and thus distinguished from as-generated waste. DOD thus requests EPA to consider an exemption or variance for this remediation waste. DoD understands that an exemption from LDR for lead-based paint wastes may be consistent with EPA's soon to be released rule on architectural components.

Commenter: American Foundrymen's Society  
Comment Number: 77  
Page Number: 3

The ability of iron and steel foundries to continue recycling 35 billion pounds of ferrous metal scrap each year depends on their ability to manage their foundry wastes in a cost effective manner. Each year, foundries in the U.S. generate an estimated 410,000 tons of EC dust and foundry sand that exhibit a hazardous characteristic for toxicity. *See* calculations attached as Exhibit 2. In addition to EC dust and foundry sand, other foundry waste streams potentially subject to the proposed LDR Phase IV rulemaking include byproducts to melting operations, and other waste streams from cleaning and processing operations. Assuming that available stabilization technologies could treat these foundry wastes to meet the proposed treatment standards, they would cost between \$150 to \$200 per ton for stabilization and disposal of these wastes off-site. Consequently, the proposed rule would impose between \$62 to \$82 million in total annual treatment and disposal costs on the foundry industry (approximately double the current costs of treatment and disposal). In fact, these costs could be even higher because of the inherent variability of foundry wastes which make them more difficult to consistently stabilize.



Commenter: Brush Wellman  
Comment Number: 82  
Page Number: 10-11

In anticipation of EPA's proposal, Brush Wellman began to make inquiries regarding commercially available HTMR processes for its waste streams. Brush Wellman discussed with Horsehead Resource Development Company ("Horsehead") its ability to process Brush Wellman's beryllium-containing wastes. One such waste stream, a rotary filter sludge with lead concentrations above the toxicity characteristic level, is the hazardous waste with the highest beryllium content currently generated by Brush Wellman. This waste contains more than 14% beryllium. At the time of Brush Wellman's inquiry, Horsehead had a commercially available HTMR process in which it would treat the waste to recover copper values. However, according to Horsehead, it estimated that the beryllium content of the remaining slag would range between 7,800-8,700 ppm TCLP, well above the universal treatment standard for beryllium. A different waste stream, containing only 0.4% beryllium was anticipated to create a HTMR slag ranging between 100-120 ppm TCLP, also above the beryllium standard. Brush Wellman has recently learned that Horsehead has discontinued this process and currently will accept only K061 for HTMR processing. Thus, the only commercial HTMR outlet for Brush Wellman's toxicity characteristic wastes is no longer available and, if it were, it would not be able to process Brush Wellman's waste so as to satisfy the universal treatment standard.

EPA suggests that stabilization is an alternative treatment technology that is available for use by generators of toxicity characteristic metal wastes to meet the universal treatment standards. Indeed, EPA's background document evaluating available capacity for treating these wastes focuses solely on stabilization capacity and does not present any information regarding commercial capacity for HTMR. As discussed previously, Brush Wellman is not aware of a commercial HTMR process which is available to treat its beryllium-containing toxicity characteristic metal wastes. It is not reasonable for the Agency to promulgate a BDAT-based standard based on one technology and expect compliance based on use of a different technology which has not been thoroughly evaluated for performance and capacity. Brush Wellman is not aware of any data in the administrative record which demonstrate that the universal treatment standard for beryllium is attainable through stabilization. Without such data, Brush Wellman must question how EPA could make a supportable determination that the beryllium standard is achievable or even desirable with respect to toxicity characteristic metal wastes. For example, has EPA considered how much additional stabilization agent may be necessary to treat beryllium to the required level and how much additional landfill capacity will be necessary in order to accommodate the increased volume of the treated waste? Finally, it is not clear from a review of the capacity background document that EPA even considered the additional stabilization of toxicity characteristic metal wastes which may be necessary in order to meet the universal treatment standards with respect to underlying hazardous constituents such as beryllium.

### 3.1.2 Amount of Soil And Debris Requiring Treatment Will Exceed EPA's Current Capacity Estimate

One commenter [Battery Council International & Association of Battery Recyclers (2SR 17)] stated that EPA underestimated the required treatment capacity for soil and debris.

- ! Battery Council International & Association of Battery Recyclers stated that the amount of contaminated soils and debris requiring treatment will be considerably more than EPA's current capacity estimate. For example, the amount of contaminated soils and debris requiring treatment at National Priority List sites alone could approach 21 million tons. This figure does not account for the amount of contaminated soils and debris requiring treatment that will be generated from RCRA corrective action cleanups, or state Superfund cleanups. (2SR 17:15)

#### Response

In the Phase IV proposed rules, the Agency acknowledged the lack of data on contaminated soils. EPA appreciates the data provided by the commenter and has incorporated these data into the capacity analysis for the final rule. In the final Phase IV rule, however, the Agency has promulgated alternative treatment standards (ten times UTS or 90 percent reduction) for contaminated soil. The Agency believes that these less stringent standards for contaminated soil can be achieved by existing commercially available treatment technologies. The Agency also compiled treatment performance data for contaminated soils from remediation case studies that indicate that the alternative treatment standards can be readily achieved by commercially available treatment technologies and adequate treatment capacity is available for these contaminated soils. (See the BDAT and Capacity Analysis Background Documents for additional information)

#### Comments

- ! Battery Council International & Association of Battery Recyclers (2SR 17:15)

Commenter: Battery Council International & Association of Battery Recyclers  
Comment Number: 2SR 17  
Page Number: 15

The amount of contaminated soils and debris requiring treatment will be considerably more than EPA's current capacity estimate. For example, the amount of contaminated soils and debris requiring treatment at National Priority List (NPL) sites alone could approach 21,000,000 million tons.[*fn28: See comments of Battery Council International (Nov. 27,1995) and Association of Battery Recyclers (Nov. 20, 1995) submitted in response to EPA Land Disposal Restrictions Phase IV proposed rule (60 Fed. Reg. 43,654 (1995))*]. This figure does not account for the amount of contaminated soils and debris requiring treatment that will be generated from RCRA corrective action cleanups, or state Superfund cleanups.

### 3.1.3 Additional Data Could Be Added on Required Capacity for TC Wastes Mixed With Radioactive Wastes

Two commenters [Westinghouse Electric Corporation (2SR 14); Department of Energy (2SR 23)] provided data on the quantity of radioactive mixed wastes affected by the proposed rule.

- ! Westinghouse Electric Corporation reported that 133,565 cubic meters of non-wastewater material (including D011) from the Savannah River Site (DOE facility managed by Westinghouse) would be land disposed. Since these wastes are radioactive, it is unlikely that any silver would be reclaimed or recycled. Some of these waste streams will be macroencapsulated for land disposal. Others will be incinerated or vitrified into glass. (2SR 14:2)
  
- ! The Department of Energy (DOE) reported that approximately 41,350 cubic meters of nonwastewater D011 mixed radioactive wastes were stored at DOE sites as of December 1996. Additional nonwastewater D011 mixed wastes are projected to be generated during the coming 5 years. If practicable, DOE may use metal removal/recovery technologies to manage some nonwastewater D011 mixed waste streams. However, due to the radioactive nature of nonwastewater D011 mixed waste streams, DOE is treating or plans to treat most such streams using macroencapsulation, stabilization, vitrification, or incineration technologies. Also reported no plans for using UIC wells for managing hazardous and mixed wastes. (2SR 23:5)

#### Response

EPA appreciates the data provided by the commenters on quantities of radioactive mixed wastes and has incorporated these data into the capacity analysis for the final rule.

#### Comments

- ! Westinghouse Electric Corporation (2SR 14:2)
- ! Department of Energy (2SR 23:5)

Commenter: Westinghouse Electric Corporation  
Comment Number: 2SR 14  
Page Number: 2

EPA requested comment- on quantities of silver non-wastewaters that would be land disposed. The September 1996 Mixed Waste Inventory Report for the Savannah River Site, a Department of Energy (DOE) facility managed by Westinghouse, shows 7,240 m<sup>3</sup> of mixed low level wastes that include D011. There is also 126,325 m<sup>3</sup> of high level wastes that include D011. Since these wastes are radioactive, it is unlikely that any silver would be reclaimed or recycled. Some of these waste streams will be macroencapsulated for land disposal. Others will be incinerated or vitrified into glass.

Commenter: Department of Energy  
Comment Number: 2SR 23  
Page Number: 5

Many DOE sites generate, or have stored inventories of mixed wastes assigned the D011 waste code, among other codes. Data reported in the 1995 DOE Mixed Waste Inventory Report, as revised by updated information submitted to the states during 1996, indicate that approximately 41,350 cubic meters of nonwastewater D011 mixed wastes (in the form of mixed low level wastes and mixed transuranic wastes) were stored at 25 DOE sites as of December 1996. Additional nonwastewater D011 mixed wastes are projected to be generated at 20 of these sites during the coming 5 years. If practicable, DOE may use metal removal/recovery technologies to manage some nonwastewater D011 mixed waste streams. However, due to the radioactive nature of nonwastewater D011 mixed waste streams, DOE is treating or plans to treat most such streams using macroencapsulation, stabilization, vitrification, or incineration technologies. Treatment residues from these technologies that meet LDR treatment standards will be land disposed as appropriate when capacity becomes available.

## 3.2 Capacity Variance Issues for TC Metal Wastes

### 3.2.1 TC Metal Wastes

#### 3.2.1a Sufficient Capacity Does Not Exist to Meet Required Capacity for TC Metal Wastes

Two commenters [Battery Council International (45); Department of Defense (74)] believe that EPA's estimate of available capacity for TC metals is not sufficient to meet the demand for such capacity.

- ! Battery Council International (BCI) states that even if existing HTMR/stabilization technologies are available, there is a lack of capacity to treat D008 wastes. According to BCI, the amount on newly identified lead slag requiring treatment of stabilization would be at least 255,000 tons per year (6 times the EPA estimate). This estimate does not include contaminated soils, emission control dust, sludges, and other D008 wastes that would require treatment. (45:6-7)
- ! Battery Council International & Association of Battery Recyclers stated that there is a lack of adequate capacity for the treatment of D008 wastes. Even if existing HTMR/stabilization technologies were "commercially available" and capable of treating the D008 nonwastewaters to the proposed treatment standards, there is a lack of adequate available treatment capacity to manage these wastes. Treating these large quantities of D008 wastes to the proposed treatment standards will place an enormous burden on the lead recycling industry. It certainly will require much more than the 0.8 to 2.6 million tons of stabilization capacity predicted by the Agency in the proposed phase IV second supplemental rule. (2SR 17:14-15)

The Department of Defense states that it has a specific TC-metal waste stream that will require treatment to meet the proposed standards, but that there is no capacity for this waste.

- ! DOD has a military-unique hazardous waste stream that contains metals in excess of the proposed TC and UTS levels. This waste stream has no recognized capacity at this time. (74:3)

#### Response

The Agency disagrees with the comment that adequate capacity is not available for treating D008 wastes. Data provided by other commenters (e.g., ETC) and EPA's own analysis indicate that adequate commercial stabilization capacity exists for the Phase IV wastes. Furthermore, the Agency notes that several commercial vendors offer on-site stabilization systems for treating wastes. (Refer to the phone logs and data provided by the commenters on available capacity in the Capacity Analysis Background Document.) The Agency believes that such systems either already can meet the new treatment standards or can be readily optimized to meet additional demand for treating the Phase IV wastes.

With respect to the military-unique hazardous waste stream or any other waste streams that pose unique treatability problems, the Agency notes that the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44. For newly identified wastes (i.e., wastes that do not fail the EP test, and, consequently, are not part of the Third Third LDR Rule), the affected party may also request a capacity variance extension per 40 CFR 268.5 on a case-by-case basis. Wastes regulated in the Third Third LDR Rule (i.e., wastes that fail the EP test) are not eligible for capacity variances because the extension provided in that rulemaking has already expired.

#### **Comments**

- ! Battery Council International (45:6-7)
- ! Battery Council International & Association of Battery Recyclers (2SR 17:14-15)
- ! Department of Defense (74:3)



Commenter: Battery Council International  
Comment Number: 45  
Page Number: 6-7

B. There is Lack Of Adequate Capacity For Treatment Of D008 Wastes

Even if existing HTMR/stabilization technologies were "Commercially available" and capable of treating the D008 nonwastewaters to the proposed treatment standards (which EPA has not demonstrated), there is a lack of adequate available treatment capacity to manage these wastes.<sup>14/</sup> According to RCI, the amount of newly identified lead slag requiring treatment or stabilization would be at least 255,000 tons per year.<sup>15/</sup> This is at least 6 times more than the amount predicted by the Agency in the proposed rule (i.e., 41, 250 tons per year). Furthermore, this estimate does not include contaminated soils, emission control dusts, and sludges, among other D008 wastes, that also would be newly identified as requiring treatment.

The amount of contaminated soils requiring treatment at 157 National Priority List (NPL) sites alone could approach 21,000,000 tons.<sup>16/</sup> As RCI states in the attached letter, this figure does not account for the amount of contaminated soil requiring treatment that will be generated from RCRA corrective action cleanups, state Superfund cleanups or for that matter, from the cleanup of residential soils.<sup>17/</sup>

Treating these large quantities of D008 wastes to the UTS level for lead and selenium will place an enormous burden on the lead recycling industry. It certainly will require much more than 1 million tons of stabilization capacity predicted by the Agency in the proposed LDR Phase IV rule.

Commenter: Battery Council International & Association of Battery Recyclers  
Comment Number: 2SR 17  
Page Number: 14

Even if existing HTMR/stabilization technologies were "commercially available" and capable of treating the D008 nonwastewaters to the proposed treatment standards (which, as demonstrated above, they are not), there is a lack of adequate available treatment capacity to manage these wastes.[fn25: According to EPA, "available capacity" is estimated to be the difference between the appropriate waste management system's maximum or design capacity and the amount of waste currently going to the system (utilized capacity). *See EPA, Background Document for Capacity Analysis for Land Disposal Restrictions Phase IV (Second Supplemental) Toxicity Characteristic Metal Wastes and New Identified Mineral Processing Wastes (proposed rule)*, 1-5 (Apr. 1997).] EPA has estimated that there are 0.8 to 2.6 million tons per year of capacity available to treat TC metal wastes to the proposed treatment standards. fn26: *id.* At 1-6] By its own admission, however, the Agency states that "[i]n all of the data sources consulted by the Agency, there was little information on the amount of soil and debris that might be contaminated with newly identified TC metal wastes.... Consequently, EPA has no estimates for the amount of contaminated soil or and debris that would be subject to the LDRs for this proposed rule." [fn27: *id.* at 3-7]

Commenter: Department of Defense  
Comment Number: 74  
Page Number: 3

DoD has a military-unique hazardous waste stream that contains metals in excess of the proposed TC and UTS levels, which has no recognized treatment capacity at this time. Since the capacity does not exist for this waste stream, DoD requests the opportunity to submit further information in support of a National Capacity Variance. Because this unique waste also exhibits the reactivity characteristic, the Variance would also have to extend to this criteria. DoD is diligently pursuing research and development on treatment technologies and would like to request a meeting to discuss with EPA in more detail this DoD waste.

### 3.2.1b A Variance Is Needed for Wastes Containing More Than One TC Metal

One commenter [General Motors Corporation (2SR 33)] stated that EPA should grant variances for wastes containing more than one TC metal until data regarding interaction among metals are gathered and studied.

- ! Referring to the interview logs provided in Appendix A of the Capacity Analysis Background Document (proposed rule), General Motors (GM) stated that the data indicate concerns over the ability to treat wastes containing more than one metal and requested treatment variance for such wastes. Therefore, GM believes that the Agency should not expand the LDR requirements to the TC wastes at this time until data regarding metal interaction are gathered and studied. If these regulations are promulgated as proposed without further investigation the Agency should at least include provisions that would allow variances or exemptions for problematic complex metal bearing streams. (2SR 33:2,3)

#### Response

This issue is an extension of the one discussed in Section 2.1.1. To summarize, the Agency compiled additional evidence regarding the treatability of mixed-metal TC metal wastes to the UTS by conducting site visits to several commercial hazardous waste treatment facilities, collecting additional stabilization and HTMR treatment performance data that better represent the diversity of metal wastes, and analyzing relevant commenter data. Based on an analysis of these data, the Agency believes that a well designed stabilization system can immobilize any combination of metals to the proposed UTS levels, and that any necessary re-designing or optimization of these systems can take place within 90 days of promulgation of the final rule. Thus, a capacity variance is unnecessary. Furthermore, EPA notes that if a situation exists in which the waste is unique in that it possesses properties making it difficult to treat, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44. For newly identified wastes (i.e., wastes that do not fail the EP test, and, consequently, are not part of the Third Third LDR Rule), the affected party may also request a capacity variance extension per 40 CFR 268.5 on a case-by-case basis. Wastes regulated in the Third Third LDR Rule (i.e., wastes that fail the EP test) are not eligible for capacity variances because the extension provided in that rulemaking has already expired.

#### Comments

- ! General Motors Corporation (2SR 33:2,3)

Commenter: General Motors Corporation  
Comment Number: 2SR 33  
Page Number: 2

The docket contained no information on nonwastewater streams that contained higher concentrations of two or more metals (docket item 2 - "Final Revised Calculation of Treatment Standards Using Data Obtained from Rollins ..."). Several letters contained in the docket which summarized interviews with personnel in the waste treatment industry indicated concerns about meeting LDR levels when several metals are present in a waste stream (Appendix A - Data on Available Stabilization Capacity).

Commenter: General Motors Corporation  
Comment Number: 2SR 33  
Page Number: 3

Apparently, the waste treatment industry is concerned with their ability to treat complex nonwastewater streams. This writer believes that the Agency in determining appropriate BDAT land disposal restriction levels for metal contained non wastewater waste only studied single metal containing waste streams.

The Agency should not expand the LDR requirements to the TC wastes at this time until data regarding metal interaction are gathered and studied. If these regulations are promulgated as proposed without further investigation the Agency should at least include provisos that would allow variances or exemptions for problematic complex metal bearing streams.

### 3.2.1c A Variance Is Needed for D004-D011 Wastes

Two commenters [Chemical Waste Management, Inc. (48); Hazardous Waste Management Association (97)] stated that EPA should grant a national variance for D004-D011 wastes.

- ! Chemical Waste Management, Inc. stated that EPA does not indicate that the national capacity variance is being granted to D004-D011 newly identified wastes. The commenter believes that EPA must clarify capacity variance language to include D004-D011 wastes. (48:36-37)
- ! Hazardous Waste Management Association supports a national capacity variance for D004-D011 wastes. (97:17-18)

#### Response

Data provided by other commenters and EPA's own analysis indicate that adequate commercial stabilization capacity exists for the Phase IV wastes. Furthermore, the Agency believes that several commercial vendors offer on-site stabilization systems for treating wastes. (Refer to the phone logs and data provided by the commenters on available capacity in the Capacity Analysis Background Document.) The Agency believes that such systems either already can meet the new treatment standards or can be readily optimized to meet additional demand for treating the Phase IV wastes. Therefore, a capacity variance is unnecessary.

#### Comments

- ! Chemical Management, Inc. (48:36-37)
- ! Hazardous Waste Management Association (97:17-18)

Commenter: Chemical Waste Management  
Comment Number: 48  
Page Number: 36-37

The Agency is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes.

CWM supports this proposal in principal, however, it is not clear to CWM whether this includes newly identified newly identified wastes. The Agency states "EPA is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes." (See 60 Fed. Reg. at 43,686) This statement implies that the capacity variance is for all newly identified Phase IV soil and debris. This should include the newly identified D004-D011 wastes. However, upon further review the Agency does not indicate that this national capacity variance is being granted to D004-D011 newly identified wastes. Neither the table in the preamble discussion (See 60 Fed. Reg. at 43,686) or proposed 268.30 (See 60 Fed. Reg. at 43,694) indicate that D004-D011 newly identified wastes are subject to the capacity variance.

CWM believes that the newly identified D004-D011 wastes should also be included in this capacity variance, because of the logic that the Agency uses for granting the capacity variance for F032, F034, F035, and D004-D011 mixed with radioactive wastes. The Agency states "It has been the Agency's experience that contaminated soils are significantly different in their treatability characteristics from the wastes that have been evaluated in establishing the BDAT standards, and thus, will generally qualify for a treatability variance for soils,....". CWM sees no logical reason for not granting this capacity variance for these D004-D011 newly identified soil and debris, while granting it for the other waste streams(as in text). CWM urges the Agency to extend this capacity variance to these D004-D011 wastestreams.



Commenter: Hazardous Waste Management Association  
Comment Number: 97  
Page Number: 17-18

**Treatment Standards For Newly Listed And Identified Wastes (60 FR 43680)**

**Treatment Standards for Soil Contaminated With Newly Listed Wastes (60 FR 43680)**

The Agency is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes. HWMA supports this proposal in principal; however, it is not clear whether this includes D004-D011 newly identified wastes. The Agency states that, "EPA is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes" (60 FR 43686). This statement implies that the capacity variance is for all newly identified Phase IV soil and debris, a universe which does include D004-D011 newly identified wastes. However, the Agency does not indicate that this national capacity variance is being granted to D004-D011 newly identified wastes. Neither the table in the preamble discussion (60 FR 43686) or proposed §268.30 (60 FR 43694) state that D004-D011 newly identified wastes are subject to the capacity variance.

D004-D011 newly identified wastes should also be included in this capacity variance based on the logic for granting the capacity variance for F032, F034, F035, and D004-D011 mixed with radioactive wastes. The Agency states, "It has been the Agency's experience that contaminated soils are significantly different in their treatability characteristics from the wastes that have been evaluated in establishing the BDAT standards, and thus, will generally qualify for a treatability variance for soils..... HWMA does not see any logical reason for not granting this capacity variance for D004-D011 newly identified soil and debris while granting it for the other waste streams.

### 3.2.1d Large Volume of Sludge Justifies a Variance from the Treatment Standards

One commenter [CITGO Petroleum Corporation (2SR 11)] stated that the large amount of sludge material to be removed during the closure of a surface impoundment located in their property and the lack of incineration capacity justify a treatability variance from the treatment standards.

- ! CITGO Petroleum Corporation stated that large amounts of sludge material (approximately 375,000 cubic yards) have to be removed from the surface impoundment (Surge Pond) at the CITGO refinery in Lake Charles, Louisiana. If incineration were used to treat this sludge to the BDAT levels, the remaining Surge Pond sludge could consume all available national incineration capacity for over 18 months. The lack of local incineration capacity would require CITGO to transport the sludge to remote incineration facilities in Texas, Arkansas, Kansas, Kentucky, South Carolina, Ohio, and Utah. The extremely large volume of these sludge materials and the lack of local incineration capacity makes the treatment technologies upon which the BDAT was based inappropriate for the waste. (2SR 11:3)

#### Response

In the Phase IV LDR second supplemental proposed rule (62 FR 26061), EPA proposed to reissue a treatment variance granted to CITGO Petroleum on October 28, 1996 (61 FR 55718) for wastes disposed in a large surface impoundment awaiting closure. However, since the variance was granted, CITGO has chosen to pursue the legal option of seeking to close the impoundment with waste left in place. Because of CITGO's decision, EPA withdrew the CITGO treatment variance as part of the "Clarification of Standards for Hazardous Waste Land Disposal Restriction Treatment Variances; Final Rule." (62 FR 64504, December 5, 1997).

#### Comments

- ! CITGO Petroleum Corporation (2SR 11:3)

Commenter: CITGO Petroleum Corporation  
Comment Number: 2SR 11  
Page Number: 3

**A. The Extremely Large Volume of Surge Pond Sludge Renders BDAT Inappropriate.**

In this case, it is without question that the large amount of sludge material remaining to be removed during closure of the Surge Pond, estimated to be 375,000 cubic yards, makes the treatment technologies upon which BDAT was based inappropriate for the waste. If incineration was the method required to treat the Surge Pond sludge to BDAT levels, the remaining Surge Pond sludge alone could consume all available national incineration capacity for over 18 months. See Site-Specific Treatability Variance Petition for F037/F038 Hazardous Wastes Generated From Surge Pond Closure, dated April 1994, RCRA Docket Id. No. F-94-TVLP-S0001 (“Variance Petition”), §2.2.4, p. 2-5. The lack of capacity of local incineration would require CITGO to transport the Surge Pond sludge to remote incineration facilities in Texas, Arkansas, Kansas, Kentucky, South Carolina, Ohio and Utah. CITGO calculates that nearly 24 million miles would be traveled in order to incinerate all Surge Pond sludge, resulting in a probability of 48 highway accidents involving a possible release of hazardous materials to the environment. See Supplement to Site-Specific Treatability Variance Petition for F037/F038 Hazardous Wastes Generated from Surge Pond Closure, dated May 1994, RCRA Docket Id. No. F-94-TVLP-S0002, (“Variance Petition Supplement”), §3.22. Furthermore, any other facilities dependent on those incinerators for disposal of waste would not be able to utilize such facilities during that time. The extremely large volume of Surge Pond sludge and the lack of incineration capacity illustrates and underscores the inappropriateness of the treatment technology underlying BDAT with respect to closure of the Surge Pond.

### 3.2.1e A Variance for Any TC Metal Wastes Is Not Justified

Two commenters [Environmental Technologies International, Inc. (NODA1 1); Environmental Technology Council (NODA1 14)] stated that a variance for any TC metal wastes is not justified.

- ! Environmental Technologies International, Inc. (ETI) stated that the need for a capacity variance is technologically and operationally unfounded. The annual treatment capacity of ETI is 100,000 tons for its fixed units and 40,000 tons for its mobile treatment unit. ETI also stated that additional treatment units can be operational in less than 45 days. (NODA1 1:1)
- ! The Environmental Technology Council stated that it is not likely that the 1.3 million tons of waste for stabilization in 1994 would be materially exceeded in the near future and that given the large amount of stabilization capacity available, a variance for any TC metal wastes is clearly not justified. (NODA1 14:13)

#### Response

EPA appreciates the data provided by the commenter and notes that the Agency has incorporated the data into the Capacity Analysis Background Document. The Agency believes that the 90-day period between the publication date and the effective date of the rule will allow treaters sufficient time to optimize treatment systems and conduct other activities (e.g., analyzing wastes) in order to meet treatment standards. Therefore, the Agency is not granting a national capacity variance for TC metal wastes.

#### Comments

- ! Environmental Technologies International, Inc. (NODA1 1:1)
- ! Environmental Technology Council (NODA1 14:13)

Commenter: Environmental Technologies International, Inc.  
Comment Number: NODA1 1  
Page Number: 1

The Capacity Issues listed in item (4) found on Page 21422 of the above referenced Proposed Rule cites the request for a "capacity variance." The need for a variance is technologically and operationally unfounded. The annual treatment capacity provided by ETI's fixed based unit is 100, 000 tons. The annual treatment capacity offered by ETI's mobile treatment unit is 40,000 tons. Additional treatment units can be operational in less than 45 days.

Commenter: Environmental Technology Council  
Comment Number: NODA1 14  
Page Number: 13

In its April issue each year, E.I. Digest summarizes the volumes that hazardous waste landfills receive in the prior year. This information is reported to E.I. Digest from the facilities or from regulatory agencies. Table 6 summarizes the volumes received by commercial hazardous waste landfills over the period 1989 through 1994. These volumes include RCRA, TSCA, State regulated hazardous and non-hazardous volumes received by these facilities.

TABLE 6  
ANNUAL VOLUMES, CUBIC YARDS IN THOUSANDS  
RECEIVED BY COMMERCIAL HAZARDOUS WASTE LANDFILLS

YEAR	VOLUME
1989	3,263
1990	3,373
1991	3,350
1992	3,481
1993	3,514
1994	3,639
1995	2,703

NOTE: Information obtained from E.I. Digest April, 1996 Issue

The data show a relatively stable volume received annually by these facilities in the 1989 - 1994 period, running from 3.26 to 3.64 million tons/year. The 1995 figure shows a sharp drop to 2.7 million tons/year. The April 1996 issue discusses this drop which is almost entirely attributable to a decline in the amount of remediation waste accepted by these facilities.

It is not likely that the 1.3 million tons of waste for stabilization in 1994 would be materially exceeded in the near future. Given the large amount of stabilization capacity available, a variance for any TC metal wastes or TC-contaminated soils is clearly not justified.

### 3.2.2 Soil and Debris Contaminated with TC Metal Wastes

#### 3.2.2a A Capacity Variance Decision for TC Metal Soils Is Unclear

EPA did not propose a national capacity variance for soils contaminated with TC metals. However, the preamble to the original Phase IV proposed rule could be misunderstood to have proposed such a variance. Three commenters [Natural Gas Pipeline Co. of America (37); American Gas Association (86); Hazardous Waste Management Association (97)] ask that EPA clarify whether or not it is granting a variance.

- ! The Natural Gas Pipeline Co. of America noted that a variance for soils contaminated with metals is discussed in the proposed rule; however, the variance is not proposed. EPA should formally propose a soil treatability variance for metals so that industry will not be technically subject to the UTS while the treatment technology is being developed. (37:2)
- ! The American Gas Association noted that EPA did not propose a national capacity variance for soils contaminated with metals. (86:4-5)
- ! Hazardous Waste Management Association requested clarification on the variance for soil and debris. (97:17-18)

#### Response

The Agency agrees that the original Phase IV proposed rule could be misunderstood to have proposed a variance for contaminated soil; therefore, this issue was clarified in subsequent notices. Furthermore, EPA recognizes the unique issues associated with remediation waste, including hazardous contaminated soil, and therefore believes that it is appropriate to establish alternative, less-stringent LDR treatment standards for hazardous soil, so long as the alternative standards encourage implementation of more aggressive or permanent remedies contemplated by RCRA section 3004(m). (See 61 FR 18808, April 29, 1996 for additional discussion on this issue.) Therefore, in the final Phase IV rule, the Agency has promulgated alternative treatment standards for hazardous soil, which require that the concentrations of constituents subject to treatment be reduced by 90 percent with treatment for any given constituent capped at ten times the UTS. The data reviewed by the Agency on remediation case studies indicate that these standards can be readily achieved within 90 days through existing commercial technologies. Therefore, the Agency is not granting a national capacity variance for soils contaminated with TC metal wastes. See the BDAT and Capacity Analysis Background Documents for additional information.

Nevertheless, the Agency recognizes that some wastes could possess unique properties that make them more difficult to treat than the wastes on which the standards are based. In such cases, the affected party may petition the Agency for a treatability variance per 40 CFR 268.44. For newly identified wastes (i.e., wastes that do not fail the EP test, and, consequently, are not part of the Third Third LDR Rule), the affected party may also request a capacity variance extension per 40 CFR 268.5 on a case-by-case basis. Wastes regulated in the Third Third LDR Rule (i.e., wastes that fail the EP test) are not eligible for capacity variances because the extension provided in that rulemaking has already expired.

In addition, EPA is establishing a new site-specific, risk-based variance for the technology-based alternative soil treatment standards. This variance can be used when treatment to concentrations of hazardous constituents that are greater (i.e., higher) than those specified in the alternative soil treatment

standards is shown to minimize short- and long-term threats to human health and the environment. In this way, on a case-by-case basis, risk-based LDR treatment standards approved through a variance process could “cap” the technology-based treatment standards.

### Comments

- ! Natural Gas Pipeline Company of America (37:2)
- ! American Gas Association (86:4-5)
- ! Hazardous Waste Management Association (97:17-18)



Commenter: Natural Gas Pipeline Company of America  
Comment Number: 37  
Page Number: 2

The USEPA has stated a “presumption” that the treatment standards for as-generated wastes are generally inappropriate or unachievable for soils contaminated with hazardous wastes. Further, USEPA indicates that their experience is that contaminated soils will generally qualify for a treatability variance under 40 CFR 268.44. Although the variance is discussed, the variance is not proposed in the rule for soil contaminated with metals as it is for disposal wells and for soil contaminated with wood preserving wastes (pg. 43686). USEPA should formally propose a soil treatability variance for metals in this rulemaking so that industry will not be technically subject to the Universal Treatment Standards while the treatment technology is being developed.

Commenter: American Gas Association  
Comment Number: 86  
Page Number: 4-5

#### NATIONAL CAPACITY VARIANCE

EPA has stated a “presumption” that the treatment standards for as-generated wastes are generally inappropriate or unachievable for soft with hazardous wastes. Further, EPA indicates that its experience is that contaminated soils will generally qualify for a treatability variance under 40 C.F.R. §268.44. Although this national capacity variance for soil is recommended in the preamble on page 43680 it is not proposed in the rule for soil contaminated with metals as it is for disposal wells and for soil contaminated with wood preserving wastes on page 43688. We therefore urge EPA to formally propose a soil treatability variance for metals in this rulemaking so that industry will not be technically subject to the UTS while the treatment technology is being developed.

Commenter: Hazardous Waste Management Association  
Comment Number: 97  
Page Number: 17-18

**Treatment Standards For Newly Listed And Identified Wastes (60 FR 43680)**

**Treatment Standards for Soil Contaminated With Newly Listed Wastes (60 FR 43680)**

The Agency is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes. HWMA supports this proposal in principal; however, it is not clear whether this includes D004-D011 newly identified wastes. The Agency states that, "EPA is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes" (60 FR 43686). This statement implies that the capacity variance is for all newly identified Phase IV soil and debris, a universe which does include D004-D011 newly identified wastes. However, the Agency does not indicate that this national capacity variance is being granted to D004-D011 newly identified wastes. Neither the table in the preamble discussion (60 FR 43686) or proposed §268.30 (60 FR 43694) state that D004-D011 newly identified wastes are subject to the capacity variance.

D004-D011 newly identified wastes should also be included in this capacity variance based on the logic for granting the capacity variance for F032, F034, F035, and D004-D011 mixed with radioactive wastes. The Agency states, "It has been the Agency's experience that contaminated soils are significantly different in their treatability characteristics from the wastes that have been evaluated in establishing the BDAT standards, and thus, will generally qualify for a treatability variance for soils..... HWMA does not see any logical reason for not granting this capacity variance for D004-D011 newly identified soil and debris while granting it for the other waste streams.

### 3.2.2b A National Capacity Variance Should Be Granted for Soil and Debris Wastes

Seven commenters [Natural Gas Pipeline Co. of America (37); Chemical Waste Management, Inc. (48); American Gas Association (86); Safety Kleen (65); Chemical Manufacturers Association (113); DuPont Engineering (NODA1 16); The Department of Defense (2SR 75)] stated that EPA should grant a national capacity variance for soil and debris wastes.

- ! The Natural Gas Pipeline Co. of America noted that EPA should formally propose a soil treatability variance for metals so that industry will not be technically subject to the UTS while the treatment technology is being developed. (37:2)
- ! Chemical Waste Management, Inc. supports the concept of a national capacity variance for contaminated soils and debris. (48:36-37)
- ! The American Gas Association supports a two-year national capacity variance. (86:4-5)
- ! Safety Kleen and the Chemical Manufacturers Association support the variance for soil and debris contaminated with Phase IV wastes. (65:6) (113:26)
- ! DuPont Engineering stated that it is actively engaged in remediation activities involving metal contaminated soils and debris at five locations and has identified more than 100,000 cubic yards of potentially impacted soil. Perhaps 50,000 cubic yards of this material will be managed in the next few years. Pending implementation of the proposed HWIR-Media Rule, some or all of this soil would need to be managed under LDRs. DuPont requested that the Agency grant a variance to facilitate remediation. (NODA1 16:1)
- ! The Department of Defense (DOD) stated that EPA's data evaluation may not have addressed the true scope of TC metals contaminated soil and debris containing organic UHCs. Further stated that, based on DOD's remediation experience, it is not atypical for TC metals contaminated soils to have organic UHCs above UTS. Therefore, until EPA establishes the true extent of these wastes, DOD believes that EPA should grant a national capacity variance for soil and debris that exhibit only a TC metal waste code and contain organic UHCs above UTS. DOD also requested EPA to clarify or address TC metal waste code precedence over organic UHCs for the purposes of selecting the appropriate treatment methodology, specifically with regards to dilution prohibition issues based on the incineration or stabilization of TC metal waste streams with organic UHCs. (2SR 75:4-5)

#### Response

As discussed in more detail in the previous section, the Agency recognizes the unique issues associated with remediation waste, including hazardous contaminated soil, and therefore believes that it is appropriate to establish alternative, less-stringent LDR treatment standards for hazardous soil. Therefore, in the final Phase IV rule, the Agency has promulgated alternative treatment standards for hazardous soil, which require that the concentrations of constituents subject to treatment be reduced by 90 percent with treatment for any given constituent capped at ten times the UTS. Because these standards can be readily met, the Agency is not providing a capacity variance.

## Comments

- ! Natural Gas Pipeline Company of America (37:2)
- ! Chemical Waste Management (48:36-37)
- ! American Gas Association (86:4-5)
- ! Safety Kleen (65:6)
- ! Chemical Manufacturers Association (113:26)
- ! DuPont Engineering (NODA1 16:1)
- ! Department of Defense (2SR 75:4-5)

Commenter: Natural Gas Pipeline Company of America  
Comment Number: 37  
Page Number: 2

The USEPA has stated a “presumption” that the treatment standards for as-generated wastes are generally inappropriate or unachievable for soils contaminated with hazardous wastes. Further, USEPA indicates that their experience is that contaminated soils will generally qualify for a treatability variance under 40 CFR 268.44. Although the variance is discussed, the variance is not proposed in the rule for soil contaminated with metals as it is for disposal wells and for soil contaminated with wood preserving wastes (pg. 43686). USEPA should formally propose a soil treatability variance for metals in this rulemaking so that industry will not be technically subject to the Universal Treatment Standards while the treatment technology is being developed.

Commenter: Chemical Waste Management  
Comment Number: 48  
Page Number: 36-37

The Agency is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes.

CWM supports this proposal in principal, however, it is not clear to CWM whether this includes newly identified newly identified wastes. The Agency states "EPA is proposing a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes." (See 60 Fed. Reg. at 43,686) This statement implies that the capacity variance is for all newly identified Phase IV soil and debris. This should include the newly identified D004-D011 wastes. However, upon further review the Agency does not indicate that this national capacity variance is being granted to D004-D011 newly identified wastes. Neither the table in the preamble discussion (See 60 Fed. Reg. at 43,686) or proposed 268.30 (See 60 Fed. Reg. at 43,694) indicate that D004-D011 newly identified wastes are subject to the capacity variance.

CWM believes that the newly identified D004-D011 wastes should also be included in this capacity variance, because of the logic that the Agency uses for granting the capacity variance for F032, F034, F035, and D004-D011 mixed with radioactive wastes. The Agency states "It has been the Agency's experience that contaminated soils are significantly different in their treatability characteristics from the wastes that have been evaluated in establishing the BDAT standards, and thus, will generally qualify for a treatability variance for soils,....". CWM sees no logical reason for not granting this capacity variance for these D004-D011 newly identified soil and debris, while granting it for the other waste streams(as in text). CWM urges the Agency to extend this capacity variance to these D004-D011 wastestreams.

Commenter: American Gas Association  
Comment Number: 86  
Page Number: 4-5

#### NATIONAL CAPACITY VARIANCE

EPA has stated a “presumption” that the treatment standards for as-generated wastes are generally inappropriate or unachievable for soft with hazardous wastes. Further, EPA indicates that its experience is that contaminated soils will generally qualify for a treatability variance under 40 C.F.R. §268.44. Although this national capacity variance for soil is recommended in the preamble on page 43680 it is not proposed in the rule for soil contaminated with metals as it is for disposal wells and for soil contaminated with wood preserving wastes on page 43688. We therefore urge EPA to formally propose a soil treatability variance for metals in this rulemaking so that industry will not be technically subject to the UTS while the treatment technology is being developed.



Commenter: Safety Kleen  
Comment Number: 65  
Page Number: 6

**13. Safety-Kleen supports the Agency's intent to provide a national capacity variance for soil and debris contaminated with Phase IV newly listed wastes.**

Safety-Kleen agrees that the treatment standards for as-generated wastes are inappropriate for soil and debris contaminated with hazardous wastes. Imposing treatment that is not available in the short term will delay or interrupt remediation efforts under RCRA corrective action and other remediation and construction programs. In addition, 90-day generators of hazardous waste soils and debris would be in jeopardy of not-being able to comply with regulations because viable treatment alternatives do not exist. Safety-Kleen therefore supports granting a national capacity variance for contaminated soil and debris for the maximum time allowable.

Commenter: Chemical Manufacturers Association  
Comment Number: 113  
Page Number: 26

CMA recommends EPA set the National Capacity Variance effective date and the implementation plan completion date for a given management standard at two and four years, respectively, after the date that the given management standard is promulgated.

Finally, CMA agrees that the treatment standards for as-generated wastes are inappropriate for soil and debris contaminated with hazardous waste. Imposing treatment which is not available in the short term will delay or interrupt remediation efforts under RCRA corrective action and other remediation and construction programs. Further, 90-day generators of hazardous soil and debris would be in jeopardy of not being able to comply with regulations since treatment alternatives do not exist. The NCV for soil and debris contaminated with Phase IV listed wastes should be granted for the maximum time allowable.

Commenter: DuPont Engineering  
Comment Number: NODA1 16  
Page Number: 1

DuPont is actively engaged in remediation activities involving metal contaminated soils and debris at five locations and has identified more than 100,000 cubic yards of potentially impacted soil. Perhaps 50,000 cubic yards of this material will be managed in the next few years. Pending implementation of the recently proposed HWIR-media rule, some or all of this soil would need to be managed under LDRS. In order to not create impediments to remediation, DuPont requests that the Agency grant a variance

Commenter: Department of Defense  
Comment Number: 2SR 75  
Page Number: 4-5

DoD is concerned that the data evaluation may not have addressed the true scope of TC metals contaminated soil and debris that would now be subject to this rulemaking (i.e., contain organic UHCS). EPA acknowledges this concern by stating in section 3.4 (page 3-7) of the background document "In all of the data sources consulted by the Agency, there was little information on the amount of soil and debris that might be contaminated with the newly identified TC metal wastes." Remediation experience within the Installation Restoration and the Formally Utilized Defense site Programs indicates it is not atypical for TC metals contaminated soils to have organic UHCs above UTS. Until such time as EPA has established the true extent of these wastes, DoD believes EPA should grant a national capacity variance for soil and debris waste streams that exhibit only a TC metal waste code and contain organic UHCs above UTS.

### 3.2.2c A Capacity Variance for Soil and Debris Wastes Is Not Justified

One commenter [Environmental Technology Council (NODA1 14)] stated that a variance for soil and debris wastes contaminated with TC metals is not justified.

- ! The Environmental Technology Council stated that it is not likely that the 1.3 million tons of waste for stabilization in 1994 would be materially exceeded in the near future and that given the large amount of stabilization capacity available, a variance for TC-contaminated soils is clearly not justified. (NODA1 14:13)

#### Response

The Agency recognizes the unique issues associated with remediation waste, including hazardous contaminated soil, and therefore believes that it is appropriate to establish alternative, less-stringent LDR treatment standards for hazardous soil. Therefore, in the final Phase IV rule, the Agency has promulgated alternative treatment standards for hazardous soil, which require that the concentrations of constituents subject to treatment be reduced by 90 percent with treatment for any given constituent capped at ten times the UTS. Because these standards can be readily met, the Agency is not providing a capacity variance.

#### Comments

- ! Environmental Technology Council (NODA1 14:13)

Commenter: Environmental Technology Council  
Comment Number: NODAI 14  
Page Number: 13

In its April issue each year, E.I. Digest summarizes the volumes that hazardous waste landfills receive in the prior year. This information is reported to E.I. Digest from the facilities or from regulatory agencies. Table 6 summarizes the volumes received by commercial hazardous waste landfills over the period 1989 through 1994. These volumes include RCRA, TSCA, State regulated hazardous and non-hazardous volumes received by these facilities.

TABLE 6  
ANNUAL VOLUMES, CUBIC YARDS IN THOUSANDS  
RECEIVED BY COMMERCIAL HAZARDOUS WASTE LANDFILLS

YEAR	VOLUME
1989	3,263
1990	3,373
1991	3,350
1992	3,481
1993	3,514
1994	3,639
1995	2,703

NOTE: Information obtained from E.I. Digest April, 1996 Issue

The data show a relatively stable volume received annually by these facilities in the 1989 - 1994 period, running from 3.26 to 3.64 million tons/year. The 1995 figure shows a sharp drop to 2.7 million tons/year. The April 1996 issue discusses this drop which is almost entirely attributable to a decline in the amount of remediation waste accepted by these facilities.

It is not likely that the 1.3 million tons of waste for stabilization in 1994 would be materially exceeded in the near future. Given the large amount of stabilization capacity available, a variance for any TC metal wastes or TC-contaminated soils is clearly not justified.

### 3.2.3 Mixed Radioactive Wastes

#### 3.2.3a Clarification Is Required for the Applicability of the Two-Year Capacity Variance for Mixed Radioactive Wastes

Two commenters [Department of Energy (31 and 2SR23); Westinghouse Electric Corporation (56)] requested clarification on the applicability of the two-year capacity variance for mixed radioactive wastewaters and non-wastewaters.

- ! The Department of Energy and Westinghouse requested clarification on the effective date of the proposed treatment standards for mixed/RCRA radioactive wastewaters and non-wastewaters contaminated with wastes that will be subject to the Phase IV LDR. They would like to know if these treatment standards will go into effect after the Phase IV rulemaking or after the expiration of the two-year capacity variance. They believe the latter scenario should apply because time is needed for the market to develop mixed waste treatment capacity to comply with the Phase IV rule. (31:35; 2SR 23:2; 56:6)

One commenter [Westinghouse Electric Corporation (56)] requested additional clarification regarding the variance for D004-D011 wastes.

- ! Westinghouse also requested clarification on the applicability of the two-year capacity variance for mixed radioactive wastewaters and non-wastewaters classified as D004-D011 wastes. They believe EPA should clarify whether the capacity variance applies only to the D004-D011 wastes which fail the TCLP. (56:7)

#### Response

The Agency is promulgating treatment standards for metal-bearing and newly identified mineral processing mixed radioactive wastes at the UTS levels in the final Phase IV rule. However, the Agency recognizes the lack of available treatment and disposal capacity for these wastes, and therefore is granting a two-year national capacity variance to radioactive wastes mixed with newly identified TC metal wastes (i.e., wastes that pass the Extraction Procedure (EP) but fail the TCLP) or with newly identified mineral processing wastes, including soil and debris. These newly identified wastes are the only significantly affected wastes that are eligible for a capacity variance. Other wastes, such as Third Third characteristic metal mixed wastes, can continue to be treated to existing treatment standards (e.g., TC levels) only until the effective date of the Phase IV rule. This is in keeping with the language of section 3004(h)(1), which states that prohibitions (and by extension, the treatment standards that are issued along with prohibitions) are to take effect immediately, or as soon as protective treatment capacity is available. Thus, untreated wastes, other than newly identified TC metal and mineral processing wastes, must be treated to meet Phase IV standards 90 days after the publication of this rule. Those characteristic metal mixed radioactive wastes that had been stabilized prior to this effective date to meet the LDR requirements in effect at the time of treatment, and that are being or will be stored until disposal capacity becomes available, are not required to undergo further treatment to comply with the newly promulgated treatment standards.

#### Comments

- ! Department of Energy (31:35)
- ! Department of Energy (2SR 23:2)
- ! Westinghouse Electric Corporation (56:6)
- ! Westinghouse Electric Corporation (56:7)

Commenter: Department of Energy  
Comment Number: 31  
Page Number: 35

VIIIB.5 Mixed Radioactive Wastes

1. **p. 43686, col.1** -- EPA states that any new commercial capacity that becomes available will be needed for mixed radioactive wastes that were regulated in previous LDR rulemakings and whose variances have already expired. Therefore, EPA is proposing to grant a two-year national capacity variance for mixed RCRA/radioactive wastewaters and nonwastewaters contaminated with wastes whose standards are being addressed in the LDR Phase IV proposed rule.

a. DOE agrees with EPA's assessment that, regardless of the volume of mixed radioactive wastes that will require treatment for the first time as a result of the LDR Phase IV rule, there will be inadequate capacity to manage such additional mixed waste streams. Therefore, the Department supports EPA's proposal of a two-year national capacity variance for such mixed wastes.

b. EPA is proposing a two-year national capacity variance for "mixed RCRA/radioactive wastewaters and nonwastewaters contaminated with wastes whose standards are being proposed today" (i.e., Phase IV Mixed Radioactive Wastes). Assuming that the two year national capacity variance proposed in 40 CFR 268.30(b) applies to characteristic metal mixed wastes whose treatment standards will be lowered by the LDR Phase IV rule, DOE requests that EPA clarify whether the exemption of previously stabilized characteristic metal mixed wastes from the LDR Phase IV treatment standards will apply to characteristic metal mixed wastes stabilized before the date on which the national capacity variance ends, or only to characteristic metal mixed wastes stabilized before the date which is 90 days from the date of publication of the LDR Phase IV final rule in the *Federal Register*. DOE favors the granting of a two-year national capacity variance for RCRA nonwastewaters consisting of toxicity characteristic metal waste mixed with low levels of radioactive waste.



Commenter: Department of Energy  
Comment Number: 2SR 23  
Page Number: 2

c. DOE is particularly concerned that the final Phase IV compliance exception for previously treated characteristic metal mixed wastes be appropriately codified. Therefore, DOE suggested the following possible regulatory language in its comments in response to the Phase IV proposed rule.[FN2: DOE Comments, Land Disposal Restrictions --Phase IV: Issues Associated with Clean Water Act Treatment Equivalency, and Treatment Standards for Wood Preserving Wastes and Toxicity Characteristic Metal Wastes, Specific Comment V.D.3, Item 1, p. 34 (Nov. 20, 1995).] and continues to advocate that this or similar language be added to 40 CFR 268.30(d) [as proposed at 60 FR 43654, 43694; Aug. 22, 1995].

§268.30 Waste specific prohibitions -- wood preserving wastes, and characteristic wastes that fail the toxicity characteristic.

\* \* \* \* \*

(d) The requirements of paragraphs (a) and (b) of this section do not apply if:

\* \* \* \* \*

(5) The wastes are radioactive wastes mixed with or containing D004 - D011 wastes, which have been treated to meet Subpart D treatment standards in effect prior to [insert effective date of Phase IV regulations (including any applicable national capacity variance) for radioactive wastes mixed with D004 - D011]. Such wastes must have been treated prior to [insert effective date of Phase IV regulations (including any applicable national capacity variance) for radioactive wastes mixed with D004 - D011] to be excluded from application of paragraph (b).

Commenter: Westinghouse Electric Corporation  
Comment Number: 56  
Page Number: 6

Westinghouse requests clarification of the two year capacity variance for mixed RCRA/radioactive wastewaters and nonwastewaters contaminated with wastes that will be subject to the Phase IV LDR. Specifically, is mixed waste that is stabilized after the effective date of the final Phase IV LDR rulemaking (expected to be in 1996), but before the expiration of the proposed national capacity variance (expected to be in 1998), subject to the proposed Phase IV treatment standards or to the treatment standards in effect prior to the promulgation of the Phase IV rules? It is our interpretation that the latter scenario will apply. In other words, the new Phase IV treatment standards for mixed waste will not go into effect until after the expiration of the national capacity variance in 1998. This would presumably provide sufficient time for the market place to develop mixed waste treatment capacity that would comply with the Phase IV LDR standards.

Commenter: Westinghouse Electric Corporation  
Comment Number: 56  
Page Number: 7

We also request clarification of the two year national capacity variance for mixed radioactive wastewaters and nonwastewaters classified as D004-D011 wastes. Is the capacity variance for D004-D011 wastes which fail the TCLP only? In the Phase III rule under the waste description and treatment regulatory - subcategory for the D004-DO I I wastes, it clarified which test the toxicity characteristic was based on. In Phase IV, this clarification has been removed from §268.40, Treatment Standards for Hazardous Wastes. This could create confusion in the regulated community as to which wastes are covered by the two year capacity variance. A suggested remedy would be to add the wording from the Phase III rule to the §268.40, Treatment Standards for Hazardous Wastes that includes the clarification on whether to base the determination on EP or TCLP.

### 3.2.3b National Capacity Variance Is Needed for Phase IV Mixed Radioactive Wastes

Many commenters [New York Department of Environmental Conservation (13); Utilities Solid Waste Activities Group (35); Association of State and Territorial Solid Waste Management Officers (89); Chemical Manufacturers Association (113); Department of Energy (31); Molten Metal (49); Westinghouse (56)] agree with EPA's assessment that inadequate capacity exists for the treatment of mixed radioactive wastes. A few commenters [DOE (31); USWAG (35); Molten Metal (49)] specifically state their support of a two-year national capacity variance for characteristic metal mixed waste.

- ! The New York Department of Environmental Conservation stated that disposal capacity inadequacy for mixed wastes has been and continues to be a major problem for LDR compliance. (13:2)
- ! Utilities Solid Waste Activities Group stated that it supports the proposed two-year capacity variance for the disposal of TC metal mixed wastes due to the current lack of disposal capacity for this waste stream. (35:15)
- ! The Association of State and Territorial Solid Waste Management Officers stated that disposal capacity inadequacy for mixed wastes continues to be a major problem for LDR compliance. (89:5-6)
- ! The Chemical Manufacturers Association stated that capacity has not been available for the land disposal of radioactive wastes. (113:43)
- ! The Department of Energy stated that it supports EPA's proposal of a two-year national capacity variance for mixed wastes because there will be inadequate capacity to manage these wastes. (31:35)
- ! Molten Metal Technologies stated that currently there is a shortage of available capacity for mixed radioactive wastes and, therefore, it does not question the need for, or oppose granting of, mixed waste capacity variances. However, the commenter strongly urged EPA to condition such variances upon a commitment to deploy and use technology which can address both the RCRA and radiologic hazards posed by mixed wastes and realistically can be sited and permitted. (49:2-4)
- ! Westinghouse stated that there is lack of treatment and disposal capacity for mixed wastes. (56:5-6)

## Response

The Agency thanks the commenters for their support for the granting of a two-year national capacity variance for mixed radioactive wastes.

## Comments

- ! New York Department of Environmental Conservation (13:2)
- ! Utilities Solid Waste Activities Group (35:15)
- ! Association of State and Territorial Solid Waste Management Officers (89:5-6)
- ! Chemical Manufacturers Association (113:43)
- ! Department of Energy (31:35)
- ! Molten Metal (49:2-4)
- ! Westinghouse (56:5-6)

Commenter: New York Department of Environmental Conservation  
Comment Number: 13  
Page Number: 2

### III. Previously Treated Mixed Toxic Characteristic Metal Wastes (CMW)

DEC agrees with the proposed handling of previously treated mixed wastes, contaminated with characteristic metals. Mixed wastes that have met the applicable standard at the time they were treated should be considered in compliance even if the standards were to change before actual disposal takes place. Disposal capacity inadequacy for Mixed wastes has been and continues to be a major problem for LDR. compliance. The retreatment of previously stabilized mixed wastes to address new standards for CMW will benefit no one while increasing the dangers of handling these wastes.

Commenter: Utilities Solid Waste Activities Group  
Comment Number: 35  
Page Number: 15

**IV. USWAG SUPPORTS THE PROPOSALS FOR THE MIXED WASTE LAND DISPOSAL AND CAPACITY VARIANCES.**

USWAG agrees with EPA's proposal to allow TC-metal mixed wastes to be land disposed if they were stabilized to meet existing LDR standards prior to the effective date of the Phase IV rule, but will not actually be land disposed until after the Phase IV rule is finalized. Id. at 43683. As EPA has reasoned, subjecting such wastes to retreatment under the UTS standards would unnecessarily expose workers to significant health risks while affording little additional protection to human health and the environment.

In addition, USWAG supports the proposed two year capacity variance for the disposal of TC-metal mixed wastes due to the current lack of disposal capacity for this wastestream. Id. at 43686. USWAG agrees with EPA that the dearth of mixed waste disposal capacity necessitates such a variance from the LDR treatment requirements, and requests that the Agency express its willingness to grant additional variances in the event that disposal options remain limited in the future.

Commenter: Association of State and Territorial Solid Waste Management Officers  
Comment Number: 89  
Page Number: 5-6

11. The proposed handling of previously treated mixed wastes contaminated with characteristic metal is suitable. Mixed wastes that have met the applicable standard at the time they were treated should be considered in compliance even if the standards were to change before actual disposal takes place. This is consistent with the Storage Prohibition [40 CFR 268.50(e)], where wastes that have met the applicable treatment standards are excluded from the storage prohibition. Disposal capacity inadequacy for mixed wastes continues to be a major problem for LDR compliance. The retreatment of previously stabilized mixed wastes to address new standards for characteristic metal waste will benefit no one while increasing the dangers of handling these wastes.



Commenter: Chemical Manufacturers Association  
Comment Number: 113  
Page Number: 43

**C. The treatment standards for previously stabilized mixed radioactive and characteristic metal wastes should not be changed.**

As the Agency points out, to require more stringent treatment standards for radioactive wastes that have been previously stabilized could increase threat to human health and the environment. Knowing this and taking into consideration that the only reason these wastes have not already been land disposed is that capacity has not been available makes it quite reasonable and, in fact necessary, for the Agency to accept those LDR standards which existed at the time of stabilization for these mixed wastes that have been stabilized “pre Phase IV” standards.

Commenter: Department of Energy  
Comment Number: 31  
Page Number: 35

VIIIB.5 Mixed Radioactive Wastes

1. **p. 43686, col.1 -- EPA states that any new commercial capacity that becomes available will be needed for mixed radioactive wastes that were regulated in previous LDR rulemakings and whose variances have already expired. Therefore, EPA is proposing to grant a two-year national capacity variance for mixed RCRA/radioactive wastewaters and nonwastewaters contaminated with wastes whose standards are being addressed in the LDR Phase IV proposed rule.**

a. DOE agrees with EPA's assessment that, regardless of the volume of mixed radioactive wastes that will require treatment for the first time as a result of the LDR Phase IV rule, there will be inadequate capacity to manage such additional mixed waste streams. Therefore, the Department supports EPA's proposal of a two-year national capacity variance for such mixed wastes.

Commenter: Molten Metal  
Comment Number: 49  
Page Number: 2

**2. THE AGENCY SHOULD REQUIRE THE USE OF TECHNOLOGIES OR TECHNIQUES THAT EFFECTIVELY ADDRESS AND MINIMIZE ALL THE HAZARDS POSED BY MIXED WASTES, INCLUDING RADIOACTIVE HAZARDS.**

Mixed waste, like most hazardous waste, is subject to the LDR regulations. The LDR regulations require that hazardous waste be treated to specified standards prior to land disposal. If there is insufficient treatment capacity to treat a particular waste, EPA may grant a "capacity variance" for up to three years. With few exceptions, EPA has not established specific treatment standards for mixed wastes, but rather has specified that the LDR treatment standard for a given hazardous waste applies to the hazardous component of a mixed waste.

Over the years, EPA has regularly issued capacity variances for mixed wastes. In 1990, EPA granted a two year national capacity variance for radioactive waste mixed with most hazardous waste. This variance was subsequently extended for one year but has now expired. Another capacity variance was granted in August 1994, as part of the LDR "Phase II" rulemaking. At that

Commenter: Molten Metal  
Comment Number: 49  
Page Number: 3

time, EPA noted that "DOE is in the process of increasing its capacity to manage mixed RCRA/radioactive wastes" but that a "significant capacity shortfall currently exists." Continuing the pattern, EPA proposed another capacity variance in the Phase III rulemaking (see 60 Fed. Reg. 11702, 11734 (March 2, 1995)), and is now proposing to grant a two-year national capacity variance to radioactive waste mixed with hazardous wastes affected by the Phase IV rulemaking. See 60 Fed. Reg. at 43686.

The traditional technologies that can comply with the LDR standards (e.g., incineration and combustion) are considered to be mature, demonstrated technologies that have been "available" for treatment of hazardous wastes for many years. Nevertheless, as a practical matter, these treatment technologies have not been successfully applied on a large scale to mixed waste. As a result of the lack of suitable treatment capacity, most mixed waste is currently in storage facilities awaiting treatment, which is not permissible under RCRA. This mixed waste storage dilemma was one of the significant drivers leading to enactment of the Federal Facility Compliance Act, which obligates the Department of Energy to develop mixed waste treatment plans and develop mixed waste treatment capacity.

MMT does not understand why EPA apparently continues to believe that traditional treatment technologies such as incineration and combustion are appropriate or realistically will ever be available for mixed waste. There are significant technical, political, and regulatory difficulties associated with these technologies. From a technical standpoint, they do not address or minimize radiological hazards. In fact, they typically disperse radioactive constituents into the air, and create a radioactive ash that requires further treatment prior to disposal as a mixed waste. Also, combustion technologies are meeting with increasing public opposition and EPA, state and local regulatory agencies are implementing programs and policies designed to encourage the use of alternatives to combustion for treatment of hazardous waste (see, e.g., EPA's "Hazardous Waste Combustion Strategy"). When attempts are made to apply combustion technologies to mixed waste, these political and regulatory difficulties are likely to intensify, and MMT does not believe that these technologies can be relied upon to provide any significant treatment capacity for mixed waste.

There is no reasonable basis for assuming that traditional combustion technologies will in the foreseeable future provide adequate or appropriate treatment capacity for mixed waste. Thus, the continuing practice of granting capacity variances amounts to little more than a holding action which will not allow time for mixed waste combustion capacity to develop, but rather just delays the time when it will become obvious that these wastes must be treated using new, innovative technologies that specifically address and minimize all the hazards presented by mixed waste, including radioactive hazards. MMT therefore urges EPA to reconsider its practice of assuming that

Commenter: Molten Metal  
Comment Number: 49  
Page Number: 4

LDR requirements for mixed waste can be achieved by using traditional hazardous waste treatment technologies to treat the hazardous portion of mixed waste, and instead identify and designate as BDAT those technologies which address and effectively minimize all the hazards presented by mixed waste, including radioactive hazards.

MMT recognizes that the needs of DOE and others who currently store mixed waste because of the current shortage of available capacity must be responsibly addressed in accordance with current laws and regulations. Thus, at this time MMT does not question the need for, or oppose the granting of, mixed waste capacity variances. However, MMT strongly urges EPA to condition such variances upon a commitment to deploy and use technology which can address both the RCRA and radiologic hazards posed by mixed waste and realistically can be sited and permitted.

Commenter: Westinghouse  
Comment Number: 56  
Page Number: 5-6

#### **Issue 4: Treatment Standard for Previously Stabilized Mixed Radioactive and Characteristic Metal Wastes**

Reference: Preamble at Section V.D.3., page 43683

Westinghouse supports the EPA proposal to exempt characteristic metal mixed waste from the Phase IV LDR treatment standards if the mixed waste was stabilized prior to the effective date of the Phase IV LDR final rulemaking and if the stabilized waste complies with the LDR treatment standards that were effect when the waste was stabilized.

However, this proposal should be expanded to include all previously stabilized characteristic and listed mixed wastes that met the standards in effect at the time of treatment but, due to regulatory changes, may no longer meet the standards. The same rationale used to justify the West Valley example provided in the preamble would apply to other characteristic and listed mixed wastes that have been previously stabilized; opening drums, grinding already treated masses of mixed waste to treat them again.(as in text) could expose workers to unnecessary and unacceptable levels of dust containing metals, organics and radioactivity without a commensurate environmental benefit.

An example would be ash that has been stabilized from an incinerator that burns listed/ characteristic mixed waste. At the Savannah River Site (SRS), which is managed by Westinghouse on behalf of the Department of Energy (DOE), the Consolidated Incineration Facility (CIF) generates ash and blowdown residues. The stabilization unit (called the ashcrete unit) treats the ash and blowdown to meet the LDR treatment standards, producing an average of about 100 drums of stabilized waste monthly. This mixed waste is being stored in RCRA storage facilities until RCRA Subtitle C disposal vaults can be built. It is possible that waste generated prior to Phase IV promulgation may not meet the Phase IV requirements; (or future unknown requirements) thus possibly prohibiting disposal of the stabilized waste without further treatment. Additionally, with the evolution of the land disposal restrictions program, it is possible to have standards change numerous times prior to final disposal. Treatment and disposal capacity for mixed waste is already lacking, and constantly changing standards will only makes matters worse. We support expansion of the concept that wastes treated to meet current standards will not have to be further treated if standards change prior to disposal.

### 3.3 Other Issues

#### 3.3.1 EPA Underestimated the Effects of the Proposed Phase IV LDR Rule on TC Metal Wastes

Two commenters [Steel Manufacturers Association (83); Specialty Steel Industry of North America (84)] stated that in EPA's capacity analysis supporting the original Phase IV proposed rule underestimated the effects of the rule on TC metal wastes by assuming that these wastes will not require additional treatment in order to meet the proposed treatment standards.

- ! Steel Manufacturers Association and Specialty Steel Industry of North America stated that EPA failed to address the additional capacity requirements necessary to handle the TC metal wastes that must be treated to meet more stringent treatment standards under the Phase IV LDRs. The commenters noted that, in the capacity analysis for the original Phase IV proposed rule, the Agency asserted that it "does not expect that TC metal wastes that are currently subject to the LDR treatment standards promulgated in the Third Third rule will require any additional treatment in order to meet the proposed treatment standards." However, the Third Third final rule established treatment standards for TC metal wastes at levels much higher than those proposed for the Phase IV LDR. Thus, additional treatment will be required in order to meet what the Agency clearly described as *more stringent* standards. (83:9; 84:9)

#### Response

In the capacity analysis for the original Phase IV proposed rule (60 FR 43654, August 22, 1995), EPA presented an analysis of the only data that had been submitted to the Agency in response to an Advance Notice of Proposed Rulemaking (ANPR) on LDRs for newly identified TC metal wastes (56 FR 55160, October 24, 1991). Only one commenter had provided data on TC metal wastes that would not fail the EP. Subsequent to that analysis, the Agency has collected additional data. In its capacity analysis for today's rulemaking, the Agency has determined that technologies used to treat TC metal wastes to the point of removing the hazardous characteristic can also be used to meet the UTS standards for most wastes. To meet UTS standards, the treatment system would only require minor modifications and/or optimization. EPA's analysis shows that most TC metal wastes are already meeting treatment standards or will meet treatment standards once the treatment formulations and systems are optimized. Therefore, EPA believes that there is adequate capacity to treat TC metal wastes affected by today's rulemaking and determined that no capacity variance is required for these wastes. (See the BDAT and Capacity Analysis Background Documents for additional details.)

#### Comments

- ! Steel Manufacturers Association (83:9)
- ! Specialty Steel Industry of North America (84:9)

Commenter: Steel Manufacturers Association  
Comment Number: 83  
Page Number: 9

B. The Agency Misunderstands and Underestimates the Effects of the Proposed LDR Phase IV Rule on TC Metal Wastes

The Agency's *Capacity Analysis* demonstrates a dramatic misunderstanding of the anticipated effect of the proposed LDR Phase IV rule on TC metal wastes. For example, the Agency fails to address the additional capacity requirements necessary to handle the TC metal wastes that must be treated to meet more stringent treatment standards under LDR Phase IV. Instead, the Agency asserts that it "does not expect that TC metal wastes that are currently subject to the LDR treatment standards promulgated in the Third-Third rule will require any additional treatment in order to meet the proposed treatment standards." *Id.* This analysis is seriously flawed. The Third-Third final rule established treatment standards for TC metal wastes at levels much higher than those being proposed in LDR Phase IV. It is absurd to think additional treatment would not be required in order to meet what the Agency has clearly described as *more stringent* standards. Ample data are presented in the rulemaking record to provide evidence of the need for many wastes to undergo additional treatment in order to meet the proposed treatment standards. *See, e.g., Proposed BDAT Background Document for TC Metal Wastes D004-D011* (July 26, 1995) at A-13 to A-27.



Commenter: Specialty Steel Industry of North America  
Comment Number: 84  
Page Number: 9

B. The Agency Misunderstands and Underestimates the Effects of the Proposed LDR Phase IV Rule on TC Metal Wastes

The Agency's *Capacity Analysis* demonstrates a dramatic misunderstanding of the anticipated effect of the proposed LDR Phase IV rule on TC metal wastes. For example, the Agency fails to address the additional capacity requirements necessary to handle the TC metal wastes that must be treated to meet more stringent treatment standards under LDR Phase IV. Instead, the Agency asserts that it "does not expect that TC metal wastes that are currently subject to the LDR treatment standards promulgated in the Third-Third rule will require any additional treatment in order to meet the proposed treatment standards." *Id.* This analysis is seriously flawed. The Third-Third final rule established treatment standards for TC metal wastes at levels much higher than those being proposed in LDR Phase IV. It is absurd to think additional treatment would not be required in order to meet what the Agency has clearly described as *more stringent* standards. Ample data are presented in the rulemaking record to provide evidence of the need for many wastes to undergo additional treatment in order to meet the proposed treatment standards. *See, e.g., Proposed BDAT Background Document for TC Metal Wastes D004-D011* (July 26, 1995) at A-13 to A-27.

### 3.3.2 The Proposed UTS Level for Antimony Will Significantly Reduce Useful Life of On-Site Hazardous Waste Landfills

One commenter [Eastman Chemical Company (2SR 81)] stated that compliance with the proposed UTS level for antimony will significantly reduce the life of its on-site hazardous waste landfills and require the construction of new landfill capacity much sooner than if the current UTS standard is maintained.

- ! Eastman Chemical Company stated that it would have to stabilize the ash from its hazardous waste incinerators at its Tennessee and Texas facilities to comply with the proposed antimony UTS. The result of stabilization simply to comply with the proposed antimony standard will significantly reduce the life of Eastman's on-site hazardous waste landfills and require the construction of new landfill capacity much sooner than if the current UTS standard is maintained. At a time when the Agency and industry are working so hard to minimize the amount of waste that is generated, especially hazardous waste, the Agency should not inadvertently increase hazardous waste generation by promulgating a UTS level that provides no off-setting environmental benefits. (2SR 81:3)

#### Response

As discussed in Section 2.1.1, the treatment standards were determined based on treatment performance data from wastes that EPA believes is representative of metal-bearing hazardous wastes. The Agency also believes that the treatment standards should be based on the most difficult-to-treat wastes. To demonstrate the treatability of TC metal wastes to the UTS using existing stabilization and HTMR technologies, the Agency analyzed additional stabilization and HTMR treatment performance data that better represent the diversity of metal wastes. The Agency has determined that the antimony treatment standard (0.07 mg/l) proposed in the second supplemental Phase IV proposal (62 FR 26041, May 12, 1997) does not represent BDAT for the most difficult-to-treat waste. Therefore, the Agency has re-calculated the BDAT treatment standard for antimony at 1.15 mg/l. (See the BDAT Background Document for additional details.)

Regarding landfill capacity, the Agency does not expect a substantial increase in required capacity in terms of volume and therefore believes that sufficient landfill capacity exists for TC metal wastes. (See EPA's Capacity Assurance Plan (CAP) Report for additional information on landfill capacity.)

The Agency notes that if a situation exists in which the waste is unique in that it possesses properties making it difficult to treat, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44. For newly identified wastes (i.e., wastes that do not fail the EP test, and, consequently, are not part of the Third Third LDR Rule), the affected party may also request a capacity variance extension per 40 CFR 268.5 on a case-by-case basis. Wastes regulated in the Third Third LDR Rule (i.e., wastes that fail the EP test) are not eligible for capacity variances because the extension provided in that rulemaking has already expired.

#### Comments

- ! Eastman Chemical Company (2SR 81:3)

Commenter: Eastman Chemical Company  
Comment Number: 2SR 81  
Page Number: 3

As is discussed in the previous comment, Eastman would likely have to stabilize the ash from its hazardous waste incinerators at its Tennessee and Texas facilities in order to comply with the proposed antimony UTS. Because the sole purpose for stabilization would be compliance with the antimony standard and because flyash is readily available at both Eastman facilities, flyash/cement-based stabilization would likely be the process utilized. Data indicate that cement-based stabilization is effective for heavy metals (i.e., arsenic, lead, zinc, copper, cadmium, and nickel). However, in addition to the costs and permitting burdens discussed above, this action would likely increase the volume of ash that has to be managed as a hazardous waste by 10% to 20% due to the addition of stabilizing agents (FN: 1). The result of stabilization simply to comply with the proposed antimony standard will significantly reduce the life of Eastman's on-site hazardous waste landfills and require the construction of new landfill capacity much sooner than if the current UTS standard is maintained. Not only is this costly for Eastman, but it results in valuable commercial land space being consumed by a landfill. At a time when the Agency and industry are working so hard to minimize the amount of waste that is generated, especially hazardous waste, the Agency should not inadvertently increase hazardous waste generation by promulgating a UTS level that provides no off-setting environmental benefit.

## CHAPTER 4 MINERAL PROCESSING WASTES

Over 19 commenters addressed a range of issues related to available or required commercial treatment capacity for the newly identified mineral processing wastes. Specifically, commenters addressed the appropriateness of a national capacity variance from Phase IV LDRs for mineral processing wastes, characteristic arsenic and high mercury containing waste, soil contaminated with newly identified mineral processing wastes, manufactured gas plant (MGP) remediation wastes, and other newly identified mineral processing wastes.

### 4.1 Estimates of Required Capacity

#### 4.1.1 Companies Cannot Predict Whether On-Site or Off-Site Capacity Will Be Needed

One commenter [National Mining Association (NODA1 5)] stated that mineral processing facilities cannot predict whether on-site or off-site treatment capacity will be needed to comply with the proposed treatment standards.

- ! The National Mining Association (NMA) stated that the regulatory status of mineral processing wastes is uncertain, and therefore many companies are unable to identify and quantify their wastes in response to EPA's requests. Consequently, mineral processing facilities cannot predict whether, or to what extent, on-site or off-site treatment capacity will be needed to ensure compliance with the yet-to-be promulgated LDR treatment standards. (NODA1 5:1-2,2)

#### Response

The Agency has clarified the regulatory status of mineral processing wastes in the second supplemental proposed rule (62 FR 26041, May 12, 1997). Furthermore, the Agency has estimated the amount of wastes that would be affected by the Phase IV rule under the various possible regulatory options and compliance scenarios. (Refer to Chapter 4 of the Capacity Analysis Background Document for a discussion of the options and the waste volumes affected by this rule.) EPA had based its required capacity analysis on the worst case scenario to account for the differences in the options, and does not expect any significant variations in the overall required capacity. However, the Agency notes that if a particular waste, generated either currently or in the future, is unique and that adequate treatment capacity is not available, the affected party may petition the Agency for a case-by-case capacity variance as per 40 CFR 268.5. A treatability case-by-case variance is also available as per 40 CFR 268.44.

#### Comments

- ! National Mining Association (NODA1 5:1-2,2)

Commenter: National Mining Association  
Comment Number: NODA1 5  
Page Number: 1-2

In the Notice of Data Availability, EPA requests that the mineral processing industry supply "information on quantities of characteristic mineral processing wastes" in order to support a potential national capacity variance for such wastes. 61 Fed. Reg. at 21,422. As discussed in NMA's April 24, 1996 comments in response to the January 25 Supplemental Phase IV Proposal, however, EPA must recognize that its decision to "put in play" virtually all aspects of the RCRA Subtitle C hazardous waste program as it relates to the regulatory status of non-Bevill mineral processing wastes has made the provision of the requested information impossible for many, if not most, industry sectors and many mineral processing companies.

Commenter: National Mining Association  
Comment Number: NODA1 5  
Page Number: 2

The definition of solid waste, which is the key jurisdictional underpinning of RCRA Subtitle C, has been proposed by EPA for revision as it applies to mineral processing wastes. The proposed changes could result in the regulation of previously unregulated materials (i.e., characteristic sludges and byproducts) that otherwise would not be subject to Subtitle C regulation, including the LDR program. Moreover, two key determinants of whether a mineral processing waste is subject to regulation as a hazardous waste (including the LDR program) -- the toxicity characteristic and the Bevill mixture rule -- also are open for comment in this rulemaking. To compound further the regulatory uncertainty surrounding the status of mineral processing residues under the LDR program, EPA's proposed rule threatens to alter the- previously established boundary between beneficiation wastes (all of which are covered by the Bevill Amendment) and processing wastes (only 20 of which are covered by the Bevill Amendment).

Under these circumstances, mineral processing facilities cannot predict whether, and to what extent, on-site (or off-site) treatment capacity will be needed to ensure compliance with the yet-to-be promulgated LDR treatment standards (much less determine whether off-site capacity, even if available, will be feasible to utilize). The identity, nature, and volumes of mineral processing wastes subject to the Phase IV rule simply cannot be determined until EPA renders its final decisions concerning the jurisdictional, hazardous waste identification, and other issues opened for comment in its January 25 proposal.

#### 4.1.2 Calcining Wastes from Elemental Phosphorus Production Should Be Subject to RCRA

One commenter [Shoshone-Bannock Tribe Land Use Department (2SR 107)] stated that the calcining wastes associated with the FMC elemental phosphorus industry should be subject to RCRA regulations.

- ! Shoshone-Bannock Tribe Land Use Department stated that FMC's Pocatello facility generated about 22,000 tons per year of precipitator dust that contains high levels of selenium, vanadium, and zinc, and these metals should be removed prior to final land placement. Also stated that the calcining wastes associated with the FMC elemental phosphorus industry are medium volume/high toxicity wastes and exceed TCLP values for several metals including cadmium, selenium, and arsenic and should be subject to RCRA regulations. (2SR 107:1,2)

#### Response

The Agency notes that the precipitator dust generated by FMC's Pocatello facility is considered hazardous waste and is subject to RCRA LDR regulations. However, FMC has requested a capacity variance due to the unique characteristics of this waste (e.g., naturally occurring radioactive material) and the lack of adequate treatment capacity. After careful review of FMC's petition, the Agency has determined that the precipitator dust, along with the other four waste streams (Medusa scrubber blowdown, furnace building washdown, NOSAP slurry, and phossy water) generated at the Pocatello facility, would require a national capacity variance and, therefore, is granting today a two-year national capacity variance for these wastes. See the Capacity Analysis Background Document for additional details.

#### Comments

- ! Shoshone-Bannock Tribe Land Use Department (2SR 107:1,2)

Commenter: Shoshone-Bannock Tribe Land Use Department  
Comment Number: 2SR 107  
Page Number: 1

The FMC Pocatello, Idaho elemental phosphorus production facility (FMC) currently generates approximately 22,000 tons per year of precipitator dust that contains significant quantities of these and other metals. We believe this dust is hazardous, as defined by RCRA, due to its high level of metals and its reactivity and ignitability. Under the proposed rule, the precipitator dust would be treated to remove the hazardous characteristics of the waste but would not be treated to remove selenium, vanadium, or zinc. Although precipitator dust is not a listed waste, we believe the high level of metals, including vanadium and zinc, pose a threat to human health and the environment and should be removed prior to final placement.



Commenter: Shoshone-Bannock Tribe Land Use Department  
Comment Number: 2SR 107  
Page Number: 2

Finally, it is our understanding that the Beville exclusion was originally designed to address high volume/low toxicity wastes. Based on our review of available information, we have determined that calcining wastes associated with the FMC elemental phosphorus industry are medium volume/high toxicity wastes and exceed TCLP values for several metals including cadmium, selenium, and arsenic.

#### 4.1.3 Additional Data Exists on Mixed Radioactive Wastes

One commenter [Coalition on West Valley Nuclear Wastes (10)] provided data on the amount of mixed radioactive wastes affected by the proposed rule.

- ! The Coalition on West Valley Nuclear Wastes (CWVNW) provided data on Phase IV mixed radioactive wastes at one DOE site. According CWVNW, the West Valley Demonstration Project has 21,000 drums of cemented mixed waste, which met treatment standards prior to Phase IV but would not meet the proposed standards. (10:1)

#### Response

EPA thanks the commenter for providing the data and also notes that previously stabilized wastes need not be re-treated to meet the Phase IV treatment standards.

#### Comments

- ! Coalition on West Valley Nuclear Wastes (10:1)

Commenter: Coalition on West Valley Nuclear Wastes  
Comment Number. 10  
Page Number: 1

We oppose the proposed exemption of West Valley Demonstration Project wastes from the proposed Land Disposal Restrictions for burial of mixed waste.

At West Valley 21,000 drums have already been filled with cemented mixed waste but not yet disposed of. These drums do not meet the proposed new restrictions. Since retreatment of those wastes to meet the new standard (opening the drums and grinding -the cement), would pose a significant risk, EPA proposes that they be exempted from the new restrictions.

We agree that retreatment is not a reasonable option. But to us the burial of waste which does not meet the new standards is not reasonable either. Therefore it should not be exempted from the restrictions. If these restrictions are necessary to protect the environment from contamination then they should be met unconditionally.

## 4.2 Capacity Variance Issues

### 4.2.1 Process Wastes

#### 4.2.1a Elemental Phosphorus Waste Streams Should Receive a National Capacity Variance

One commenter [FMC Corporation (SR 70; NODA1 17; 2SR 88)] urged EPA to grant a two-year national capacity variance for several elemental phosphorus waste streams generated at their plant located in Pocatello, Idaho.

- ! FMC urged the Agency to grant a two-year national capacity variance for the company's elemental phosphorus mineral processing wastes. FMC states that the proposed Phase IV Supplemental rule will greatly impact FMC's elemental phosphorus plant located in Pocatello, Idaho (FMC Pocatello) in that no available treatment capacity exists, either at the Pocatello plant itself or elsewhere in the United States, for mineral processing waste streams that contain elemental phosphorus. FMC believes that the variance time period will enable its Pocatello facility to develop and install potential onsite pollution prevention and treatment technologies. Additionally, FMC has conducted a capacity evaluation that demonstrates the lack of treatment capacity. (SR 70:1)
- ! FMC identified three additional waste streams generated in the elemental phosphorus production at its Pocatello facility: (1) Precipitator Slurry (43 million gallons per year); (2) NOSAP Slurry (22 million gallons per year); and (3) Phossey Water (89 million gallons per year). The newly identified streams contain varying amounts of both naturally occurring radioactive materials and elemental phosphorus and they could exhibit the TC in the event of process upsets due to the presence of heavy metals. Also stated that the maximum volume of Precipitator Slurry and NOSAP Slurry that would be produced in a year would be 43 million gallons. This results in the total volume of the three new waste streams at 132 million gallons per year. FMC and its consultant, The Technical Group, Inc., conducted an exhaustive survey of treatment and disposal facilities to determine whether they had the current or anticipated capability to handle the Pocatello streams. A total of 168 facilities were contacted. None could accept the Pocatello materials. The lack of available treatment or disposal capacity for these materials is the primary basis upon which FMC has requested a national capacity variance. (NODA1 17:1; 2SR 88:2-3,3,5-6,6,8)
- ! FMC, in response to the November 10, 1997 NODA (62 FR 60465), stated that it has eliminated the generation of one of the three waste streams included in their original petition for a national capacity variance (NCV), the AFM Rinsate waste stream. The elimination of this stream means that it would not be necessary for EPA to extend its proposed NCV to include the AFM Rinsate. However, FMC has identified three additional waste streams that are nearly identical to the three waste streams for which EPA has proposed the NCV and that pose the same handling and safety concerns. Therefore, because no capacity exists for the original wastes or the additional wastes, FMC maintains its request that EPA modify its two-year NCV proposal for the three FMC Pocatello wastes to include these additional waste streams. Thus, EPA's proposed NCV should apply to the additional three waste streams and the two remaining original waste streams for which the NCV was originally sought. (NODA2 1:2,5)

## Response

The Agency, in response to the first supplemental proposal, reviewed the first three waste streams—Medusa scrubber blowdown, Anderson filter media (AFM) rinsate, and furnace building washdown—for which FMC requested a national capacity variance. EPA subsequently proposed to grant a two-year capacity variance for these waste streams. In response to the second supplemental proposal, FMC requested a national capacity variance for three additional waste streams—NOSAP slurry, precipitator slurry, and phosphy water—and stated that it has eliminated the generation of the AFM rinsate waste stream. After careful review of FMC's petition, the Agency has determined that the five waste streams being generated at the Pocatello facility would require a national capacity variance and, therefore, is granting today a two-year national capacity variance for these wastes. See the Capacity Analysis Background Document for additional details.

## Comments

- ! FMC Corporation (SR 70:1)
- ! FMC Corporation (NODA1 17:1)
- ! FMC Corporation (2SR 88:2-3,3,5-6,6,8)
- ! FMC Corporation (NODA2 1:2,5)

Commenter: FMC Corporation  
Comment Number: SR 70  
Page Number: 1

FMC urges the Agency to grant a two-year National Capacity Variance for the company's elemental phosphorus mineral processing wastes. The proposed Phase IV Supplemental rule<sup>1</sup> will greatly impact FMC's elemental phosphorus plant, EPA ID D070929518, located in Pocatello, Idaho (FMC Pocatello) in that no available treatment capacity exists, either at the Pocatello plant itself or elsewhere in the United States, for mineral processing waste streams that contain elemental phosphorus. The variance time period will enable FMC Pocatello to develop and install potential onsite pollution prevention and treatment technologies. As described in greater detail below, FMC has conducted a thorough capacity evaluation that demonstrates the lack of treatment capacity. FMC thus believes that there are compelling reasons for granting a two-year NCV for the elemental phosphorus mineral processing waste streams generated at the Pocatello facility.

Commenter: FMC Corporation  
Comment Number: NODA1 17  
Page Number: 1

The first needed clarification relates to the summary presented in Section 4.b. regarding a meeting between FMC and EPA that took place on January 23, 1996. At that meeting, FMC described the factors that supported a two-year national capacity variance with respect to the process water streams generated at the FMC elemental phosphorus plant in Pocatello, Idaho. Depending on the scope of the final Phase IV rule, the Phase IV LDR requirements might apply to these streams. The summary presented in Section 4.b. creates the implication that the primary factors supporting the proposed variance are the logistics and costs of transporting the FMC Pocatello streams to an off-site treatment or disposal facility. While these factors are important, the determining factor is the lack of available treatment or disposal capacity for these materials. FMC and its consultant, The Technical Group, Inc., conducted an exhaustive survey of treatment and disposal facilities to determine whether they had the current or anticipated capability to handle the Pocatello streams. A total of 168 facilities were contacted. None could accept the Pocatello materials. This was and is the primary basis upon which FMC has requested a national capacity variance.

Commenter: FMC Corporation  
Comment Number: 2SR 88  
Page Number: 2-3

Since it filed the NCV petition with EPA, FMC Pocatello has eliminated the generation of one of the three waste streams to which the NCV proposal applies, the AFM Rinsate waste stream. FMC has thus successfully and entirely eliminated through its pollution prevention efforts one category of waste for which it previously sought an NCV. FMC Pocatello has determined, however, to seek an NCV for three additional waste streams generated in the elemental phosphorous production process that EPA currently claims and FMC disputes are hazardous wastes. If managed as hazardous waste, these streams would be subject to the Phase IV LDR requirements once they are made final. Based on the capacity evaluation results and responses by treatment, storage, and disposal (TSD) facilities in the survey supporting that evaluation, there is inadequate treatment capacity to handle these additional waste streams in the United States.

The starting point for this capacity determination is the understanding that the composition of these three additional waste streams -- the Non-Hazardous Slurry Assurance Process (NOSAP) Slurry, Precipitator Slurry, and Phossey Water -- is identical to the three waste streams for which EPA has proposed an NCV in all respects that are relevant to national capacity determinations. As with the three waste streams for which EPA has proposed a two-year NCV, the newly identified streams contain varying amounts of both naturally occurring radioactive materials (NORM) and elemental phosphorous. Like the three waste streams addressed in the original petition, it is possible that NOSAP Slurry, Precipitator Slurry, and Phossey Water could exhibit the Toxicity Characteristic (TC) [FN 6: 40 C.F.R. § 261.24.] in the event of process upsets due to the presence of heavy metals. In addition, they all contain a variety of other metals, albeit below TC concentrations. Unlike the three waste streams addressed in the original petition, these waste streams are defined as non-wastewaters [FN 7: In 40 C.F.R. § 268.2, EPA defines a non-wastewater to be wastes that do not meet the criteria for wastewaters. Wastewaters are wastes that contain less than 1 percent by weight total organic carbon (TOC) and less than 1 percent by weight total suspended solids (TSS).] under the LDR program.



Commenter: FMC Corporation  
Comment Number: 2SR 88  
Page Number: 3

The total volume of the three hazardous waste streams addressed in the original petition exceeds 148 million gallons per year. The total volume of the three "new" hazardous waste streams exceeds 132 million gallons per year. The combined total of the six waste streams exceeds 280 million gallons per year. As noted above, FMC Pocatello has successfully and entirely eliminated through its pollution prevention efforts the AFM Rinsate waste stream. When the AFM Rinsate stream is subtracted from the overall total volumes generated, the total volume of the remaining five waste streams exceeds 279 million gallons.

Commenter: FMC Corporation  
Comment Number: 2SR 88  
Page Number: 5-6

#### Precipitator Slurry

The elemental phosphorus product exits the furnaces as a gas along with the carbon monoxide produced in the furnace reaction. The furnace off-gas also includes entrained solids and solids that have volatilized in the furnace and condensed as the off-gas cools. Electrostatic precipitators are used to remove these furnace off-gas solids prior to the water spray condensers that remove the elemental phosphorus as a liquid. At FMC, these solids collect in a vessel at the bottom of the precipitator, known as the slurry pot, where water is added with a mixer to form what is termed Precipitator Slurry. The slurry pot acts as a gas seal on the precipitators to prevent in-leakage of air. Some elemental phosphorus condenses in the slurry pot and the solids contain low volatile metals such as cadmium and zinc in elevated levels. Historically, Precipitator Slurry has been sent to ponds where the solids settle out and the water is recycled. FMC produces 43 million gallons of Precipitator Slurry each year. Though there are elevated levels of metals in the Precipitator Slurry, the solids typically do not fail a Toxicity Characteristic Leaching Procedure (TCLP) test unless there are extenuating circumstances when it has failed for cadmium (D006). Based on preliminary data, EPA has indicated that Precipitator Slurry is ignitable (D001) and reactive (D003). [FN 11: FMC is applying the D001 and D003 waste codes for the ignitable and reactive characteristics to certain waste streams based on preliminary EPA test results that EPA claims demonstrate the presence of these characteristics. These waste characteristic determinations are contrary to those FMC made previously. These determinations and other information FMC has obtained lead it to believe that EPA's results are neither representative nor valid. Nonetheless, FMC is prepared to manage these wastes as ignitable and reactive as part of an overall RCRA compliance program. That FMC will manage these streams as if these characteristics apply does not constitute any agreement on the part of FMC that the D001 or D003 waste code designations are accurate or appropriate.] The Slurry also contains NORM and elemental phosphorus and should be managed accordingly. The TSS in the Precipitator Slurry typically exceed 1 percent, and the TOC concentration present in the Precipitator Slurry does not exceed 1 percent. Therefore, the Slurry is considered an LDR non-wastewater.

Commenter: FMC Corporation  
Comment Number: 2SR 88  
Page Number: 6

#### NOSAP Slurry

In 1994 and 1995 as part of its waste minimization efforts, FMC developed and installed NOSAP which is a modification to the electrostatic precipitator and the slurry pot. Lime slurry is added to the slurry pot to control the pH of the slurry to a set point of pH 12. The lime reacts with the phosphorus to form phosphites and phosphine gas thus reducing the concentration of phosphorus to below 100 ppm. The lime also prevents the metals from becoming leachable and assures the metals will not fail the TCLP test. The resulting slurry that has gone through this process is known as NOSAP Slurry. Based on preliminary data, EPA has indicated that NOSAP Slurry is reactive (D003). If all Precipitator Slurry went through the NOSAP process, FMC would produce only 22 million gallons per year since the NOSAP Slurry has a higher solids content. The solids in NOSAP Slurry are the same as Precipitator Slurry with the exception of the effect of the lime. The NORM content is the same and there is still some residual phosphorus content. NOSAP slurry that does not meet specifications is a component of Precipitator Slurry. The TSS in the NOSAP Slurry typically exceed 1 percent, and the TOC in the NOSAP Slurry does not exceed 1 percent. Therefore, the NOSAP Slurry is a non-wastewater for LDR purposes.

The maximum volume of Precipitator Slurry and NOSAP Slurry that would be produced in a year would be 43 million gallons.

Commenter: FMC Corporation  
Comment Number: 2SR 88  
Page Number: 8

The TSS in the Phossey Water typically exceed 1 percent, and the TOC in the Phossey Water does not exceed 1 percent. Therefore, the Phossey Water is a non-wastewater for LDR purposes. FMC generates 89 million gallons total of the Phossey Water per year.

Commenter: FMC Corporation  
Comment Number: NODA2 1  
Page Number: 2

On May 12, 1997, EPA proposed a supplement to the January 25, 1996, propose rule.<sup>2</sup> EPA proposed to grant a two-year NCV for the three waste streams addressed in FMC's original petition. These "original" waste streams, for which adequate capacity does not exit are, Medusa Scrubber Blowdown, Anderson Filter Media (AFM) Rinsate, and Furnace Building Washdown.

Since it filed the NCV petition with EPA, FMC Pocatello has eliminated the generation of one of the three waste streams to which the NCV proposal applies, the AFM Rinsate waste stream. The elimination of this stream means that it would not be necessary for EPA to extend its grant of the proposed NCV to include the AFM Rinsate.

Commenter: FMC Corporation  
Comment Number: NODA2 1  
Page Number: 5

The three additional waste streams are nearly identical to the three waste streams for which EPA has proposed the NCV and pose the same handling and safety concerns and issues addressed in FMC's earlier submissions. Therefore, because no capacity exists for the original wastes or the additional wastes, FMC maintains its request that EPA modify its two-year NCV proposal for the three FMC Pocatello wastes to include these additional waste streams. Thus, EPA's proposed NCV should apply to the additional three waste streams and the two remaining original waste streams for which the NCV was originally sought.

#### 4.2.1b Elemental Phosphorus Waste Streams Should Not Receive a National Capacity Variance

Two commenters [Environmental Technology Council (NODA1 14); Environmental Defense Fund (NODA1 10)] stated that FMC Corporation's request for a capacity variance should be denied.

- ! The Environmental Technology Council stated that EPA should consider a case-by-case extension for the three large volume TC metal wastewater streams generated at FMC Corporation facilities because of the unique treatability problems that these wastewaters pose due to the presence of elemental phosphorous contamination and naturally occurring radioactive material. A national capacity variance is inappropriate because adequate capacity does exist for TC metal wastewaters. (NODA1 14:13-14)
- ! The Environmental Defense Fund (EDF) stated that FMC Corporation's request for a capacity variance should be denied. EDF stated two reasons why the variance should be denied: (1) the necessary data were not submitted to the docket preventing the public from commenting on the merits of the issue and (2) FMC has not submitted any of the requisite demonstrations for the case-by-case capacity variance it is requesting. (NODA1 10:5)

#### Response

As discussed in the previous section, the Agency determined that adequate treatment capacity does not exist for the three original waste streams identified by FMC in its request for a national capacity variance nor for the additional three waste streams identified by FMC in their response to the second supplemental proposed rule. The Agency notes that the data submitted by FMC was placed in the docket and was available to the public for comment. Furthermore, another NODA was published (62 FR 60465, November 11, 1997), thus allowing the public additional opportunity to review the necessary data and provide comment. No additional comment, other than that from FMC, was provided. The Agency also notes that FMC requested a national capacity variance and not a case-by-case variance. As discussed in the previous section of this Comment Summary and Response Document and in the Capacity Analysis Background Document, the Agency determined that adequate treatment capacity does not exist for the five waste streams generated at FMC's Pocatello facility and that a two-year capacity variance for these wastes is needed. Therefore, the Agency is granting today a two-year national capacity variance for these wastes.

#### Comments

- ! Environmental Technology Council (NODA1 14:13-14)
- ! Environmental Defense Fund (NODA1 10:5)

Commenter: Environmental Technology Council  
Comment Number: NODA1 14  
Page Number: 13-14

EPA solicits comment on whether a national capacity variance should be granted for three large volume TC metal wastewater streams that are generated at FMC Corporation facilities. Because these wastewaters pose unique treatability problems due to the presence of elemental phosphorous contamination and naturally occurring radioactive material, EPA should consider a case-by-case extension under 40 CFR 268.5. A national capacity variance is not appropriate because adequate capacity does exist for TC metal wastewaters. FMC Corporation's wastewaters have unique treatability problems that make a case-by-case extension the appropriate regulatory mechanism.



Commenter: Environmental Defense Fund  
Comment Number: NODA1 10  
Page Number: 5

According to the NODA, FMC purportedly seeks a two year national capacity variance for three wastes. However, the only information in the docket addressing this matter when the NODA was published is a one page summary of a meeting held on January 23, 1996, almost four months before the NODA was published, and an attachment of six slides containing little more than conclusory statements on the alleged need for a variance. In the NODA, EPA essentially concedes the existing documentation is insufficient, but then suggests if FMC submitted additional information during this comment period, the deficiency would be cured because EPA would make the information available to the public. See 61 FR 21422.

First, FMC had almost four months to submit the necessary data. Having failed to do so, the public is prevented from commenting on the merits of the issue. EPA cannot and should not reward FMC's recalcitrance by considering the issue ripe for consideration at this time. The public is not required nor can it be expected to check the docket daily for FMC submissions and file comments accordingly. Moreover, since the information was not available when the NODA was published, the time period provided for public comment would be inadequate if and when FMC submits additional information.

Second, since FMC seeks only a variance for its TC hazardous wastes (and not for all metal wastes with a similar waste code), the capacity variance request is more properly a request for a case-by-case capacity variance pursuant to Section 3004(h)(3) of RCRA. Since none of the requisite demonstrations for such a request have been made, as specified in 40 CFR 268.5, the request should be denied.

#### 4.2.1c A Capacity Variance Is Needed for Other Newly Identified Mineral Processing Wastes

Six commenters [ASARCO (SR 36); Phelps Dodge Corporation (SR 38); Phosphorus Producers Environmental Council (SR 42); Cyprus Amax Minerals Company (SR 46); National Mining Association (SR 58); Occidental Chemical Corporation (SR 81)] support the adoption of a national capacity variance for newly identified mineral processing wastes.

- ! ASARCO believes a more expansive national capacity variance for all newly identified primary mineral processing wastes is appropriate. ASARCO states that the existing methods for handling these materials may not be available if they are considered to involve hazardous waste treatment and would trigger RCRA permitting requirements. Additionally, ASARCO believes that since the universe of secondary materials affected by the Supplemental Proposed Rule is ambiguous, significant primary mining and mineral processing materials could fall within the definition of solid waste. Based on these two factors, ASARCO believes a two-year national capacity variance is appropriate for all newly identified mineral processing wastes. (SR 36:37-38)
- ! Phelps Dodge takes exception to EPA's position that a national capacity variance is not warranted. Phelps Dodge believes that EPA has erroneously based its conclusion on the assumption that the proposed rule will increase recycling of materials and thus reduce the amount of wastes subject to LDR standards. Phelps Dodge believes that it is likely that recycling activities actually will decrease due to the ambiguities inherent in the proposed rule. (SR 38:45)
- ! The Phosphorus Producers Environmental Council (PPEC) believes that EPA's determination that mineral processing waste do not require a two-year national capacity variance is erroneous. PPEC states that immediate application of RCRA land disposal restrictions for wastes which are subject to this proposed rule is clearly erroneous and will cause facility shutdowns throughout the mineral industries because neither the facilities nor the regulatory agencies can possibly react quickly enough to make necessary changes to facilities or existing permit approvals. Consequently, PPEC believes that it is completely unrealistic to expect immediate application of the LDRs under these circumstances. (SR 42:25)
- ! Cyprus Amax supports the adoption of a two-year national capacity variance for mineral processing wastes. Cyprus Amax states that even assuming that stabilization will achieve the proposed LDRs for most mineral processing non-wastewaters, EPA's assumption that the technology will be "up and running" within 90 days of promulgation of the Phase IV rule simply is unrealistic. Cyprus Amax believes that in light of the fact that existing off-site commercial treatment capacity may not practically be available for use by mineral processing facilities, EPA should allow a two-year capacity variance for newly-identified mineral processing wastes, and soil and debris contaminated with such wastes. Such time will be necessary to allow mineral processing facilities to evaluate which waste streams are subject to the LDRS, to install any necessary treatment technology, and to perfect that treatment technology to ensure LDR compliance. (SR 46:54-55)

- ! NMA believes EPA's decision not to provide a national capacity variance for most mineral processing wastes is unsupported by the record. NMA states that even assuming that stabilization will achieve the proposed LDRs for most mineral processing non-wastewaters, EPA's assumption that the technology will be "up and running" within 90 days of promulgation of the Phase IV rule simply is unrealistic. NMA believes that in light of the fact that existing off-site commercial treatment capacity may not practically be available for use by mineral processing facilities, EPA should allow a two-year capacity variance for newly-identified mineral processing wastes. Such time will be necessary to allow mineral processing facilities to evaluate which waste streams are subject to the LDRS, to install any necessary treatment technology, and to perfect that treatment technology to ensure LDR compliance. (NODA1 5:2; SR 58:178-179)
- ! Occidental Chemicals Corporation supports a minimum two-year national capacity variance because projects to replace impoundments with aboveground units can easily require four years to complete. In addition, off-site treatment capacity does not exist for large volume wastes and adequate time is required to install on-site waste treatment capacity. (116:6; SR 81:4; 2SR 109:1-2)

### Response

Based on the treatability and capacity analyses conducted by the Agency, it is clear that the newly identified mineral processing wastes can be readily treated for TC metals and the underlying hazardous constituents using commercially available treatment technologies. Furthermore, EPA's data show that adequate treatment capacity exists for such wastes or can be optimized within 90 days of promulgation of the final rule. (See the BDAT Background Document for treatment performance data and the Capacity Analysis Background Document for available treatment capacity information.) The Agency notes that the standards are not technology-based, but rather concentration-based, and thus the treaters have the flexibility of selecting an appropriate treatment technology. Therefore, EPA believes that adequate treatment capacity exists for treating the newly identified mineral processing wastes and is not granting a national capacity variance. Nevertheless, the Agency notes that if generators of newly identified wastes (i.e., wastes that do not fail the EP test, and, consequently, are not part of the Third Third LDR Rule) cannot obtain adequate treatment for specific wastes, then the generators of these wastes may apply for a capacity variance extension per 40 CFR 268.5 on a case-by-case basis. Wastes regulated in the Third Third LDR Rule (i.e., wastes that fail the EP test) are not eligible for capacity variances because the extension provided in that rulemaking has already expired. Furthermore, if treaters of TC metal wastes (i.e., newly identified wastes as well as those wastes regulated in the Third Third Rule) have difficulties in treating specific wastes, the treaters may apply for a treatability variance under 40 CFR 268.42.

### Comments

- ! ASARCO (SR 36:37-38)
- ! Phelps Dodge Corporation (SR 38:45)
- ! Phosphorus Producers Environmental Council (SR 42:25)
- ! Cyprus Amax Minerals Company (SR 46:54-55)
- ! National Mining Association (NODA1 5:2)
- ! National Mining Association (SR 58:178-179)
- ! Occidental Chemical Corporation (116:6)
- ! Occidental Chemical Corporation (SR 81:4)
- ! Occidental Chemical Corporation (2SR 109:1-2)

Commenter: ASARCO  
Comment Number: SR 36  
Page Number: 37-38

ASARCO believes a more expansive national capacity variance for all newly identified primary mineral processing wastes is appropriate. EPA estimates that "for the regulatory options described previously for the newly identified mineral processing wastes, few (if any) facilities or waste quantities will be affected by this rule." 61 Fed. Reg.2360. However, as discussed above, the existing methods for handling these materials may not be available if they are considered to involve hazardous waste treatment and would trigger RCRA permitting requirements. Additionally, since the universe of secondary materials affected by the Supplemental Proposed Rule is ambiguous, significant primary mining and mineral processing materials could fall within the definition of solid waste. Based on these two factors, ASARCO believes a two-year national capacity variance is appropriate for all newly identified mineral processing wastes.

Commenter: Phelps Dodge Corporation  
Comment Number: SR 38  
Page Number: 45

Phelps Dodge also takes exception to EPA's position that a national capacity variance is not warranted. EPA erroneously bases this conclusion on the assumption that the Proposed Rule will increase recycling of materials and thus reduce the amount of wastes subject to LDR standards. However, it is likely that recycling activities actually will decrease due to the ambiguities inherent in the Proposed Rule, as discussed above. Under the Proposed Rule, Phelps Dodge and other facilities will be forced to make a number of important decisions regarding the status of potential "secondary materials" to determine if recycling can continue given the potentially severe costs of failing to comply with the conditional exclusions. Basing a decision to not grant a national capacity variance on the assumption that recycling will increase is short-sighted.

Commenter: Phosphorus Producers Environmental Council  
Comment Number: SR 42  
Page Number: 25

Immediate application of RCRA land disposal restrictions for wastes which are subject to this Proposed Rule is clearly erroneous and will cause facility shutdowns throughout the mineral industries because neither the facilities nor the regulatory agencies can possibly react quickly enough to make necessary changes to facilities or existing permit approvals. Congress and EPA have long recognized that mineral-processing-waste are generated in large volumes and are unique from other hazardous waste. Many facilities have been operating for decades. It is completely unrealistic to expect immediate application of the LDRs under these circumstances. Under separate cover, FMC, a member company of the PPEC, is providing comments regarding the need for a two year national capacity variance for phosphorus processing wastes from their facility.

Commenter: Cyprus Amax Mineral Company  
Comment Number: SR 46  
Page Number: 54-55

EPA has proposed to subject most newly-identified mineral processing wastes to LDR treatment standards within 90 days of promulgation of the final Phase IV rule, instead of providing a national capacity variance of up to two years as allowed under the statute. 61 Fed. Reg. 2360. See also 42 U.S.C. § 6924(h)(2). EPA asserts that a national capacity variance generally is not necessary because "few (if any) facilities or waste quantities will be affected by this rule, . . . based on data indicating that the predominant management of these [newly identified] wastes, stabilization, will be adequate for meeting the proposed treatment standards." 61 Fed. Reg. 2360.

Even assuming, however, that stabilization will achieve the proposed LDRs for most mineral processing non-wastewaters, EPA's assumption that the technology will be "up and running" within 90 days of promulgation of the Phase IV rule simply is unrealistic. EPA itself acknowledges in the proposed rule that:

for some of the wastes at issue in this proposed rule, it may not be feasible to ship wastes off-site to a commercial facility. In particular, facilities with large volumes of wastes may not readily be able to transport their wastes to treatment facilities. Alternative treatment for these wastes may need to be constructed on site.

Id.

In light of the fact that existing off-site commercial treatment capacity may not practically be available for use by mineral processing facilities, EPA should allow a two year capacity variance for newly-identified mineral processing wastes, and soil and debris contaminated with such wastes.<sup>6</sup> Such time will be necessary to allow mineral processing facilities to evaluate which waste streams are subject to the LDRs, to install any necessary treatment technology, and to perfect that treatment technology to ensure LDR compliance.

Commenter: National Mining Association  
Comment Number: NODA1 5  
Page Number: 2

For EPA now to demand that industry evaluate the Subtitle C status of all of its mineral processing materials, install any necessary treatment technology, and refine its treatment processes to meet the LDR treatment standards within 90 days of promulgation of the rule (or to provide detailed information and data demonstrating conclusively that there will be a capacity shortfall) is unrealistic and patently unfair. No other industry has been forced to make the case for a capacity variance in the face of a moving target such as that erected by the Agency in its Phase IV rule for the mineral processing industry. To ensure that mineral processing facilities are afforded adequate time (1) to determine whether, and if so, to what extent, they generate mineral processing wastes subject to LDR treatment standards as the result of the Phase IV LDR rulemaking, and (2) to conform their operations accordingly, a two year national capacity variance for all newly-identified mineral processing wastes is both fair and essential.



Commenter: National Mining Association  
Comment Number: SR 58  
Page Number: 178-179

EPA's capacity determination for newly-identified mineral processing wastes is badly flawed. First, the Agency's assertion that stabilization is the "predominant" form of management for mineral processing wastes is incorrect. Moreover, there is no evidence in the administrative record to support EPA's assertion that the LDRs for non-wastewater forms of newly-identified mineral processing wastes generally can be met using stabilization technology. As discussed elsewhere in these comments, the Agency's determination that newly-identified mineral processing non-wastewaters can be treated to the UTS using stabilization is unfounded. Because that BDAT determination forms the basis for the Agency's finding that adequate treatment capacity (i.e., stabilization) exists for newly-identified mineral processing wastes, EPA's capacity determination is similarly flawed.

Even assuming, however, that stabilization will achieve the proposed LDRs for most mineral processing non-wastewaters, EPA's assumption that the technology will be "up and running" within 90 days of promulgation of the Phase IV rule simply is unrealistic. EPA itself acknowledges in the proposed rule that:

for some of the wastes at issue in this proposed rule, it may not be feasible to ship wastes off-site to a commercial facility. In particular, facilities with large volumes of wastes may not readily be able to transport their wastes to treatment facilities. Alternative treatment for these wastes may need to be constructed on site.

61 Fed. Reg. at 2360.

In light of the fact that existing off-site commercial treatment capacity may not practically be available for use by mineral processing facilities, EPA should allow a two year capacity variance for newly-identified mineral processing wastes. Such time will be necessary to allow mineral processing facilities to evaluate which waste streams are subject to the LDRS, to install any necessary treatment technology, and to perfect that treatment technology to ensure LDR compliance.

Commenter: Occidental Chemical Corporation  
Comment Number: 116  
Page Number: 6

C. OxyChem supports the two-year National Capacity Variance, which allows for extensions of up to two additional years.

Commenter: Occidental Chemical Corporation  
Comment Number: SR 81  
Page Number: 4

Since offsite treatment capacity does not exist for these high volume wastes, adequate compliance time is needed to modify on-site facilities. To comply with the treatment standard 100% of time will require modifications to our treatment system. A compliance schedule prepared by a facility outlining work to be done and kept on-site should be sufficient to demonstrate compliance in the interim.

Commenter: Occidental Chemical Corporation  
Comment Number: 2SR 109  
Page Number: 1-2

In addition, process variability due to the nature of characteristic metal wastes which are extremely variable depending on production rates, ratios of mixtures of materials from various internal processes, amounts of water processed, etc. will require modifications to the residue stabilization system to ensure residue quality can consistently meet the new treatment standards. These modifications will include the need for additional stabilization materials, resulting in greater quantities of treated waste to be disposed.

We question whether the agency's goals of waste minimization and pollution prevention have been considered when additional required treatment will cause an increase in waste to be managed. At a minimum, a two year compliance schedule should be allowed to provide time to make the necessary modifications to the stabilization system.

#### **4.2.1d A Capacity Variance Is Not Needed for Other Newly Identified Mineral Processing Wastes**

One commenter [Laidlaw Environmental Services (SR 31)] opposes the adoption of a national capacity variance for newly identified mineral processing wastes.

- ! Laidlaw supports the Agency's proposal not to grant a national capacity variance for meeting the LDR requirements for these wastes because ample stabilization and treatment capacity exists within the waste management industry to meet the requirements of waste generators. (SR 31:3)

#### **Response**

The Agency acknowledges the commenters support and has used the submitted information in the capacity analysis.

#### **Comments**

- ! Laidlaw Environmental Services (SR 31:3)

Commenter: Laidlaw Environmental Services  
Comment Number: SR 31  
Page Number: 3

Laidlaw supports the application of the existing Universal Treatment Standards to the newly identified mineral processing wastes. In addition, Laidlaw supports the Agency's proposal not to grant a national capacity variance for meeting the LDR requirements for these wastes. Ample stabilization and treatment capacity exists within the waste management industry to meet the requirements of waste generators.

#### 4.2.1e Capacity Variances Are Needed for Characteristic Arsenic and High Mercury Mineral Processing Wastes

Two commenters [ASARCO (SR 36); NMA (SR 58)] support a variance for characteristic arsenic and/or high mercury wastes.

- ! ASARCO supports the proposed one-year variance for characteristically hazardous arsenic non-wastewaters. (SR 36:38)
- ! NMA supports a two-year rather than a one-year national capacity variance for characteristically hazardous arsenic non-wastewaters and high mercury subcategory non-wastewaters arguing that inadequate capacity exists. (SR 58:176-177)

#### Response

The Agency collected additional treatment performance data on these wastes from several commercial treatment facilities. These data indicate no treatability problems exist with high arsenic and high mercury waste, as previously thought. In contrast, the commenters did not provide any supporting data to demonstrate any treatability or capacity issues associated with arsenic and mercury wastes. Therefore, the Agency is not granting a national capacity variance for these wastes. Nevertheless, the Agency notes that if generators of newly identified wastes (i.e., wastes that do not fail the EP test, and, consequently, are not part of the Third Third LDR Rule) cannot obtain adequate treatment for specific wastes, then the generators of these wastes may apply for a capacity variance extension per 40 CFR 268.5 on a case-by-case basis. Wastes regulated in the Third Third LDR Rule (i.e., wastes that fail the EP test) are not eligible for capacity variances because the extension provided in that rulemaking has already expired. Furthermore, if treaters of TC metal wastes (i.e., newly identified wastes as well as those wastes regulated in the Third Third Rule) have difficulties in treating specific wastes, the treaters may apply for a treatability variance under 40 CFR 268.42.

#### Comments

- ! ASARCO (SR 36:38)
- ! National Mining Association (SR 58:176-177)

Commenter: ASARCO  
Comment Number: SR 36  
Page Number: 38

ASARCO supports the one-year variance for characteristically hazardous arsenic non-wastewaters and also supports the Agency's proposal to grant a two-year national capacity variance for mineral processing wastes received by Class I injection wells. In light of the on-site location of these disposal units at one of ASARCO's primary plants, the currently limited capacity of ASARCO to treat the higher volumes of wastes effectively, and the extensive amount of time required to achieve the necessary capacity, ASARCO agrees that a two-year capacity variance is essential.



Commenter: National Mining Association  
Comment Number: SR 58  
Page Number: 176-177

In the proposed rule, EPA explains that the UTS for arsenic in non-wastewaters, which it has proposed to extend to non-wastewater forms of newly-identified mineral processing wastes, is based on slag vitrification. 61 Fed. Reg. at 2359. NMA has several concerns about the proposed extension of this treatment standard to newly identified mineral processing wastes.

First, primary slags are generally beyond EPA's Subtitle C jurisdiction because of the Beville Amendment. 42 U.S.C. § 6921(b)(3)(A)(ii). Moreover, EPA's position, expressed in the rulemaking establishing the UTS, that a treatment standard based on slag vitrification is appropriate for arsenic because "most arsenic is not reclaimed from waste materials," 58 Fed. Reg. at 48,102, ignores the fact that slags from both primary and secondary smelters are frequently processed to recover additional metal values other than arsenic. Requiring such facilities to produce vitrified slags would complicate the further processing of slags by necessitating more costly grinding of the slags prior to processing. Such a result would clearly be contrary to the resource conservation and recovery goals of RCRA.

#### **4.2.1f Capacity Variances for New Wastes Should Be Made Upon Petition**

One commenter [Kennecott (2SR 54)] stated that capacity variances for newly identified wastes should be granted upon petition by the waste producer.

- ! Kennecott stated that for new wastes produced in the future as a result of process, technology, or market changes, determinations as to treatability to UTS and capacity variances should be made upon petition by the waste producer at that time. (2SR 54:63)

#### **Response**

The Agency notes that if generators of newly identified wastes (i.e., wastes that do not fail the EP test, and, consequently, are not part of the Third Third LDR Rule), generated currently or in the future, cannot obtain adequate treatment for specific wastes, then the generators of these wastes may apply for a capacity variance extension per 40 CFR 268.5 on a case-by-case basis. Wastes regulated in the Third Third LDR Rule (i.e., wastes that fail the EP test) are not eligible for capacity variances because the extension provided in that rulemaking has already expired. Furthermore, if treaters of TC metal wastes (i.e., newly identified wastes as well as those wastes regulated in the Third Third Rule) have difficulties in treating specific wastes, the treaters may apply for a treatability variance under 40 CFR 268.42.

#### **Comments**

- ! Kennecott Corporation (2SR 54:63)

Commenter: Kennecott Corporation  
Comment Number: 2SR 54  
Page Number: 63

EPA should clarify that the proposed Land Disposal Restrictions (LDR) for newly identified mineral processing wastes (i.e: Part 268.32) would be applicable only to currently produced waste materials. The rule should provide that, for new wastes produced in the future as a result of process, technology, or market changes, determinations as to treatability to Universal Treatment Standards (UTS), and capacity variances will be made upon petition by the producer at that time.

## 4.2.2 Soil and Debris

### 4.2.2a A Two-Year Capacity Variance Is Needed for Soil Contaminated With Newly Identified Mineral Processing Waste

Three commenters [Kennecott Corporation (SR 40); Cyprus Amax (SR 46); National Mining Association (SR 58)] believe that EPA should allow a two-year national capacity variance for soil contaminated with newly identified mineral processing waste.

- ! Kennecott believes a reexamination of the record will substantiate a minimum two-year national capacity variance for contaminated soils because of the Agency's stated lack of knowledge regarding the quantities of soil that may be contaminated with newly identified mineral processing wastes. Kennecott suggests that the Agency may have a significant body of data from CERCLA cleanups of sites with mineral processing wastes (e.g., Anaconda, Montana; Bunker Hill, Idaho; Palmerton, Pennsylvania; Tacoma/Commencement Bay, Washington). (SR 40:12)
- ! Cyprus Amax believes that in light of the fact that existing off-site commercial treatment capacity may not practically be available for use by mineral processing facilities, EPA should allow a two-year capacity variance for newly-identified mineral processing wastes, and soil and debris contaminated with such wastes. Such time will be necessary to allow mineral processing facilities to evaluate which waste streams are subject to the LDRS, to install any necessary treatment technology, and to perfect that treatment technology to ensure LDR compliance. (SR 46:54-55)
- ! NMA believes EPA should reconsider its decision to deny a capacity variance for soil and debris contaminated with newly-identified mineral processing wastes. NMA states that large volumes of such soil and debris is likely to be generated at many facilities in the context of remedial actions (under Superfund or RCRA), voluntary cleanups, or facility expansions. (SR 58:181-182)

#### Response

The Agency recognizes the unique issues associated with remediation waste, including hazardous contaminated soil, and therefore believes that it is appropriate to establish alternative, less-stringent LDR treatment standards for hazardous soil. Thus, in the final Phase IV rule, the Agency has promulgated alternative treatment standards for hazardous soil, which require that the concentrations of constituents subject to treatment be reduced by 90 percent with treatment for any given constituent capped at ten times the UTS. The Agency believes that these less stringent standards can be achieved by existing commercially available treatment technologies. The Agency also compiled treatment performance data for contaminated soils from remediation case studies that indicate that the alternative treatment standards can be readily achieved by commercially available treatment technologies and adequate treatment capacity is available for these contaminated soils. (See the BDAT and Capacity Analysis Background Documents for additional information.) Therefore, the Agency is not granting a national capacity variance for soil contaminated with newly identified mineral processing wastes.

Nevertheless, the Agency notes that if generators of newly identified wastes (i.e., wastes that do not fail the EP test, and, consequently, are not part of the Third Third LDR Rule) cannot obtain adequate treatment for specific wastes, then the generators of these wastes may apply for a capacity variance extension per 40 CFR 268.5 on a case-by-case basis. Wastes regulated in the Third Third LDR Rule (i.e., wastes that fail the EP test) are not eligible for capacity variances because the extension provided in that rulemaking has already expired. Furthermore, if treaters of TC metal wastes (i.e., newly identified wastes as well as those wastes regulated in the Third Third Rule) have difficulties in treating specific wastes, the treaters may apply for a treatability variance under 40 CFR 268.42.

#### Comments

- ! Kennecott Corporation (SR 40:12)
- ! Cyprus Amax Minerals Company (SR 46:54-55)
- ! National Mining Association (SR 58:181-182)

Commenter: Kennecott Corporation  
Comment Number: SR 40  
Page Number: 12

EPA's statement that the Agency has no data on the quantities of soil that may be contaminated with newly identified mineral processing wastes is puzzling. The Agency clearly has a significant body of data from CERCLA cleanups of sites with mineral processing wastes (e.g.: Anaconda, Montana; Bunker Hill, Idaho; Palmerton, Pennsylvania; Tacoma/Commencement Bay, Washington).

Kennecott believes a reexamination of the record will substantiate a minimum two year national capacity variance.

Commenter: Cyprus Amax Mineral Company  
Comment Number: SR 46  
Page Number: 54-55

In light of the fact that existing off-site commercial treatment capacity may not practically be available for use by mineral processing facilities, EPA should allow a two year capacity variance for newly-identified mineral processing wastes, and soil and debris contaminated with such wastes.<sup>6</sup> Such time will be necessary to allow mineral processing facilities to evaluate which waste streams are subject to the LDRs, to install any necessary treatment technology, and to perfect that treatment technology to ensure LDR compliance.

Commenter: National Mining Association  
Comment Number: SR 58  
Page Number: 181-182

C. EPA Should Allow A Two Year National Capacity Variance For Soil And Debris Contaminated With Newly-Identified Mineral Processing Wastes

In the proposed rule, EPA states that it does not plan to grant a national capacity variance for soil and debris contaminated with newly-identified mineral processing wastes, based on its conclusion that "few (if any) facilities or waste quantities are likely to be impacted by the proposed rule." 61 Fed. Reg. at 2361. The Agency admits, however, that it "currently does not have data on the quantities of soil and debris that may be contaminated with newly identified mineral processing wastes." Id.

NMA urges EPA to reconsider its decision to deny a capacity variance for soil and debris contaminated with newly-identified mineral processing wastes. Large volumes of such soil and debris is likely to be generated at many facilities in the context of remedial actions (under Superfund or RCRA), voluntary cleanups, or facility expansions. At a minimum, EPA in the Phase IV rule must recognize the need to grant treatability variances for soil and debris contaminated with newly-identified mineral processing wastes. In the Phase 11 rule that established the UTS, EPA "stated a presumption ... that the treatment standards for as-generated wastes are generally inappropriate or unachievable for soils contaminated with hazardous wastes .... It has been the Agency's experience that contaminated soils are significantly different in their treatability characteristics from the wastes that have been evaluated in establishing the BDAT standards, and thus will generally qualify for a treatability variance under 40 CFR 268.44." 59 Fed. Reg. at 47,987. EPA should at least make a similar finding in the case of soil contaminated with mineral processing wastes.

A far preferable approach, however, would be for EPA to grant a two year capacity variance for both soil and debris contaminated with newly-identified mineral processing wastes. In view of the pendency of the proposed HWIR rule for contaminated media, which was signed on April 12, 1996 and will appear in the Federal Register imminently, and which may result in substantial quantities of contaminated environmental media (including both soil and debris) being excluded from Subtitle C regulation (including the LDR program), it would be appropriate at this juncture to grant a two year capacity variance for soil and debris contaminated with newly-identified mineral processing wastes. In this way, mineral processing facilities managing contaminated soil and debris that may soon be excluded under HWIR will not, in the meantime, be subjected unnecessarily to the onerous burdens of Subtitle C regulation.<sup>54</sup>



#### 4.2.2b A Two-Year Capacity Variance Is Needed for Manufactured Gas Plant (MGP) Remediation Wastes

Two commenters [New Jersey Natural Gas Company (SR 50); South Jersey Gas Company (SR 51)] believe that EPA should grant a two-year national capacity variance for manufactured gas plant (MGP) remediation wastes.

- ! New Jersey Natural Gas Company (NJNG) believes that EPA should delay the effective date of the LDR requirements for MGP waste for at least an initial two years because capacity would not necessarily be available in many geographic areas and transportation costs could be significant. (SR 50:4)
- ! South Jersey Gas Company (SJG) believes that EPA should delay the effective date of the LDR requirements for MGP waste for at least an initial two years because capacity would not necessarily be available in many geographic areas and transportation costs could be significant. (SR 51:3-4)

#### Response

As discussed in the previous section, the Agency believes that the new, less stringent standards can be achieved by existing commercially available treatment technologies, and that adequate treatment capacity is available for these contaminated soils. Also, clarified in this rulemaking is the Agency's interpretation that residues from co-burning hazardous MGP soils along with coal is covered by the Beville Amendment (assuming the residues are not significantly affected by such burning, as provided in 40 CFR 266.112). Therefore, as discussed in more detail in the Capacity Analysis Background Document, the Agency is not granting a national capacity variance for MGP remediation wastes.

#### Comments

- ! New Jersey Natural Gas Company (SR 50:4)
- ! South Jersey Gas Company (SR 51:3-4)

Commenter: New Jersey Natural Gas Company  
Comment Number: SR 50  
Page Number: 4

Even if EPA determines that there is adequate treatment capacity for the volume of waste that would require additional treatment to meet LDR treatment standards, such capacity would not necessarily be available in many geographic areas and transportation costs could be significant. Treatment costs would, therefore, be increased not only as a result of the absence of alternative methods of treatment, but also the increased cost of transportation and handling. The EPA should, therefore, delay the effective date of the LDR requirements for MGP waste for at least an initial two years in order to allow for both a general increase in capacity and the availability of capacity in geographic areas currently lacking such capacity. This would lessen the increased cost otherwise associated with the imposition of the LDR requirements for MGP waste.

Commenter: South Jersey Gas Company  
Comment Number: SR 51  
Page Number: 3-4

Even if the EPA determines that there is adequate treatment capacity for the volume of waste that would require additional treatment to meet LDR treatment standards, such capacity would not necessarily be available in many geographic areas and transportation costs could be significant. Treatment costs would, therefore, be increased not only as a result of the absence of alternative methods of treatment, but also the increased cost of transportation and handling. The EPA should, therefore, delay the effective date of the LDR requirements for MGP waste for at least an initial two years in order to allow for both a general increase in capacity and the availability of capacity in geographic areas currently lacking such capacity. This would lessen the increased cost otherwise associated with the imposition of the LDR requirements for MGP waste.