RESPONSE TO COMMENTS DOCUMENT

Land Disposal Restrictions--Phase IV: Final Rule Promulgating Treatment Standards for Metal Wastes and Mineral Processing Wastes; Mineral Processing Secondary Materials and Bevill Exclusion Issues; Treatment Standards for Hazardous Soils; and Exclusion of Recycled Wood Preserving Wastewaters

Volume 6
Comments Related to Second Supplemental Proposed Rule (May 12, 1997)

U.S. Environmental Protection Agency
Office of Solid Waste
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List of Phase IV Land Disposal Restriction Codes, Description, and Location by Page Number

Index of Commenters and Location of Comment, By Issue

Phase IV Second Supplemental Proposed Rule:
Comments and Responses on Antimony
1. 2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

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.

Response:

The Agency thanks the commenter for their support. However, in response to public comments on difficulties in treating antimony to the standard proposed in the second supplemental rule, the Agency conducted a careful review of the performance data used to calculate the proposed standard of 0.07 mg/L TCLP. As a result, the Agency agrees with the commenters that the performance data used to calculate the proposed standard does not represent BDAT with a "most difficult to treat" waste. The Agency believes that the proposed UTS for antimony must be revised to reflect a more difficult-to-treat antimony waste. Therefore, the Agency collected additional treatment performance data from a commercial treatment facility (Chemical Waste Management), that EPA believes represents the "most difficult to treat" waste due to its high concentration of antimony, and re-calculated the BDAT treatment standard for antimony (for additional information on the data reviewed, see the Background Document for Antimony Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for antimony nonwastewaters at 1.15 mg/l based on this newly acquired data.

See respective sections for discussion of other metals.

2.2P4P-00017 Battery Council International (BCI) and Association of Battery Recyclers (ABR)

I.THE PROPOSED LEAD, SILVER, ANTIMONY, BERYLLIUM, AND THALLIUM TREATMENT STANDARDS ARE NOT ACHIEVABLE WITH BDAT

A concentration-based treatment standard must be set at a performance level achievable by application of the Best Demonstrated Available Technology (BDAT).[fn 2: 51 Fed. Reg. 40,572, 40,578 (1986); *Hazardous Waste Treatment Council v. United States EPA*, 886 F.2d 355, 364-65 (D.C. Cir. 1989), *cert. denied*, 498 U.S. 849 (1990).] To identify BDAT for the treatment of a particular waste, EPA has recognized that it must consider three factors: whether the technology is "best demonstrated;" whether it is "available;" and whether it is the "best applicable" technology.[fn 3: 55 Fed. Reg. 22,536.]

A treatment technology is considered to be "demonstrated" when full-scale treatment operations are currently being used to treat that waste.[fn4: *Id.*] To be considered "available," the technology must not be proprietary or a patented process that cannot be purchased or licensed from the proprietor. (I.e., it must be "commercially available.") It also must substantially diminish the toxicity of the waste or reduce the likelihood of migration of hazardous constituents from the waste.[fn5: *Id.*] To be "applicable," a
technology must theoretically be able to treat the waste.[fn6: *Id.*]

The proposed treatment standards do not meet these criteria. For one thing, the high temperature metals recovery technologies (HTMR) to which EPA points as capable of meeting its proposed standards are not BDAT. First, they are not demonstrably capable of handling D008 wastes. They handle D006 and K061 wastes, the chemistry of which is vastly different from D008. Second, they are not commercially available.

BDAT in fact is the stabilization process employed by existing secondary smelters. However, data submitted to EPA by BCI and ABR on November 27,1995 (BCI's comments are attached as "Exhibit 1") and a new database (attached as "Exhibit 2") show that no facility in the secondary lead industry can meet EPA's proposed treatment standards for lead, silver, antimony, beryllium, and thallium. Thus, EPA has not demonstrated that stabilization technologies are capable of meeting its proposed treatment standards. Instead, the data supports setting standards at the levels set forth above, in the Summary section of these comments.

A. HTMR Technologies to Meet the Proposed D008 Nonwastewater Treatment Standards are Neither Demonstrated nor Available

The HTMR technologies asserted by EPA as capable of treating D008 wastes to its proposed treatment standards are not demonstrated. The chemistry of D008 wastes is vastly different from the chemistries of D006 and K061 wastes. But EPA reviewed and relied upon only D006 and K061 treatment data in concluding that HTMR technologies could meet the treatment standards D006 wastes include paint, plating sludges, wastewater treatment sludges, and a wide variety of other waste materials derived from the manufacture and reclamation of nickel-cadmium batteries and other cadmium-related products. D006 wastes typically include various concentrations of cadmium, nickel, zinc, and chromium. Waste streams from particular facilities tend to be relatively consistent in chemical makeup. D006 wastes rarely contain antimony, arsenic, and selenium, which are abundant in D008 wastes.

K061 wastes are derived from the steel making process. The chemical constituents of K061 are iron, zinc, chromium, nickel, and lead oxides. K061 wastes also typically contain very little antimony, arsenic, and selenium. As with D006 waste streams at particular facilities tend to have reasonably consistent chemical characteristics.

In contrast, the D008 wastes generated from lead-acid battery recycling operations and from the cleanup of contaminated soils and debris tend to be massive, solid, and extremely variable. Their chemical and physical characteristics can vary significantly depending upon individual processes and the feedstocks used to produce them. They may include substantial quantities of calcium, sodium, and other alkaline earth oxides as well as sulfur, selenium, antimony, and arsenic. These elements are essentially non-existent in D006 and K061 wastes.

The chemical differences between D008 wastes and D006 and K061 wastes render the HTMR process less effective in treating D008 wastes to EPA*s proposed treatment levels. Moreover, many D008 wastes (e.g., secondary smelter slags) are already the residues of an HTMR process. They thus contain significant quantities of silica and iron oxides which further impedes the ability of additional HTMR processes to remove elements such as lead, antimony, and selenium.

In addition, the HTMR technology used by EPA to determine the BDAT (known as the Horsehead Resource Development Company Inc.'s Waelz kiln series process and the INMETCO HTMR process) are not "commercially available" to treat D008 nonwastewaters. Both processes are patented and very expensive. Neither has been built into any of the lead battery industry's operations or otherwise applied to battery-reclamation slags. Moreover, no facility operating either process is permitted to accept and store D008 wastes.

D. The Proper Treatment Standards

Data collected and analyzed by BCI and ABR establishes that the proper treatment standards should be the following:

Barium 21 mg/l
Cadmium 0.20 mg/l
Chromium 0.85 mg/l
Lead 9.46 mg/l
Selenium 5.7 mg/l
Silver 0.22 mg/l

Antimony 2.98 mg/l
Beryllium 0.13 mg/l
Nickel 13.6 mg/l
Thallium 0.79 mg/l
Vanadium 1.6 mg/l
Zinc 4.3 mg/l

As has been amply discussed, EPA's proposed treatment standards for lead, silver, antimony, beryllium, and thallium should not be set below the levels identified above.

Response:

The Agency notes that the commenter may be correct in stating that the chemistry of D008 waste is different from the chemistries of D006 and K061 wastes. However, the important issue here is that all of the data available to the Agency that reflects effective treatment shows that the standard for antimony can be met be either stabilization or by HTMR. See memorandum in record entitled, “Development of Metal Treatment Standards”. EPA, when transferring treatment standards from one waste to another, determines whether the BDAT will achieve the same level of performance on an untested waste that it achieved on a previously tested waste. For this determination, EPA examines the waste characteristics that affect performance such as (I) the concentrations of undesirable volatile metals, (ii) the metal constituent boiling points, and (iii) the thermal conductivity of the waste. In addition, EPA also examines the design and operating parameters of the technology. Based on the evaluation of these waste characteristics that affect performance, the Agency determined that well operated HTMR facilities can meet the treatment standards for D008 wastes.

The Agency notes that HTMR technology is currently being implemented on a full-scale basis and is being used to treat TC metal wastes and therefore is considered a “demonstrated” technology. The Agency has conducted extensive research on commercially demonstrated and available metal recovery technologies and developed detailed profiles of metal recovery technologies applicable for metal-bearing wastes (See the “profiles of metal recovery technologies for mineral processing and other metal-bearing hazardous wastes,” U.S. EPA, April 30, 1997). Also, the treatment performance data obtained and reviewed by the Agency from HTMR facilities indicate that the TC metal-bearing wastes can be treated to the UTS. In addition, the Agency notes that the mere existence of the secondary lead smelting industry itself proves the applicability of HTMR to D008 wastes.

EPA also recognizes that HTMR may not be the best technology for all TC metal wastes. For the same reason, the Agency is establishing a concentration-based standard rather than requiring a specific technology. To compile further evidence regarding the treatability of TC metal wastes, including D008 wastes, to the UTS, the Agency conducted site visits to commercial hazardous waste treatment facilities and collected additional stabilization and HTMR treatment performance data that better represent the diversity of metal wastes than those previously used. The treatment performance data (based on grab samples) represented a wide range of metal-bearing wastes (both listed and characteristic) that the Agency believes represents the difficult to treat metal-bearing wastes. The types of waste treated included battery slag, mineral processing wastes, baghouse dust, soils, pot solids, recycling by-products, and sludge. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: antimony and chromium (16.1 and 1580 mg/L TCLP respectively); lead and cadmium (220 and 13 mg/L TCLP respectively); and barium and lead (32 and 898 mg/L TCLP (total lead 4.6%) respectively). The Agency compared the treatment standards developed based on stabilization and HTMR and selected the highest (less stringent) standard for each metal to establish the UTS, thus, allowing for process and waste variability, plus detection limit difficulties. The Agency notes that in response to the Second Supplemental additional data was submitted by the "Battery Council International/Association of Battery Recyclers (2P4P-00017), Waste Management, Inc. (2P4P-00087), and Horsehead Research Development Company, among others. Analysis of these data indicate that there were no multiple metal waste streams with higher concentrations of two or more contaminants than those used in the development of the treatment standards. With regard to single constituent contaminants, e.g. lead, the Agency utilized data for the calculation of the treatment standard, with TCLPs in the untreated waste of between 0.0296 mg/L - 4430 mg/L, and a mean concentration of 483.8 mg/L. In comparison, a commenter submitted slag data with TCLP concentrations, in the untreated waste, of lead ranging from 0.060 mg/L to 1017 mg/L, with a mean value of 283.8 mg/L.

In response to public comments on difficulties in treating antimony to the standard proposed in the second supplemental rule, the Agency conducted a careful review of the performance data used to calculate the proposed standard of 0.07 mg/L TCLP. As a result, the Agency agrees with the commenters that the performance data used to calculate the proposed standard does not represent BDAT with a "most difficult to treat" waste. The Agency believes that the proposed UTS for antimony must be revised to reflect a more difficult-to-treat antimony waste. In response to the second supplemental proposal, the Agency received additional treatment performance data from a commercial treatment facility (Chemical Waste Management). Upon analysis, EPA believes that this data represents the "most difficult to treat" waste, and therefore, re-calculated the BDAT treatment standard for antimony (for additional information on the data reviewed, see the Background Document for Antimony Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for antimony nonwastewaters at 1.15 mg/l based on this newly acquired data.

The Agency reviewed the data submitted by the commenter. While the data was not of the quality used to establish BDAT, the Agency did evaluate the data based on the Agency's LDR methodology. The data submitted by BCI/ABR consisted of 106 data points for antimony. Of these 106, 60 of the data points were disregarded because the effluent concentrations were equal to or greater than the influent concentrations. Based on a Z-score test, 3 additional data points were also removed. (For a discussion of the Z-score test as it related to the LDR methodology see the EPA document, “Final Best Demonstrated Available Technology (BDAT) Background Document for Quality Assurance/Quality Control Procedures and Methodology”. October 23 1991.) Of the 43 data points remaining, all meet the proposed treatment standard (1.15 mg/L TCLP for antimony nonwastewaters). While the commenter indicated that the slag had underwent chemical stabilization, the Agency was given no information as to the type of reagents the companies used nor if in fact the treatment was optimized. Indications suggest that the treatment was designed only to remove the lead characteristic. Therefore, the Agency was unable to use the data for developing the BDAT treatment standards.

The Agency also would like to note that if a particular waste possesses unique properties that make it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.]

3. 2P4P-00019 The Doe Run Company (DRC)

(3) The third point relates to the testing, TCLP limits, and management of slag wastes from the secondary lead industry.

The greatest concern to the Buick recycling plant of DRC are the UTS standards for antimony and lead. The Buick facility utilizes a chemical fixation process on the blast furnace slag generated, whereby the slag chemistry is transformed to a sulfide. Since antimony has not been a regulated metal for TCLP, the facility did not have data for this metal. However, we have collected approximately forty (40) data points both composite and grab, and find that we can consistently meet only a 1.3 mg/liter Sb level which would be approximately the two standard deviation level. Because of the unique nature of this type of slag, Doe Run would recommend that representative sampling of stabilized or fixated slag be analyzed for antimony to develop an acceptable TCLP level. Doe Run is not aware of any other secondary smelter operation that treats slag down to a 0.07 mg/l level for antimony. We urge you to adopt a level for antimony in the 1.3-2.0 mg/l range allowing for long range variability in the process.

The Buick Facility has collected 170 samples to date for chemically fixated slag and tested for lead. We found that we can only meet a 2.0 mg/liter Pb level at the two standard deviation level. Because the slag composition has an inherently wide variability with certain constituents it is not possible to meet the 0.75 mg/l TCLP level for lead. As an example, iron and sulfur which have significant binding capabilities with lead and are regular constituents in this type of slag, can have considerable variations which therefore impact the potential leachability of lead from the slag. A review of Buick slag assays shows an iron level ranging from 12% to 40% and sulfur ranging from 0.1% to 7% content. With these variabilities it simply wouldn't be possible to constantly reach such a low proposed TCLP level for lead.

Response:

First, the Agency notes that all of the data submitted by the commenter was on lead treatment and based on composite samples and not grab samples, and therefore, would not be appropriate for setting a treatment standard that is to be met based on grab samples. Second, while the commenter alluded to 40 grab and composite samples for antimony where they could consistently meet only 1.3 mg/L TCLP for antimony, the commenter did not provide the Agency with the raw data on the antimony treatment when was it requested to do so. (See Docket Item 18D - *Meeting Notes.* Telephone conversation between Anita Cummings USEPA and Doug Bice, Doe Run. Re: Grab and Comosite Samples Referred to in Phase IV Comment and Docket Item 20 - *Facsimile Transmission.* Doug Bice, the Doe Run Company to Anita Cummings, USEPA, Re: Post Treatment Result 1996- Present. September 4, 1997). In the absence of this information, the Agency can not adequately assess the commenter’s claims.

To compile additional evidence regarding the treatability of TC metal wastes, including secondary lead smelter slags, 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) represented 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. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony.

Third, in response to public comments on difficulties in treating antimony to the standard proposed in the second supplemental rule, the Agency conducted a careful review of the performance data used to calculate the proposed standard of 0.07 mg/L TCLP. As a result, the Agency agrees with the commenters that the performance data used to calculate the proposed standard does not represent BDAT with a “most difficult to treat” waste. The Agency believes that the proposed UTS for antimony must be revised to reflect a more difficult-to-treat antimony waste. In response to the second supplemental proposal, the Agency received additional treatment performance data from a commercial treatment facility (Chemical Waste Management). Upon analysis, EPA believes that this data represents the “most difficult to treat” waste, and therefore, re-calculated the BDAT treatment standard for antimony (for additional information on the data reviewed, see the Background Document for Antimony Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for antimony nonwastewaters at 1.15 mg/l based on this newly acquired data.

Finally, the Agency would like to note that if a particular waste possesses unique properties making it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

See the lead section for discussion of comments related to lead standard.

4. 2P4P-00025 RSR Corporation

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.

Response:

The Agency disagrees with the commenter’s statement that EPA has not demonstrated the capability and availability of commercial treatment technologies. The Agency has provided adequate data to show the capability and availability of commercial treatment technologies (stabilization and HTMR) for treating the TC metals to the UTS levels. (See the BDAT background document for this rule). 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) represented 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. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony.

Also, in response to public comments on difficulties in treating antimony to the standard proposed in the second supplemental rule, the Agency conducted a careful review of the performance data used to calculate the proposed standard of 0.07 mg/L TCLP. As a result, the Agency agrees with the commenters that the performance data used to calculate the proposed standard does not represent BDAT with a “most difficult to treat” waste. The Agency believes that the proposed UTS for antimony must be revised to reflect a more difficult-to-treat antimony waste. In response to the second supplemental proposal, the Agency received additional treatment performance data from a commercial treatment facility (Chemical Waste Management). Upon analysis, EPA believes that this data represents the “most difficult to treat” waste, and therefore, re-calculated the BDAT treatment standard for antimony (for additional information on the data reviewed, see the Background Document for Antimony Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for antimony nonwastewaters at 1.15 mg/l based on this newly acquired data.

Finally, the Agency would like to note that if a particular waste possesses unique properties making it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

See respective sections for discussion of other metals.

5. 2P4P-00028 Laidlaw Environmental Services

Laidlaw Environmental Services. Inc. wishes to submit the following comments on the Phase IV Land Disposal Restrictions proposed rule that was published in the Federal Register on May 12, 1997.

Laidlaw generally supports most of the provisions of the proposed rule and has worked with the Environmental Technology Council to provide detailed comments, we do, however, have several concerns with the proposal as it is written.

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.

Response:

The Agency thanks the commenter for their support in its efforts to establish treatment standards for TC metal wastes. However, in response to public comments on difficulties in treating antimony to the standard proposed in the second supplemental rule, the Agency conducted a careful review of the performance data used to calculate the proposed standard of 0.07 mg/L TCLP. As a result, the Agency agrees with the commenters that the performance data used to calculate the proposed standard does not represent BDAT with a "most difficult to treat" waste. The Agency believes that the proposed UTS for antimony must be revised to reflect a more difficult-to-treat antimony waste. In response to the second supplemental proposal, the Agency received additional treatment performance data from a commercial treatment facility (Chemical Waste Management). Upon analysis, EPA believes that this data represents the "most difficult to treat" waste, and therefore, re-calculated the BDAT treatment standard for antimony (for additional information on the data reviewed, see the Background Document for Antimony Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for antimony nonwastewaters at 1.15 mg/l based on this newly acquired data.

The Agency notes that there are certainly legitimate questions as to the degree of risk reduction required through treatment to satisfy the minimized threat standard. EPA believes that treatment generally is (1) adequate to be considered to be both minimizing threats to the human health and the environment and (2) protective of human health and the environment where there is substantial destruction of toxic substances and/or substantial reduction of the mobility of toxic residues. See Section12 Cong. Record at 59178 (Statement of Sen. Chaffee introducing the provision which became RCRA 3004(m) indicating that the LDR treatment standards are not to be technology forcing). To avoid technology forcing regulations, EPA has set standards achievable by either HTMR or stabilization, where in many cases one technology could achieve superior results.

Finally, the Agency notes that the UTS levels are determined based on BDAT for the most difficult to treat wastes and not solely based on the lowest level a treatment technology could achieve, since such a process might fail to adequately account for process and waste variability.

6. 2P4P-00081 Eastman Chemical Company

Eastman Chemical Company is a worldwide manufacturer of chemicals, fibers, and plastics. Eastman has major U.S. manufacturing plants in Kingsport, Tennessee; Longview, Texas; Batesville, Arkansas; and Columbia, South Carolina. Its worldwide headquarters are located in Kingsport, Tennessee.

Eastman is pleased to submit the enclosed comments on EPA's May 12, 1997 Phase IV . LDR supplemental proposed rule. Eastman's primary interests with the proposal deal with the proposed Universal Treatment Standards (UTS) for metals (primarily the proposed standard for antimony) and with issues surrounding Bevill-exempted wastes.

Eastman opposes. the Agency's proposal to lower the UTS level for antimony in nonwastewaters from 2.1 mg/l to 0.07 mg/I. As is discussed in the enclosed comments, this change will significantly increase Eastman's LDR compliance costs, may require permitting of new ash treatment facilities, will increase Eastman's hazardous waste generation and will significantly - decrease the useful life of Eastman's on-site hazardous waste landfills. Eastman believes that these consequences are unwarranted, especially when there is no evidence that reducing the treatment level will result in any incremental environmental benefit. In fact, actual Eastman data comparing antimony TCLP concentrations in a landfilled wastestream to the antimony concentrations in the leachate samples from the landfill demonstrate that no environmental benefit will accrue. Eastman is also concerned that the 0.07 mg/l treatment level may not be universally achievable on the broad spectrum of hazardous wastes that are generated by industry. In addition, Eastman does not believe that antimony can be reliably quantitated in complex waste matrices at the 0.07 mg/l level. Eastman also does not believe that the Agency has an adequate database for establishing a new UTS level for antimony. For all these reasons, Eastman does not believe that an antimony UTS level of 0.07 mg/l is justified. Eastman urges the Agency to retain the current 2.1 mg/l standard.

In this rulemaking, EPA is proposing a number of potential changes to the Bevill exemption for mineral processing wastes. Eastman generates Bevill-exempt ash (pursuant to 261.4(b)(4)) from several on-site industrial boilers which co-fire hazardous wastes with coal. These ashes are currently managed in on-site state-permitted landfills. Eastman does not interpret any of the changes to the Bevill exemptions for mineral processing wastes to extend to, or change in an way, the Bevill exclusion for ash generated primarily from combustion fossil fuels provided at 261.4(b)(4). Eastman finds the Part 266 "significantly affected" test for boiler ash to be a reasonable qualification for the Bevill exemption. Eastman has found implementation of this test to be manageable for boiler ash. Therefore, Eastman sees no reason why a similar "significantly affected" test could not be' applied to other Bevill wastes. EPA should not totally preclude exemption under Bevill just because non-Bevill wastes are used as feedstocks, especially when a facility can demonstrate that (1) at least 50% of the feedstock was a Bevill material, (2) that legitimate recycling of the non-Bevill feedstock is occurring, and (3) that the character of the generated waste was not significantly affected by processing non-Bevill materials.

If you have any questions about Eastman's comments, please contact me at (423)229-2834.

COMMENTS:
I.1 Eastman Opposes the Proposed UTS Level for Antimony

A. The Proposed UTS Level for Antimony Will Significantly Increase Eastman’s's LDR Compliance Costs

Eastman Chemical Company (Eastman) operates two rotary kiln incinerators and one liquid chemical incinerator at its Kingsport, Tennessee I see plant, as well as a rotary kiln incinerator and a fluidized bed incinerator at its Longview, Texas plant. Use of these incinerators to treat wastes generated on-site is vital and integral to the ongoing operation of Eastman's manufacturing facilities.

Tennessee Eastman Company

Approximately 3.5 million pounds of ash is generated annually from the two rotary kilns located at Eastman's Tennessee facility. In the past, this ash was transported off-site for disposal in a commercial landfill. In 1995, Eastman constructed an on-site ' state-of-the-art, double-lined hazardous waste landfill designed specifically for disposal of ash from the two rotary kilns. This landfill is operated under a RCRA Subtitle C permit issued by the state of Tennessee. The cost of constructing the landfill was approximately $5 million.

Eastman opposes the Agency's proposal to lower the UTS level for antimony in nonwastewaters from 2.1 mg/l to 0.07 mg/l. As is discussed in the enclosed comments, this change will significantly increase Eastman's LDR compliance costs, may require permitting of new ash treatment facilities, will increase Eastman's hazardous waste generation and will significantly - decrease the useful life of Eastman's on-site hazardous waste landfills. Eastman believes that these consequences are unwarranted, especially when there is no evidence that reducing the treatment level will result in any incremental environmental benefit. In fact, actual Eastman data comparing antimony TCLP concentrations in a landfilled wastestream to the antimony concentrations in the leachate samples from the landfill demonstrate that no environmental benefit will accrue. Eastman is also concerned that the 0.07 mg/l treatment level may not be universally achievable on the broad spectrum of hazardous wastes that are generated by industry. In addition, Eastman does not believe that antimony can be reliably quantitated in complex waste matrices at the 0.07 mg/l level. Eastman also does not believe that the Agency has an adequate database for establishing a new UTS level for antimony. For all these reasons, Eastman does not believe that an antimony UTS level of 0.07 mg/l is justified. Eastman urges the Agency to retain the current 2.1 mg/l standard.

1.1 Eastman Opposes the Proposed UTS Level for Antimony

A. The Proposed UTS Level for Antimony Will Significantly Increase Eastman’s's LDR Compliance Costs

Eastman Chemical Company (Eastman) operates two rotary kiln incinerators and one liquid chemical incinerator at its Kingsport, Tennessee plant, as well as a rotary kiln incinerator and a fluidized bed incinerator at its Longview, Texas plant. Use of these incinerators to treat wastes generated on-site is vital and integral to the ongoing operation of Eastman's manufacturing facilities.

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Approximately 3.5 million pounds of ash is generated annually from the two rotary kilns located at Eastman's Tennessee facility. In the past, this ash was transported off-site for disposal in a commercial landfill. In 1995, Eastman constructed an on-site, state-of-the-art, double-lined hazardous waste landfill designed specifically for disposal of ash from the two rotary kilns. This landfill is operated under a RCRA Subtitle C permit issued by the state of Tennessee. The cost of constructing the landfill was approximately $5 million.

Currently, the ash from Eastman's Tennessee rotary kilns consistently meets all applicable land disposal treatment standards as generated, including the current 2.1 mg/l standard for antimony. Therefore, Eastman can directly place the ash into its on-site landfill without any prior treatment. Eastman's Tennessee facility RCRA permit does not include a provision for stabilization. However, Eastman's data show that this ash does not consistently meet the proposed UTS level for antimony, 0.07 mg/I. It should be noted that the primary source of antimony in this ash is nonhazardous wastes that are combusted in these rotary kilns. Additional information concerning this situation is presented in Part D of this comment package. If the proposed UTS level for antimony is promulgated, Eastman's primary options for complying with the new UTS standard are as follows:

Option 1: Off-Site Treatment and Disposal

One option is for Eastman to ship its incinerator ash off-site for stabilization and disposal to a commercial hazardous waste landfill approximately 500 miles from the site of generation in a neighboring state. This option would cost Eastman over $500,000 per year in treatment, disposal and shipping costs and would involve long distance over-the-road transportation of over 100 truckloads of ash each year. In addition, the continued ability of the company to use a hazardous waste landfill outside of the state of waste generation is continually subject to legislative actions in the state where disposal occurs. As stated previously, the operation of the rotary kilns is essential to the continued viability of the manufacturing operation in Tennessee. Clearly, adequate ash disposal options are critical to maintaining the operability of these kilns. This consideration as well as a desire to minimize the liability of offsite disposal is what led the Tennessee manufacturing facility to permit and construct an onsite land disposal facility. The option of shipping incinerator ash offsite exposes the company once again to the whims of another state's legislative and regulatory agendas, exposes the company to additional liability for transportation and offsite disposal and negates the value of the $5 million dollar capital investment that Eastman has made in constructing an on-site hazardous waste landfill.

Option 2: On-Site Ash Treatment

The second option is for Eastman to install treatment facilities on-site to treat its incinerator ash such that the TCLP extract will contain concentrations of antimony lower than the proposed UTS level prior to placement in the landfill. Although Eastman does not yet have detailed estimates of the cost for such treatment facilities, the following concerns would have to be addressed resulting in substantial costs:

1. Eastman would have to purchase or develop the treatment technology, conduct treatability tests and review the regulatory restrictions of any option considered to achieve the proposed UTS for antimony.

2. Eastman would have to purchase and install the equipment needed to treat the ash.

3. Increased annual operating costs would accrue from extra handling of the ash, operation of the treatment facility, and additional laboratory analyses.

It is also highly probable that Eastman would have to obtain RCRA and CAA permits for the treatment unit and potentially for any associated storage facilities. This permitting action would be a cause for considerable delay in construction and operation of such a treatment unit. In addition, the permitting process is costly in and of itself.

Texas Eastman Company

A situation very similar to that at Eastman's Tennessee facility exists at Eastman's facility in Longview, Texas. At Texas Eastman, approximately 4.4 million pounds per year of ash are generated from rotary kiln and fluidized bed incinerators. Ash from these incinerators is currently managed in an on-site RCRA-permitted landfill. Offsite stabilization and disposal of this quantity of ash in a commercial hazard waste landfill would cost an estimated $700,000 per year and, again, would involve long-distance transportation of well over 100 truckloads of ash per year.

On-site treatment of these ashes would be costly and counterproductive, as discussed above. As part of an earlier investigation, Texas Eastman determined that the construction of a contaminant building in which to stabilize its ash would cost between $1.5 and $2 million. Additional operating and permitting costs would also be incurred.

<u>B. The Proposed UTS Level for Antimony Will Increase Eastman's Hazardous Waste Generation</u>

and Significantly Reduce the Useful Life of Its On-Site Hazardous Waste Landfills

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 fly ash is readily available at both Eastman facilities, fly ash/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.

C. EPA Has Not Demonstrated That Lowering, the Antimony UTS Level Will Result in Any Measurable Environmental Benefit

Eastman does not believe that the costs associated with meeting the proposed UTS level for antimony are justified. The wastes in question are being disposed in secure double-lined landfills equipped with leachate collection systems. Eastman knows of no data that show leakage from such state-of-the-art landfills to present an environmental problem, especially not due to the presence of antimony.

In its recent proposed technical standards for hazardous waste combustors, EPA proposed to delete antimony from the list of metals for which , emissions from hazardous waste combustors will be directly regulated, stating:

> "Sb is a non-carcinogen with relatively low toxicity compared with the other five non-Hg metals, and would have to be present in hazardous waste (and emitted PM) at extremely high levels (perhaps over 1,000 times the current levels) to pose a health hazard" (Footnote 11 at 62 FR 24216, May 2, 1997).

[FN 1: Stabilization/Solidification of CERCLA and RCRA Wastes - Physical Tests, Chemical Testing Procedures, Technology Screening, and Field Activities; United States Environmental Protection Agency; Center for Environmental Research Information, Cincinnati, Ohio, 1989]

Considering that antimony is a non-carcinogenic, relatively non-toxic metal and that reducing the leachable level of antimony in wastes that are disposed of in secure landfills only reduces the quantity of antimony that is collected in the landfill's -leachate collection system (as opposed to a release to the environment), any environmental benefits associated with lowering the UTS level for antimony from 2.1 to 0.07 mg/l are likely to be negligible and not measurable.

Even more important is the fact that Eastman data demonstrate that for its facilities, the consequences of a lower standard do not even result in enhanced environmental protection. As stated previously, beginning in 1995, Eastman's Tennessee facility began operation of its new hazardous waste landfill. Greater than 95% of the 2,724 cubic yards of material landfilled thus far is ash from the incinerator, with antimony TCLP concentrations ranging from 0.016 mg/l to 1.3 mg/l. Actual leachate data collected on a quarterly basis from this hazardous waste landfill since operations began yield the following results for antimony:

16 results are <0.001 mg/l;
9 results are <0.010 mg/l; and
2 detected values were measured at 0.00 1 3 mg/l and 0.015 mg/l.

Because these samples are actual leachate samples in a relatively simple .matrix, detection levels for antimony in the range of 1 ug/l to 10 ug/l are possible using SW-846 Method 60l0. These data clearly show that concentrations of antimony in the TCLP extract of the incinerator ash grossly overestimate the concentration of antimony in actual leachate. Texas Eastman reports similar concentrations in their leachate. Again this is actual leachate generated from a landfill with two synthetic liners, as well as compacted clay in accordance with stringent RCRA requirements. Stabilization would provide no measurable environmental benefit, while resulting in additional cost and additional landfill space.

D. Antimony Cannot be Reliably Quantitated at a 0.07 mg/l Level in Complex Waste Matrices

Universal Treatment Standards (UTS) are designed to evaluate a wide variety of hazardous waste streams and matrices for treatment adequacy prior to land disposal. Eastman believes the agency has overlooked this requirement in determining the adequacy of the database used to establish the proposed standard of 0.07 mg/l for antimony. It appears that the treatment standard is established primarily based on data collected from solid wastes destined for landfill at hazardous waste landfill facilities. Such wastes would have no free liquids or would require stabilization prior to landfill. As a result, the data is a TCLP extract of a solid waste matrix. As such the proposed standard is based on a limited range of waste streams which is inappropriate for a standard that must be applied universally in numerous complex applications as required by the Land Disposal Restrictions (LDR).

Extracts from such solid waste matrices are usually relatively free of complex analytical interferences, thus allowing for quantification in the 70 part per billion (ppb) level. However, many generators including Eastman's facilities generate liquid, high total organic carbon, nonwastewater streams with interferences substantially more complex than those seen in diluted TCLP extract samples of solid waste matrices. Quantification of antimony to the 70 ug/l level for such waste streams cannot be reliably achieved. For several Eastman facilities,.this situation poses extreme problems with the end result that incinerator ash can no longer be landfilled in new on-site hazardous waste landfills if the proposed 0.07 mg/l UTS is finalized. To further explain the intricacies of the land disposal restrictions with regard to waste management at Eastman's Tennessee facility, the following case is presented:

As stated previously, Eastman's Tennessee facility operates two rotary kilns and a liquid chemical destructor under a RCRA permit issued in 1989. These units manage both hazardous and nonhazardous incinerable wastes. Because many of the manufacturing processes generate corrosive D002 wastes which are managed in these incineration units, it is necessary for Eastman*s to demonstrate compliance with underlying hazardous constituent UTS before the ash from the combustion of these decharacterized corrosive wastes can be land disposed. There are approximately 80 approved waste streams at this facility, which are acetic liquid waste steams. Many of the waste streams have as many as 40 analyses in the database for antimony. Using SW-846 Method 6010, more than 99% of the data for these streams show values lower than the detection limit in the data system. For these highly organic waste streams, the detection limits range from 1.28 mg/l to 2.0 mg/l which is below the current UTS of 2.1 mg/l. Again, these detection limits are based on an extensive analytical testing program for multiple wastes and waste matrices. In addition, incinerator ash samples yield antimony TCLP values ranging from 0.016 mg/l to 1.3 mg/l which is again below the current UTS. However, neither database is adequate to demonstrate compliance with the proposed UTS of 0.07 mg/I.

The wide range in antimony in the ash is related to high volume *nonhazardous* waste streams which do contain measurable levels of antimony but to which LDR does not apply. Because ash is collected in a system common to both kilns, it is not possible to segregate the ash handling based on RCRA designation. Clearly, the newly proposed extremely stringent 0.07 mg/l UTS for antimony causes severe compliance demonstration problems which cannot be overcome without stabilizing ash, even if it is reasonable to conclude that the "excessive" antimony is from nonhazardous waste sources. Point-of-generation compliance demonstrations are precluded because of detection limit constraints in the high total organic carbon liquid hazardous waste streams. Because of the absolute certainty required by the EPA's Office of Enforcement and Compliance Assurance regarding compliance demonstrations, Eastman is certain that a compliance demonstration adequate for their definition of compliance could not be achieved without stabilization of the ash to a UTS of 0.07 mg/l.

These compliance concerns are not limited to Eastman facilities. As such, it is clear that adequate attention has not been given to the universe of wastes which may require evaluation for LDR at the point of generation and not at the point of land disposal. As such, it is inappropriate to move forward with the adoption of the proposed antimony UTS until adequate consideration of these issues has been given.

E. Eastman Believes That the Database Presented for This Proposal is Inadequate to Establish a New UTS Level for Antimony

Eastman has reviewed the background documents for EPA's proposed rule. While there is limited discussion of the data used to calculate the proposed UTS level for antimony, it appears that the 0.07 mg/l level was based upon stabilization data from Rollins Environmental's Highway 36 Commercial Waste Treatment Facility and GNB's Frisco, Texas treatment facility.

In a letter to Ms. Anita Cummings dated March 10, 1997, Mr. Howard Finkel (ICF Consulting Group) discusses the methodology ICF used to calculate the proposed UTS level. Metals data are presented in Attachment 1 to that letter. For antimony, 19 data points from untreated wastes are presented, and 44 data points for treated wastes are presented. The letter does not distinguish which data points are from Rollins and which are from GNB. Five untreated waste data points were deleted because no corresponding treated data exist. Thirty treated waste data points were deleted because no corresponding untreated data exist. Four pairs of treated/untreated data were deleted because the treated data point was equal to or greater than the corresponding untreated data. One data set was deleted because it was identified as an outlier. After these edits, the final database for antimony consisted of only nine treated data points, two of which were non-detect values.

Eastman questions whether a UTS level calculated from only nine data points can be representative of a treatment level that can be universally achieved. These data are very limited in scope, in that there are few data points, the data may represent treatment from only one facility (two at the most), and the data may represent stabilization of only one type of waste [Note: Insufficient data are presented in the background documents to determine if this is true. However, in the March 10, 1997 ICF letter, antimony was listed as a primary constituent in only one of the 26 waste streams comprising the Rollins and GNB database.]

In addition, 6 (14%) of the 44 treated data points are greater than the proposed 0.07 mg/l level. Thus, several of the GNB/Rollins samples would fail the proposed level. These data points were discarded, and not used in the calculations, because no corresponding untreated data for them exist. However, there is no evidence that these data points are not representative of treatment levels that may be obtained, even from the waste streams and facilities upon which the new proposed standard is based. Eastman recognizes that EPA typically screens data for which there are not corresponding treated/untreated data as part of the process of establishing UTS levels. However, Eastman*s does not feel that, with this database, EPA has provided adequate justification for discarding such a large portion of the treated database. Eastman is especially concerned, in this case, because there is no apparent relationship between the untreated and treated values and that the untreated levels are irrelevant. In an October 9, 1996 letter to Ms. Anita Cummings from Mr. Steve Emmins and Mr. Earl Cornette, the following statements are made:

> "Nonetheless, the "before" samples do not directly match the "after" samples."

"...the Associations caution EPA that this data is grossly insufficient to support any decision regarding the appropriate treatment of D008 materials. To the contrary, this is an extremely limited set of data points derived from sampling at only one plant during a brief two-day period. Accordingly, the data points, taken alone, lack the statistical significance necessary to an informed evaluation."

This discussion points out the difficulty of correlating treated and untreated results, due to hold-up time in the treatment system, influence of mixing with other materials during treatment, lack of sample homogeneity, and other factors. Since the relationship between untreated and treated results is questionable, and may have little or no influence on the validity of the treated results, Eastman suggests that, if EPA decides to develop a new UTS standard for antimony based on GNB and Rollin's database, all of the treated data should be used to calculate the new standard. Using all of the treated data, a new UTS level of 0.83 mg/l would be calculated as follows:

$$\text{UTS} = \text{VF} \quad \text{x} \quad X$$

$$= [\text{Exp}(u + 2.33s)]/X \quad \text{x} \quad X$$

Ed. Note: The “X” should all have a X slash over them to indicate “mean”

$$= \text{Exp}\,[u + 2.33s]$$

$$= \text{Exp}\,[-2.8582 + 2.33(l.1445)]$$

$$= \text{Exp}\,[-0.1915]$$

$$= 0.83 \text{ mg/l}$$

Where: VF = Variability Factor = $[\text{Exp}(u + 2.33s)]/X$

u = Mean of log transformed treated data
s = Standard deviation of log transformed treated data
X = Mean of treated data

EPA's methodology for establishing numerical performance standards on the basis of BDAT (see docket #S-95-PH4P-SO255) says:

"Data on concentrations in treated waste must be adjusted for accuracy using recovery factors specific to the laboratory tests." (pp. 3-7)

The procedures for determining the appropriate percent spike recovery value are presented in Appendix C of that document. In developing the new proposed UTS level for antimony, it appears that the Agency did not adjust the treated GNB and Rollins data for accuracy (presumably because recovery data was not provided to the Agency). This makes the proposed 0.07 mg/l proposed level even more conservative and potentially unachievable, due to analytical variability. If, as Eastman suggests above, EPA decides to establish a new UTS level based upon the GNB and Rollins data, all the treated data should be used and the data should be corrected for accuracy. If recovery data cannot be obtained and if EPA remains determined to change the existing standard, Eastman recommends that the standard be set at 1.0 mg/l, assuming an 80% recovery factor.

F. UTS Levels Must Be Universally Achievable

Eastman recognizes that little data on the level of antimony in treated wastes exists because, in general, there has been no regulatory reason to analyze for antimony in treated wastes. However, as is discussed above, Eastman does not believe the Agency has developed enough data to demonstrate that a UTS level of 0.07 mg/l can be universally achieved across all of the waste streams and waste matrices that are regulated under RCRA. UTS standards should represent levels that can generally be achieved with a broad range of wastes and waste matrices, when BDAT treatment technology is used. It is inappropriate for EPA to set very low UTS levels based on limited data from only one or two facilities and a limited number of waste streams without verifying that those levels can be readily achieved by other facilities treating other types of waste with BDAT treatment technologies.

Response:

The Agency disagrees with the commenter's statement that EPA has not evaluated a wide variety of hazardous waste streams and matrices for establishing the antimony standards. The Agency notes that 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 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) represented a wide range of metal-bearing wastes (both listed and characteristic) that the Agency believes represents the most difficult to treat metal-bearing wastes, due to the high total and leachable levels of metals, pH variations, and the presence of multiple hazardous metal constituents. The types of waste treated included battery slag wastes, mineral processing wastes, baghouse dust, soils, pot solids, recycling by-products, and sludge. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony. For a complete description of the data used see the following memorandums entitled, "Final Revised Calculation of Treatment Standards Using Data Obtained From Rollins Environmental's Highway 36 Commercial Waste Treatment Facility and GNB's

Frisco, Texas Waste Treatment Facility" and "Development of Metal Treatment Standards" that can be found in the Metals Background Document in the docket supporting today's rule.

Also, in response to public comments on difficulties in treating antimony to the standard proposed in the second supplemental rule, the Agency conducted a careful review of the performance data used to calculate the proposed standard of 0.07 mg/L TCLP. As a result, the Agency agrees with the commenters that the performance data used to calculate the proposed standard does not represent BDAT with a "most difficult to treat" waste. The Agency believes that the proposed UTS for antimony must be revised to reflect a more difficult-to-treat antimony waste. Therefore, the Agency collected additional treatment performance data from a commercial treatment facility (Chemical Waste Management), that EPA believes represents the "most difficult to treat" waste, and re-calculated the BDAT treatment standard for antimony (for additional information on the data reviewed, see the Background Document for Antimony Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for antimony nonwastewaters at 1.15 mg/l based on this newly acquired data. Based on the treatment performance data reviewed, the Agency believes that the new antimony standard can readily be achieved through commercially available treatment technologies. See the memorandum entitled, Development of Metal Treatment Standards" for a discussion on the achievability of the final antimony standard. With respect to the comment's ability to meet the final standard, based on a telephone conversation between Mr. Paul Borst of EPA and Mr. Gerald Wrye of Eastman Chemical, the company felt that a standard of 1.15 mg/L TCLP for antimony nonwastewaters with 100% analyte recovery would be achievable with no additional financial burdens. See the RIA in support of this rule for a complete discussion of this issue. Finally, the Agency would like to note that if a particular waste possesses unique properties making it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

The Agency agrees with the commenter that wastes satisfying the significantly-affected test in the BIF rule would not be considered to be generating a prohibited waste. See Horsehead Resource Development Company v. EPA, 16 F. 3d 1246 (D.C. Cir, 1994) (sustaining this interpretation). Issues about other applications of the significantly affected test, however, are not part of this rulemaking.

Responses to the comments regarding treatment cost can be found in the RIA component of the "Response to Comment" document.

7. 2P4P-00087 Waste Management

B. Antimony

The original proposal on August 22, 1995 proposed a UTS level of 2.1 mg/l TCLP for antimony. This level provided WM a level which could be consistently met for waste streams which contain antimony. The new proposed level for antimony of 0.07 mg/l TCLP creates significant problems with our ability to treat all waste streams that contain this compound.

At one particular facility, the UTS level is less than the detection limit which can be achieved (0. 1 86 mg/1). Based on this information the facility examined all antimony wastes streams treated during 1997 to determine if the treatment levels achieved would meet the proposed treatment standard. The results indicated that very few of the wastes streams treated by stabilization, which included furnace ash, incinerator ash, scrubber brine sludge, furnace baghouse dust, and stripper rinse waters would meet the proposed standards. A complete table of the results are included in attachment 2.

Similar results were found at other WM facilities for several waste streams which also support the information included in attachment 2. The example below is representative of treatment data on incinerator ash received regularly at WM's Model City, New York facility. Three of the last six times this waste stream has been stabilized the waste would have failed the proposed antimony number. The standard recipe for this waste stream is 40% Cement Kiln Dust, 15% Ferrous Sulfate, and 4.8 gallons per ton of calcium polysulfide. The information is provided below.

Date Received	12/4/96		2/4/97		2/17/97	
TCLP Metals	untreated	treated	untreated	treated	untreated	treated
Antimony	1.8	0.07	< 1	0.11	< 0.2	0.08
Arsenic	< 0.4	< 0.29	290	< 0.15	< 0.4	< 0.29
Barium	0.52	0.93	< 1	0.53	0.7	0.53
Beryllium	< 0.006	< 0.003	< 0.005	< 0.003	< 0.006	< 0.0015
Cadmium	40	< 0.022	15	< 0.022	13.5	< 0.022
Chromium	< 0.1	< 0.022	< 0.5	< 0.022	< 0.1	< 0.022
Lead	7.8	< 0.10	13	< 0.10	63	< 0.10
Mercury	< 0.1	< 0.1	< 0.1	< 0.l	< 0.1	< 0.1
Nickel	0.88	< 0.043	3	< 0.043	1.7	< 0.043
Selenium	< 0.16	<0.030	< 0.1	< 0.015	< 0.016	< 0.015
Silver	< 0.2	< 0.034	< 0.1	< 0.06	<0.2	< 0.06
Thallium	< 0.078	< 0.030	< 0.05	< 0.030	< 0.078	< 0.015
pH final		9		10		11

In addition, another WM facility has identified problems treating antimony to the proposed standards when Portland cement is substituted for Cement Kiln Dust. One of the problems WM has identified in attempting to address this problem is the lack of scientific literature available on how to treat antimony, especially in the presence of other metals. As a result, WM urges the Agency to maintain the treatment standard for Antimony at 2.1 mg/l TCLP. This treatment level is environmentally sound and represents Best Demonstrated Available Technology (BDAT).

IV. Less Stringent Requirements (62 Fed. Reg. at 26,065)

In the discussion on the portions of the rule which the Agency believes are less stringent, the Agency indicates that the revised universal treatment standards for antimony, barium, beryllium, cadmium, lead, nickel, selenium, thallium, and vanadium are viewed as less stringent.

WM believes that this is incorrect based upon the proposed standards for antimony and thallium. Both of these metals have proposed standards which are more stringent than the current UTS levels. Therefore, the Agency should clarify that these standards are not less stringent in its final rule.

Response:

The Agency thanks the commenter for providing treatment performance data. The Agency has reviewed the new treatment performance data submitted by the commenter and 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 with a "most difficult to treat" waste. The Agency believes that the proposed UTS for antimony must be revised to reflect a more difficult-to-treat antimony waste as indicated in the data submitted by the commenter. Upon analysis, EPA believes that this data represents the "most difficult to treat" waste, and therefore, has determined that a recalculation of the treatment standard for antimony nonwastewaters is appropriate. The Agency has combined this new data submitted by the commenter with the data used to calculated the UTS for antimony nonwastewaters in the Second Supplemental. The data set now consists of 50 data points (Data point 18 (Waste Management, Inc.) was Determined to be an outlier with a Z-score of 3.3271 and was deleted from the data set.) The decision to combine the two data sets was based on the following: 1). Both data sets consisted of multiple metal waste streams with significant levels of antimony in the untreated waste; [Supplemental data submitted to the Agency by the commenter (See Docket Item 12, Letter to Anita Cummings, USEPA from Mitchell Hahn, Waste Management, Inc., October 20, 1997)showed TCLP levels of antimony I the untreated waste of : 1.13, 1.10, 1.23, 1.29, 1.02, 1.29, 1.19, 1.22, 1.56, and 2.09. Data used in the Second Supplemental proposal showed untreated levels of antimony of 3.4800, 3.1300, 16.1, 0.81, 0.4210, 0.8100, 3.0, 0.4340, 0.2440] and 2) both data sets were developed using conventional stabilization techniques that were determined to be highly effective in treating multiple metal waste streams. Based on the merged data, a treatment standard of 1.15 mg/L TCLP was calculated.

Regarding the comment on less stringent standards, the Agency agrees with the commenter that the proposed standard for antimony (0.07mg/l) is more stringent than the existing standard (2.1 mg/l) and the Agency will clarify this in the Phase IV final rule. However, the Agency notes that, as stated in the second supplemental proposed rule, the proposed standard for thallium (0.20 mg/l) is less stringent than the existing UTS (0.078 mg/l).

1. State Authority (p.26064)

2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

D. Status of the New Standards Under HSWA

As EPA observes, the revised treatment standards for metal-bearing wastes to be promulgated in this proceeding have been proposed pursuant to section 3004(m) of RCRA, a section added by the Hazardous and Solid Waste Amendments of 1984 ("HSWA"). See 62 Fed. Reg. at 26065/1. Requirements imposed under HSWA take effect in RCRA-authorized states at the same time as they take effect in unauthorized states.[fn10: See *id.*; section 3006(g) of RCRA, 42 U.S.C. § 6926(g).] Accordingly, the revised treatment standards ordinarily would be expected to take effect in all states as soon as they are made effective by EPA. RCRA does, however, preserve state authority to impose more stringent requirements under state law than EPA has implemented as part of the Federal program. In light of that authority, EPA suggests that RCRA-authorized states are not required to adopt the new UTS/BDAT standards for which EPA is proposing higher numerical values and that those new standards will not become effective in such states unless and until the states adopt them as a matter of state law. See 62 Fed. Reg. at 26065-66. We urge the Agency to reconsider this position.

As EPA acknowledges, the existing UTS/BDAT nonwastewater standards for most metals were developed in whole or in part on the basis of composite sampling data from HTMR facilities, including INMETCO. See 62 Fed. Reg. at 26047/2. And the standards were set on the assumption that they could be achieved by all the major HTMR facilities. See 56 Fed. Reg. 41164, 41169 (August 19, 1991). But, because of the greater variability in grab sampling results, a standard that can be met on the basis of composite sampling may not be achievable on the basis of grab sampling. See 62 Fed. Reg. at 26047. That is a principal reason why EPA is revising the metals standards to reflect solely grab sampling data. See *id.* In effect, the existing composite sample-based standards are being translated into grab sample-based standards of equivalent stringency. The new standards reflect the performance of the same technologies used to set the old standards, but that performance is now measured on the basis of grab sampling, rather than composite sampling. Thus, even in those cases where the numerical values are being revised upward to reflect grab sampling data, the standard is not being made less stringent; it is just being expressed in a different way -- *i.e.* the equivalent degree of stringency is being "translated" from composite to grab sampling.

EPA has recognized this point in the Phase IV Second Supplemental Proposal by providing that until the new grab sample-based standards are adopted, INMETCO and the other major HTMR operator, Horsehead Resource Development Company, may determine compliance with the BDAT standards for metals on the basis of composite sampling. See *id.* at 26047-48, 26069-70. INMETCO is able to meet the existing standards on a composite sample basis, and it expects to be able to meet the revised standards (assuming the adjustments suggested above are made) on a grab sample basis -- operating its HTMR process in precisely the same way. Thus, as far as INMETCO is concerned, the HTMR-based standards will not have become less stringent when the numerical values go up while, at the same time, the basis for determining the company's compliance shifts from composite to grab sampling. The standards will have been restructured, but their stringency will remain the same.

We believe EPA should recognize this point as a matter of general application and provide that the revised standards will take effect in RCRA-authorized states at the same time as they take effect in nonauthorized states if:

(1) The numerical value of the revised standard is lower than the numerical value of the existing standard (antimony,[fn11:EPA mistakenly included antimony in the list of metals for which the revised UTS is higher. See 62 Fed. Reg. at 26065-66.] chromium, silver, and zinc); or

(2) The revised standard (although higher numerically) is based on grab sample data from an HTMR process (beryllium, cadmium, and nickel).

If EPA is unwilling to state this as a matter of general application, it should, at the very least, do so in the case of the two HTMR operations for which it has explicitly recognized that adoption of the revised standards will change the basis of compliance determinations from composite sampling to grab sampling. See 62 Fed. Reg. at 26047-48.

Most of the existing UTS/BDAT nonwastewater standards for metals were based in whole or in part on composite sampling data. By contrast, the revised standards reflect grab sampling data and will be enforced on that basis. Accordingly, the fact that the numerical levels of some of the revised standards are higher than the numerical levels of the existing standards does not mean that the revised standards are less stringent than the existing standards. Instead, the revised numerical values reflect an adjustment from composite to grab sampling, with an attendant increase in the variability factor since “'grab samples normally reflect maximum process variability.'” See 62 Fed. Reg. at 26047. When the difference between composite and grab sampling is taken into account, the stringency of these “increased” numerical standards remains the same as it had been, and the standards continue to reflect the performance of what EPA has identified as the Best Demonstrated Available Technologies. Pursuant to the Hazardous and Solid Waste Amendments of 1984, the revised standards should, therefore, take effect in RCRA-authorized states at the same time they take effect in non-authorized states.

2P4P-00042 Law Office of David J. Lennett (for Environmental Defense Fund, Mineral Policy Center, Southwest Research and Information Center, North Santiam Watershed Council, Pamlico-Tar River Foundation, Siskiyou Regional Education

Project, Okanogan Highlands Alliance, and the Louisiana Environmental Action Network

Finally, in Section XI of the comments, we discuss why the mineral processing and other portions of the proposal are properly considered Category 2 requirements under EPA's developing state authorization modifications. Accordingly, insofar as EPA desires to use revised authorization procedures for mineral processing waste and other non-treatment Phase IV LDR requirements, EPA should take the following steps:

1. Finalize only the proposed <u>procedural</u> revisions associated with the Category 2 authorization process;

2.Modify the proposed Category 2 procedures to provide that either all necessary documents are available electronically or the public comment period is extended to 60 days; and

3. Promulgate the Phase IV LDR requirements as Category 2 revisions.

The proposed Category 2 <u>substantive</u> review changes to the authorization process violate Sections 3006 and 3009 of RCRA and are otherwise inappropriate. Therefore, the substantive elements of the proposed Category 2 procedures should <u>not</u> be adopted.

XI. STATE AUTHORIZATION

Over the course of the last two years, EPA proposed a series of changes intended to "streamline" the state authorization process. In the first Phase IV LDR proposal, EPA proposed a streamlined set of state authorization procedures for new-rules promulgated by EPA that are "minor", "routine in nature", and "do not significantly change the way a State might implement its program". See 61 FR 18819; 60 FR 43687 (August 22, 1995). Under these expedited procedures, known as Category 1 procedures, state authorization submissions are limited to certifications that state requirements are equivalent and no less stringent than the new federal rules (and copies of the state requirements), EPA reviews the application <u>only for completeness</u>, 30 days public notice is provided on the proposed authorization decision, and the authorization becomes final 60 days after the public notice is published unless adverse comment is received by the Agency.

In the HWIR-media Rulemaking, EPA proposed a second set of streamlined authorization procedures, known as Category 2 procedures, intended for new federal rules that would significantly change state programs. The Category 2 procedures differ from existing authorization procedures in several important respects. Procedurally, EPA would limit its review of state submissions to 60 days, once a completeness determination is made. In addition, state authorization decisions would become final 60 days after publication of the proposed decision, unless adverse public comment on the proposal is received.

Substantively, state authorization submissions would largely contain Director certifications as to authorities and capabilities, rather than data and other information supporting demonstrations of program capability. Secondly, those certifications would target "essential elements" of the new rules that may be identified by EPA, rather than the new rules as written, thereby limiting the scope of EPA's authorization determinations to those "essential elements".

As indicated in EDF's comments on the August 1995 proposal, the Category 1 procedures are appropriate for those new federal rules that truly pose no significant changes to state programs in areas such as scope, types of regulatory decisions required, or resource demands. Accordingly, the issue with the Category 1 procedures are not the procedures themselves, but the application of the procedures to circumstances not consistent with their intended use.

As indicated in EDF's comments on the HWIR-media proposal, the substantive aspects of the Category 2 procedures raise profound legal and policy concerns as to whether EPA would adequately discharge its responsibilities under Sections 3006 and 3009 of RCRA in reaching the authorization determinations. For example, EPA cannot ensure the state program provides for "adequate enforcement" if EPA relies merely upon state certifications that resources and available technical expertise are sufficient to meet the challenges posed by the new rules. In addition, by limiting the scope of the authorization review to "essential elements" of the program revisions, the EPA proposal will result in the omission of important elements in the authorization rules, unless the essential elements are identified with exceptional vigor and care. Absent such care, this approach will result in the eventual authorization of state programs less stringent than the federal program, in violation of Sections 3006 and 3009 of RCRA. EPA's suggestion in the HWIR-media proposal preamble that the essential elements could simply be provided as guidance illustrates many of the problems posed by this approach. See 61 FR 18829.

Several other aspects of the Category 2 procedures merit particular scrutiny. First, EPA proposes only a 30 day comment period on proposed authorization determinations, notwithstanding the limited scope of the Agency review and thus the increased importance of public involvement in the authorization determinations. This length of time is insufficient to obtain the necessary materials, review them in detail, and then prepare substantive comments. In fact, the process of obtaining the materials alone can consume a large portion of the comment period. [FN 127: For this reason, EPA should require the submission of all state authorization materials (including copies of relevant statutes and regulations) in electronic format, and then provide access to the materials over the internet for immediate downloading. In this manner, commenters can utilize the full length of the 30 day comment period for review and analysis. Alternatively, EPA should extend the comment period to 60 days.]

Second, EPA proposes a definition of "equivalent" for evaluating state programs which requires that state laws and regulations "provide for a program" no less stringent than the analogous federal program. See proposed 40 CFR 271.21(j). While carbon copy state programs are not required under RCRA, states are prohibited from enforcing "requirements" less stringent than federal law under Section 3009 of RCRA. Therefore, insofar as EPA regards the proposed "equivalency" definition as the basis for authorizing state programs with less stringent requirements than new federal rules, the proposal is contrary to law. This deficiency is particularly acute if EPA would authorize less stringent requirements deemed "essential elements" of program revisions, based upon a totally unspecified and unproven methodology purported to reach stringency determinations on a programmatic basis. [FN 128: The proposed Category 1 procedures do not suffer from this defect since state requirements must be "equivalent to and no less stringent than" the federal program revisions, and thus link the stringency determinations to the actual requirements. See proposed 40 CFR 271.28(b)(1) at 60 FR 43699 (August 22, 1995).]

In the instant reproposal, EPA seeks comment on whether the all the Phase IV LDR provisions, including the mineral processing waste provisions, should be authorized using the Category 1 procedures. See 62 FR 26065 (May 12, 1997). However, the actual regulatory language is the same as the January 1996 proposal, which more closely reflects proposed Category 2 procedures.

In this portion of the comments, we will address whether the Phase IV LDR requirements are appropriately Category 1 revisions. Since the actual regulatory language is unchanged from the January 1996 proposal, the 1996 EDF Comments on the regulatory language are hereby incorporated by reference.

Except as they are applied to the mineral processing industry, the new treatment standards contained in the Phase IV LDR Rulemaking proposal are appropriate Category 1 revisions because they pose no significant changes to state programs in areas such as scope, types of regulatory decisions required, or resource demands. In most cases, the treatment standards . represent revisions to previously existing requirements for wastes already in the system.

However, other aspects of this Rulemaking will control units or facilities in a substantially different manner than Currently controlled, and/or prohibit the use of hazardous waste as fill material. Under these circumstances, the changes cannot be characterized as "minor" or "routine" revisions to the program. [FN 129: 60 FR 43686-7 (August 22, 1985).]

Most importantly, all the regulations related to mineral processing wastes are first impression requirements for a large number of wastes and potentially affected facilities. While EPA claims these provisions will not significantly expand the scope of the program, "and will be easily adopted by the states", the facts indicate otherwise. [FN 130: 62 FR

26065 (May 12, 1997).] According to EPA's own data, 29 mineral commodity sectors that generate over 100 waste different waste streams at more than 100 facilities are potentially affected by the Phase IV rules. Accordingly, the Phase IV LDR rules initially establish treatment standards at many facilities throughout the country covering millions of tons of hazardous waste. This represents a significant expansion of the RCRA program under any reasonable view of the program before and after.

Moreover, given the history of mineral processing waste regulation in the RCRA program, there is no basis for EPA to conclude the states "will easily adopt" the necessary requirements. First and foremost, the states apparently have not adopted the necessary rule changes to restrict the scope of the Bevill exemption in accordance with EPA's 1989 and 1990 rules. While states should have adopted the federal rule changes no later than January 1993 (even with the maximum extensions allowed under 40 CFR 271.21(e)(2)), the biennial reporting data for 1995 does not include many mineral processing wastes. Therefore, state programs have not complied with current authorization procedures and requirements, completely contradicting EPA claims of "easy state adoption".

EPA's experience when investigating damage cases in state files also demonstrates state adoption of mineral processing waste requirements is not as easy as EPA suggests. Despite limiting the investigation to damage cases occurring since 1990, EPA found state files were grossly incomplete, follow-up action to many releases were not performed, and one state enforcement division refused to cooperate with EPA entirely. [FN 131: EPA Damage Cases at 22-23.]

Second, since many states do not yet regulate and have not applied for mineral processing waste authorization, EPA has not yet determined whether state program capabilities are adequate for these wastes. Since previous authorization for regulating mineral processing wastes as hazardous is not a precondition for authorization of the Phase IV LDR-rules under EPA's proposal, EPA could approve a state LDR program for mineral processing wastes without first determining state program capabilities for these wastes, in violation of Section 3006 of RCRA. [FN 132: EPA also contemplates allowing states to base their Category authorization upon non-RCRA authorities in whole or in part. More than likely EPA has not previously reviewed the relevant non-RCRA requirements or program capabilities, even in states already authorized to administer the program for mineral processing wastes.]

Third, EPA has reviewed process descriptions in many different commodity sectors and determined which wastes are beneficiation and covered by the Bevill exclusion, and which wastes are mineral processing wastes subject to RCRA regulation when exhibiting a hazardous waste characteristic. EPA is considering issuing these determinations in a non-binding guidance document, which would allow states to reach different conclusions about the scope of the Bevill exclusion. See 61 FR 2354 (January 25, 1996). Such state decisions defining the line between beneficiation and processing would be unprecedented in the RCRA program, and EPA has never evaluated state program requirements and capabilities to reach those determinations in order to ensure the state program consistency and enforcement capability mandated by Section 3006 of RCRA.

Indeed, the Agency recognizes these complexities associated with state mineral processing waste programs in one of its background reports. As EPA indicated:

> Prior to 1990, many facilities and specific waste streams associated with mining and mineral processing operations were not subject to the rigorous controls of RCRA Subtitle C. Although some are now explicitly regulated under Subtitle C, there may be remaining uncertainty as to the statutory and regulatory authority over these facilities and wastes. Even where the state's authority is clear, the relatively recent (post-1990) changes in the RCRA status of mineral industry wastes may have, in the short term, outstripped the ability of some state agencies to effectively regulate them. As a result, some facilities may not, as yet, have been fully subjected to the requirements of RCRA Subtitle C (e.g., permitting, monitoring, and record keeping/reporting). [FN 133: EPA Damage Cases at 22-23 (emphasis added). See also Reproposal RIA at 7 ("This alternative reflects the Agency's belief that some operators do not clearly understand the Subtitle C regulations apply to their secondary materials, i.e., that spent materials intended for recycling are not currently excluded from Subtitle C regulation.").]

This candid assessment of existing state program capabilities completely belies EPA's position on Category 1 authorization for mineral processing waste requirements.

Accordingly, insofar as EPA desires to use revised authorization procedures for mineral processing waste and other non-treatment Phase IV LDR requirements, EPA should take the following steps:

1. Finalize only the proposed procedural revisions associated with the Category 2 authorization process;

2. Modify the proposed Category 2 procedures to provide that either all necessary documents are available electronically or the public comment period is extended to 60 days; and

3. Promulgate the Phase IV LDR requirements as Category 2 revisions.

For the reasons explained above, and discussed further in the EDF September 1996 comments on the HWIR-media rule (which are hereby incorporated by reference), the proposed Category 2 substantive review changes to the authorization process violate Sections 3006 and 3009 of RCRA and are otherwise inappropriate. Therefore, the substantive elements of the proposed Category 2 procedures should not be adopted.

2P4P-00068 Horsehead Resource Development Company, Inc.

C. EPA's Planned Phase-In Implementation of the Revised UTS WUI Be Impracticable to Implement and Unlawful.

As proposed, EPA's planned phase-in implementation of the revised UTS, including the grab sampling requirement for K061, K062, and F006, will be unpracticable for the regulated community to implement and unlawful. Serious implementation difficulties will occur because, under EPA's current plan, only the grab sampling requirement and the more stringent proposed UTS (which are based solely on grab sampling data) will become effective immediately in all states after EPA promulgates the Phase IV LDR final rule. The less stringent UTS, many of which are based on composite sampling data, will not become effective until the states take separate action to adopt them. Thus, the regulated community will be subject to UTS that are based on a mix of composite and grab sampling data, yet are implemented and enforced solely on the basis of grab sampling, which is contrary to EPA policy and unlawful. See 55 Fed. Reg. 22,520, 22539 (June 1, 1990) (where composite data is used to establish the standard, enforcement of the standard also is based on composite sampling).

The UTS implementation problems will be compounded in two important respects for any company that operates facilities in multiple states and, in accordance with existing law, uses composite sampling to determine compliance with the UTS. First, states authorized under RCRA's Hazardous and Solid Waste Amendments to administer the LDR program will adopt the less stringent UTS according to their own regulatory timetables within approximately the next two years, if at all. Therefore, companies will be subject to different sets of UTS in different states unless and until all of the states adopt the less stringent UTS. Second, and equally problematic, because of the grab sampling requirement - a more stringent requirement that states must adopt -- companies will be placed in the unacceptable position of having to use grab sampling to confirm compliance with UTS that were developed on the basis of composite sampling. This state of affairs will continue at least until the states adopt the newer, less stringent standards in their place. This patch-quilt implementation of the UTS, which will be based on a mix of composite and grab sampling data until all relevant states adopt all of the standards, yet enforced using grab sampling, not only frustrates the very purpose of the UTS but also will be impracticable to implement and unlawful.

The most sensible solution to this implementation problem is for EPA to continue to allow HRD and other affected companies to continue to comply with the current UTS for K061, K062, and F006 through the use of composite sampling until all relevant states have adopted all of the UTS, including the less stringent UTS. There would be no "environmental" issues implicated in this solution, since UTS are technology-based (moreover, this matter involves only the less stringent standards). Extending the composite sampling compliance period is consistent with EPA's policy of implementing and enforcing the UTS on the same sampling basis as that used in their development, and is consistent with EPA's acceptance of composite sampling for K061, K062 and F006. See 62 Fed. Reg. at 26047.

Should EPA not allow continued compliance with the current UTS based on composite sampling data, another potential solution to the implementation problem is for EPA to determine that, regardless of the actual levels, all of the UTS are more stringent than the existing standards because the sampling basis has changed from composite to grab sampling. (Grab sampling methodology is more stringent than composite sampling methodology.) Accordingly, all of the UTS should become effective immediately in all states and enforceable by EPA as more stringent HSWA regulations. Otherwise, as explained above, measuring compliance with the UTS will be rendered impracticable and unlawful.

2P4P-00074 New York State Department of Environmental Conservation

DEC supports the delegation of authority to states for certain aspects of the LDR. New York State, for instance, has been authorized for the LDR program since May 1992. In its continuing effort to improve and update the LDR and associated hazardous waste programs, EPA may wish to consider delegating authority to states with approved LDR programs for at least case--by-case variances, extensions, and exemptions. DEC believes that improvement to the LDR program has its base in the ability of regulatory agencies to quickly and efficiently administer the program. This will improve compliance and expedite environmentally safe solutions to hazardous waste management.

RESPONSE

The U.S. EPA appreciates the above comment regarding State Authorization Streamlining. The U. S. EPA will respond to this comment in the upcoming Final HWIR Media Rule.

Phase IV Second Supplemental Proposed Rule:
Comments and Responses on Beryllium

1. 2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

In addition, while the proposed standard for beryllium is consistent with the data considered by EPA, the stabilization data for beryllium are quite limited and reflect the treatment of wastes having a very low beryllium content. This leads us to question whether the proposed standard of 0.02 mg/L can be met by stabilization in the case of higher beryllium content wastes.

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_{99}" 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 wastestreams 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 wastestream 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.

In addition, while the proposed standard for beryllium is consistent with the data considered by EPA, the stabilization data for beryllium are quite limited and reflect the treatment of wastes having a very low beryllium content. This leads us to question whether the proposed standard of 0.02 mg/L can be met by stabilization in the case of higher beryllium content wastes.

Response:

The Agency agrees with the commenter that the performance data used to calculate the proposed standard (0.02 mg/l) does not adequately account for the difficulty in treating relatively high concentrations of beryllium wastes. The Agency believes that the proposed UTS for beryllium must be revised to reflect a more difficult-to-treat, high-concentration beryllium waste. Therefore, the Agency collected additional treatment performance data on high beryllium containing wastes (from Brush Wellman, Inc.) and re-calculated the BDAT treatment standard for beryllium (for additional information on the data reviewed, see the Background Document for Beryllium Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for beryllium nonwastewaters of 1.22 mg/l based on this newly acquired data. The Agency would like to point out however, that INMETCO submitted HTMR treatment data (40 data points) on beryllium treatment, that data indicated that all the data points would achieve the treatment standard being promulgated. The minimum value being 0.0100 and the maximum being 0.0200 mg/L TCLP.

2. 2P4P-00017 Battery Council International (BCI) and Association of Battery Recyclers (ABR)

I. THE PROPOSED LEAD, SILVER, ANTIMONY, BERYLLIUM, AND THALLIUM TREATMENT STANDARDS ARE NOT ACHIEVABLE WITH BDAT

A concentration-based treatment standard must be set at a performance level achievable by application of the Best Demonstrated Available Technology (BDAT).[fn 2: 51 Fed. Reg. 40,572, 40,578 (1986); *Hazardous Waste Treatment Council v. United States EPA*, 886 F.2d 355, 364-65 (D.C. Cir. 1989), *cert. denied,* 498 U.S. 849 (1990).] To identify BDAT for the treatment of a particular waste, EPA has recognized that it must consider three factors: whether the technology is "best demonstrated;" whether it is "available;" and whether it is the "best applicable" technology.[fn 3: 55 Fed. Reg. 22,536.]

A treatment technology is considered to be "demonstrated" when full-scale treatment operations are currently being used to treat that waste.[fn4: *Id.*] To be considered "available," the technology must not be proprietary or a patented process that cannot be purchased or licensed from the proprietor. (I.e., it must be "commercially available.") It also must substantially diminish the toxicity of the waste or reduce the likelihood of migration of hazardous constituents from the waste.[fn5: *Id.*] To be "applicable," a technology must theoretically be able to treat the waste.[fn6: *Id.*]

The proposed treatment standards do not meet these criteria. For one thing, the high temperature metals recovery technologies (HTMR) to which EPA points as capable of meeting its proposed standards are not BDAT. First, they are not demonstrably capable of handling D008 wastes. They handle D006 and K061 wastes, the chemistry of which is vastly different from D008. Second, they are not commercially available.

BDAT in fact is the stabilization process employed by existing secondary smelters. However, data submitted to EPA by BCI and ABR on November 27,1995 (BCI's comments are attached as "Exhibit 1") and a new database (attached as "Exhibit 2") show that no facility in the secondary lead industry can meet EPA's proposed treatment standards for lead, silver, antimony, beryllium, and thallium. Thus, EPA has not demonstrated that stabilization technologies are capable of meeting its proposed treatment standards. Instead, the data supports setting standards at the levels set forth above, in the Summary section of these comments.

A. HTMR Technologies to Meet the Proposed D008 Nonwastewater Treatment Standards are Neither Demonstrated nor Available

The HTMR technologies asserted by EPA as capable of treating D008 wastes to its proposed treatment standards are not demonstrated. The chemistry of D008 wastes is vastly different from the chemistries of D006 and K061 wastes. But EPA reviewed and relied upon only D006 and K061 treatment data in concluding that HTMR technologies could meet the treatment standards D006 wastes include paint, plating sludges, wastewater treatment sludges, and a wide variety of other waste materials derived from the manufacture and reclamation of nickel-cadmium batteries and other cadmium-related products. D006 wastes typically include various concentrations of cadmium, nickel, zinc, and chromium. Waste streams from particular facilities tend to be relatively consistent in chemical makeup. D006 wastes rarely contain antimony, arsenic, and selenium, which are abundant in D008 wastes.

K061 wastes are derived from the steel making process. The chemical constituents of K061 are iron, zinc, chromium, nickel, and lead oxides. K061 wastes also typically contain very little antimony, arsenic, and selenium. As with D006 waste streams at particular facilities tend to have reasonably consistent chemical characteristics.

In contrast, the D008 wastes generated from lead-acid battery recycling operations and from the cleanup of contaminated soils and debris tend to be massive, solid, and extremely variable. Their chemical and physical characteristics can vary significantly depending upon individual processes and the feedstocks used to produce them. They may include substantial quantities of calcium, sodium, and other alkaline earth oxides as well as sulfur, selenium, antimony, and arsenic. These elements are essentially non-existent in D006 and K061 wastes.

The chemical differences between D008 wastes and D006 and K061 wastes render the HTMR process less effective in treating D008 wastes to EPA*s proposed treatment levels. Moreover, many D008 wastes (e.g., secondary smelter slags) are already the residues of an HTMR process. They thus contain significant quantities of silica and iron oxides which further impedes the ability of additional HTMR processes to remove elements such as lead, antimony, and selenium.

In addition, the HTMR technology used by EPA to determine the BDAT (known as the Horsehead Resource Development Company Inc.'s Waelz kiln series process and the INMETCO HTMR process) are not "commercially available" to treat D008 nonwastewaters. Both processes are patented and very expensive. Neither has been built into any of the lead battery industry's operations or otherwise applied to battery-reclamation slags. Moreover, no facility operating either process is permitted to accept and store D008 wastes.

D. The Proper Treatment Standards

Data collected and analyzed by BCI and ABR establishes that the proper treatment standards should be the following:

Barium 21 mg/l
Cadmium 0.20 mg/l
Chromium 0.85 mg/l
Lead 9.46 mg/l
Selenium 5.7 mg/l
Silver 0.22 mg/l
Antimony 2.98 mg/l

Beryllium 0.13 mg/l
Nickel 13.6 mg/l
Thallium 0.79 mg/l
Vanadium 1.6 mg/l
Zinc 4.3 mg/l

As has been amply discussed, EPA's proposed treatment standards for lead, silver, antimony, beryllium, and thallium should not be set below the levels identified above.

Response:

The Agency notes that the commenter may be correct in stating that the chemistry of D008 waste is different from the chemistries of D006 and K061 wastes. The Agency has determined that beryllium is usually a UHC in D008 waste. However, the important issue here is that the D006 and K061 wastes are more difficult to treat compared to D008 wastes. EPA, when transferring treatment standards from one waste to another, determines whether the BDAT will achieve the same level of performance on an untested waste that it achieved on a previously tested waste. For this determination, EPA examines the waste characteristics that affect performance such as (I) the concentrations of undesirable volatile metals, (ii) the metal constituent boiling points, and (iii) the thermal conductivity of the waste. In addition, EPA also examines the design and operating parameters of the technology. Based on the evaluation of these waste characteristics that affect performance, the Agency determined that well operated HTMR facilities can meet the treatment standards for D008 wastes.

The Agency notes that HTMR technology is currently being implemented on a full-scale basis and is being used to treat TC metal wastes and therefore is considered a “demonstrated” technology. The Agency has conducted extensive research on commercially demonstrated and available metal recovery technologies and developed detailed profiles of metal recovery technologies applicable for metal-bearing wastes (See the “profiles of metal recovery technologies for mineral processing and other metal-bearing hazardous wastes,” U.S. EPA, April 30, 1997). Also, the treatment performance data obtained and reviewed by the Agency from HTMR facilities indicate that the TC metal-bearing wastes can be treated to the UTS. In addition, the Agency notes that the mere existence of the secondary lead smelting industry itself proves the applicability of HTMR to D008 wastes.

EPA also recognizes that HTMR may not be the best technology for all TC metal wastes. For the same reason, the Agency is establishing a concentration-based standard rather than requiring a specific technology. To compile further evidence regarding the treatability of TC metal wastes, including D008 wastes, to the UTS, the Agency conducted site visits to commercial hazardous waste treatment facilities and collected additional stabilization and HTMR treatment performance data that better represent the diversity of metal wastes than those previously used. The treatment performance data (based on grab samples) represented a wide range of metal-bearing wastes (both listed and characteristic) that the Agency believes represents the most difficult to treat metal-bearing wastes. (See the discussions in USEPA, "Treatment Technology Background Document", January 1991). The types of waste treated included battery slag, mineral processing wastes, baghouse dust, soils, pot solids, recycling by-products, and sludge. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony. The Agency compared the treatment standards developed based on stabilization and HTMR and selected the highest (less stringent) standard for each metal to establish the UTS, thus, allowing for process variability and detection limit difficulties.

In response to public comments on difficulties in treating beryllium to the standard proposed in the second supplemental rule, the Agency conducted a careful review of the performance data used to calculate the proposed standard of 0.02 mg/L TCLP. As a result, the Agency agrees with the commenters that the performance data used to calculate the proposed standard does not represent BDAT as a "most difficult to treat" waste. The Agency believes that the proposed UTS for beryllium must be revised to reflect a more difficult-to-treat, high-concentration beryllium waste. Therefore, the Agency collected additional treatment performance data on high beryllium containing wastes (from Brush Wellman, Inc.) and re-calculated the BDAT treatment standard for beryllium (for additional information on the data reviewed, see the Background Document for Metal Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for beryllium nonwastewaters of 1.22 mg/l based on this newly acquired data.

The Agency also reviewed the data submitted by the commenter, and found the data to be lacking in form. Specifically, the data submitted to the Agency were: (1) based on composite samples rather than grab samples, the latter being the only type used to develop BDAT treatment standards; and (2) not accompanied with specific treatment information, or any indication that performance of the treatment process was in fact optimized. Therefore, the Agency was unable to use the data for developing the BDAT treatment standards. However, based on an analysis of the data, it shows that of the 83 data points submitted by the commenter on beryllium, 83/83 data points are below the promulgated treatment standard (i.e., achieve it).. The treated data ranged from 0.0100 mg/L TCLP to 0.080 mg/L TCLP.

The Agency also would like to note that if a particular waste is unique or possesses properties making it difficult to treat, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

3. 2P4P-00018 Collier, Shannon, Rill & Scott, PLLC for Specialty Steel Industry of North America (SSINA)

III. 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 nondetectable in the TCLP extract from nine of the eleven raw wastestream samples in EPA's overall stabilization database. See March 10, 1997 memorandum to Anita Cummings (Item 5001 1 in Docket F-97-2P4P-FFFFF), Wastestream 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.

Response:

The Agency agrees with the commenter that the performance data used to calculate the proposed standard (0.02 mg/l) does not adequately account for the difficulty in treating relatively high concentrations of beryllium wastes. The Agency believes that the proposed UTS for beryllium must be revised to reflect a more difficult-to-treat, high-concentration beryllium waste. Therefore, the Agency collected additional treatment performance data on high beryllium containing wastes (from Brush Wellman, Inc.) and re-calculated the BDAT treatment standard for beryllium (for additional information on the data reviewed, see the Background Document for Beryllium Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for beryllium nonwastewaters of 1.22 mg/l based on this newly acquired data.

4. 2P4P-00025 RSR Corporation

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.

Response:

The Agency disagrees with the commenter’s statement that EPA has not demonstrated the capability and availability of commercial treatment technologies. The Agency has provided adequate data to show the capability and availability of commercial treatment technologies (stabilization and HTMR) for treating the TC metals to the UTS levels. (See the BDAT background document for this rule). 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) represented 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. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony.

However, the Agency recognizes that the performance data used to calculate the proposed standard (0.02 mg/l) does not adequately account for the difficulty in treating relatively high concentrations of beryllium wastes. The Agency believes that the proposed UTS for beryllium must be revised to reflect a more difficult-to-treat, high-concentration beryllium waste. Therefore, the Agency collected additional treatment performance data on high beryllium containing wastes (from Brush Wellman, Inc.) and re-calculated the BDAT treatment standard for beryllium (for additional information on the data reviewed, see the Background Document for Beryllium Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for beryllium nonwastewaters of 1.22 mg/l based on this newly acquired data.

The Agency also would like to note that if a particular waste possesses unique properties that make it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

See respective sections for discussion of other metals.

5. 2P4P-00028 Laidlaw Environmental Services

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.

Response:

The Agency thanks the commenter for their support. However, in response to public comments on difficulties in treating beryllium to the standard proposed in the second supplemental rule, the Agency conducted a careful review of the performance data used to calculate the proposed standard of 0.02 mg/L TCLP. As a result, the Agency agrees with the commenters that the performance data used to calculate the proposed standard does not represent BDAT with a "most difficult to treat" waste. The Agency believes that the proposed UTS for beryllium must be revised to reflect a more difficult-to-treat, high-concentration beryllium waste. Therefore, the Agency collected additional treatment performance data on high beryllium containing wastes (from Brush Wellman, Inc.) and re-calculated the BDAT treatment standard for beryllium (for additional information on the data reviewed, see the Background Document for Beryllium Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for beryllium nonwastewaters of 1.22 mg/l based on this newly acquired data.

6. 2P4P-00053 Brush Wellman, Inc.

Brush Wellman Inc. ("Brush Wellman") is no stranger to the Environmental Protection Agency's efforts to promulgate regulations establishing a universal treatment standard for beryllium. As the only fully integrated producer of beryllium, beryllium alloys and beryllium oxide ceramic, Brush Wellman has submitted comments regarding a beryllium UTS on three separate occasions. [FN 1 Comments Of Brush Wellman Inc. With Respect To EPA's Proposed Rule To Establish Universal Treatment Standards And Treatment Standards For Contaminated Soil, Docket No. F-92-CS2P-FFFFF (March 4,1994); Comments Of Brush Wellman Inc. On EPA's Proposed Phase IV LDR Rule And Proposed Revision To UTS For Beryllium, Docket No. F-95-PH4P-FFFFF (November 20, 1995); Comments Of Brush Wellman Inc. With Regard To Application Of The Universal Treatment Standard For Beryllium To Mineral Processing Wastes And The Use Of The Maximum Contaminant Level For Beryllium As A Groundwater Protection Standard, Docket No. F-95-PH4A-FFFFF (April 23, 1996).] As an initial matter, Brush Wellman hereby incorporates those comments by reference and urges the Agency to consider the points contained therein as supplemented by the information Brush Wellman presents in these comments.

As discussed in Brush Wellman's earlier comments, the Agency's rationale for establishing a UTS at the proposed level was deficient in several respects. The most recent efforts by EPA in this regard, as reflected in the record for the proposed rulemaking, do little to cure the defects and instead repeat the same mistakes of EPA's earlier proposals. Accordingly, Brush Wellman urges the Agency to consider Brush Wellman's comments and reflect them in any final action the Agency takes regarding establishing a UTS for beryllium.

In sum, EPA's proposed UTS for beryllium should not be adopted for the following reasons:

! The proposed UTS is based on a very limited amount of beryllium treatment data. In fact, it is highly suspect that treatment even occurred in any of the tests relied upon to develop the proposed UTS.
! The data relied upon by EPA relates to non-representative, low beryllium content wastes that do not realistically reflect treatability issues posed by beryllium.
! Treatability data from a commercial stabilization facility as well as from a treatability study involving Brush-generated waste exceed the proposed UTS for beryllium.
! Due to the varying chemical forms in which beryllium is present in different wastes and the presence of beryllium in typical stabilization agents, the proposed UTS for beryllium is not achievable through conventional stabilization methods.
! The proposed UTS for beryllium is lower than that necessary to minimize risk to human health and the environment and indeed may be lower than levels present in naturally occurring materials.

The balance of these comments address these points in greater detail.

I. The Agency's Consideration Of Treatability Information Has Focused On A Limited Amount Of Non-Representative Data And Needs To Be Expanded To Account For Data That Shows That The Proposed UTS Is Not Universally Achievable.

A. EPA's Data Reflecting The Results Of HTMR Are Not Adequate To Support The Proposed UTS For Beryllium.

The UTS for beryllium, as initially proposed by EPA, and as proposed in the present rulemaking, is based on the treatment of K061 using high temperature metal recovery (HTMR) as BDAT. EPA continues to rely on HTMR data despite the facts that K061 does not typically contain beryllium and that whatever beryllium found in K061 is probably naturally occurring rather than present as a result of manufacturing activities. Moreover, as previously explained by Brush Wellman, the K061 data used by the Agency does not actually demonstrate that treatment of beryllium occurs as a result of the HTMR process. Indeed, the data indicate that, instead of treating the beryllium, HTMR actually increased the total beryllium concentrations in the waste. Accordingly, the Agency's continued reliance on the limited HTMR data relating to beryllium is misplaced and should be abandoned by the Agency in establishing the final UTS for beryllium.

B. EPA's Data Reflecting The Results Of Stabilization Of Beryllium-Containing Wastes Are Not Adequate To Support The Proposed UTS For Beryllium.

In light of its position that BDAT for the UTS for metals includes both HTMR and stabilization, EPA tried to collect stabilization data to demonstrate that the HTMR-derived UTS could be met through stabilization. If the stabilization data showed results higher than the HTMR data, the Agency presumably would have proposed a higher, stabilization-derived UTS. The Agency's data, however, suggested that stabilization could achieve TCLP results for beryllium of 0.012 mg/l. The stabilization data relied upon by the Agency suffers from some of the same deficiencies that characterizes the HTMR data for beryllium: it is very limited and is derived from low beryllium content waste.

ICF Incorporated, the consulting firm contracted by EPA, used a lack of data and unscientific methods to determine the level of treatment achievable for beryllium through stabilization. According to Docket Document No. 2P4P-S0011, the data supplied to EPA by Rollins Environmental's Highway 36 Treatment Facility and GNB's Frisco Treatment Facility included only 11 samples of waste analyzed for TCLP-leachable beryllium prior to treatment and 26 samples of treated waste analyzed for TCLP-leachable beryllium. The total levels of beryllium in both the "raw" (untreated) and treated samples were not reported.

Of the eleven samples of raw waste, eight contained less than 0.005 mg/l beryllium, one contained less than 0.5 mg/l beryllium, and only two had detectable levels of beryllium (0.016 and 0.008 mg/1). Of the 26 samples of treated waste analyzed for TCLP-leachable beryllium, only one contained a detectable level of beryllium (0.0014 mg/1). The other 25 samples had non-detectable levels of beryllium, with 24 listed as containing less than 0.005 mg/l and the other containing less than 0.0017 mg/l. The only sample of treated waste which contained a detectable level of beryllium (0.0014 mg/1) was identified as an outlier and was not used to calculate the treatment standard.

The treatment standard actually was calculated by using four samples of waste, two of which did not even contain detectable levels of beryllium (with detection limits of 0.5 and 0.005 mg/l). The other two samples of raw waste used contained extremely low, but detectable, levels of beryllium. Samples of waste which did not contain detectable levels of beryllium were arbitrarily assigned beryllium values equal to the detection limit for the sample for purposes of determining average beryllium content of the untreated waste. Of the four samples of waste used to calculate the treatment standard, none contained detectable levels of beryllium in the treated material. However, each was arbitrarily assigned a beryllium value equal to the detection limit for purposed of calculating the treatment standard. In addition, of the only two samples of raw waste which contained beryllium, one contained 0.008 mg/l of leachable beryllium prior to treatment, and less than 0.005 mg/l following treatment. A drop in the beryllium level from 0.008 to 0.005 is not significant. It could be explained by such factors as analytical error, sampling error, or indeed could have been accomplished simply through dilution of the waste with the treatment reagents.

The data and calculation used to demonstrate the achievability of the UTS for beryllium are suspect at best. To base the standard on only one sample which contained a detectable level of beryllium greater than 0.01 mg/l is unreasonable. There is no way possible for anyone, using even the most minimal of scientific principles, to establish a curve determining to what extent treatment is feasible based on only one statistically significant sample point. To take the data used and apply the resulting treatment standard to all waste streams containing beryllium is unconscionable.

C. The Final UTS For Beryllium Should Reflect Available Treatment Data From More Representative Waste Samples As Well As Treatability Studies Involving High Beryllium Content Wastes.

In the preamble to the proposed regulation, EPA apparently refers to Brush Wellman's previous comments and remarks that Brush Wellman failed to provide any treatment data that validated Brush Wellman's claims that the proposed UTS is not achievable. Brush Wellman points out that the burden originally should be on the Agency, and not the regulated community, to develop the data to support the establishment of regulatory standards. If sufficient reliable data to support the establishment of a UTS do not exist and the Agency is unwilling to develop such data, the response is not to promulgate a standard based on inadequate data but rather is to not promulgate the standard in the first place.

Notwithstanding the Agency's abandonment of this fundamental principle, Brush Wellman has endeavored to obtain relevant data. Like the Agency's more recent attempts as described in various Agency documents present in the administrative record, Brush Wellman too has had difficulty in obtaining real data regarding wastes from non-beryllium facilities. However, unlike the Agency, Brush has obtained some data relating to the inability of a commercial treatment facility to treat beryllium to the proposed UTS which the Agency was prepared to summarily dismiss as "anecdotal."

In Docket Document No. 2P4P-S0035, the Agency's efforts to obtain metal stabilization information are described. This description includes the following statement:

> Anecdotal information from Facility 3 shows that over the past 3 years UTS can be met for all metals, <u>except for Beryllium</u>, over 80% of the time. This information was based on composite sampling, using TSP as the stabilizing agent.

USEPA Overview of Five Data Sets Submitted in Response to Land Disposal Restriction Phase IV Proposed Rule: Treatment of Metals. Draft. November 1996 at p. 6 (emphasis added). The same document goes on to conclude:

> Selenium and Beryllium are two constituents that may pose difficulty for commercial treaters. However, no data was provided during the site visits on Beryllium.

<u>Id</u>. Even in light of this frank admission by the Agency, it still proceeded to promulgate a UTS for beryllium that is not achievable using commercially available treatment techniques.

As revealed in Docket Document No. 2P4P-S0027, Facility 3 is the Mill Service facility in Yukon, Pennsylvania. In its site visit report, EPA once again acknowledges that the proposed beryllium UTS is not achievable when it states:

> Mill Service can treat wastes with any metal except beryllium. Specifically, Mill Service cannot reach the proposed UTS for beryllium and any such requirement to meet the proposed UTS will force them out of business. Currently, 30 to 40 percent of all wastes received at the Yukon facility exceed the UTS for beryllium.

Correspondence. Mr. Michael Petruska, USEPA to Mr. Henry Springer, Director Mill Service. Re: Site Visit Report to Yukon, Pennsylvania Facility. January 3, 1997 at p. 5.

Recognizing the significance of these statements, Brush Wellman took the step which the Agency inexplicably chose not to obtain and analyze the Mill Service data regarding the treatability of beryllium in various waste streams. Brush Wellman visited the facility and reviewed 248 TCLP test results for treated wastes containing beryllium for the period from November 1995 through June 1996. Exhibits 1-4 attached hereto are scatter plots that reflect those treatment results, and the following table summarizes the data.

Exhibit No.	Number of Samples	Range of TCLP Result	Average TCLP Result	Standard Deviation
1	26	.025-.062 mg/l	.043 mg/l	.009
2	15	.031-.056 mg/l	.041 mg/l	.007
3	104	.010-.044 mg/l	.021 mg/l	.008
4	103	.015-.056 mg/l	.030 mg/l	.010

Almost 68% of the treated materials containing leachable beryllium within this data failed to meet the proposed UTS. The significance of these data is underscored by the fact that they are derived from wastestreams where beryllium is prevalent and reflect the treatability of beryllium using conventional stabilization methods. In light of the few data points of questionable significance relied upon by EPA in determining the proposed UTS, it is incomprehensible why the Agency has ignored the Mill Service data and proceeded to propose a UTS for beryllium that obviously is not achievable.

As significant as the Mill Service data set is, it may represent only the tip of the iceberg. Preliminary results from a treatability study involving a Brush Wellman waste indicates that the proposed UTS for beryllium may be grossly too low. Brush Wellman sent a sample of a waste it regularly generates -- a D008 sludge that contained 41,680 mg/kg of beryllium (93.7 mg/l TCLP) -- to a commercial treatment facility and instructed the facility to treat the waste as it ordinarily would to stabilize the lead. After such stabilization, the waste still contained beryllium with a TCLP concentration of 6.0 mg/l. This is 300 times the proposed UTS! This preliminary data suggests that the UTS for beryllium needs to be increased significantly, perhaps even to a level of 10.0 mg/l. At a minimum, these data indicate that additional treatability studies involving high beryllium content wastes are warranted.

Another area deserving of additional investigation is the impact of the presence of beryllium in typical stabilization agents upon the treatability of the beryllium in hazardous wastes. Brush Wellman obtained samples of stabilization agents from Mill Service and analyzed them for beryllium. The following table lists the results of that analysis:

Stabilization Agent	Total Beryllium	TCLP Beryllium
Ferrous Sulfate	<0.50mg/kg	0.007 mg/l
Dolomite Lime	0.62 mg/kg	0.014 mg/l
Carbide Lime	1.57 mg/kg	0.009 mg/l
Monoammonium Phosphate	3.03 mg/kg	0.008 mg/l

As demonstrated by the above results, leachable beryllium is naturally-occurring in stabilization agents at significant levels. Although further testing should be performed, this information suggests that it may be difficult to stabilize a waste to meet the proposed UTS level, due not only to the presence of beryllium in many waste streams, but also due to the beryllium introduced during the stabilization process.

II. The Final UTS For Beryllium Needs To Take Into Account The Varying Chemical Forms Of Beryllium Potentially Present In Hazardous Wastes And The Variable Treatability Of Those Different Forms.

The TCLP response obtained from a sample containing beryllium will likely depend upon the beryllium specie or species present, the terminal pH of the leaching media, and the presence or absence of beryllium-complexing agents. In the case of "stabilized" material, the reagents used for stabilization will also affect the TCLP response. Each of these must be factored in when making any conclusion regarding the treatability of beryllium-containing wastes.

While not exhaustive, beryllium can reasonably be expected to be present within industrial wastes as beryllium metal (singularly, or alloyed with other metals), beryllium oxide, beryllium hydroxide, or as water soluble beryllium salts including beryllium fluoride, beryllium sulfate, beryllium phosphate and beryllium nitrate. Within the naturally occurring environment, beryllium is typically present as a silicate mineral or as a non-specific humic acid derivative resulting from the decay of vegetation.

Among the industrial forms of beryllium, only beryllium hydroxide and the water soluble beryllium salts are expected to yield potential TCLP responses. Among naturally occurring materials, the TCLP response will vary widely according to the degree of structural degradation within the mineral framework. Several beryllium minerals, for example, bertrandite ($Be_2Si_2O_7*H_2O$) and helvite ($3(Mn,Fe)BeSiO_4*MnS$), are known to be acid soluble and, therefore, a TCLP response to these minerals would not be surprising. Other beryllium minerals, for example, the highly structured mineral beryl ($Be_3Al_2Si_6O_{18}$), are virtually inert to the TCLP. Vegetation, including many common table vegetables, can contain several ppm beryllium and yield a marginal TCLP response. Here again, structural complexity may affect the leachability of the beryllium containing material. As the vegetation decays, forming humic acids and other organic decay products, beryllium may be converted into a more accessible form. Some soil samples show a 20% or more solubility of beryllium during the TCLP test.

The alkaline pH chemistry of beryllium displays several unique features. Although beryllium hydroxide has a rather low solubility in low ionic strength water at pH's between 7 and 9, the solubility of beryllium increases with increasing pH (alkalinity) due to the formation of the very stable beryllate ion, $BeO(OH)^{1-}$. Furthermore, the precipitation of beryllium can be prevented or even reversed in the presence of fluoride ions with the formation of fluoroberyllate complexes ranging from BeF^{1+} to BeF_4^{2-}
Finally, the *ortho*-phosphate ion, PO_4^{3-} ,which is frequently used to stabilize the characteristic hazard metals Cr, Pb, Ba, and Ag, forms a soluble complex with beryllium. Thus, the typical stabilization regiment of lime addition to pH 13, coupled with orthophosphate additions as tri-sodium phosphate or mono-ammonium phosphate, can actually increase the TCLP response of

beryllium due to the formation of soluble beryllium complexes. Because HF (hydrofluoric acid) is a common addition to $HN0_3$ (nitric acid) pickling baths used for ferrous metal finishing, the presence of fluoride in the wastewater treatment stream is fairly common, but largely unreported.

While beryllium as beryllium hydroxide should have a treatability maximum (solubility minimum) near pH 8, the presence of fluoride from waste treatment effluents or *ortho*phosphate added to stabilize Pb, Cr, or Ag will adversely affect the treatability limit of beryllium by the formation of soluble fluoro-beryllate or beryllium phosphate complexes. In addition, pH's near 12 and 13, commonly created by lime stabilization procedures, will also increase the solubility of beryllium by the formation of beryllate ion. With the promulgation of a lower UTS for lead (from 5 mg/l to 0.74 mg/l), most treatment facilities will likely increase the amount of orthophosphate added for stabilization, which, in turn, may even more adversely affect the stabilization of beryllium. Specific test work is needed to ascertain the achievable level of beryllium stabilization in light of these unique characteristics of beryllium. [FN 2 In the preamble to the proposed regulation, EPA "reminds" Brush Wellman that a treatability variance may be available should any hazardous wastes be unable to meet the UTS for beryllium. EPA should not rely upon the availability of a variance to justify its lack of adequate data to support its proposal. It unfairly shifts the burden of demonstrating achievable treatment from the Agency to the regulated community. Also, it is likely that the unrepresentative, low beryllium content wastes actually represent the exception and should not constitute the rule.

III.   Brush Wellman's Concerns Regarding The Treatability Of Beryllium Should Not Be Minimized In Light Of The Ubiquitousness Of Beryllium In Wastes And Naturally Occurring, Materials.

Brush Wellman's criticism of the Agency's reliance upon minimal waste treatment data in proposing the UTS for beryllium arises from a legitimate concern that the presence of beryllium and its treatability in a variety of wastestreams has been overlooked and therefore not considered. This, of course, is understandable because heretofore the treatability of beryllium under the LDR program arose only in connection with the beryllium treatment standard for K061. This will change, of course, upon finalization of the Agency's regulation at 40 C.F.R. § 268.32(e) requiring that treatment standards be met with respect to not only the constituent that renders the waste a TC metal waste (e.g., lead) but also any underlying hazardous constituent that may not be a TC-regulated constituent (e.g., beryllium). In sum, while beryllium very well may be a universal underlying hazardous constituent in TC metal wastes, EPA seeks to promulgate a universal treatment standard based on treatment of a single waste stream without appreciable amounts of beryllium. EPA's process has put the cart before the horse.

For example, Brush Wellman routinely has found beryllium at part-per--million levels in several primary metals such as copper and aluminum. As these primary metals are melted, alloyed and cast by the secondary metal industry, various metal drosses are formed. Because beryllium has a relatively low oxidation threshold, more beryllium would be found in waste byproducts than in the alloyed product. These waste byproducts may constitute TC metal wastes subject to the proposed UTS. However, the generator usually would have no reason to believe that beryllium is present in the TC metal wastes.

Brush Wellman has long believed that many of the metal bearing wastes that typically are stabilized prior to land disposal contain measurable levels of beryllium. The information obtained from Mill Service bore out this belief and demonstrated it to be true. A variety of typical metal manufacturing waste streams treated at the Mill Service facility such as lead contaminated soil, sludge, mixed slag, acid mixtures, IWWTP sludge, steel tube scale, baghouse dust, roof gravel, filter cake, blasting sand and grinding swarf were analyzed and shown to contain beryllium. [FN 3 As previously discussed, Mill Service is not able to treat all of these wastes down to the UTS, thereby demonstrating that the UTS cannot be achieved universally using the identified BDAT of stabilization.

One reason why beryllium historically may not have been identified as a regular constituent of typical metal bearing wastes is the special difficulties that can be encountered in trying to detect beryllium. Almost all analytical laboratories use one or more sophisticated instruments to determine the concentration of various metals in a variety of sample matrixes. While most metals are readily detected and measured by these instruments, the detection and measurement of beryllium is frequently not possible. The three most commonly used instrumentation techniques are briefly described below, along with their respective beryllium capability:

X-Ray Methods. Notably X-Ray Fluorescence and Energy- or Wavelength-Dispersive X-Ray Spectrometry where a sample is bombarded by a beam of x-ray radiation which produces characteristic secondary x-ray spectra. The detection and quantification of these characteristic secondary x-rays allow the analytical determination of elements with atomic numbers greater than sodium. Beryllium cannot be analyzed by this method. This method is typically used as a non-destructive technique to "survey" a material for the presence of major and minor elements.

Atomic Absorption Spectrometry. In this method, samples must be dissolved as a solution such that they can be nebulized and passed into a flame for the absorption of characteristic radiation (light of specific wavelength). The specific wavelength of radiation absorbed identifies the element; the intensity of the absorption is proportional to the amount of element present. While this technique has enjoyed widespread analytical application, the detection of each individual element required a dedicated light source specific for that element. Thus beryllium can only be detected when the atomic absorption spectrometer is fitted with a "beryllium" hollow cathode tube. Furthermore, traditional atomic absorption spectrometers cannot detect beryllium at concentrations below 0.005 mg/l (0.005 ppm), Although Graphite Furnace Atomic Absorption Spectrometers have a significantly better sensitivity towards beryllium with detection limits near 0.0002 mg/l (0.2 µg/1), they are also considerably more expensive to purchase and to maintain than the standard flame AA spectrometer.

Optical Emission Spectrometry. When a substance is excited by a plasma or electric discharge, elements present emit light at wavelengths that are specific for each element. Electrical discharge methods are used for solid samples, while inductively coupled plasma (ICP) methods are typically used for solution samples. The electrical discharge methods are matrix sensitive and are used predominately for quality control of metal foundry products. This method will not detect beryllium unless the equipment is provided with a dedicated channel (photomultiplier) set at the specific wavelength for beryllium. The ICP spectrometer provides simultaneous excitation of many (metallic) elements with high sensitivities and low matrix interferences. Beryllium can be analyzed with good sensitivity by ICP with detection limits near 0.0003 mg/l (0.3ug/l). Unfortunately, the major expense of simultaneous multi-element ICP instrumentation is a limitation to many laboratories.

In summary, analytical laboratories equipped with x-ray spectrometers, Atomic Absorption spectrometers, and/or electrical discharge optical emission spectrometers cannot detect beryllium unless the equipment is specifically modified for beryllium analysis. Only laboratories equipped with relatively expensive simultaneous ICP optical emission spectrometers are capable of routine beryllium analysis without modification.

IV. The Proposed UTS For Beryllium Is Less Than That Necessary To Protect Human Health And The Environment.

In its earlier comments regarding the UTS for beryllium, Brush Wellman has demonstrated that the Agency's previous proposals to establish a UTS for beryllium have been at levels that are impermissible because they are "beyond the point at which there is no 'threat' to man or nature."

Hazardous Waste Treatment Council v. EPA, 886 F.2d 355, 361-64 (D.C. Cir. 1989), cert. denied 111 S.Ct. 139 (1990). EPA has acknowledged this limitation on its authority to establish LDR treatment standards. 58 Fed. Reg. 48092, 48095 (Sept. 14, 1993). Brush Wellman continues to believe that the proposed UTS is unnecessarily over-protective and urges the Agency to reconsider the points presented in Brush Wellman's earlier comments.

As a supplement to the information previously put forward on this point, Brush Wellman offers the following:

! The Department of Energy's "National Uranium Resource Evolution" detected beryllium in a total of 181,988 separate soil and sediment samples at an average level of 1.773 ppm. Based on EPA's 20 to 1 dilution "rule of thumb" used to estimate TCLP levels from total concentrations, the average pure beryllium sample would exceed the proposed UTS.

! Brush Wellman obtained five soil samples from five separate Western states. The results of analyzing these samples were as follows:

Sample	Total Be	TCLP Be
New Mexico	4.46 mg/kg	.017 mg/l
Oklahoma	2.75 mg/kg	.029 mg/l
Utah	1.28 mg/kg	.0 12 mg/l
Colorado	7.47 mg/kg	.002 mg/l
Idaho	1.83 mg/kg	.002 mg/l

Like soil analyses previously submitted to the Agency, these results indicate that there are naturally occurring soils that exceed or nearly exceed the proposed UTS for beryllium.

! In addition to EPA's Toxicological Profile for Beryllium which indicates the presence of beryllium in a variety of common foodstuffs, Brush Wellman subjected samples of green peppers, dried kidney beans and chili peppers to TCLP analysis. The results indicated TCLP levels of beryllium at 0.007, 0.012 and 0.016 mg/l respectively. These food products, which presumably do not present a risk due to their natural beryllium content, are very close to failing the proposed UTS for beryllium.

While EPA may have statutory authority to require treatment of all hazardous constituents in a hazardous waste from whatever source once that waste becomes a prohibited waste, that authority cannot and should not extend to requiring treatment of constituents beneath those levels which are naturally present. However, such treatment could be required under EPA's current proposal.

V. EPA Should Consider Compelling Commercial Reasons For Not Promulgating The Proposed Beryllium UTS In Final Form.

Brush Wellman's concern regarding the proposed UTS for beryllium is heightened by its understanding of the commercial implications of dealing with an unnecessarily low standard. [FN4: Indeed, of the metal constituents, the proposed UTS for beryllium is the lowest.] This creates an unfair burden for Brush Wellman as a producer of beryllium in its efforts to promote the use of its products. The unnecessary regulation of beryllium containing wastes becomes a significant disincentive for selecting beryllium over alternative materials. This is particularly so in light of the indication discussed herein that, at best, the beryllium standard may be difficult to meet and easily could become the driving force in developing suitable treatment technology. This is despite the fact that beryllium is not even a constituent that can cause the waste to be regulated as hazardous in the first place. The additional costs associated with treating the beryllium and the additional incremental volume of waste generated by adding more and more stabilizing agent to treat the beryllium can and should be avoided, particularly absent any convincing determination that they are necessary in order to protect human health or the environment.

Response:

In sum, the commenter states that EPA's proposed UTS for beryllium should not be adopted for the following reasons: 1) The proposed UTS is based on a very limited amount of beryllium treatment data. In fact, it is highly suspect that treatment even occurred in any of the tests relied upon to develop the proposed UTS; 2) The data relied upon by EPA relates to non-representative, low beryllium content wastes that do not realistically reflect treatability issues posed by beryllium; 3) Treatability data from a commercial stabilization facility as well as from a treatability study involving Brush-generated waste exceed the proposed UTS for beryllium; 4) Due to the varying chemical forms in which beryllium is present in different wastes and the presence of beryllium in typical stabilization agents, the proposed UTS for beryllium is not achievable through conventional stabilization methods; and 5) The proposed UTS for beryllium is lower than that necessary to minimize risk to human health and the environment and indeed may be lower than levels present in naturally occurring materials.

[The Agency notes to the commenter that the Land Disposal Restriction (LDR) program is based on the premise that regulated constituents are to be treated using the Best Demonstrated Available Technology (BDAT) to minimize threats to human health and the environment, because of the absence of certainty as to levels at which threats are minimized. The Agency agrees with the commenter on points one and two and recognizes that the performance data used to calculate the proposed standard (0.02 mg/l) does not adequately account for the difficulty in treating relatively high concentrations of beryllium wastes. The Agency believes that the proposed UTS for beryllium must be revised to reflect a more difficult-to-treat, high-concentration beryllium waste.

The Agency received stabilization data from Brush Wellman, Inc., consisting of seven data points from the treatment of D008 rotary filter sludge with cement kiln dust (CKD). These data show that beryllium concentrations (mg/L TCLP) in the untreated waste were as follows: 95, 32, 49, 54, 97, 52. After treatment, the beryllium concentrations (mg/L TCLP) were 0.58, less than

0.05, 0.31, 0.07, 0.06, less than 0.05, and 0.2. Upon examination, the Agency determined that this waste stream reflects a difficult to treat beryllium waste and should be used in the calculation of the treatment standard. (The use of this data also addresses a major concern of several of the commenters which was that while the standard was acceptable, it would not or may not be appropriate with higher levels of beryllium in the waste stream. The Agency believes that the data used in the Second Supplemental is not representative of a "difficult to treat" beryllium-containing waste in that the untreated waste concentrations were from two to four orders of magnitude less than the untreated waste concentrations (mg/L TCLP) in the data submitted by Brush Wellman (0.16, less than 0.5, 0.008, less than 0.005). The Agency ha determined that the data used to calculate the UTS for beryllium-containing nonwastewaters was inadequate and not reflective of a difficult to treat beryllium waste. As such, that data has been removed from the UTS data set used in the Second Supplemental proposal and replaced with the seven data points collected by Brush Wellman. The Agency believes that this data is more appropriate for the beryllium UTS and addresses the concerns raised by the commenters. For additional information on the data reviewed, see the Background Document for Metal Wastes in the Docket for this rule. As such, the Agency is today promulgating a revised UTS for beryllium nonwastewaters of 1.22 mg/l based on this newly acquired data.

With respect to point three, the commenters reference to the Mill Services data, the Agency notes that Mill Service uses TSP (trisodium phosphate) to immobilize the inorganics by forming metallic phosphates and lime to buffer the pH of the treatment residue. The Agency believes that the use of TSP alone does not represent the BDAT for stabilization and therefore is not applicable to the determination of the BDAT treatment standard.

Regarding detection and measurement of beryllium, the Agency notes that the proposed UTS of 0.02 mg/l is four times the minimum detection limit achievable by Flame Atomic Adsorption (FAA) and, as such, the more sensitive GFAA (Graphite FAA) technique might be required for the analysis of more difficult matrixes (0.0002 mg/l MDL). However, the final UTS for beryllium is 1.22 mg/l and should be readily measurable by either atomic adsorption techniques with good precision or by ICP (0.0003 mg/l) techniques.

Phase IV Second Supplemental Proposed Rule:
Comments and Responses on Cadmium

1. 2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

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.

Response:

The Agency thanks the commenter for their support for the cadmium treatment standard. However, the Agency has identified a technical error in the BDAT determination of the proposed cadmium standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. The Agency corrected this error and re-calculated the cadmium treatment standard and is promulgating the UTS for cadmium at 0.11 mg/l TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR.

See respective sections for discussion of other metals.

2. 2P4P-00017 Battery Council International (BCI) and Association of Battery Recyclers (ABR)

Likewise, BCI and ABR support the Agency's proposed treatment standards for barium, cadmium, chromium, nickel, vanadium, and zinc. Although our data shows lower levels of treatment than currently proposed, these elements have not generally been prevalent in secondary smelter feedstock, and hence secondary smelter slag. Some of these elements, however, are likely to be increasingly utilized in the future as substitutes for more hazardous and toxic elements in products. Thus, they are likely to become prevalent in secondary smelter feedstock, and hence smelter slag. Nonetheless, the appropriate chemical interactions between these elements and some of the other TC metals will limit the ability of secondary smelters to achieve extremely low treatment levels. EPA, therefore, should recognize this issue and maintain the treatment standards for barium, cadmium, chromium, nickel, vanadium, and zinc as proposed. These levels will provide secondary smelters the flexibility to handle future changes in their feedstock.

Response:

The Agency appreciates the commenters response on this issue. The Agency recognizes that all waste streams are not the same and that the characteristics of the same waste stream can vary over time. The determination of treatment standards based on the BDAT methodology accounts for such variability by applying (1) accuracy correction factor - to account for any analytical interferences associated with the chemical make-up of the samples; and (2) variability factor - to correct for normal variations in the performance of a particular technology over time. Therefore, the Agency believes that UTS provides adequate flexibility to handle future changes in the feedstock for secondary smelters. If a particular waste, generated in the future, possesses unique properties that make it more difficult to treat than the wastes on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

In addition, the Agency has identified a technical error in the BDAT determination of the proposed cadmium standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. The Agency corrected this error and re-calculated the cadmium treatment standard and is promulgating the UTS for cadmium at 0.11 mg/l TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR.

3. 2P4P-00028 Laidlaw Environmental Services

Revised Treatment Standards for TC Metal Wastes

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.

Response:

The Agency thanks the commenter for their support on the cadmium treatment standard. The Agency determined the proposed treatment standards 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." Therefore, the Agency notes that the UTS levels are determined based on BDAT for the most difficult to treat wastes and not solely based on the lowest level a treatment technology could achieve.

In addition, the Agency has identified a technical error in the BDAT determination of the proposed cadmium standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a "Z-score" outlier test. The Agency corrected this error and re-calculated the cadmium treatment standard and is promulgating the UTS for cadmium at 0.11 mg/l TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR.

4. 2P4P-00087 Waste Management

II. Revised UTS for TC Metal Wastes

WM has provided comments and data to the Agency throughout the Phase IV process regarding the establishment of UTS for characteristic metal waste-streams. WM supports the Agency's efforts in reproposing higher standards than originally proposed for cadmium, lead, selenium, nickel, thallium, beryllium, and vanadium.

Response:

The Agency thanks the commenter for their support on this rulemaking. However, the Agency has identified a technical error in the BDAT determination of the proposed cadmium standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. The Agency corrected this error and re-calculated the cadmium treatment standard and is promulgating the UTS for cadmium at 0.11 mg/l TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR.

5. 2P4P-L1003 Environmental Technology Council

The ETC has reviewed the reproposed treatment standards for TC metal wastes and is generally supportive of the proposed levels. In these comments, the ETC provides data demonstrating that these standards are readily achievable through the use of proven, available technology.

In Appendix A of these comments are data from the treatment of a variety of TC metal bearing hazardous wastes. All data were generated in compliance with EPA's BDAT Background Document on Quality Assurance / Quality Control Procedures and Methodology (1 991). These data reflect the ability of commercially available technology to meet the proposed treatment standards today. The data were gathered from five separate sites around the country, and include the results of treatment on a wide variety of wastes.

The ETC is providing these data for the EPA to add to its present treatment standard database. In addition, to determine if the proposed standards were achievable, ETC statistically analyzed our data for this submission. Table I compares the results of this statistical analysis of new data with EPA's proposed treatment standards.

Table 1 Comparison of Nonwastewater Treatment Standards Statistically Derived from ETC Data to Proposed EPA Treatment Standards

METAL (WASTE CODE)	PROPOSED EPA STANDARD	TREATMENTSTANDARD STATISTICALLY DERIVED FROM ETC DATA(PPM)
BARIUM (D005)	21.0	1.5
CADMIUM (D006)	0.20	0.10
CHROMIUM (D007)	0.85	2.30*
LEAD (D008)	0.75	1.20*
SELENIUM (D010)	5.7	0.40
SILVER (D011)	0.11	0.10

*In ETC's data set for both Chromium and Lead, one (possibly outlier) data point accounts for the calculated treatment level that is higher than EPA's proposed standard. If this data point is removed, the levels based on ETC's data would actually be lower than EPA*s proposed standards.

While the ETC data must be used in conjunction with EPA's existing database and not as a stand-alone to establish new treatment standards, it is interesting to note that ETC's data support treatment standards virtually identical to EPA's proposal for Cadmium and Silver, and lower treatment standards for Barium and Selenium.

This data demonstrate that well-run treatment systems are capable of meeting the proposed treatment standards. In fact, the ETC members have been meeting metals treatment standards similar to those in this proposal for years. Many non-TC waste streams have metal treatment standards already associated with them. These metal treatment standards are based on the metal Universal Treatment Standards (UTS) which are more stringent than the present Characteristic Treatment Standards.

While the waste matrix can alter the ability of a specific treatment regime to stabilize a specific metal, the ETC feels strongly that years of data and experience demonstrate that a well-run treatment system can effectively stabilize regulated metals to the proposed limits. The Council knows that TC metal wastes react no differently to a well run treatment system, and the experience of our member companies backs this up.

In September, 1996 EPA reviewed treatment data and capabilities at three separate sites and found:

> "The performance data represented 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 wastes treated included mineral processing wastes, baghouse dust, battery slag, soils, pot solids, recycling by-products, and sludge. TCLP values in the untreated wastes included 4430 mg/l lead, 1580 mg/l chromium, 82 mg/l barium, and 4280 mg/l cadmium. In addition, numerous waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, while other waste streams had a significant concentration of combination metals including: lead and cadmium, barium and lead, and chromium and antimony."

The Agency compared the data from these site visits with previously acquired data on the performance of HTMR. This analysis resulted in the reproposed TC metal treatment standards in the supplemental proposal. The reproposed standards corroborate ETC member-firms' knowledge of the capabilities of a well-run treatment system. The additional data provided in our comments add more data points in support of these treatment standards. ETC strongly urges the EPA to adopt the TC metal treatment standards in this supplemental proposal.

Response:

The Agency thanks the commenter for providing data and supporting the treatment standard for cadmium. However, the Agency has identified a technical error in the BDAT determination of the proposed cadmium standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. The Agency corrected this error and re-calculated the cadmium treatment standard and is promulgating the UTS for cadmium at 0.11 mg/l TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR.

1. 2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

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.

Response:

The Agency thanks the commenter for supporting the treatment standard for chromium. However, the Agency has identified a technical error in the BDAT determination of the proposed chromium standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. Upon application of the test, two statistical outliers were identified. The Agency corrected this error and re-calculated the chromium treatment standard and is promulgating the UTS for chromium at 0.60 mg/l TCLP. The treatment standard was based on 38 grab samples submitted to the Agency by the commenter (Two data points were identified as outliers 0.61 and 0.65 mg/L TCLP). The rest of the treatment data ranged from 0.0100 mg/L TCLP to 0.56 mg/L TCLP, with a mean concentration of 0.12 mg/L TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR.

See respective sections for discussion of other metals.

2. 2P4P-00055 Mr. William R. Schneider, P.E. (Consultant to Macalloy Corp.)

My previous review of the proposed rule which appeared in the Federal Register on January 25, 1996 was favorable because the proposal at that time was to include the so-called "newly identified" mineral processing wastes in such a way as to allow for easier recycling as the preferred option to land filling, yet also to include them in essentially the same category as TC metal wastes for disposal purposes-, i.e. subject to treatment below a TCLP of 5.0 mg/l in the case of Chromium which is the metal of concern to Macalloy. The rule also dropped the Chromium listed waste K-091 which had previously required a UTS of 0.86 mg/l, which standard is not achievable on a consistent basis.

The most recent proposed rule would impose a new UTS of 0.85 mg/l for both wastes, i.e. for TC metals and mineral processing wastes alike.

I believe this proposed UTS is unnecessarily stringent, even more so than the UTS for the previously listed waste (K091) which listing was remanded in Federal Court. It appears also to be a way around the court's ruling, because it would have the same effect as restoring that listing. Macalloy currently has an accumulation of approximately 40,000 tons of Chromium waste material -which was previously treated to below the TCLP of 5.0 mg/l based upon the criteria then in effect. Under the terms of a Consent Order with the State of South Carolina, this material is to be moved off site to a Class B disposal facility. Should this, proposed rule be adopted, it would result in an increased cost to Macalloy Corporation in excess of $11,000,000 with no apparent environmental benefit.

It appears also that such wastes, if generated at a TCLP level below 5.0 mg/l would not be covered by this proposed rule, while any generated at a TCLP level of 5.0 *mg/l* or higher would require treatment to a level below 0.85 mg/l. This leaves a rather wide window of toxicity missed by the proposed rules, as well as precluding the planned removal of their treated material from the site since it was originally generated as a fume from a ferrochromium smelting furnace with a TCLP result considerably above 5.0 *mg/l*

We urge you to reconsider these restrictive treatment standards, and to include the mineral processing wastes in the same category with the TC metal wastes with the previous TCLP treatment requirements of 5.0 *mg/l* in the case of Chromium.

Response:

The Agency disagrees with the commenter that the proposed UTS for chromium is unnecessarily stringent. The Agency notes that the stabilization performance data (based on grab samples) used for determining the treatment standards represents 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 mineral processing wastes, baghouse dust, battery slag, soils, pot solids, recycling by-products, and sludge. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony. Therefore, the Agency believes that the performance data used to develop the UTS proposed in the second supplemental rule (62 FR 26041, May 12, 1997) adequately characterizes the diversity in metal-bearing wastes including multiple metal containing hazardous wastes.

In addition, the Agency has identified a technical error in the BDAT determination of the proposed chromium standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. The Agency corrected this error and re-calculated the chromium treatment standard and is promulgating the UTS for chromium at 0.60 mg/l TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR.

With respect to the commenters concern regarding a wide window of toxicity missed by the proposed rule, EPA believes that, in certain cases, further treatment of characteristic metal wastes below the TC level may be required in order to minimize threats to human health and the environment from these wastes within the meaning of 3004(m). As stated previously in the Third Third Final Rule, which set treatment standards for characteristic wastes at the characteristic levels, the Agency believed that the requirements of section 3004(m) may require the application of standards promulgated lower than the characteristic level. See also Chemical Waste Management, 976 F. 2d 2, 32 (remanding standard for chromium as insufficiently stringent since further reductions in chromium mobility could be achieved).

EPA also would like to note that if a particular waste possesses unique properties making it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

3. 2P4P-00069 Macalloy Corporation

The rule seems contradictory when considering protecting the public health. If a waste when generated yields a TCLP result of greater than 0.85 mg/l but less than 5.0 mg/l the new rule does not apply. However, if the waste when generated yields a TCLP result greater than 5.0 mg/l, let's say 5.01 mg/l, the waste is subject to the land ban and the UTS. Treating down to just less than 5.0 mg/l has the same effect as not treating a waste that is less than 5.0 mg/l but greater than 0.85 mg/l. So, if it is 5.01 mg/l, treat it down to below 0.85 mg/l. But, if it is 4.99 mg/l, the land disposal restriction does not even apply. Thus. a generator of a waste testing at 4.99 mg/l can arbitrarily manage his waste less stringently than one who has a waste at 5.01 mg/l.

As President of The Ferroalloys Association (TFA), I wish to provide these comments in response to the above proposed rule. The Macalloy Corporation, a member of TFA, is the only current U.S. producer of ferrochromium. Ferrochromium is a critical material for defense components and as such is of national security importance.

As an alloying element, chromium increases the hardness and strength of steels- in amounts over ten percent, it imparts the corrosion and oxidation resistance of stainless steels and superalloys. Chromium is irreplaceable in stainless steels and in high temperature/high stress nickel and cobalt base superalloys that are vital to the defense industrial base and a number of high-tech military and commercial applications. Without chromium, it would not be possible to build jet engines for aircraft, nuclear weapons for naval vessels and much of our present weapons systems. Currently. there is no known substitute for chromium in these critical uses, nor is any likely to be developed in the foreseeable future.

The previous phases of the LDR offered encouragement to companies which use Chromium in their production processes. It was a significant improvement to drop the K-091 listing of Chromium. The referenced proposed rule circumvents the ruling by the Federal Court whereby the court remanded the listing of K-091 as a hazardous waste. The agency has now called this waste a 'newly identified" mineral processing waste and now proposes to subject those who generate this waste to similar and even more stringent regulations than it would be if the waste had remained listed as K-091. It is our understanding that Chromium was de-listed in accordance with the Federal Court's ruling to remand the listing in 1990-, the Federal Court based their decision on the lack of toxicological data to support the listing.

In my capacity as an engineering consultant to the Macalloy Corporation in Charleston, SC, I wish to respond to the above proposed rule which appeared in the Federal Register on May 12, 1997.

My previous review of the proposed rule which appeared in the Federal Register on January 25, 1996 was favorable because the proposal at that time was to include the so-called "newly identified" mineral processing wastes in such a way as to allow for easier recycling as the preferred option to land filling, yet also to include them in essentially the same category as TC metal wastes for disposal purposes-, i.e. subject to treatment below a TCLP of 5.0 mg/l in the case of Chromium which is the metal of concern to Macalloy. The rule also dropped the Chromium listed waste K-091 which had previously required a UTS of 0.86 mg/I, which standard is not achievable on a consistent basis.

In previous phases of this proposed rule we were encouraged to learn that the endeavor for a Chromium listing as K-091 would be eliminated in addition to the subsequent difficult to achieve treatment level of 0.86 m/l of Chromium which is the substance of concern to us. The dropping of the listing was the wish of the Federal Court which remanded the listing in 1990 due to the lack of toxicological data to warrant the listing. In this previous phase it appears that the U.S. EPA was not recognizing the remand and carrying out the wishes of the court. Now, with this phase, the proposed rule circumvents the remanding by Federal Court by calling the waste a so-called "newly identified" mineral processing waste and subjecting this waste to the even more stringent UTS for a TCLP for Chromium of 0.85 mg/l. Therefore, even though K-091 will not become a hazardous waste listing the effect of this proposed rule is the same or even more stringent. The U.S. EPA has thus ignored the wishes of the courts and to the contrary has yielded to groups which desire only tougher regulations, apparently just for the sake of more regulation, without worrying about the costs or the fact that no additional benefits to the public health and environment will be achieved.

The U.S. EPA, in this phase of the proposed rule, in several instances cites data that allegedly supports the activities which will be required if this rule making becomes law. The U.S. EPA, however, does not provide any reference to this data as to the source or does the U.S. EPA predict what benefits the public health and the environment will reap from this proposed rule if it becomes law.

Response:

The situation pointed about by the commenter arises simply because wastes must be hazardous when generated for the land ban prohibition to apply to them. Once that prohibition attaches, however, the wastes must be treated so that threats posed by land disposal are minimized. Section 3004 (m), and Chemical Waste Management v. EPA, 976 F.2d 14-16 (sustaining this approach). The Agency notes that the TC levels that determine whether the waste is hazardous or not is not based on the best demonstrated available technology (BDAT). EPA believes that, in certain cases, further treatment of characteristic metal wastes below the TC level may be required in order to minimize threats to human health and the environment from these wastes within the meaning of 3004(m).

In addition, the Agency has identified a technical error in the BDAT determination of the proposed chromium standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. The Agency corrected this error and re-calculated the chromium treatment standard and is promulgating the UTS for chromium at 0.60

mg/l TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR.

The commenter is also referred to the mineral processing component of the response to comment document for a further discussion of these comment..

4. 2P4P-00109 Occidental Chemical Corporation (OxyChem)

Occidental Chemical Corporation ("OxyChem) is a diversified manufacturer of industrial and specialty chemicals with 28 locations in the U.S. Two of our sites conduct mineral processing options and are directly impacted by this rulemaking. Our comments on this proposal follow.

OxyChem believes the reproposal does not adequately consider comments by OxyChem on April 24, 1996 concerning the proposed LDR Phase IV Supplemental Rulemaking for mineral processing wastes under Docket Number F-95-PHAA-FFFF.

OxyChem submitted stabilization data to EPA in regards to mineral processing non-wastewaters. Based on the reproposal it appears that the information provided by OxyChem was not evaluated by the EPA when considering the potential impact of the rule on the affected facilities. Therefore, OxyChm is requesting the agency review the previous information as well as making comments regarding the current reproposal and requesting EPA's review.

Both the TCLP test method itself and variability in mineral processing waste characteristics contribute to significant variability in the TCLP results.

We have charted five (5) years of chromium TCLP analysis based on grab samples. There is a great deal of variability in the TCLP results which points out inaccuracies associated with the TCLP testing method. The TCLP analysis for total chromium lends itself to repeatability issues depending on test conditions. The treatment standard for chromium should not be lowered until a more consistent test method is established which will ensure reliable, repeatable TCLP results.

Response:

The Agency throughly evaluated the data provided by the commenter in response to the first supplemental proposed Phase IV rule. The Agency notes that the data provided by the commenter had inadequate information on the stabilization process and the methodology adopted for sampling and analysis. Therefore, the Agency could not use the data for determining the treatment standard for chromium. However, the Agency conducted site visits to commercial hazardous waste treatment facilities and collected additional stabilization treatment performance data that accounted for the variabilities in waste characteristic and better characterized the diversity of metal wastes. The stabilization performance data (based on grab samples) represented a wide range of metal-bearing wastes (both listed and characteristic) including mineral processing wastes, baghouse dust, battery slag, soils, pot solids, recycling by-products, and sludge. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs and significant concentrations of combination metals including: lead and cadmium (untreated concentrations 13mg/L TCLP and 4090 mg/L TCLP and 11.7 mg/L TCLP and 338 mg/L TCLP respectively); barium and lead (untreated concentrations 13.5 mg/L TCLP and 50.7 mg/L TCLP and 32mg/L TCLP and 898 mg/L TCLP (4.6%), and chromium and antimony (untreated concentrations 1580 mg/L TCLP and 16.1 mg/L TCLP). Based on this data collection effort, the Agency believes that it has addressed the issue of effective multiple contaminant waste stabilization in two ways: (1) Utilization of treatment data that contains multiple metals; and (2) the utilization of these data to generate treatment standards. The Agency agrees with the commenter that the stabilization "recipe" may need to be adjusted to account for the variability of the waste contaminants, however the Agency can not find any information that would suggest that multiple waste codes cannot be stabilized to the treatment levels, when effective stabilization processes are used. (The Agency does note an exception for the metal constituent, Selenium which was discussed in detail in the Second Supplemental preamble as well as the response to comments). The Agency also notes that many of the multiple-contaminant waste streams contained significant lead concentrations in addition to other metal constituents and still achieved low treatment levels. See memorandum entitled, "Final Revised Calculation of Treatment Standards Using Data Obtained From Rollins Environmental's Highway 36 Commercial Waste Treatment Facility and GNB's Frisco, Texas Waste Treatment Facility," March 10, 1997. While the Agency notes that in the past it has 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" (See 55FR 22520,22565 (June 1, 1990), the Agency believes that the standards being proposed today can be met in metal waste streams. See memorandum entitled, "Development of Metal Standards" which can be found in the Background Document for Metal Wastes in the RCRA docket for today's rule. Therefore, the Agency believes that the performance data used to develop the UTS proposed in the second supplemental rule (62 FR 26041, May 12, 1997) adequately characterizes the diversity in metal-bearing wastes including multiple metal containing hazardous wastes.

However, the Agency has identified a technical error in the BDAT determination of the proposed chromium standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a "Z-score" outlier test. The Agency corrected this error and re-calculated the chromium treatment standard and is promulgating the UTS for chromium at 0.60 mg/l TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR.

Regarding the comment on test methods, EPA disagrees with the commenter's assertion that the TCLP is not a reliable test method. The Agency has established the TCLP as the required method for determining whether a waste will be considered toxicity characteristic hazardous (40 CFR 261.24(a)). EPA's determination of the use of the TCLP was finalized on March 29, 1990 (55 FR 11798). This issue is not being reopened in this rulemaking. In addition, the Agency notes that the test conditions of the TCLP procedure must be adhered to as these conditions determine the leachability of the analities to be assessed. If the prescribed conditions are not reproduced then significant variations may result, and the analysis may be invalid for regulatory determination. The Agency also notes that the RCRA regulations, as stated in 40 CFR 261.4(a), require TCLP, test method 1311 to determine wether the leachate exhibits a hazardous characteristic.

The Agency would like to note that if a particular waste possesses unique properties making it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

5. 2P4P-L1003 Environmental Technology Council

The ETC has reviewed the reproposed treatment standards for TC metal wastes and is generally supportive of the proposed levels. In these comments, the ETC provides data demonstrating that these standards are readily achievable through the use of proven, available technology.

In Appendix **A** of these comments are data from the treatment of a variety of TC metal bearing hazardous wastes. All data were generated in compliance with EPA's BDAT Background Document on Quality Assurance / Quality Control Procedures and Methodology (1991). These data reflect the ability of commercially available technology to meet the proposed treatment standards today. The data were gathered from five separate sites around the country, and include the results of treatment on a wide variety of wastes.

The ETC is providing these data for the EPA to add to its present treatment standard database. In addition, to determine if the proposed standards were achievable, ETC statistically analyzed our data for this submission. Table I compares the results of this statistical analysis of new data with EPA's proposed treatment standards.

Table 1 Comparison of Nonwastewater Treatment Standards Statistically Derived from ETC Data to Proposed EPA Treatment Standards

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*In ETC's data set for both Chromium and Lead, one (possibly outlier) data point accounts for the calculated treatment level that is higher than EPA's proposed standard. If this data point is removed, the levels based on ETC's data would actually be lower than EPA*s proposed standards.

While the ETC data must be used in conjunction with EPA's existing database and not as a stand-alone to establish new treatment standards, it is interesting to note that ETC's data support treatment standards virtually identical to EPA's proposal for Cadmium and Silver, and lower treatment standards for Barium and Selenium.
This data demonstrate that well-run treatment systems are capable of meeting the proposed treatment standards. In fact, the ETC members have been meeting metals treatment standards

similar to those in this proposal for years. Many non-TC waste streams have metal treatment standards already associated with them. These metal treatment standards are based on the metal Universal Treatment Standards (UTS) which are more stringent than the present Characteristic Treatment Standards.

While the waste matrix can alter the ability of a specific treatment regime to stabilize a specific metal, the ETC feels strongly that years of data and experience demonstrate that a well-run treatment system can effectively stabilize regulated metals to the proposed limits. The Council knows that TC metal wastes react no differently to a well run treatment system, and the experience of our member companies backs this up.

In September, 1996 EPA reviewed treatment data and capabilities at three separate sites and found:

"The performance data represented 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 wastes treated included mineral processing wastes, baghouse dust, battery slag, soils, pot solids, recycling by-products, and sludge. TCLP values in the untreated wastes included 4430 mg/l lead, 1580 mg/l chromium, 82 mg/l barium, and 4280 mg/l cadmium. In addition, numerous waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, while other waste streams had a significant concentration of combination metals including: lead and cadmium, barium and lead, and chromium and antimony."

The Agency compared the data from these site visits with previously acquired data on the performance of HTMR. This analysis resulted in the reproposed TC metal treatment standards in the supplemental proposal. The reproposed standards corroborate ETC member-firms' knowledge of the capabilities of a well-run treatment system. The additional data provided in our comments add more data points in support of these treatment standards. ETC strongly urges the EPA to adopt the TC metal treatment standards in this supplemental proposal.

Response:

The Agency thanks the commenter for providing the summary information on ETC's data collection efforts and supporting the treatment standard for chromium. (The data corrobrates the achievabillity of the standard). However, the Agency has identified a technical error in the BDAT determination of the proposed chromium standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a "Z-score" outlier test. The Agency corrected this error and re-calculated the chromium treatment standard and is promulgating the UTS for chromium at 0.60 mg/l TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR.] In fact, data collected by the Agency on stabilization of chromium indicates that a treatment standard of 0.33 mg/L TCLP can be achieved (See "Final Revised Calculation of

Treatment Standards Using Data Obtained From Rollins Environmental’s Highway 36 Commercial Waste Treatment Facility and GNB’s Frisco, Texas Waste Treatment Facility.”) Additional data submitted in response to the Second Supplemental on an HTMR process indicated that 152/152 were below the treatment standard of 0.60 mg/L TCLP. While the treatment standard statistically derived from ETC data was 2.30 mg/L TCLP, the commenter had stated in their comment that one (possibly outlier) data point accounted for the calculated treatment level that was higher than EPA’s proposed level. In fact, the commenter stated that if this data point was removed, ETC’s data would actually be lower than EPA’s proposed standard. In that ETC did not make available the raw data in its comment, the Agency is uncertain as to whether the proper LDR methodology was applied to the data. See “Final Best Demonstrated Available Technology (BDAT) Background Document for Quality Assurance/Quality Control Procedures and Methodology”, October 23, 1991. In the absence of this information, the Agency can only respond by thanking the
commenter for their comment and support of the treatment standards.

3. 2P4P-00024 Lead Industries Association, Inc. (LIA)

In comments being filed contemporaneously with LIA*s, Battery Council International (BCI) and the Association of Battery Recyclers (ABR) address the fact that the contemplated replacement of the TC level for lead with a much lower UTS is infeasible. LIA supports the positions taken by BCI and ABR, and will focus its comments on what it considers the principle reason why the proposed rule conflicts with the requirements of the Resource Conservation and Recovery Act and should not be adopted-- the fact that no showing has been made that the proposal is necessary to protect human health and the environment, while EPA has previously found that much higher levels would accomplish that purpose.

II. The Proposed Lead UTS Lacks a Reasoned Explanation and Conflicts with EPA*s Finding in the HWIR Proceeding RCRA section 3004(m) requires EPA to set LDR treatment standards at levels that will substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized.

The requirement that levels or treatment methods adopted pursuant to section 3004(m) must minimize such threats necessarily subjects EPA to the familiar rule requiring a determination that significant risks exist under the current regulatory scheme, and that these risks will be substantially reduced by EPA's proposal. See, e.g., Industrial Union Department, AFL-CIO v. American Petroleum Institute, 448 U.S. 607, 645-646 (1980). Most importantly, the courts have held that the language of section 3004(m) requiring that threats be minimized does not allow the agency to require treatment "beyond the point at which there is no 'threat' to human health and the environment."[fn1: Hazardous Waste Treatment Council v. EPA, 886 F.2d 355, 62 (D.C. Cir. 1989); See also Chemical Waste Management v. EPA, 976 F.2d 2, 12-14 (D.C. Cir. 1992) cert. denied 113 S. Ct. 1961 (1993).] Finally, EPA is required to provide a reasoned explanation for its determination concerning risks as well as for the UTS it has selected. [fn2: Motor Vehicle Manufacturers Association v. State Farm, 463 U.S. 29, 43 (1983).]

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/1. [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.

III. EPA's Proposal Also Conflicts With Its Prior Findings in the Third Third Rulemaking Proceeding

Prior to finding in its HWIR proposal that a 12.0 mg/l lead level minimized threats to human health and the environment, EPA in its Third Third rulemaking proceeding set the LDR level for all metals wastes at the TC level -- 5.0 mg/l in the case of lead wastes -- and stated that treatment to the TC level "achieves the statutory minimize threat standard."[fn4: *Land Disposal Restrictions - Phase IV Proposed Rule*, 60 Fed. Reg. 43653, 83 (Aug. 22, 1995). *See also, Land Disposal Restrictions for Third Third Scheduled Wastes*, 55 Fed. Reg. 22520 (June 1, 1990).] In the preamble to its current proposal, EPA reverses its position on that point asserting that under the statute threats posed by metals should not be regarded as minimized by the current TC-based LDR levels (61 Fed. Reg. 26043). In support of that position, EPA relies on data from *Chemical Waste Management* that EPA reads as suggesting that the LDR program requires treatment standards below the characteristic level (id.). However, the language EPA refers to does not state that LDR levels must be below TC levels, but only that they <u>may</u> be below them (976 F.2d at 14).

Furthermore, immediately after making that point, the court in *Chemical Waste Management* made the holding referred to earlier that EPA may not set LDR standards below the level where threats exist (id.). Hence, EPA's insistence that an LDR for lead-bearing wastes must be set at a level lower than 5.0 mg/l -- without any showing that this is necessary to minimize threats -- is based on a misconception of what the courts have said.

Furthermore, the problem with EPA's insistence that lead-bearing wastes must be set below the characteristic level is that EPA acknowledged in the HWIR proceeding that the 5.0 lead TC mg/l level is much too low because the 100 dilution attenuation factor (DAF) that underlies the 5.0 mg/l lead TC level is itself much too low in the face of the growing evidence that lead migrates from landfills far more slowly than had previously been thought. The preamble indicates that modeling underlying the proposed exit levels for lead wastes would justify a DAF of 5000 and a TC level for lead of 75 mg/l (60 Fed. Reg. 66406). These conclusions concerning lead's slow migration are amply supported by the literature.[fn5: McCulley, Frick & Gilman, Inc., *Literature Review: Geochemical Fate and Transport of Anthropogenic Lead Releases to the Soil Environment, (1991*) (concluding that lead that infiltrates the soil subsurface is immobilized and the solubility of lead compounds limits the rate at which lead can be infiltrated downward) appended to LIA's November 20, 1955 Comments in Docket No. F-95-PH4P-FFFFF See also Organization for Economic Cooperation and Development, *Draft Report on Lead Risk Reduction to the OECD Chemicals Group and Management Committee, (1991*) (concluding that lead tends to be immobilized in "organic complexes or absorbed by hydrous iron oxides which limits [lead's] availability to humans and other terrestrial life).]

Accordingly, EPA's conclusion that the 5.0 mg/l lead TC level represents an upper boundary for a lead LDR is misplaced not only because of EPA's misreading of the *Chemical Waste Management* case but also because the present lead TC is too low.[fn6: LIA also continues to contend that using the TCLP to demonstrate compliance with LDR standards causes needless regulation of lead-bearing materials because the grinding and acid application protocols of the TCLP overstate the amount of lead that leaches from lead-bearing waste samples.] In these circumstances. there is no Justification or legal basis for imposing on lead producers and those industries that consume lead the immense cost of complying with the proposed 0.75 mg/l LDR for lead-bearing wastes.

Conclusion

EPA has not made the necessary findings that the present 5.0 mg/l lead LDR level -- or, for that matter, the 12.0 mg/l level proposed in the HWIR proceeding -- are inadequate to minimize threats to human health and the environment or that the proposed LDR is necessary to do so. Accordingly, insofar as lead-bearing wastes are concerned, the proposal should be withdrawn, and EPA should move forward with its reexamination of the TC for lead-bearing wastes.

RESPONSE

The Toxicity Characteristic levels are the levels above which constituents are clearly hazardous, not the levels at which threats from the constituents are minimized. EPA finds, for purposes of this rule, that none of the treatment standards are established below levels at which threats to human health and the environment are minimized. This finding stems from the Agency's inability at the present time to establish concentration levels for hazardous constituents which represent levels at which threats to human health and the environment are minimized. Unless the Agency determines risk-based concentration levels that achieve the "minimized threat" requirement for a particular wastestream, the Agency believes that BDAT treatment (as reflected by the UTS levels) fulfills the statutory charge. Technology-based standards have been upheld as a permissible means of implementing RCRA 3004(m) (see *Hazardous Waste Treatment Council v. EPA*, 886 F.2d 345 D.C. Cir. 1989, cert. denied 111S. Ct 139 (1990). The approach of setting standards below the characteristic level was upheld in *Chemical Waste Management v. EPA (976 F.2d 2).*

In response to the commenter’s discussion of the HWIR proposed “exit level” for lead, that level was very preliminary and is undergoing significant revision. EPA specifically states that the proposed HWIR value for lead should not be considered at this time to represent a level at which threats posed by land disposal are minimized, since the Agency is presently unable to support such a conclusion. No updated level was yet available by the time the Phase IV rule was finalized.

2P4P-00074 New York State Department of Environmental Conservation

DEC generally agrees with EPA that new and significant data should be utilized to set treatment standards for Toxicity Characteristic (TC) metal and other metal-bearing wastes. Technology-based standards that are used, in lieu of risk-based standards, seem unavoidable when data on risk-based criteria are not available or have not been sufficiently summarized or reviewed. However DEC suggests that performance should not be the only consideration in setting these standards.

RESPONSE

Until nationally-applicable risk-based levels are available for hazardous constituents, EPA must rely on treatment standards based on Best Demonstrated Available Technology in order to ensure that threats to human health and the environment are minimized.

Phase IV Second Supplemental Proposed Rule:
Comments and Responses on Lead and Lead Slags

1. 2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

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.

Response:

The Agency thanks the commenter for their support on the lead treatment standard. However, the Agency notes that the treatment standards for antimony, cadmium, chromium, and nickel have been revised, and refers the commenter to the respective comment-response sections for additional information.

2. 2P4P-00012 The Ferroalloys Association (FTA)

The new proposed universal treatment standards seem contradictory. The proposed rule requires that some metal bearing wastes will be required to be treated to lower levels of the constituent in question than the concentration allowed in other wastes that require no treatment at all for the same constituent. Also, while the universal treatment standard (UTS) for lead has increased from 0.37 mg/l to 0.75 mg/l while the UTS for chromium has decreased. The threat to public health and the environment are significantly greater for lead than chromium. Again, the change is inconsistent.

Response:

The Agency disagrees with the commenter that the proposed UTS are contradictory. The Agency notes that the TC levels that determine whether the waste is hazardous or not is not based on the best demonstrated available technology (BDAT). EPA, under the statutory requirements of the RCRA Sec. 3004(m), is legally obligated to establish treatment standards using the BDAT and therefore, has developed technology based UTS. EPA believes that, in certain cases, further treatment of characteristic metal wastes below the TC level may be required in order to minimize threats to human health and the environment from these wastes within the meaning of 3004(m). As stated previously in the Third Third Final Rule, which set treatment standards for characteristic wastes at the characteristic levels, the Agency believed that the goals of section 3004(m) may require the application of standards promulgated lower than the characteristic level. Unless the Agency determines risk-based concentration levels that achieve the minimized threat requirement for a particular waste stream, EPA believes that BDAT treatment, as reflected in the proposed UTS levels, fulfills the statutory charge of section 3004(m).

The Agency also would like to note that if a particular waste is unique or possesses properties making it difficult to treat, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

3. 2P4P-00017 Battery Council International (BCI) and Association of Battery Recyclers (ABR)

Likewise, BCI and ABR support the Agency's proposed treatment standards for barium, cadmium, chromium, nickel, vanadium, and zinc. Although our data shows lower levels of treatment than currently proposed, these elements have not generally been prevalent in secondary smelter feedstock, and hence secondary smelter slag. Some of these elements, however, are likely to be increasingly utilized in the future as substitutes for more hazardous and toxic elements in products. Thus, they are likely to become prevalent in secondary smelter feedstock, and hence smelter slag. Nonetheless, the appropriate chemical interactions between these elements and some of the other TC metals will limit the ability of secondary smelters to achieve extremely low treatment levels. EPA, therefore, should recognize this issue and maintain the treatment standards for barium, cadmium, chromium, nickel, vanadium, and zinc as proposed. These levels will provide secondary smelters the flexibility to handle future changes in their feedstock.

SUMMARY

BCI and ABR support EPA's decision not to revise the treatment standard of 5.7 mg/l for selenium and the Agency's proposed treatment standards for barium, cadmium, chromium, nickel, vanadium and zinc. Regrettably, however, EPA's proposed treatment standards for lead, silver, antimony, beryllium, and thallium are not acceptable or lawful.

EPA has not demonstrated that existing commercial technologies are capable of achieving its proposed treatment standards, or are otherwise "available," as to these five constituents. To the contrary, data previously submitted to EPA by BCI ' and ABR and ignored in developing this proposal, and additional data being submitted with these comments, demonstrates that treatment standards for each cannot be established at levels lower than the following:

Lead	9.46 mg/l
Silver	0.22 mg/l
Antimony	2.98 mg/l
Beryllium	0.13 mg/l
Thallium	0.79 mg/l

SPECIFIC COMMENTS

I. THE PROPOSED LEAD, SILVER, ANTIMONY, BERYLLIUM, THALLIUM TREATMENT STANDARDS ARE NOT ACHIEVABLE WITH BDAT

A concentration-based treatment standard must be set at a performance level achievable by application of the Best Demonstrated Available Technology (BDAT).[fn 2: 51 Fed. Reg. 40,572, 40,578 (1986); *Hazardous Waste Treatment Council v. United States EPA,* 886 F.2d 355, 364-65 (D.C. Cir. 1989), *cert. denied,* 498 U.S. 849 (1990).] To identify BDAT for the treatment of a particular waste, EPA has recognized that it must consider three factors: whether the technology is "best demonstrated;" whether it is "available;" and whether it is the "best applicable" technology.[fn 3: 55 Fed. Reg. 22,536.]

A treatment technology is considered to be "demonstrated" when full-scale treatment operations are currently being used to treat that waste.[fn4: *Id.*] To be considered "available," the technology must not be proprietary or a patented process that cannot be purchased or licensed from the proprietor. (I.e., it must be "commercially available.") It also must substantially diminish the toxicity of the waste or reduce the likelihood of migration of hazardous constituents from the waste.[fn5: *Id.*] To be "applicable," a
technology must theoretically be able to treat the waste.[fn6: *Id.*]

The proposed treatment standards do not meet these criteria. For one thing, the high temperature metals recovery technologies (HTMR) to which EPA points as capable of meeting its proposed standards are not BDAT. First, they are not demonstrably capable of handling D008 wastes. They handle D006 and K061 wastes, the chemistry of which is vastly different from D008. Second, they are not commercially available.

BDAT in fact is the stabilization process employed by existing secondary smelters. However, data submitted to EPA by BCI and ABR on November 27,1995 (BCI's comments are attached as "Exhibit 1") and a new database (attached as "Exhibit 2") show that no facility in the secondary lead industry can meet EPA's proposed treatment standards for lead, silver, antimony, beryllium, and thallium. Thus, EPA has not demonstrated that stabilization technologies are capable of meeting its proposed treatment standards. Instead, the data supports setting standards at the levels set forth above, in the Summary section of these comments.

A. HTMR Technologies to Meet the Proposed D008 Nonwastewater Treatment Standards are Neither Demonstrated nor Available

The HTMR technologies asserted by EPA as capable of treating D008 wastes to its proposed treatment standards are not demonstrated. The chemistry of D008 wastes is vastly different from the chemistries of D006 and K061 wastes. But EPA reviewed and relied upon only D006 and K061 treatment data in concluding that HTMR technologies could meet the treatment standards D006 wastes include paint, plating sludges, wastewater treatment sludges, and a wide variety of other waste materials derived from the manufacture and reclamation of nickel-cadmium batteries and other cadmium-related products. D006 wastes typically include various concentrations of cadmium, nickel, zinc, and chromium. Waste streams from particular facilities tend to be relatively consistent in chemical makeup. D006 wastes rarely contain antimony, arsenic, and selenium, which are abundant in D008 wastes.

K061 wastes are derived from the steel making process. The chemical constituents of K061 are iron, zinc, chromium, nickel, and lead oxides. K061 wastes also typically contain very little antimony, arsenic, and selenium. As with D006 waste streams at particular facilities tend to have reasonably consistent chemical characteristics.

In contrast, the D008 wastes generated from lead-acid battery recycling operations and from the cleanup of contaminated soils and debris tend to be massive, solid, and extremely variable. Their chemical and physical characteristics can vary significantly depending upon individual processes and the feedstocks used to produce them. They may include substantial quantities of calcium, sodium, and other alkaline earth oxides as well as sulfur, selenium, antimony, and arsenic. These elements are essentially non-existent in D006 and K061 wastes.

The chemical differences between D008 wastes and D006 and K061 wastes render the HTMR process less effective in treating D008 wastes to EPA*s proposed treatment levels. Moreover, many D008 wastes (e.g., secondary smelter slags) are already the residues of an HTMR process. They thus contain significant quantities of silica and iron oxides which further impedes the ability of additional HTMR processes to remove elements such as lead, antimony, and selenium.

In addition, the HTMR technology used by EPA to determine the BDAT (known as the Horsehead Resource Development Company Inc.'s Waelz kiln series process and the INMETCO HTMR process) are not "commercially available" to treat D008 nonwastewaters. Both processes are patented and very expensive. Neither has been built into any of the lead battery industry's operations or otherwise applied to battery-reclamation slags. Moreover, no facility operating either process is permitted to accept and store D008 wastes.

B. Before publishing the proposed standards, EPA had before it at least two data sets: a 200-point set of analyses of composite samples taken from six facilities over a several month period of time[fn8: *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 data contained analysis of composite sampling results on the treatment of secondary smelter slag and contaminated soils.] and a much smaller set of analyses of grab samples taken over a much shorter period of time.[fn9: *See* Memorandum of Howard Finkel to Anita Cummings, *supra.*] EPA disregarded the first and relied solely upon the second. No effort was made, however, to select a representative set. For example, EPA's treatment standard for lead was derived from twenty-seven grab sample data points.[fn10: *Id.*] 276 other data points submitted by BCI and ABR, taken over several months, were ignored. Similarly, the Agency's treatment standard for beryllium was derived from only four grab sample data points.[fn11: *Id.*] The treatment standards for antimony, silver, and thallium were derived from nine, fourteen, and fifteen grab sample data points, respectively.[fn12: Id.]

This is far too limited a set of samples from which to calculate treatment standards. Such a limited sampling size will not adequately represent the variability of the D008 waste stream. This is particularly so for secondary smelter slag. Because of its physical and chemical composition, this slag is extremely variable, differing from one minute to the next and one week to the next. BCI and ABR note that, in other contexts, the Agency requires many more samples to be taken than were included in this set. For example, for municipal incinerator ash, a waste not as variable as secondary smelter slag, the Agency requires a total of fourteen eight-hour composite samples. These samples must be collected hourly for a total of eight hours for seven days.[fn13: Environmental Protection Agency, *Sampling and Analysis of municipal Refuse Incinerator Ash* (June 1995).]

The Agency has compounded its error by analyzing only grab samples, a one-time sample occurrence. Unless performed frequently over a several week period of time, and then analyzed using appropriate statistical techniques, these samples will fail to accurately characterize highly variable heterogeneous wastestreams. As discussed above, secondary smelter slag is extremely heterogeneous. Thus, unless many grab samples are taken over an extended period of time (which was not done by EPA in this instance), it will be only sheer coincidence if they are an accurate measure of this wastestream.

Finally, all of the grab sample data points obtained from Rollins Environmental, which comprised the vast majority of the data points used by EPA in calculating the treatment standards for D008 wastes, [fn14: For example, twenty-two out of the twenty-seven data points EPA used for the calculation of the treatment standard for lead were taken from Rollins Environmental Data. All of the remaining data points used by EPA in the calculation of treatment standards for silver, antimony, beryllium, and thallium were collected by Rollins Environmental. See Memorandum of Howard Finkel to Anita Cummings, *supra*] were based on the treatment of remediation and other types of wastes, not of secondary smelter slag. Smelter slag, however, has chemical and physical characteristics distinctly different from the remediation and other wastes obtained from Rollins. For example, secondary smelter slag is partly or completely solid, and of variable particle size. Because of this physical variably, its treatment through stabilization is much less effective than other types of D008 wastes.

EPA's reliance upon this data set ignored the much more comprehensive and representative data submitted by BCI, ABR and others in response to EPA's original proposed LDR Phase IV rule.[fn15: *See* comments of Battery Council International (Nov. 27,1995) and Association of Battery Recyclers submitted in response to EPA Land Disposal Restrictions Phase IV proposed rule (60 Fed. Reg. 43,654 (1995)).] BCI and ABR's data contained 276 composite data points for lead and 156 composite data points for selenium and barium in secondary smelter slag.[fn16: Id.] The data showed the 99th percentile confidence interval for stabilized slag to be 2.97 mg/l for lead, 2.48 mg/l for selenium, and 8.92 mg/l for barium.[fn17:Id] This level for lead is well above the treatment level now proposed by EPA.

This data was generated over a several month period, from six secondary lead smelters, and represents over one thousand individual grab sample points consolidated into composite samples. EPA ignored this data on the grounds that it was not obtained from grab samples and did not provide "in versus out data points."[fn18: *See Overview of Five Data Sets Submitted in Response to Phase IV Proposed Rule: Treatment of Metals 4* (Dec. 1996).] This rationale fails for several reasons. First, it is inconsistent with past practice. In past LDR rulemakings, EPA has considered all of the relevant data in determining what treatment standards could typically be achieved. For example, in the Third -Third LDR rule EPA stated with regard to D008 treatment standards that although "[the majority of the data received by the Agency did not have the proper QA/QC, corresponding influent and effluent data, and design and operating parameters..... **The Agency, nevertheless, evaluated all of the data to assess the range of waste variability and what standard could typically be achieved."**[fn19: 55 Fed. Reg. 22,565 (1990**]** Had EPA evaluated all of the data it received in response to the original proposed Phase IV rule, it clearly would have recognized that the proposed treatment standard of .75 mg/ I for lead could not be achieved.

Second, the use of grab samples is inappropriate for analyzing highly variable D008 wastes.[fn20:The issue of whether grab sampling is an inherently unreliable method for measuring heterogeneous wastes, such as secondary smelter slag, for the development of treatment standards has not previously been subject to judicial review. *See e.g., Chemical Waste Management v. United States EPA*, 976 F.2d 2 (D.C. Cir. 1992), *cert. denied* 507 U.S. 1057 (1993).] Secondary smelter slag is extremely variable and heterogeneous. Three factors principally affect the variability of slags: (1) changes in concentration with respect to time; (2) changes in concentration where the material is partly or completely solid; and (3) changes in concentration where the material is of variable particle size. The constituents of waste materials comprised of particles larger in size than dust, including crushed slag from a discontinuous process such as secondary smelting of lead, are very inconsistent from one day to the next or one week to the next. Because of the highly variable nature of secondary smelter slag grab sampling, unless done frequently over a extended period of time (which was not done by EPA), does not provide an accurate measure for the development of treatment standards (or, for that matter, the enforcement of existing treatment standards).

It is no doubt for this reason that SW-846 mandates that when analyzing heterogeneous wastes resulting from discontinuous or variable processes (such as lead-acid battery and other lead scrap smelting), statistically random samples of waste must be taken over extended periods of time.[fn21:Environmental Protection Agency, *Test Methods for Evaluating Solid Waste*, SW 846 3rd Ed (Nov. 1986).] Indeed, for highly variable waste operations, such as secondary lead smelting, EPA's SW-846 method further requires hundreds of samples to be taken and analyzed to obtain an adequate data baseline.[fn22: Id]

In contrast, as discussed above, BCI and ABR's composite sampling method combined over a thousand individual grab samples that were averaged into 276 composite samples for lead and 156 composite samples for barium and selenium. These composite samples represent an average concentration obtained over a several month period on the effectiveness of stabilization technologies.

Finally, comparison of "in versus out data points" is not meaningful when analyzing secondary smelter slag. As discussed above, secondary smelter slag is heterogeneous; its composition varies over time and space. It thus is wholly coincidental if incoming and treated slag samples are true pairs. A sample taken one inch from another can have dramatically different parameter concentrations.

D. The Proper Treatment Standards

Data collected and analyzed by BCI and ABR establishes that the proper treatment standards should be the following:

Barium 21 mg/l
Cadmium 0.20 mg/l
Chromium 0.85 mg/l
Lead 9.46 mg/l
Selenium 5.7 mg/l
Silver 0.22 mg/l
Antimony 2.98 mg/l
Beryllium 0.13 mg/l
Nickel 13.6 mg/l
Thallium 0.79 mg/l
Vanadium 1.6 mg/l
Zinc 4.3 mg/l

As has been amply discussed, EPA's proposed treatment standards for lead, silver, antimony, beryllium, and thallium should not be set below the levels identified above.

Response:

The Agency notes that the commenter may be correct in stating that the chemistry of D008 waste is different from the chemistries of D006 and K061 wastes. However, the important issue here is that the D006 and K061 wastes are more difficult to treat compared to D008 wastes. EPA, when transferring treatment standards from one waste to another, determines whether the BDAT will achieve the same level of performance on an untested waste that it achieved on a previously tested waste. For this determination, EPA examines the waste characteristics that affect performance such as (i) the concentrations of undesirable volatile metals, (ii) the metal constituent boiling points, and (iii) the thermal conductivity of the waste. In addition, EPA also examines the design and operating parameters of the technology. Based on the evaluation of these waste characteristics that affect performance, the Agency determined that well operated HTMR facilities can meet the proposed treatment standards for D008 wastes.

The Agency notes that HTMR technology is currently being implemented on a full-scale basis and is being used to treat TC metal wastes and therefore is considered a “demonstrated” technology. The Agency has conducted extensive research on commercially demonstrated and available metal recovery technologies and developed detailed profiles of metal recovery technologies applicable for metal-bearing wastes (See the “profiles of metal recovery technologies for mineral processing and other metal-bearing hazardous wastes,” U.S. EPA, April 30, 1997). Also, the treatment performance data obtained and reviewed by the Agency from HTMR facilities indicate that the TC metal-bearing wastes can be treated to the UTS. In addition, the Agency notes that the mere existence of the secondary lead smelting industry itself proves the applicability of HTMR to D008 wastes.

EPA also recognizes that HTMR may not be the best technology for all TC metal wastes.

For the same reason, the Agency is establishing a concentration-based standard rather than requiring a specific technology. To compile further evidence regarding the treatability of TC metal wastes, including D008 wastes, to the UTS, the Agency conducted site visits to commercial hazardous waste treatment facilities and collected additional stabilization and HTMR treatment performance data that better represent the diversity of metal wastes than those previously used. The treatment performance data (based on grab samples) represented 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, mineral processing wastes, baghouse dust, soils, pot solids, recycling by-products, and sludge. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony. The Agency compared the treatment standards developed based on stabilization and HTMR and selected the highest (less stringent) standard for each metal to establish the proposed UTS, thus, allowing for process variability and detection limit difficulties.

The Agency also reviewed the data submitted by the commenter, and found the data to be seriously lacking in form and quality assurance/quality control prerequisites. Specifically, the data submitted to the Agency were: (1) based on composite samples rather than grab samples, the latter being the only type used to develop BDAT treatment standards; (2) lacking in any quality assurance/quality control documentation; and (3) not accompanied with specific treatment information, or any indication that performance of the treatment process was in fact optimized. Therefore, the Agency was unable to use the data for developing the BDAT treatment standards.

The Agency also would like to note that if a particular waste possesses unique properties that make it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

4. 2P4P-00019 The Doe Run Company (DRC)

These comments are being submitted for The Doe Run Company (DRC). DRC operates seven mines and four concentrating mills in Missouri. It sells its copper and zinc concentrates. The company converts lead concentrates to lead metal at its Herculaneum, Mo., primary lead smelter rated at about 225,000 tons of product metal and alloys annually. It is expected to produce 225,000 to 250,000 over the next several years annually. The company also operates a 90,000 ton secondary lead smelter in Iron Count', Missouri, for the conversion of spent batteries and other lead bearing materials to lead metal and alloys. In addition the company operates several value added lead businesses in Seattle, Washington, and Houston, Texas. Today we are making comments on a number of areas of concern in this rulemaking.

(1) The first relates to major changes in EPA's philosophy with regard to the recycling of internal secondaries within a primary lead smelter including the regulatory analysis.

(2) The second relates to the proposed regulatory changes with regard to the co-processing of hazardous waste for metal recovery.

(3) The third point relates to the testing, TCLP limits, and management of slag wastes from the secondary lead industry.

(4) The fourth area of comments relates to the notice's request for comments on the "High Risk Mining Wastes Excluded by the Bevill Amendment".

DRC is a member of the National Mining Association and the Associated Battery Recyclers, both of which are also submitting comments on this rule which we support and incorporate by reference into our comments.

<u>Testing, TCLP limits, and management of slag wastes from the secondary lead industry.</u>

The greatest concern to the Buick recycling plant of DRC are the UTS standards for antimony and lead. The Buick facility utilizes a chemical fixation process on the blast furnace slag generated, whereby the slag chemistry is transformed to a sulfide. Since antimony has not been a regulated metal for TCLP, the facility did not have data for this metal. However, we have collected approximately forty (40) data points both composite and grab, and find that we can consistently meet only a 1.3 mg/liter Sb level which would be approximately the two standard deviation level. Because of the unique nature of this type of slag, Doe Run would recommend that representative sampling of stabilized or fixated slag be analyzed for antimony to develop an acceptable TCLP level. Doe Run is not aware of any other secondary smelter operation that treats slag down to a 0.07 mg/l level for antimony. We urge you to adopt a level for antimony in the 1.3-2.0 mg/l range allowing for long range variability in the process.

The Buick Facility has collected 170 samples to date for chemically fixated slag and tested for lead. We found that we can only meet a 2.0 mg/liter Pb level at the two standard deviation level. Because the slag composition has an inherently wide variability with certain constituents it is not possible to meet the 0.75 mg/l TCLP level for lead. As an example, iron and sulfur which have significant binding capabilities with lead and are regular constituents in this type of slag, can have considerable variations which therefore impact the potential leachability of lead from the slag. A review of Buick slag assays shows an iron level ranging from 12% to 40% and sulfur ranging from 0.1% to 7% content. With these variabilities it simply wouldn't be possible to constantly reach such a low proposed TCLP level for lead.

Response:

First, the Agency notes that all of the data submitted by the commenter was based on composite samples and not grab samples, and therefore, would not be appropriate for setting a treatment standard that is to be met based on grab samples. Second, to compile additional evidence regarding the treatability of TC metal wastes, including secondary lead smelter slags, 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) represented 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. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony.

Finally, the Agency would like to note that if a particular waste possesses unique properties making it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

5. 2P4P-00024 Lead Industries Association, Inc. (LIA)

In comments being filed contemporaneously with LIA*s, Battery Council International (BCI) and the Association of Battery Recyclers (ABR) address the fact that the contemplated replacement of the TC level for lead with a much lower UTS is infeasible. LIA supports the positions taken by BCI and ABR, and will focus its comments on what it considers the principle reason why the proposed rule conflicts with the requirements of the Resource Conservation and Recovery Act and should not be adopted-- the fact that no showing has been made that the proposal is necessary to protect human health and the environment, while EPA has previously found that much higher levels would accomplish that purpose.

<u>II. The Proposed Lead UTS Lacks a Reasoned Explanation and Conflicts with EPA*s Finding in the HWIR Proceeding RCRA section 3004(m) requires EPA to set LDR treatment standards at levels that will substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized.</u>

The requirement that levels or treatment methods adopted pursuant to section 3004(m) must minimize such threats necessarily subjects EPA to the familiar rule requiring a determination that significant risks exist under the current regulatory scheme, and that these risks will be substantially reduced by EPA's proposal. See, e.g., Industrial Union Department, AFL-CIO v. American Petroleum Institute, 448 U.S. 607, 645-646 (1980). Most importantly, the courts have held that the language of section 3004(m) requiring that threats be minimized does not allow the agency to require treatment "beyond the point at which there is no 'threat' to human health and the environment."[fn1: Hazardous Waste Treatment Council v. EPA, 886 F.2d 355, 62 (D.C. Cir. 1989); See also Chemical Waste Management v. EPA, 976 F.2d 2, 12-14 (D.C. Cir. 1992) cert. denied 113 S. Ct. 1961 (1993).] Finally, EPA is required to provide a reasoned explanation for its determination concerning risks as well as for the UTS it has selected. [fn2: Motor Vehicle Manufacturers Association v. State Farm, 463 U.S. 29, 43 (1983).]

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/1. [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.

III. EPA's Proposal Also Conflicts With Its Prior Findings **in** the Third Third Rulemaking Proceeding

Prior to finding in its HWIR proposal that a 12.0 mg/l lead level minimized threats to human health and the environment, EPA in its Third Third rulemaking proceeding set the LDR level for all metals wastes at the TC level -- 5.0 mg/l in the case of lead wastes -- and stated that treatment to the TC level "achieves the statutory minimize threat standard."[fn4:*Land Disposal Restrictions - Phase IV Proposed Rule,* 60 Fed. Reg. 43653, 83 (Aug. 22, 1995). *See also, Land Disposal Restrictions for Third Third Scheduled Wastes,* 55 Fed. Reg. 22520 (June 1, 1990).] In the preamble to its current proposal, EPA reverses its position on that point asserting that under the statute threats posed by metals should not be regarded as minimized by the current TC-based LDR levels (61 Fed. Reg. 26043). In support of that position, EPA relies on data from *Chemical Waste Management* that EPA reads as suggesting that the LDR program requires treatment standards below the characteristic level (id.). However, the language EPA refers to does not state that LDR levels must be below TC levels, but only that they <u>may</u> be below them (976 F.2d at 14).

Furthermore, immediately after making that point, the court in *Chemical Waste Management* made the holding referred to earlier that EPA may not set LDR standards below the level where threats exist (id.). Hence, EPA's insistence that an LDR for lead-bearing wastes must be set at a level lower than 5.0 mg/l -- without any showing that this is necessary to minimize threats -- is based on a misconception of what the courts have said.

Furthermore, the problem with EPA's insistence that lead-bearing wastes must be set below the characteristic level is that EPA acknowledged in the HWIR proceeding that the 5.0 lead TC mg/l level is much too low because the 100 dilution attenuation factor (DAF) that underlies the 5.0 mg/l lead TC level is itself much too low in the face of the growing evidence that lead migrates from landfills far more slowly than had previously been thought. The preamble indicates that modeling underlying the proposed exit levels for lead wastes would justify a DAF of 5000 and a TC level for lead of 75 mg/l (60 Fed. Reg. 66406). These conclusions concerning lead's slow migration are amply supported by the literature.[fn5: McCulley, Frick & Gilman, Inc., *Literature Review: Geochemical Fate and Transport of Anthropogenic Lead Releases to the Soil Environment, (1991*) (concluding that lead that infiltrates the soil subsurface is immobilized and the solubility of lead compounds limits the rate at which lead can be infiltrated downward) appended to LIA's November 20, 1955 Comments in Docket No. F-95-PH4P-FFFFF See also Organization for Economic Cooperation and Development, *Draft Report on Lead Risk Reduction to the OECD Chemicals Group and Management Committee, (1991*) (concluding that lead tends to be immobilized in "organic complexes or absorbed by hydrous iron oxides which limits [lead's] availability to humans and other terrestrial life).]

Accordingly, EPA's conclusion that the 5.0 mg/l lead TC level represents an upper boundary for a lead LDR is misplaced not only because of EPA's misreading of the *Chemical Waste Management* case but also because the present lead TC is too low.[fn6: LIA also continues to contend that using the TCLP to demonstrate compliance with LDR standards causes needless regulation of lead-bearing materials because the grinding and acid application protocols of the TCLP overstate the amount of lead that leaches from lead-bearing waste samples.] In these circumstances. there is no Justification or legal basis for imposing on lead producers and those industries that consume lead the immense cost of complying with the proposed 0.75 mg/l LDR for lead-bearing wastes.

Conclusion

EPA has not made the necessary findings that the present 5.0 mg/l lead LDR level -- or, for that matter, the 12.0 mg/l level proposed in the HWIR proceeding -- are inadequate to minimize threats to human health and the environment or that the proposed LDR is necessary to do so. Accordingly, insofar as lead-bearing wastes are concerned, the proposal should be withdrawn, and EPA should move forward with its reexamination of the TC for lead-bearing wastes.

Response:

The Agency notes that the root requirement of the LDR program is that treatment of hazardous wastes is to “substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized,” RCRA Sec. 3004(m). To date in the absence of a reliable means of quantifying where threats are minimized, EPA has implemented this requirement by requiring treatment to reflect the performance of BDAT technologies, in order to assure substantial reduction of a waste’s toxicity and mobility prior to land disposal (see 56 FR 6641). It would be premature for the Agency to adopt HWIR based standards as that rule is currently undergoing extensive review and additional modeling. The commenter also is referred to the response provided by EPA in the HWIR section of this comment-response document.

6. 2P4P-00025 RSR Corporation

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.

Response:

The Agency disagrees with the commenter’s statement that EPA has not demonstrated the capability and availability of commercial treatment technologies. The Agency has provided adequate data to show the capability and availability of commercial treatment technologies (stabilization and HTMR) for treating the TC metals to the UTS levels. (See the BDAT background document for this rule). 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) represented 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. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony. Therefore, based on the treatment performance data reviewed, the Agency believes that the lead UTS can readily be achieved through commercially available treatment technologies.

The Agency would like to note that if a particular waste possesses unique properties making it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

7. 2P4P-00028 Laidlaw Environmental Services

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.

Response:

The Agency thanks the commenter for their support on the lead treatment standard. The Agency determined the proposed treatment standards 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.” Therefore, the Agency notes that the UTS levels are determined based on BDAT for the most difficult to treat wastes and not solely based on the lowest level a treatment technology could achieve.

8. 2P4P-00069 Macalloy Corporation

The UTS for lead has increased from 0.37 mg/l to 0.75 mg/l while the UTS for chromium has decreased. The adverse effects to the public health and the environment are far greater for lead than for chromium. This change seems to be inconsistent.

Response:

The Agency disagrees with the commenter that the proposed UTS are inconsistent. The Agency determined the treatment standards for all TC metals based on treatment performance data from wastes that EPA believes is representative of the “most difficult to treat” metal-bearing hazardous wastes. The root requirement of the LDR program is that the treatment of hazardous wastes is to “substantially reduce the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized.” RCRA 3004(m)(1). To date, in the absence of a reliable means of quantifying when threats are minimized, EPA has implemented this requirement to reflect BDAT technologies, in order to assure substantial reductions of a waste’s toxicity and mobility before land disposal. See 56FR6641 (Feb 26, 1990).

9. 2P4P-00087 Waste Management

The proposed changes for selenium (5.7 mg/l TCLP) and lead (0.75 mg/l TCLP) will improve WM's ability to treat such waste streams to the revised UTS.

Response:

The Agency thanks the commenter for supporting the UTS for lead and selenium.

10. 2P4P-L1003 Environmental Technology Council

The ETC has reviewed the reproposed treatment standards for TC metal wastes and is generally supportive of the proposed levels. In these comments, the ETC provides data demonstrating that these standards are readily achievable through the use of proven, available technology.

In Appendix **A** of these comments are data from the treatment of a variety of TC metal bearing hazardous wastes. All data were generated in compliance with EPA's BDAT Background Document on Quality Assurance / Quality Control Procedures and Methodology (1991). These data reflect the ability of commercially available technology to meet the proposed treatment standards today. The data were gathered from five separate sites around the country, and include the results of treatment on a wide variety of wastes.

The ETC is providing these data for the EPA to add to its present treatment standard database. In addition, to determine if the proposed standards were achievable, ETC statistically analyzed our data for this submission. Table I compares the results of this statistical analysis of new data with EPA's proposed treatment standards.

Table 1 Comparison of Nonwastewater Treatment Standards Statistically Derived from ETC Data to Proposed EPA Treatment Standards

METAL (WASTE CODE)	PROPOSED EPA STANDARD	TREATMENTSTANDARD STATISTICALLY DERIVED FROM ETC DATA(PPM)
BARIUM (D005)	21.0	1.5
CADMIUM (D006)	0.20	0.10
CHROMIUM (D007)	0.85	2.30*
LEAD (D008)	0.75	1.20*
SELENIUM (D010)	5.7	0.40
SILVER (D011)	0.11	0.10

*In ETC's data set for both Chromium and Lead, one (possibly outlier) data point accounts for the calculated treatment level that is higher than EPA's proposed standard. If this data point is removed, the levels based on ETC's data would actually be lower than EPA*s proposed standards.

While the ETC data must be used in conjunction with EPA's existing database and not as a stand-alone to establish new treatment standards, it is interesting to note that ETC's data support treatment standards virtually identical to EPA's proposal for Cadmium and Silver, and lower treatment standards for Barium and Selenium.

This data demonstrate that well-run treatment systems are capable of meeting the proposed treatment standards. In fact, the ETC members have been meeting metals treatment standards similar to those in this proposal for years. Many non-TC waste streams have metal treatment standards already associated with them. These metal treatment standards are based on the metal Universal Treatment Standards (UTS) which are more stringent than the present Characteristic Treatment Standards.

While the waste matrix can alter the ability of a specific treatment regime to stabilize a specific metal, the ETC feels strongly that years of data and experience demonstrate that a well-run treatment system can effectively stabilize regulated metals to the proposed limits. The Council knows that TC metal wastes react no differently to a well run treatment system, and the experience of our member companies backs this up.

In September, 1996 EPA reviewed treatment data and capabilities at three separate sites and found:

> "The performance data represented 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 wastes treated included mineral processing wastes, baghouse dust, battery slag, soils, pot solids, recycling by-products, and sludge. TCLP values in the untreated wastes included 4430 mg/l lead, 1580 mg/l chromium, 82 mg/l barium, and 4280 mg/l cadmium. In addition, numerous waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, while other waste streams had a significant concentration of combination metals including: lead and cadmium, barium and lead, and chromium and antimony."

The Agency compared the data from these site visits with previously acquired data on the performance of HTMR. This analysis resulted in the reproposed TC metal treatment standards in the supplemental proposal. The reproposed standards corroborate ETC member-firms' knowledge of the capabilities of a well-run treatment system. The additional data provided in our comments add more data points in support of these treatment standards. ETC strongly urges the EPA to adopt the TC metal treatment standards in this supplemental proposal.

Response:

The Agency thanks the commenter for providing data and supporting the treatment standard for lead.

Phase IV Second Supplemental Proposed Rule:
Comments and Responses on Mercury

2P4P-L1003 Environmental Technology Council

4. MERCURY TREATMENT STANDARD

The ETC urges the EPA to consider modifying the treatment standard for TC Mercury nonwastewaters containing greater than 260 mg/kg Mercury that are inorganic, including incinerator residues. The present standard for this waste is recovery of Mercury (RMERC).

While the Council feels strongly that the recovery of Mercury can be beneficial in many types of waste, there are some cases, specifically with incinerator air pollution control (APC) residues, where the present standard cannot be met. The Council is also of the opinion that with the upcoming stringent MACT standards for hazardous waste incinerators, the problem of high levels of Mercury in APC residues will be compounded. As a stringent MACT mandates greater levels of Mercury be removed by the APC devices, higher concentrations of Mercury will be found in the APC residue.

There is no known recovery technology available to remove the Mercury from APC residue. Generally this is a highly chlorinated waste stream, and is not amenable to available mercury recovery technologies. However, stabilization is a safe, proven, and effective method to treat this type of waste.

Since there is no recovery available for high Mercury APC residues, this type of waste cannot be treated in the U.S. and generally is shipped to Canada. If the EPA fails to revisit this standard, especially in light of the upcoming MACT standards, larger and larger quantities of waste will be forced out of the country to Canada because there is no realistic treatment capability for this type of waste in the U.S. The Council strongly urges the EPA to look at this treatment standard and allow stabilization for high Mercury APC residues.

Response:

The Agency notes that the mercury treatment standard was not discussed in the Phase IV proposed rules and therefore, is not germane to the Phase IV LDR rule.

Phase IV Second Supplemental Proposed Rule:
Comments and Responses on General Metal Issues

1. 2P4P-00003 Chemical Products Corporation

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.

CPC is a Georgia corporation which has manufactured barium chemicals in Cartersville, Georgia for over 60 years. In this capacity, we have kept abreast of all studies involving the toxicology of barium and have participated in revisions to the Primary Drinking Water Standards for barium, the regulation of barium under Section 313 of EPCRA, and the BDAT Treatment Standards for barium wastes.

In response to a petition to delist the entire barium compounds category from EPCRA Section 313 reporting requirements filed by CPC on June 28, 1996, EPA conducted a thorough and comprehensive evaluation of the available toxicity data for soluble barium. This available toxicity data includes the recently-published results of toxicology and carcinogenicity studies conducted as part of the U.S. Department of Health and Human Services'.National Toxicology Program (NTP) contained in 1994 NTP Technical Report 432 (NIH Publication #94-3163). The results of EPA's technical review of barium compound toxicity was the statement in the technical summary of the EPA ruling, published in the Federal Register of January 3, 1997 (62 FR 366), "With regard to chronic toxicity, the data from animal studies support a LOAEL of approximately 180 mg/kg/day for renal toxicity."

EPA's ruling, published in the Federal Register of January 3, 1997, denied CPC's June 28, 1996 petition based on the assertion that an LOAEL of 180 mg/kg/day was sufficient to justify inclusion in the SARA Section 313 list.

The existing RCRA TC regulatory level for barium of 100 mg/l was established when the Primary Drinking Water Standard (PDWS) for barium was 1 mg/l. The PDWS was raised to 2 mg/l in 1992 based on an LOAEL of only 5.1 mg/day for supposed hypertensiogenic and cardiotoxic effects (IRIS barium file entry 9008-02). The recognition of an LOAEL of 180 mg/kg/day should lead EPA to increase the RCRA TC regulatory level for barium from 100 mg/l to approximately 7000 mg/l. Likewise, the higher LOAEL should lead to an upward revision of the UTS level for barium to at least 1500 mg/l by the TCLP test.

CPC has been instrumental in bringing to the attention of EPA’s Integrated Risk Information

System (IRIS) new toxicological information for barium Which, in the near future, should result in a major revision to the IRIS file on barium. This information shows that the critical effect, an increase in blood pressure from the chronic ingestion of soluble barium, previously supposed, does not exist. Mr. Edward Ohanian, Chief Toxicologist in EPA's Office of Science and Technology, has informed CPC, in response to our letter to his office, that a review of the IRIS barium file is being given top priority, that the review is well underway, and that a revision should be completed by the end of August, 1997. We hope that this revision will prompt a rapid review and revision of both the RCRA TCLP and UTS regulatory limits pertaining to barium.

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.

On request, CPC would be pleased to furnish the Office of Solid Waste with copies of the studies supporting its position in this matter.

Response:

The Agency thanks the commenter for supporting the revised treatment standard of 21 mg/l for barium, but does not agree that the standard should be higher. The Agency notes that the LDR program is based on the premise that regulated constituents are to be treated using the Best Demonstrated Available Technology (BDAT) to minimize threats to human health and the environment and in the absence of a risk -based program, technology is the determining factor in minimized threat for the LDR program. The Agency finds, for the purpose of this rule, that the treatment standard of 21 mg/l for barium is not less than necessary to protect human health and the environment, and therefore is promulgating the barium treatment standard at 21 mg/l as proposed.

2. 2P4P-00012 The Ferroalloys Association (TFA)

The new proposed universal treatment standards seem contradictory. The proposed rule requires that some metal bearing wastes will be required to be treated to lower levels of the constituent in question than the concentration allowed in other wastes that require no treatment at all for the same constituent. Also, while the universal treatment standard (UTS) for lead has increased from 0.37 mg/l to 0.75 mg/l while the UTS for chromium has decreased. The threat to public health and the environment are significantly greater for lead than chromium. Again, the change is inconsistent.

Response:

The Agency recognizes the concern raised by the commenter, however, the Agency notes that the Land Disposal Restrictions program is based on the premise that regulated constituents are to be treated using the Best Demonstrated Available Technology (BDAT) to minimize threats to human health and the environment, because of the absence of certainty as to levels at which threats are minimized. The Agency further notes that the TC level does not equal a minimized threat to human health and the environment. 55 FR 22651. EPA believes that, in certain cases, further treatment of characteristic metal wastes below the TC level may be required in order to minimize threats to human health and the environment from these wastes within the meaning of 3004(m). As stated previously in the Third Third Final Rule, which set treatment standards for characteristic wastes at the characteristic levels, the Agency believed that the goals of section 3004(m) may require the application of standards promulgated lower than the characteristic level. Unless the Agency determines risk-based concentration levels that achieve the minimized threat requirement for a particular waste stream, EPA believes that BDAT treatment, as reflected in the UTS, fulfills the statutory charge of section 3004(m). In light of all these issues, the Agency believes that the UTSs are consistent with the Agency's policies and programs.

3. 2P4P-00014 Westinghouse Electric Corporation

Section 1, Background, page 26042
Westinghouse suggests EPA consider expanding the second paragraph in this section to -identify potential areas to be addressed in future LDR rulemakings. Will treatment standards for TC metal wastes previously stabilized to current LDR levels be included in future rule makings? Does the EPA envision the issuance of additional supplemental proposals and if so, what will be addressed in these proposals?

Section III, general comment,. page 26043
The proposal does not appear to consistently use the terms, "Universal Treatment Standards" and "treatment standards." These terms appear to be used interchangeably through out the proposal. It is difficult to determine if the agency is referring to 40 CFR Part 268.40, "Treatment Standards for Hazardous Wastes," or 40 CFR Part 268.44, "Universal Treatment Standards" when the term "treatment standard" is utilized n the text.

Section III, issue not addressed
The original, LDR, Phase IV, proposed rulemaking (The Land Disposal Restrictions - Phase IV, 60 FR 43654, dated August 25, 1995, Section V, "Treatment Standards for Newly Listed and Identified Wastes," subsection 3, "Treatment Standard for Previously Stabilized Mixed Radioactive and Characteristic Metal Wastes) proposed to allow characteristic metal mixed waste, that have undergone stabilization prior to the effective date of the Phase IV final rule, to comply with the LDR metal standards that were in effect at the time the waste was stabilized. Specifically the language addressed the non-hazardous cement-waste forms at the West Valley Demonstration Project Site, which is managed by Westinghouse on behalf of the Department of Energy. This language is not found in the Second Supplemental Proposal. Westinghouse urges EPA to reincorporate the language into the second supplemental proposal or future modifications to the LDR regulations.

Response:

The Agency acknowledges the commenter’s suggestion to identify potential areas to be addressed in future LDR rulemakings. The time constraints of completing this rulemaking in compliance with our consent decree schedule, however, precluded taking such an action except for those notices directly related to the Phase IV final rule.

With respect to the commenters concern regarding the use of the terms "Universal Treatment Standards" and "treatment standards," the Agency agrees with the commenter that the terms are used interchangeably in the proposed rule and will clarify this in the Phase IV final rule.

Regarding the comment on treatment standards for previously stabilized mixed radioactive waste, the Agency notes that the second proposal (62 FR 26041, May 12, 1997) was only a supplement to the original proposal, and therefore, to avoid redundancy, EPA did not find it necessary to repeat the reference to wastes from West Valley Demonstration Project Site. However, the Agency notes that this information will be included in the final Phase IV rule.

4. 2P4P-00018 Collier, Shannon, Rill & Scott, PLLC for Specialty Steel Industry of North America (SSINA)

COMMENTS

1. **SSINA** GENERALLY SUPPORTs **EPA's** METHODOLOGY OF SELECTING THE HIGHEST STANDARD ACHIEVED By HIGH TEMPERATURE METALs RECOVERY OR STABILIZATION

In the process of melting scrap metal and producing and processing steel, SSINA members generate diverse metal-rich secondary materials which may exhibit the toxicity characteristic ("TC") for metals. The vast majority of the hazardous process wastes generated by SSINA members, including electric arc furnace ("EAF") dust (hazardous waste code K061), are sent to INMETCO for high temperature metals recovery ("HTMR"). When remediating contaminated sites associated with historic operations, SSINA members occasionally generate soil, debris or other materials that may also exhibit a hazardous characteristic. Typically, this material must be stabilized and landfilled because it cannot be processed by HTMR due to either insufficient concentrations of recoverable metals and/or the presence of sand. Because HTMR is ineffective or inappropriate for recycling certain wastestreams, the universal treatment standards ("UTS") standards must be achieved by stabilization technologies. By selecting the highest standard from HTMR and stabilization processes, the Agency allows for both the necessary stabilization of contaminated soil and debris as well as the continued recycling of those metal-rich wastes that can be recycled via HTMR. For example, EPA has set the UTS level for nickel based on a "grab sample" from INMETCO's HTMR process. If EPA set the UTS level for nickel-based on stabilization data, the proposed standard for nickel would be so low (.082 mg/1) that it would not be achieved by HTMR technology despite the fact that INMETCO recovers 96 percent of the nickel in the materials it recycles.[fn1: Grab samples of INMETCO's slag generate a leachable nickel concentration of 13.6mg/l. The proposed UTS level is appropriately based on this number.] EPA should adopt regulations that facilitate the recycling of metal-rich wastes rather than forcing those materials to be stabilized and landfilled. SSINA supports the Agency's decision to select universal treatment standards based on the highest standard for each regulated metal.

Response:

The Agency thanks the commenter for supporting EPA’s rationale for selecting treatment standards based on the highest standard achieved for each regulated metal constituent.

5. 2P4P-00030 Chemical Products Corporation

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.

Chemical Products Corporation (CPC), a Georgia Corporation which has been producing barium chemicals in Cartersville, Georgia for more than 60 years, is submitting this letter to supplement comments submitted in a letter dated June 16, 1997. In that June 16, 1997 letter, we called attention to the EPA ruling published in the January 3, 1997 Federal Register (62 FR 366) in which EPA recognized the recent scientific studies which support a LOAEL of approximately 180 mg/kg/day for soluble barium instead of the previously recognized LOAEL of 5.1 mg/kg/day contained in the Integrated Risk Information System (IRIS) at IRIS barium file entry 900802. EPA's Office of Science and Technology has projected that the review and revision of the IRIS barium file which is currently underway will be completed by the end of September, 1997.

Barium sulfate was recognized by EPA as being harmless to human health and the environment when EPA published the final rule delisting barium sulfate from the EPCRA Section 313 reporting requirements on June 28, 1994 (59 FR 33205). In fact, barium is present in all soils at an average concentration of 500 ppm, primarily in the form of barium sulfate; precipitation as extremely insoluble barium sulfate is the environmental fate of practically all soluble barium.

Wastewater which contains up to 1% suspended solids could easily contain up to 1% barium sulfate, because barite, the mineral name for barium sulfate, is soft and friable. A wastewater that contains a soluble barium level below EPA's current drinking water standard of 2 mg/l and 1% suspended colloidal barium sulfate would present no hazard whatsoever related to barium, yet an elemental analysis would show a barium concentration of 5000 mg/l. Clearly, the issue of suspended barium sulfate must be addressed in establishing a wastewater standard for barium.

CPC requests that the regulatory limit for barium in Wastewaters be set at 60 ppm of <u>soluble</u> 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).

CPC appreciates the opportunity to bring this matter to EPA's attention and will be pleased to furnish supporting documentation to the Office of Solid Waste.

Response:

The Agency notes that the LDR program is based on the premise that regulated constituents are to be treated using the Best Demonstrated Available Technology (BDAT) to minimize threats to human health and the environment, in the current absence of any nationally-applicable risk-based minimized theat levels. Further, the commenter has not provided any treatment performance data showing that the proposed barium standard of 1.2 mg/l in wastewaters could not be achieved using commercially available treatment technologies. The Agency finds, for the purpose of this rule, that the treatment standard of 1.2 mg/l for barium in wastewaters is not less than necessary to protect human health and the environment, and therefore is promulgating the wastewater barium treatment standard at 1.2 mg/l as proposed.

6. 2P4P-00033 General Motors Corporation (GM)

After reviewing the preamble, proposed changes to the regulatory language, and information contained in the docket the General Motors Corporation wishes to take issue in the three following areas:

- Lowering treatment levels just because of advancing treatment technology.
- The lack of treatment data on metal bearing wastes containing metal matrices (that is, those wastes that have two or more metals) requiring treatment to the Universal Treatment Standards.
- The lack of statutory authority to require that constituents that are not otherwise regulated by RCRA to meet land disposal restrictions.

Treatment for Treatments Sake?

The court in the Hazardous Waste Treatment Council v. EPA[fn2: Hazardous Waste Treatment Council, et. el. v. EPA 886 F. 2d 355 (DC cir. 1989).] affirmed EPA's interpretation of Sec. 3004(m) justifying the use a BDAT (Best Demonstrated Available Technology) approach to establishing LDR levels. However, Congress did provide some guidance in the HWSA amendments in Sec. 3004(d) with respect to what factors should be considered in determining land disposal prohibition criteria.

This rational that **was** used in today's proposal for lowering the Land Disposal Restriction levels for characteristic metal wastes is based upon the availability and performance of certain technologies to achieve lower levels in single metal rich waste **streams.** Technology will always advance; it does not mean that treatment levels should always be lowered. The agency should consider the factors that Congress described in Sec. 3004(d) to determine what levels are adequate to protect human health and the environment.

General Motors does not have data or evidence indicating what the proper treatment levels should be for any TC metals. General Motors does have a **concern** that treating for treatment's sake will lead (is leading) to higher disposal cost for no apparent environmental benefit **(emphasis added)** and that a lack of data exists for those waste where more than one metal is a contaminant (see discussion below).

Today's climate of budget cuts and prioritization should cause the Agency some pause when considering the need for Subtitle C regulation of units, industries or contaminants previously unregulated; unless there is a clear and measurable demonstration that human health or the environment is being impacted.

Data Set

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 steam (Appendix A - Data on Available Stabilization Capacity). For instance, one contributor states: "Approximately 20 to 30 percent of TC metal only waste streams have constituent concentrations above TC or UTS levels that would require additional or modified treatment. For these waste streams, meeting individual standards for selenium, chromium, and lead are going to be problematic. They recommend that the limit be set at 3.0 ppm TCLP for **all** three metals."

Another waste treatment firm states:

'The quantity of Phase IV wastes that can be treated to UTS depends on the treatment method. Approximately 70 to 80 percent of the wastes can meet the lower UTS levels for metals, while 20 to 30 percent will require development of new treatment recipes (e.g., different ratios of stabilization agents). Of these 20-30%, 5-10% can not meet the lower standards and will not be accepted by this facility. There will be problems treating some of the wastes to individual standards. Difficulties with a mixed constituent waste stream depend on the metals, which have different stabilization levels and varying rates of leaching depending on pH."

Still another stated:

"In a follow-up call, Mr. Davis noted that meeting the hypothetical UTS levels for barium (D005), chromium (D007), and lead (D008) would require modifications to both the treatment process and the treatment recipes. Each constituent would require six months to one year to implement the changes. Meeting the UTS levels for antimony and vanadium would need modifications to their treatment recipes, requiring one year to implement. The proposed UTS level for cadmium (D006) could not be met by the facility. Those waste streams would have to be sent off site for treatment."

And finally,

"Treating for more than one metal at a time is a problem. Results depend on the interaction of the metals in the waste."

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.

Statutory Authority

The "authority' for regulating in RCRA those constituents that would not otherwise be regulated by RCRA is the dilution prohibitions stemming from CWM v. EPA[fn3: Chemical Waste Management v. EPA, 976 F. 2d 2 (DC cir. 1992).]. Discussion of the Legislative History in the Phase III proposal (60 FR 1 1 707) describes the legislative intent with regard to dilution of hazardous constituents either intentionally (diluting for purposes only to meet LDR) and unintentionally (dilution that occurs as part of the manufacturing process). Footnote 5 (60 FR 11707) states:

The Committee intends that dilution to a concentration less than the specified thresholds by the addition of other hazardous waste or any other material during waste handling, transportation, treatment, or storage, other than dilution which occurs as a normal part of a manufacturing process, will not be allowed. Such hazardous waste would still be prohibited from land disposal.**[**fn4: House Report No. 198 98th Congress 1st Session]. (emphasis added)

Clearly, Congress expressly intended a prohibition against the intentional dilution of hazardous waste to comply with LDR as supported by the court in CWM v. EPA. However, Congress also expressly intended to not include that "dilution which occurs as part of the manufacturing process." To this point, situation or intent the Court in CWM v. EPA appeared to stand silent.

General Motors since the LDR Phase III proposal has contended that Congress did not and does not intend to have RCRA regulate those contaminants and/or constituents that are below RCRA regulatory levels. For these reasons, General Motors does not believe that the Agency can subject metals that are below toxic characteristic levels to RCRA regulations.

Conclusion

In closing it is felt that the proposal to subject non RCRA metals to the Land Disposal Restriction regulations is at best, premature, for two reasons. First, because of the lack of statutory authority these non RCRA metals should not be regulated by RCRA; and because of the lack of scientific investigation, regulatory land disposal levels for complex mixtures (that is those with more than one metal) of nonwastewater waste should not yet be established.

Response:

In *Hazardous Waste Treatment Council v. EPA*, 886 F. 2d 355 (D.C. Cir. 1989), cert. denied 1113 S. Ct 139 (1990), the court held that the statute can be read to allow either technology-based or risk-based standard, and further held that technology-based standards are permissible so long as they are not established "beyond the point at which there is no "threat" to human health or the environment." *Id.* At 362. The court further held that the particular technology-based standards at issue were not established below "minimize threat" levels, notwithstanding that (in some cases) the standards were below Maximum Contaminant Levels used for drinking water under the Safe Drinking Water Act and were below the RCRA characteristic level. *Id.*at 361-62. In the court's view, the RCRA section 3004(m) minimize threat standard was more stringent than that used to establish either drinking water standards or characteristic levels. EPA finds, for purposes of this rule, that none of the treatment standards are established below levels at which threats to human health and the environment are minimized. This finding stems from the Agency's inability at the present time to establish concentration levels for hazardous constituents which represent levels at which threats to human health and the environment are minimized. Unless the Agency determines risk-based concentration levels that achieve the "minimized threat" requirement for a particular wastestream, the Agency believes that BDAT treatment (as reflected by UTS levels) fulfills the statutory charge.

The Agency disagrees with the commenter's statement that the docket contained no information on nonwastewater streams that contained higher concentrations of two or more metals. The Agency's treatment performance database has several waste streams that have high concentrations of multiple metals. For example, the waste streams "cadmium sponge residue" and "baghouse dust waste" sampled at Rollins Environmental contain cadmium, lead, and zinc. See the BDAT background materials in the RCRA docket for this rule making for additional information on waste streams, reviewed by EPA for developing the treatment standards, that have multiple metals. Other examples of the types of waste treated include battery slag, mineral processing wastes, baghouse dust, soils, pot solids, recycling by-products, and sludge. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony. Therefore, the Agency believes that the treatment performance data (based on grab samples) used to determine the treatment standards represent a wide range of metal-bearing wastes (both listed and characteristic) that represent the most difficult to treat metal-bearing wastes.

With respect to the comment on statutory authority, the Agency notes that the toxicity characteristic (TC) wastes, including TC metal wastes (D004-D011), cannot be land disposed until the characteristic is removed and any UHCs, as defined in 40 CFR section 268.2(i), are treated to meet universal treatment standards. These wastes, like the ICR characteristic wastes, could contain other hazardous constituents at concentrations of concern. The extension of the UHC requirement to TC wastes is consistent with the Court's opinion on the treatment of ignitable, corrosive, and reactive characteristic wastes in Chemical Waste Management v. EPA, 976 F. 2d 2, 17 (D.C. Cir. 1992), cert. denied 113 U.S. 1961 (1993). The Court held that all hazardous constituents in characteristic wastes must meet levels satisfying the requirements in RCRA 3004(m) before land disposal, and that treatment standards cannot be achieved by dilution (provided, of course, that treatment standards are not established below the level at which threats to human health and the environment are minimized). (See 59 FR 47987 September 19, 1994). The Agency further notes that EPA is unable to delop nationally-applicable risk-based levels which would reliable establish when threats may be minized (in spite of lavishing enormous effort on the issue, and so still finds that in the absence of such standards, technology-based standards like the UTS remain the best means of implementing the directive that threats to human health and the environment posed by land disposal of hazardous wastes be minimized.

7. 2P4P-00074 New York State Department of Environmental Conservation

Revised Treatment Standards for Metal Wastes

DEC generally agrees with EPA that new and significant data should be utilized to set treatment standards for Toxicity Characteristic (TC) metal and other metal-bearing wastes. Technology-based standards that are used, in lieu of risk-based standards, seem unavoidable when data on risk-based criteria are not available or have not been sufficiently summarized or reviewed. However DEC suggests that performance should not be the only consideration in setting these standards.

EPA has in the past received comments on proposed rulemakings which emphasize that data used in setting treatment standards is not all inclusive. DEC would caution against an approach which sets standards, based on limited waste matrices that may not fully represent significant waste streams, generated in a particular category. Technology-based standards can be inequitable and overregulate certain wastes and generators. DEC agrees with EPA that revising standards should be ongoing and reflective of "new" data, but increasing stringency should, at this point in time, be weighed against criteria which can determine if the intent of RCRA is met or exceeded.

Response:

The Agency agrees with the commenter that developing more stringent standards should be weighed against criteria which can determine if the intent of RCRA is met or exceeded. The Agency developed UTS to eliminate differences in concentration limits for the same constituent in different waste streams. This approach provides a better assessment of treatability, reduces confusion, and eases compliance and enforcement actions. EPA also recognizes that all waste streams are not the same and believes that the determination of treatment standards based on the BDAT methodology, accounts for such variability/flexibility in the waste streams and treatment process through (1) accuracy correction factor - to account for any analytical interferences associated with the chemical make-up of the samples; and (2) variability factor - to correct for normal variations in the performance of a particular technology over time. In addition, EPA has complied data from a wide variety of wastes - focussing particularly on wastes that the Agency believes are among the most difficult to treat. Therefore, the Agency believes that the universal treatment standards promulgated based on the BDAT methodology adequately meet the requirements set forth in RCRA.

8. 2P4P-00075 United States Department of Defense (DoD)

The United States Department of Defense (DoD) appreciates the opportunity to comment on the Second Supplemental Proposed Rulemaking on the Land Disposal Restrictions Phase IV (LDR IV) under the Resource Conservation and Recovery Act (RCRA) (62 *Federal Register* 2604 1). DoD commends EPA's efforts to make several of the Universal Treatment Standards (UTS) proposed in the First Supplemental Proposal to LDR IV (61 FR 2337, 25 January 1996) more realistic. DoD further commends EPA's clarification allowing treatability variances in situations where treatment to LDR standards would be "inappropriate."

Response:

The Agency thanks the commenter for supporting the revised treatment standards proposed in the second supplemental Phase IV rule. In addition, the Agency also acknowledges the commenter's support for EPA's clarification on the criteria for granting a treatability variance.

9. 2P4P-00078 EnviroSource Treatment and Disposal Services, Inc. (TDS)

TDS strongly supports the proposed treatment standards (UTS) for the twelve metal constituents listed in the proposed rule. Based on nearly a decade of stabilization experience at our facilities, and thousands of post-treatment analyses, it is our position that requiring treatment (stabilization) to the proposed standards is appropriate and valid. Our operating experience has consistently shown that these standards are attainable by stabilization technologies currently available. This conclusion is supported by EPA's own performance data collected at commercial treatment facilities.

Response:

The Agency thanks the commenter for their support. However, EPA has revised the treatment standards for antimony, beryllium, cadmium, chromium, nickel, and silver. Treatment standards for antimony, beryllium, and silver were revised based on new data provided by commenters, that represented the “most difficult to treat” wastes. Thus, the Agency is promulgating revised UTS for antimony, beryllium, and silver at 1.15 mg/l, 1.22 mg/l, and 0.14 mg/l respectively. For cadmium, chromium, and nickel, the Agency has identified a technical error in the BDAT determination of the proposed standards. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. The Agency corrected this error and has re-calculated the treatment standards for cadmium, chromium, and nickel at 0.11 mg/l, 0.60 mg/l, and 11 mg/l respectively. Although these standards are more stringent than the proposed standards, based on the treatment performance data reviewed, the Agency believes that these new standards are also achievable by commercial treatment technologies such as stabilization and HTMR. (See the BDAT background materials in the docket for today’s rule, for additional information on the revised treatment standards.)

10. 2P4P-00087 Waste Management

IV. Less Stringent Requirements (62 Fed. Reg. at 26,065)

In the discussion on the portions of the rule which the Agency believes are less stringent, the Agency indicates that the revised universal treatment standards for antimony, barium, beryllium, cadmium, lead, nickel, selenium, thallium, and vanadium are viewed as less stringent. WM believes that this is incorrect based upon the proposed standards for antimony and thallium. Both of these metals have proposed standards which are more stringent than the current UTS levels. Therefore, the Agency should clarify that these standards are no less stringent in its final rule.

Response:

The Agency agrees with the commenter that the proposed standard for antimony is more stringent than the existing standard and the Agency will clarify this in the Phase IV final rule. However, in response to public comments on difficulties in treating antimony to the standard proposed in the second supplemental rule, the Agency conducted a careful review of the performance data used to calculate the proposed standard of 0.07 mg/L TCLP. As a result, the Agency agrees with the commenters that the performance data used to calculate the proposed standard does not represent BDAT with a “most difficult to treat” waste. The Agency believes that the proposed UTS for antimony must be revised to reflect a more difficult-to-treat antimony waste. Therefore, the Agency collected additional treatment performance data from a commercial treatment facility (Chemical Waste Management), that EPA believes represents the “most difficult to treat” waste, and re-calculated the BDAT treatment standard for antimony (for additional information on the data reviewed, see the Background Document for Antimony Wastes in the Docket for this rule). As such, the Agency is today promulgating a revised UTS for antimony nonwastewaters at 1.15 mg/l based on this newly acquired data.

11. 2P4P-00100 Koppers Industries, Inc.

KII currently operates 15 wood preserving plants in the United States. KII believes that treatment standards that may be appropriate for process generated wastes are not appropriate for environmental media encountered during site remedial work, such as soil or ground water. Requiring material generated during remediation to meet LDRs prior to replacement in land discourages site cleanup and/or encourages cleanup scenarios which are actually less protective of human health and environment than might otherwise be chosen.

Response:

The Agency agrees with the commenter that treatment standards that may be appropriate for process generated wastes may not be appropriate for contaminated soil encountered during site remediation. Given the unique issues associated with remediation waste including hazardous contaminated soil, EPA 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 Agency also would like to note that if a particular waste possesses unique properties that make it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

12. 2P4P-00107 Shoshone-Bannock Tribe

The Shoshone-Bannock Tribe Land Use Department would like to comment on the Land Disposal Restriction Phase IV proposed rule. This rule will have far reaching implications to human health and the environment on the Fort Hall Indian Reservation, home of the Shoshone-Bannock people. The FMC elemental phosphorus plant is located within the exterior boundaries of our reservation. As a result of 40 years of phosphorus production our homeland has groundwater contamination, soil contamination, air contamination, is a listed NPL site and a non-attainment area for Pm 10. We believe further environmental degradation can be prevented on our reservation by imposing treatment standards for characteristic wastes and by re-evaluating Bevill exempt waste.

We have reviewed the proposed rule and background information, as a result we are concerned about the following two issues:

I)Lack of a treatment standard for selenium, vanadium, and zinc for characteristic wastes generated in the elemental phosphorus industry.

2)Beneficiation versus mineral processing in the elemental phosphorus industry

<u>Selenium, Vanadium- and Zinc</u>

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.

Response:

The Agency notes that under the Phase IV rule, hazardous wastes are required to be treated not only to remove the constituent that made the waste hazardous, but also all other underlying hazardous constituents present in the waste. However, the precipitator dust generated by FMC, if exhibits hazardous characteristic, would be required to be treated not only to remove the hazardous characteristic, but also is required to be treated for all underlying hazardous constituents. It would not however need to be treated for selenium, vanadium, and zinc prior to land disposal. If however, the selenium concentration is above 1.0 mg/L TCLP and below the 5.7 mg/L treatment standard, the waste would be required to be land disposed in a Subtitle C unit without treatment.

Phase IV Second Supplemental Proposed Rule:
Comments and Responses on Manufactured Gas Plant (MGP) Wastes

1. 2P4P-00035 Utility Solid Waste Activities Group (USWAG)

The following comments in response to EPA's request for comment in Docket No. F-97-2P4P-FFFFF, Land Disposal Restrictions-- Second Supplemental Proposal to Phase IV, 62 Fed. Reg. 26041
(May 12, 1997), are submitted on behalf of the Utility Solid Waste Activities Group ("USWAG"), the Edison Electric Institute ("EEI"), the American Public Power Association ("APPA"), and the National Rural Electric Cooperative Association ("NRECA") (collectively referred to as "USWAG").

USWAG is an informal consortium of EEI, APPA, NRECA, and approximately 80 electric utility operating companies. EEI is the principal national association of investor-owned electric power and light companies. APPA is the national association of publicly-owned electric utilities. NRECA is the national association of rural electric cooperatives. Together, USWAG members represent more than 85 percent of the total electric generating capacity of the United States, and service more than 95 percent of the nation's consumers of electricity.

BACKGROUND ON MGP REMEDIATION WASTES

The effect of this proposal on the ability of electric utilities to manage and redevelop former MGP sites is the driving force behind USWAG's interest in this rulemaking. Therefore, a brief background on the manufactured gas industry and the problems of MGP site remediation may be useful to the Agency in reviewing these comments.

Coal gasification was a manufacturing process for converting coal into gas for heating and lighting that was utilized throughout the United States from the early 1800s until the mid- 1950s. A manufactured gas plant consisted of a variety of structures associated with manufacturing, purifying and storing gas and with refining and storing coal tar and other byproducts produced during the gas manufacturing process. As a result of plant operations and demolition activities after plant operations ceased, these sites may contain areas where coal tars have accumulated or were stored.

There are over 1500 (and possibly as many as 3000) of these sites throughout the United States. A wide range of management approaches has been applied to these sites, from institutional
controls on future use to excavation and off-site management of contaminated material.

USWAG'S INTEREST IN THIS PROPOSAL

Since its formation in 1979, USWAG has participated in virtually every major rulemaking under the Resource Conservation and Recovery Act ("RCRA") to present its views on the need for the development of a cost-effective, practical and environmentally protective hazardous waste program. USWAG members are vitally interested in all aspects of RCRA and have actively participated in all of EPA's rulemakings implementing the RCRA land disposal restrictions ("LDRs") program.

USWAG commented in response to the initial Supplemental Phase IV proposal, stating, among other things, that EPA should clarify that the proposed modification to the Bevill mixture rule does not affect the status of the fossil fuel combustion waste clause of the Bevill Amendment; [fn1: See Comments of USWAG on EPA's Supplemental Proposal to LDR Phase IV, 61 Fed. Reg. 2338, submitted April 24, 1996, at 3-9 ("USWAG 1996 Comments").] confirm that revisions to the Bevill co-processing exemption do not alter the EPA-approved strategy of co-burning manufactured gas plant ("MGP") remediation waste and coal in utility power plant boilers;[fn2: Id. at 9-11.] defer imposition of the LDRs on MGP remediation wastes pending resolution of the HWIR-Media rulemaking;[fn3: Id. at 11-13] and develop alternative treatment standards for MGP remediation waste including methods of treatment based on recycling of MGP waste in asphalt, brick or cement manufacture and thermal treatment technologies. [fn4: Id. at 13-27. See also Letter from USWAG, EEI, and AGA to Elizabeth Cotsworth, EPA Acting Director, Office of Solid Waste, on proposed methods of treatment for MGP remediation waste (without attachments) (Aug. 8, 1997) (attached hereto as Appendix A)].

The comments that follow address the issues raised in EPA's Second Supplemental Phase IV Proposal. In addition, we reaffirm our earlier comments without repeating them here, and offer an additional suggestion for coordinating final action on subjecting MGP wastes to LDRs in this rulemaking with EPA's public commitment to complete the HWIR-Media rulemaking by June 30, 1998.

B. EPA Should Clarify That The Bevill Mining Waste Co-Processing Proposal Does Not Alter The EPA-Approved Strategy Of Co-Burning Manufactured Gas Plant Remediation Waste And Coal In Utility Power Plant Boilers.

EPA has proposed to limit the Bevill exclusion to units that use feedstock that is solely derived from the extraction, beneficiation or processing of a virgin ore or minerals. 62 Fed. Reg. at 26052. USWAG requests that the Agency make clear that this proposed reinterpretation is not intended to apply to the combustion of MGP waste with coal in electric utility boilers and that the residuals from such co-combustion remain subject to the Bevill exclusion.

Based on the proposed regulation, a careful review of the preamble and confirmations from numerous Agency officials, it appears that EPA has not evaluated -- and did not envision -- extending the prohibition against co-processing Bevill mining waste with non-Bevill feedstock to co-processing of utility industry Bevill combustion waste. While the Agency appears to have focused only on Bevill units using ores and minerals as feedstock, the danger of misinterpretation remains unless EPA issues a clear statement that this provision does not apply to Bevill fossil fuel combustion wastes.

Such a misinterpretation could jeopardize the remediation strategy for MGP remediation wastes developed jointly by an EPA work group and EEI. That strategy calls for the decharacterization of MGP remediation wastes that exhibit a hazardous characteristic, followed by combustion of the coal and MGP fuel mixture in a coal-fired utility boiler.
[fn8: The ratio of coal to MGP residual in the co-burning process is typically about 95 percent or more coal to 5 percent or less MGP residual. The strategy was appended to USWAG's comments on the initial Supplemental Phase IV Proposal.]

The viability of this strategy depends upon the Bevill-exempt status of the ash derived from such co-combustion,
[fn9: See Horsehead Resource Development Co. v. Browner, 16 F.3d at 1258.] and any misinterpretation of the Agency's new rules on co-processing mineral processing wastes
could jeopardize that strategy, which EPA described as "protective of human health and the environment."
[fn10: "Remediation of Historic Manufactured Gas Plant Sites," Memorandum from Sylvia Lowrance, director of EPA's Office of Solid Waste, to Regional Waste Management Division Directors (April 26, 1993) (copy attached as Appendix B).]

Therefore, the Agency should eliminate any potential for misunderstanding by making clear that its proposed co-processing criteria apply only to Bevill mining waste and that utility industry Bevill combustion waste derived from co-combustion of coal and MGP residuals retain their Bevill status.

IV. EPA SHOULD COORDINATE TIMING OF THE IMPOSITION OF THE LDRS ON MGP REMEDIATION WASTE WITH THE HWIR-MEDIA RULE.

As noted earlier, USWAG recommended in its comments on the initial Supplemental Proposal that EPA defer imposition of LDRs on MGP remediation waste until the Agency promulgates the final HWIR-Media rule. USWAG 1996 Comments at 11-13. It now appears that the Agency plans to promulgate this rule on April 15, 1998, and has committed to promulgating the HWIR-Media rule by June 30, 1998. The relationship between these two rules is important because the entire universe of MGP waste that would become subject to the LDRs are remediation wastes -- mostly contaminated soil and sometimes contaminated groundwater -- that may qualify for the alternative management options under consideration in the HWIR-Media rulemaking. EPA has acknowledged that the RCRA hazardous waste regulations, including the LDRs, are often inappropriate when applied to contaminated media generated during a remediation due both to the nature of the waste and to the circumstances of the remedial process itself. See, e.g., 58 Fed. Reg. 8658, 8660 (Feb. 16, 1993). Thus, especially if the Agency fails to adopt the recommended methods of treatment that are tailored to promote a flexible remediation strategy for MGP wastes, it would be counter-productive for the Agency to adopt LDRs for MGP wastes before the HWIR-Media program can be delegated to a significant number of states.

EPA therefore should coordinate the timing of the effective dates of the LDRs for MGP remediation waste to coincide with a realistic expectation that States will receive EPA authorization to implement the HWIR-Media program.
[fn12: Most of the HWIR-Media proposal is considered less stringent than existing federal or authorized State programs and, thus, the rule would not go into effect until and unless the State adopts it. See 61 Fed. Reg. 18780, 18827 (Apr. 29, 1996).]

Such a coordinated approach would increase the likelihood that companies generating MGP remediation wastes subject to the LDRs would be in a position to make a seamless transition into the broader remediation management plans that are anticipated under the HWIR-Media proposal. By harmonizing the implementation of these two rules, EPA can avoid imposing unnecessary costs and burdens on the regulated community and thereby facilitate the remediation of MGP sites.

RESPONSE

In the Phase IV LDR final rule, EPA is promulgating treatment standards for hazardous contaminated soils, including MGP soils. The soil-specific standards were initially proposed in 1993 and reproposed in the April 29, 1996 HWIR media rule (so that this final rule reflects the HWIR media effort). The soil-specific treatment standards require 90% reduction of hazardous constituent concentrations or 10 times the universal treatment standard, whichever is higher. EPA believes these standards are achievable. The supporting data for these standards are based on the performance of non-combustion technologies, that include biological treatment, chemical extraction, dechlorination, soil washing, thermal desorption, soil vapor extraction, and stabilization (only for metals). EPA notes that organics in soil also can be treated via combustion to satisfy today's soil-specific treatment standards if an owner/operator desires. See Soil Treatability Analysis Report (April 1998, USEPA) in this docket to today's rule. EPA believes these soil standards will remove the disincentives referred to in the comment. The Agency believes that these soil-specific treatment standards will provide adequate flexibility and encourage cleanup of contaminated sites.

The Agency's 1993 interpretative memorandum on MGP site remediations remains unaffected by today's rule. The memorandum excludes from RCRA jurisdiction the ash that results from burning MGP remediation wastes along with coal in utility boilers. These residuals are considered to be covered by the Bevill Amendment because they result primarily from the combustion of coal. As discussed in the memorandum, prior to burning MGP remediation waste, the waste must be rendered non-hazardous before it leaves the generation site. The waste may be decharacterized in 90-day tanks, containers, or containment buildings covered by 40 CFR Section 262.34(a). Waste may be treated in such units during the 90-day accumulation period without a permit, and if the waste thereafter no longer exhibits a hazardous characteristic, any further management of the waste would not be subject to Subtitle C regulations, with the possible exception of LDR standards.

2. 2P4P-00047 American Gas Association (AGA)

The American Gas Association ("A.G.A.") is filing these comments in response to EPA's request for comment in Docket No. F-97-2P4P-F"FFF, Land Disposal Restrictions, Phase IV: Second Supplemental Proposed Rule, published at 62 Fed. Reg. 26041 (May 12, 1997) ("Second Supplemental Proposal"). EPA extended the comment deadline until August 12, 1997 in a later notice. See 62 Fed. Reg. 31406 (June 9, 1997).

A.G.A. is a non-profit trade association representing over 200 local natural gas distribution companies ("LDCs") across the United States, which together distribute more than 90 percent of the natural gas delivered in this country. A.G.A.'s interest in this proceeding centers on how the Phase IV laid disposal restrictions ("LDR") could impact historic manufactured gas plant ("MGP") sites owned or controlled by our member companies.

A.G.A. has participated actively in recent major rulemakings inder the Resource Conservation and Recovery Act ("RCRA") to seek a more common sense approach for managing the wastes generated in cleaning-up historic MGP sites. Although the LDRs apply to hazardous wastes, and typically only a small portion of MGP remediation wastes test as hazardous for the Constituent benzene, we are concerned that the proposed Phase IV LDRs could impede MGP site management by applying a confusing array of restrictions to different remediation wastes at the same site. EPA currently has several rulemakings and initiatives underway that could affect MGP sites. It is important that these efforts should dovetail rather than create a tangle of conflicting requirements. Among other proceedings, EPA is currently evaluating how best to deal with contaminated soils and other media that are generated in site clean ups in the Hazardous Waste Identification Rule for contaminated media (HWIR-Media).

A.G.A. filed comments on the LDR Phase IV First Supplemental Proposal urging EPA to defer imposition of the LDRs on MGP remediation wast(s pending resolution of the HWIR-Media rulemaking. See Comments of A.G.A. (dated April 25, 1996 on the Land Disposal Restrictions -- Supplemental Proposal to Phase IV, 61 Fed. Reg. 2338 (Jan. 25, 1996). We also supported comments submitted by the Utility Solid Waste Activities Group (USWAG) urging EPA 1) develop alternative treatment standards for MGP remediation waste, including methods of treatment based on recycling MGP waste in asphalt, brick or cement manufacturing as well as thermal treatment technologies such as thermal desorption and co-burning in utility boilers. See April 24, 1996 Comments of USWAG on EPA's Supplemental Proposal to LDR Phase IV, 61 Fed. Reg. 2338 (Jan. 25, 1996). This flexibility is needed because no one treatment method is appropriate for all MGP wastes at all sites. For example, co-burning MGP wastes in utility boilers is a useful treatment option for some coal tars that have a high Btu content, but is generally not the best option for contaminated soils. Also, many gas LDCs and even some combined gas & electric utilities do not have access to appropriate boilers. It is important to have the flexibility to select a treatment technology that will work for the waste at each location.

A.G.A. also supports the comments of USWAG on thin Second Supplemental Proposal, submitted on August 12, 1997. For the reasons stated in USWAG's detailed comments: (1) we agree that EPA should clarify that the co-processing proposal applies only to Bevill mining waste and does nor affect co-processing of Bevill utility combustion waste or alter the EPA-approved strategy of co-burning MGP waste and coal in utility boilers; (2) we support EPA's proposal to modify 40 C.F.R. section 268.44 to clarify that EPA may grant variances from numerical treatment standards when the required treatment technology is inappropriate for the waste; (3) we agree that EPA should not re-open the existing Bevill fossil fuel combustion determinations; (4) we agree that EPA should coordinate the effective dates of the LDRs applicable to MGP remediation waste and the HWIR-Media rule; and (5) we support EPA's proposed definition of "fill" to exclude material used as legitimate ingredients in asphalt or concrete.

In particular, EPA's proposal to clarify its authority to grant variances under 40 C.F.R. section 268.44 is a step in the right direction. However, a case--by-case variance procedure could be a cumbersome and resource intensive way to deal with historic MGP sites. (There are more than 1,500-3,000 AGP sites across the country.) We therefore reaffirm our earlier comments on the First Supplemental Proposal and urge EPA to develop alternative treatment standards by rule for MGP remediation waste based on methods of treatment including recycling in asphalt, cement, and brick manufacturing, as well as thermal treatment.

RESPONSE

In the Phase IV LDR final rule, EPA is promulgating treatment standards for hazardous contaminated soils, including MGP soils. The soil-specific standards were initially proposed in 1993 and reproposed in the April 29, 1996 HWIR media rule (so that this final rule reflects the HWIR media effort, as requested by the commenter). The soil-specific treatment standards require 90% reduction of hazardous constituent concentrations or 10 times the universal treatment standard, whichever is higher. EPA believes these standards are achievable. The supporting data for these standards are based on the performance of non-combustion technologies, that include biological treatment, chemical extraction, dechlorination, soil washing, thermal desorption, soil vapor extraction, and stabilization (only for metals). EPA notes that organics in soil also can be treated via combustion to satisfy today's soil-specific treatment standards if an owner/operator desires. See Soil Treatability Analysis Report (April 1998, USEPA) in this docket to today's rule. EPA believes these soil standards will remove the impediments referred to in the comment. The Agency believes that these soil-specific treatment standards will provide adequate flexibility and encourage cleanup of contaminated sites.

The Agency's 1993 interpretative memorandum on MGP site remediations remains unaffected by today's rule. The memorandum excludes from RCRA jurisdiction the ash that results from burning MGP remediation wastes along with coal in utility boilers. These residuals are considered to be covered by the Bevill Amendment because they result primarily from the combustion of coal. As discussed in the memorandum, prior to burning MGP remediation waste, the waste must be rendered non-hazardous before it leaves the generation site. The waste may be decharacterized in 90-day tanks, containers, or containment buildings covered by 40 CFR Section 262.34(a). Waste may be treated in such units during the 90-day accumulation period without a permit, and if the waste thereafter no longer exhibits a hazardous characteristic, any further management of the waste would not be subject to Subtitle C regulations, with the possible exception of LDR standards.

With respect to the issue of specified methods (e.g., recycling) as treatment standards rather than numerical concentration values, the Agency considers practices such as using hazardous wastes in asphalt, bricks, or cement that is placed on the ground to be use constituting disposal. Such activities are regulated by 40 CFR part 266.20, which states that recyclable materials are not subject to regulation only if they have undergone a chemical reaction in the course of producing products so as to become inseparable by physical means, and the products meet the LDRs for each hazardous constituent present in the final product. Given that the end disposition of the material is completely uncontrolled, the Agency believes that the treatment standards reflecting performance of the most aggressive treatment technologies are needed in order to assure that threats posed by land disposal of the wastes is minimized. Also, EPA does not see the same incentive to promote this end result as it does with other types of remediation remedies. For these reasons, the contaminated soils would remain subject to the UTS, not the soil-specific treatment standards, if the end disposition is to be a use constituting disposal. Therefore, EPA believes that it would be inappropriate to designate such practices as treatment standards, since to do so would remove the assurance provided by numerical treatment standards that treatment reflecting best demonstrated available technology has taken place.

Finally, the Agency acknowledges the commenter’s support for the treatment variance clarification, but the commenter should note this issue was finalized in a rule on December 5, 1997.

Phase IV Second Supplemental Proposed Rule:
Comments and Responses on Nickel

1. 2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

A. The Proposed Standard for Nickel

Before addressing beryllium and silver, we would like to make a brief point about the proposed UTS/BDAT standard for nickel. Both the existing and the proposed standards for nickel are based on sampling data for INMETCO's HTMR slag. The present standard of 5.0 mg/L reflects INMETCO's monthly composite slag sampling data, while the proposed standard of 13.6 mg/L reflects grab sampling data for INMETCO's slag. Because “grab samples normally reflect maximum process variability” (see id. at 26047/1), a grab sample-based standard calculated in accordance with EPA's BDAT methodology ordinarily will be higher than a standard based on composite sampling data. Thus, the fact that the proposed grab sample-based standard for nickel exceeds the existing composite-based value is as expected. Since EPA wishes to determine compliance with UTS/BDAT standards on the basis of grab sampling (see id.), the proposed revision of the nonwastewater standard for nickel is appropriate.

If it were based on the stabilization data considered by EPA, the proposed standard for nickel would be lower. However, EPA's BDAT methodology quite properly sets the UTS/BDAT standard at the higher of the HTMR-based or stabilization-based level.[fn3:See 62 Fed. Reg. at 26045/2.] This is particularly appropriate with respect to nickel because HTMR is the “best” available treatment technology for most metals, including nickel: It is the most matrix-independent; it recovers valuable resources; it decreases the amount of waste sent for land disposal; it incorporates metals that are not recovered in a stable slag matrix; and it saves energy and pollution by reducing the need to process virgin ore.[fn 4: See memorandum to the record from Elaine Eby and Anita Cummings (Item S0010 in Docket F-97-2P4P-FFFFF); Proposed BDAT Background document for Toxicity Characteristic Metal Wastes D004-D011. July 26, 1995 (Item S0003 in Docket F-97-2P4P-FFFFF) at 3-5 &3-6] INMETCO, for example, recovers and returns to commerce approximately 96% of the nickel present in the secondary materials entering its pyrometallurgical furnaces. If, instead, these materials were stabilized and landfilled, all of this nickel would be buried in the ground rather than being reused productively.

Furthermore, the stabilization data considered by EPA in this proceeding reflect the treatment of wastes having a very low nickel content and very low nickel TCLP influent values.[fn5: Nickel was not among the primary constituents of any of the stabilization waste streams considered by EPA, and the mean nickel TCLP value in the “raw” stabilization waste streams was only 0.7925 mg/l. See March 10, 1997 Memorandum to Anita

Cummings from Howard Finkel (Item S0011 in Docket F-97-2P4P-FFFFF), Waste Stream Identifier Table and Attachment 1.] By contrast, nickel is a primary constituent in the secondary materials processed by INMETCO. The nickel TCLP levels for many of these materials are orders of magnitude higher than the TCLP levels for the wastestreams represented in EPA's stabilization database.[fn6: Secondary materials processed by INMETCO may have TCLP levels in excess of 1,000 mg/l, compared to the average of less than 1.0 mg/l in the stabilization waste streams considered by EPA.] It is not surprising, therefore, that INMETCO's HTMR data (reflecting the processing of high-nickel materials) produces a higher UTS/BDAT standard than the stabilization data (reflecting the treatment of wastestreams having a very low nickel content).

Response:

The Agency thanks the commenter for supporting the nickel treatment standard. EPA agrees with the commenter's assessment of both the benefits of assuring that HTMR is available as a potential treatment technology for nickel-containing hazardous wastes, and also that inclusion of the raw waste data from HTMR facilities best characterizes the type of nickel-containing wastes which may require treatment. The Agency also notes that the treatment standard was based on INMETCO's own data, which shows that no data points were above the promulgated treatment standard. In fact, out of 122 data points submitted on nickel from the INMETCO HTMR process, all of the data points were below the treatment standard. The treated values ranged from 0.200mg/L TCLP to 9.8100 mg/L TCLP with a mean value of 2.8102 mg/L TCLP.

However, the Agency has identified a technical error in the BDAT determination of the proposed nickel standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a "Z-score" outlier test. The Agency corrected this error and re-calculated the nickel treatment standard and is promulgating the UTS for nickel at 11 mg/l TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR. As stated earlier, the final treatment standard for nickel nonwastewaters is higher than any of the treatment values used to calculate the standard. In fact, analysis of other data submitted on nickel from Horsehead Research Development and The Battery Council International/Association of Battery Recyclers showed that 152 and 106 observations, respectively on nickel treatment, all met the standard of 11.0 mg/L TCLP for nickel nonwastewaters. See: "Background documents Supporting the Phase IV Final Rule - Metal Treatment Standards", April 1998 that can be found in the docket to today's rule for additional information.

2. 2P4P-00028 Laidlaw Environmental Services

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.

Response:

For the reasons given in the INMETCO comment above, the Agency believes adjusting the nickel standard so that it is achievable by both HTMR and stabilization is the most appropriate means of establishing a treatment standard for these wastes.. However, the Agency has identified a technical error in the BDAT determination of the proposed cadmium standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a "Z-score" outlier test. The Agency corrected this error and re-calculated the nickel treatment standard and is promulgating the UTS for nickel at 0.11 mg/l TCLP. Although this standard is more stringent than the proposed standard, based on the treatment performance data reviewed, the Agency believes that this new standard is also achievable by commercial treatment technologies such as stabilization and HTMR. See information detailed in the INMETCO comment.

In addition, the Agency determined the UTS 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." Therefore, the Agency notes that the UTS levels are determined based on BDAT for the most difficult to treat wastes and not solely based on the lowest level a treatment technology could achieve.

Phase IV Second Supplemental Proposed Rule:
Comments and Responses on Selenium

1. 2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

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.

Response:

The Agency thanks the commenter for supporting the selenium treatment standard.

2. 2P4P-00017 Battery Council International (BCI) and Association of Battery Recyclers (ABR)

With regard to the proposed treatment standard for selenium, BCI and ABR concur in EPA's conclusion not to revise the treatment standard for selenium. The appropriate chemical interactions between selenium and other TC metals in D008 wastes preclude achieving any lower figure. This is because selenium is insoluble at a pH range of between 6.5 and 7.5. Most other TC metals (cadmium, lead, zinc and nickel) are insoluble at a range of 9.5 to 11.5. Thus, in order to effectively stabilize selenium the pH range needs to be no higher than 7.5. Such a low pH range, however, is ineffective in stabilizing other TC metal wastes because it renders other metals soluble in TCLP leachate.

Response:

The Agency agrees thanks the commenter for supporting the selenium treatment standard.

3. 2P4P-00023 U.S. Department of Energy (DOE)

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.

Response:

The Agency thanks the commenter for supporting the selenium treatment standard. With respect to the comment on UHC, the Agency notes that since the UTS for selenium (5.7 mg/l) is higher than the TC level (1.0 mg/l), selenium is not considered a UHC in characteristic waste, according to the definition at 268.2(I). However, if selenium is present at concentrations above TC level but below UTS level (i.e., between 1.0 and 5.7 mg/l), the waste is still considered characteristic for selenium and, therefore, should be disposed in Subtitle C units.

4. 2P4P-00028 Laidlaw Environmental Services

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.

Response:

The Agency thanks the commenter for their support on the selenium treatment standard. The Agency determined the proposed treatment standards 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.” Therefore, the Agency notes that the UTS levels are determined based on BDAT for the most difficult to treat wastes and not solely based on the lowest level a treatment technology could achieve. Furthermore, as a number of commenters have pointed out, and is evident from examination of solubilization curves, optimizing stabilization of selenium could result in less treatment of other metals. Therefore, the Agency is leaving the standard at its existing level.

5. 2P4P-00087 Waste Management

Waste Management (WM) submits the following comments on EPA's supplemental proposed Phase IV Land Disposal Restrictions. See 62 Fed. Reg. at 26,041 (May 12, 1997). Waste Management is a leading provider of comprehensive hazardous waste management services at its hazardous waste facilities located in the United States. Its hazardous waste management services, including transportation, incineration, on-site services, treatment, resource recovery and disposal, are furnished principally to commercial and industrial customers, other waste management companies, and governmental entities. The proposed changes for selenium (5.7 mg/l TCLP) and lead (0.75 mg/l TCLP) will improve WM's ability to treat such waste streams to the revised UTS.

A. **Selenium**

WM believes that the standards for selenium should be raised. In WM's original comments submitted on August 22, 1995, WM suggested establishment of a "High Selenium > 200 ppm subcategory" for nonwastewaters with the establishment of a treatment standard of 10 mg/l TCLP, because of the technical problems in achieving lower levels for highly contaminated selenium wastestreams. WM has consistently experienced problems treating waste streams from glass manufacturing companies which contain high concentrations of selenium in their waste streams to the current and proposed level of 5.7 mg/l (TCLP). To further illustrate this point, WM is providing treatability testing data from a selenium contaminated waste stream which shows that WM formulated 16 different treatment recipes prior to targeting one which would treat a selenium waste which had a pre-treatment TCLP value of 80.13 mg/l. (See Attachment 1)

WM urges the Agency to maintain the proposed 5.7 mg/l TCLP level for selenium wastes containing less than 200 mg/l selenium and to establish the "High Selenium" subcategory discussed above. This approach is environmentally sound and reflects the treatability difficulties encountered with "high selenium (> 200 ppm)" wastes.

Response:

The Agency thanks the commenter for submitting additional treatment data. Using only the commenter’s data, EPA calculated the BDAT treatment standard for selenium at 77 mg/l. EPA then pooled the commenter’s data with all other selenium performance data and calculated a treatment standard of 261 mg/l. The Agency is not willing to set such a high treatment standard (either 77 mg/l or 261 mg/l) to a national level, since the difficulty appears specific to a particular situation. Earlier data suggest and commenters concur that for the majority of selenium wastes the proposed selenium nonwastewater standard of 5.7 mg/l is appropriate. Furthermore, only three high selenium concentration waste streams could not be treated to this level, and therefore, the Agency finds little reason to pool all treatment data or to engage in bifurcation of the selenium treatment standard. Therefore, the Agency is promulgating a treatment standard of 5.7 mg/l for nonwastewaters containing selenium. However, the Agency is convinced that the high-level selenium waste streams for which data were submitted to EPA will, for the most part, be unable to be treated to achieve the 5.7 mg/l TCLP standard. Therefore, the Agency will be requesting comment on a proposal to grant a site-specific treatability variance for Waste Management, Inc. for the treatment of D010 wastes containing greater than 450 ppm TCLP of selenium. The commenter is referred to a separate notice contained elsewhere in today's Federal Register for additional information.

6. 2P4P -L1003 Environmental Technology Council

3. SELENIUM TREATMENT STANDARD

EPA is proposing a 5.7 mg/l TCLP treatment standard for Selenium nonwastewaters. The Council supports this proposed level.
While the data submitted with these comments provides a basis for a treatment standard lower than the proposed standard, the ETC feels the higher standard is justified.

Selenium is an element that reacts differently from other heavy metals in a treatment matrix. Selenium has a high solubility in an alkaline environment - the same environment that provides minimum solubility for other heavy metals. In a neutral to mildly acidic environment, where Selenium has a low solubility other heavy metals have high solubilities.

Due to these different solubility profiles, a treater can treat Selenium to a minimum solubility and allow other metals to leach, or treat the other metals to a minimum solubility and allow a greater amount of Selenium to leach. While the ETC data did not demonstrate this phenomenon, the Council's members are acutely aware of this problem. The Council is also aware that EPA has received a significant volume of data in support of the reproposed Selenium treatment standard.

In this supplements proposed rule the EPA states:

> 'The Agency has researched the claims ... and concurs... The Agency is convinced that wastes containing selenium concentrations greater than 1.0 mg/l TCLP in the presence of other metals, e.g., cadmium, lead, or chromium may encounter difficulties in stabilization due to the different solubility curves noted above. While it may be possible to treat a D010 waste to the [formerly] proposed treatment standard of 0. 1 6 mg/l TCLP, in the absence of other metal contaminants, the Agency cannot be certain that this would or could occur. The Agency believes that it is more realistic to assume that treatment will occur in the presence of other metals thus limiting the effectiveness of stabilization on selenium.”

The ETC strongly agrees with EPA's reasoning on this issue. The Council urges EPA to adopt the reproposed treatment standard for Selenium in the final rule.

The ETC has reviewed the reproposed treatment standards for TC metal wastes and is generally supportive of the proposed levels. In these comments, the ETC provides data demonstrating that these standards are readily achievable through the use of proven, available technology.

In Appendix **A** of these comments are data from the treatment of a variety of TC metal bearing hazardous wastes. All data were generated in compliance with EPA's BDAT Background Document on Quality Assurance / Quality Control Procedures and Methodology (1 991). These data reflect the ability of commercially available technology to meet the proposed treatment standards today. The data were gathered from five separate sites around the country, and include the results of treatment on a wide variety of wastes.

The ETC is providing these data for the EPA to add to its present treatment standard database. In addition, to determine if the proposed standards were achievable, ETC statistically analyzed our data for this submission. Table I compares the results of this statistical analysis of new data with EPA's proposed treatment standards.

Table 1 Comparison of Nonwastewater Treatment Standards Statistically Derived from ETC Data to Proposed EPA Treatment Standards

METAL (WASTE CODE)	PROPOSED EPA STANDARD	TREATMENTSTANDARD STATISTICALLY DERIVED FROM ETC DATA(PPM)
BARIUM (D005)	21.0	1.5
CADMIUM (D006)	0.20	0.10
CHROMIUM (D007)	0.85	2.30*
LEAD (D008)	0.75	1.20*
SELENIUM (D010)	5.7	0.40
SILVER (D011)	0.11	0.10

*In ETC's data set for both Chromium and Lead, one (possibly outlier) data point accounts for the calculated treatment level that is higher than EPA's proposed standard. If this data point is removed, the levels based on ETC's data would actually be lower than EPA*s proposed standards.

While the ETC data must be used in conjunction with EPA's existing database and not as a stand-alone to establish new treatment standards, it is interesting to note that ETC's data support treatment standards virtually identical to EPA's proposal for Cadmium and Silver, and lower treatment standards for Barium and Selenium.

This data demonstrate that well-run treatment systems are capable of meeting the proposed treatment standards. In fact, the ETC members have been meeting metals treatment standards similar to those in this proposal for years. Many non-TC waste streams have metal treatment standards already associated with them. These metal treatment standards are based on the metal Universal Treatment Standards (UTS) which are more stringent than the present Characteristic Treatment Standards.

While the waste matrix can alter the ability of a specific treatment regime to stabilize a specific metal, the ETC feels strongly that years of data and experience demonstrate that a well-run treatment system can effectively stabilize regulated metals to the proposed limits. The Council knows that TC metal wastes react no differently to a well run treatment system, and the experience of our member companies backs this up.

In September, 1996 EPA reviewed treatment data and capabilities at three separate sites and found:

> "The performance data represented 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 wastes treated included mineral processing wastes, baghouse dust, battery slag, soils, pot solids, recycling by-products, and sludge. TCLP values in the untreated wastes included 4430 mg/l lead, 1580 mg/l chromium, 82 mg/l barium, and 4280 mg/l cadmium. In addition, numerous waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, while other waste streams had a significant concentration of combination metals including: lead and cadmium, barium and lead, and chromium and antimony."

The Agency compared the data from these site visits with previously acquired data on the performance of HTMR. This analysis resulted in the reproposed TC metal treatment standards in the supplemental proposal. The reproposed standards corroborate ETC member-firms' knowledge of the capabilities of a well-run treatment system. The additional data provided in our comments add more data points in support of these treatment standards. ETC strongly urges the EPA to adopt the TC metal treatment standards in this supplemental proposal.

Response:

The Agency thanks the commenter for supporting the selenium treatment standard.

Comments on Second Supplemental Phase Proposed Rule, May 12, 1997

2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

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.

C. The Proposed Standard for Silver

EPA has proposed to reduce the UTS/BDAT standard for silver from 0.30 mg/L to 0.11 mg/L, based upon 1994 grab sample data for INMETCO's slag.[fn9: 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 26046/3.] Various commenters have suggested that, because human health risks from silver are low, silver should be removed from the list of Toxicity Characteristic ("TC") metals or that, at the very least, the UTS/BDAT standard for silver should be set at the TC level of 5.0 mg/L. See 62 Fed. Reg. at 26046/3. We believe these suggestions are well founded. EPA itself has recognized that silver does not present a significant human health risk and, accordingly, deleted the national primary drinking water standard maximum contaminant level for silver in 1991. See 56 Fed. Reg. 3526, 3573 (January 30, 1991). For similar reasons, the Agency currently is considering raising the TC level for silver or doing away with it altogether. See Inside EPA, July 11, 1997, p. 11. In these circumstances, we believe EPA should raise the UTS/BDAT standard for silver to the current TC level of 5.0 mg/L. Even if EPA is reluctant to do so at this time, we see no good reason to lower the UTS/BDAT standard for silver below the existing level of 0.30 mg/L, a level that clearly can be said to "substantially diminish the toxicity of [silver-containing] waste" within the meaning of section 3004(m) of RCRA. If the standard for silver is to be changed, however, it should not be reduced to 0.11 mg/L.

RESPONSE:

As the commenter points out, the EPA is currently considering revising the TC level for silver or removing silver from the TC list altogether. EPA has studied the risks to both human health and the environment, but has not yet made a decision on the TC list, nor established a safe, risk-based level to use as a treatment standard. EPA is in the process of determining whether silver should remain on the TC list at 40 CFR 261.24 (b) Table 1, or whether the current TC level should be altered. In addition, EPA continues its work on the Hazardous Waste Identification Rule (HWIR) to establish risk-based exit levels for hazardous wastes. The Agency is not yet able to establish a nationally-applicable risk-based level for silver that fulfills the statutory charge of minimizing threats of hazardous waste to human health and the environment.

The process of establishing such a level is technically complex; EPA is currently modeling the ecological and human health effects of exposure to silver through numerous pathways. Several issues remain unresolved concerning human health and environmental risk. The Agency recently acquired studies indicating that silver may be connected to central nervous system and other non-cancer effects in humans. (Rungby, J. and G. Danscher, 1984, Hypoactivity in silver exposed rats, Acta. Pharmacol. Toxicol. 55: 398-401, as cited in ATSDR, 1990; Shavlovski et al, 1995, Embryotoxicity of silver ions is diminished by ceruloplasm--further evidence for its role in the transport of copper, Biometals; Ohbo, Y., H. Fukuzako, K. Takeuchi, and M. Takigawa, 1996, Argyria and convulsive siezures caused by ingestion of silver in a patient with schizophrenia, Psychiatry and Clinical Neurosciences. 50:89-90; and Wetshofen, M., and H. Schafer, 1986, Generalized argyrosis in man: neurotological, ultrastructural, and X-ray microanalytical findings,. Arch. Otorhinolaryngol., 243:260-264.) The draft Reference Dose for these effects have not been finalized by the Agency for use in risk assessments. (A Reference Dose is a benchmark level for chronic toxicity that is protective of human health.) In addition to potential adverse human health effects, uncertainties and concerns also remain for potential adverse environmental effects. Although EPA removed the Maximum Contaminant Level (MCL) for silver in drinking water, the Ambient Water Quality Criteria remain in effect due to potential aquatic toxicity. Further areas of uncertainty are how silver speciates after release (i.e. which valence state of silver would be present). The issue could be important since potential toxic effects differ depending on the species of silver present. In short, EPA's work on understanding risks from disposal of silver-containing hazardous wastes is ongoing, and it would be premature to establish a treatment standard based on risk at this time.

In the absence of such "minimize threat" levels for hazardous constituents, the Agency establishes standards based on Best Demonstrated Available Technology (BDAT). (See full explanation in the preamble of the Phase II Final LDR rule at 59 FR 47986, September 19, 1994.) The fact that the UTS for nonwastewater forms of silver is being lowered (made more stringent) from the existing level of 0.30mg/L to 0.14 mg/L is due to new data on what treatment technology achieves. As explained in the summary of this preamble section (Section III: Revised Land Disposal Restrictions for Metal Constituents in All Hazardous Wastes, Including Toxic Characteristic Metals), technology-based standards are the best assurance that threat is minimized, given the uncertainty as to the level at which threats of hazardous waste disposal are minimized.

EPA expects that the new treatment standard for silver wastes will have little, if any impact on the regulated community. As stated by commenters, high-silver wastes are generally recycled due to their economic value and are covered by the special streamlined standards for recyclable materials utilized for precious metal recovery at 40 CFR Part 266.70 Subpart F. Moreover, the Regulatory Impact Analysis for this rule estimated that the new, more stringent UTS levels for metal constituents, including silver, will not increase compliance costs. This is because the current treatment methods already achieve the new standard of 0.11 in silver *nonwastewaters*. (Achievability of the UTS for TC silver *wastewaters* is not an issue; EPA received no comments nor data on its proposal to apply the existing UTS of 0.43 mg/L.)

Thus, the Agency is promulgating the *wastewater* standard of 0.43 mg/L as proposed and the *nonwastewater* standard of 0.14 mg/L. If EPA changes the status of silver on the TC list, EPA will revisit the treatment standards for silver wastes.

2P4P-00016 Chemical Manufacturers Association

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/ 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 their 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.

A. *The D011 Silver LDR Standard Already Minimizes Threats, 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 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).

Section 3004(a) of the RCRA statute directs the EPA to establish performance standards that would be applicable to owners and operators of facilities for the treatment, storage, or disposal of hazardous waste identified or listed under Subtitle C, in order to protect human health and the environment. Section 3004(m)(1) of the statute also directs the EPA to take into consideration the reduction in toxicity of the waste, as well as a reduction in the migration potential of the waste bound for land disposal. Both of those directives are aimed at a level of risk, with treatment expected to achieve a level at which the constituent would no longer pose a significant threat to human health and the environment. The Agency has stated that its ultimate policy preference is to establish risk-based levels that represent minimized threat levels, thus capping the extent of hazardous waste treatment (58 FR 48095, September 14, 1993). At the same time, the Agency suggested that such an approach was "formidable and very controversial. The technical issues included assessing exposure pathways other than migration to ground water, taking environmental risk into account, and developing adequate toxicological information for the hazardous constituents controlled by the hazardous waste program.

Rather than being "formidable and very controversial," the establishment of treatment standards for silver based on risk should be relatively simple and non-controversial because the Agency already has the necessary data. There have been numerous toxicological studies performed on silver that support the conclusion that chronic exposure to low levels of silver does not pose a hazard to human health. Publications by the Agency for Toxic Substances and Disease Registry (ATSDR) - the ATSDR Draft Toxicological Profile; the EPA Drinking Water Criteria Document for Silver, and the EPA Drinking Water Health Advisory for Silver; and the National Research Council (NRC) - the NRC Drinking Water and Health Document all substantiate this fact. The lowest level of silver shown to cause adverse health effects in any animal is 150 mg/I, much higher than the levels chosen for regulation. *(See* also our discussion in subsection C detailing why silver should be deleted from the TC list of metals.)

Research results, previously shared with EPA, have also documented the substantial reductions in toxicity of silver in groundwater, surface water and sea water by complexation with natural ligands and adsorption to particulate matter and sediments. The silver complexes that are formed in natural waters have very low toxicity. Additionally, EPA's own data have documented that silver is not mobile in soils and sediments, and thus does not pose any potential for adverse environmental or health affects.

In conclusion, toxicity data already exists that verifies that the current LDR treatment standard adequately minimizes threat to human health and the environment.

B. *Low Concentration* Silver Streams Can *Not be* Economically *Recovered*

In EPA's current notice, the Agency states that the silver LDR standards will have little impact because almost all silver wastes are recycled. Although the quantity of silver bearing D011 waste disposed may be small, these standards will apply to underlying hazardous constituents (UHCS) in all hazardous wastes. In practice, the standards will not apply to high concentration silver materials, because they are already recycled, but will apply to low silver concentration wastes that are listed as hazardous for other reasons. Wastes with only 0.11 mg/l of silver cannot be recycled in an economically viable way, and do not warrant stabilization because of low silver toxicity.

C. *Not Only Should EPA Not Lower The LDR Treatment Standard for Silver, EPA Should Remove Silver From the TC List*

CMA believes that toxicological and environmental fate evidence 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 their projects for regulatory reform. In the spirit of regulatory reform, EPA should not promulgate any technology based LDR treatment standards for silver 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.

Silver was included as a D011 Toxicity Characteristic waste solely based on the Maximum Contaminant Level (MCL) for silver under the Safe Drinking Water Act. The Agency stated that, ". . . if EPA determines, within the scope of the Safe Drinking Water Act rulemaking, that silver does not pose a threat to human health and the environment, the Agency will consider proposing the deletion of silver from the list of TC constituents." 55 F.R. 11812 (March 29,1990.) On January 30,1991 EPA deleted the silver MCL, because EPA determined ". . . the only potential adverse effect from exposure to silver in drinking water is argyria (a discoloration of the eye and skin). EPA considers argyria a cosmetic effect since it does not impair body function." (56 FR 3573, January 30, 1991). Additionally on December 12, 1992 EPA removed silver from Human Health Criteria in the Water Quality Criteria Recommendations (57 FR 60910, December 12, 1992). EPA also determined that silver does not bioaccumulate and is not a hazard to wildlife, so the Office of Water deleted silver from Table 6-B of "Pollutants that are Bioaccumulative Chemicals of Concern" in the Final Water Quality Guidance for the Great Lakes System (60 FR 15393, March 23, 1995). More recently, in an August 22, 1995 letter from EPA to Senator Christopher Bond, Michael Shapiro indicated EPA is seeking information to expedite EPA's decision whether to delete silver from the TC list, and to support possible future rule-making activities.

EPA stated in the May 10, 1996 Notice of Data Availability that "concern about aquatic toxicity remains." The only studies CMA believes exist that show significant aquatic toxicity from silver are based on the silver ion, usually silver nitrate, which is not the form of silver that occurs in natural ecosystems. The silver complexes that are formed in natural waters, such as silver chloride and silver sulfide, have very low toxicity. Research results, previously shared with EPA (LeBlanc, et. al., 1984; Cooley, et. al., 1988), have documented the substantial reduction in toxicity of silver that occurs in natural waters (groundwater, surface water and sea water) due to complexation with natural ligands and adsorption to particulate matter and sediments. Additionally, EPA's own data have documented that silver is not mobile in soils and sediments, and thus does not pose any potential for adverse environmental or health effects. (Galbraith, et. al., 1972; Klusman and Edwards, 1976; Larsen, et. al., 1973; Smith and Carson, 1977; and Wachter, 1977).

Based on these EPA conclusions, it is contradictory to increase the treatment required before land disposal at the same time that EPA is considering delisting silver as a characteristic waste. It is more appropriate to use this as an opportunity to complete this review and remove silver from the TC waste list.

Deregulation of silver may actually increase the recovery of silver without any adverse environmental impact. The regulation of low concentration silver wastes as hazardous may actually reduce the recovery of silver because it is more expensive to meet the recordkeeping requirements for shipping and storage of hazardous waste. If waste is regulated as hazardous the silver recovery is more likely to occur on-site with small less efficient equipment, rather than being aggregated in large batches for more sophisticated and efficient recovery. There is no indication that the hazardous waste record keeping, storage and transportation requirements help the environment. In fact they actually reduce the recovery of silver, so more of it winds up in the environment.

In this current notice, EPA states that the silver LDR standards will have little impact because almost all silver wastes are recycled. Although the quantity of silver bearing D011 waste disposed maybe small, these standards will apply to UHCs in all hazardous wastes. In practice, the standards will not cause additional high concentration silver materials to be recycled, because they are already recycled, but will affect very low silver concentration wastes that are listed as hazardous for other reasons. Wastes with only 0.11 mg/l of silver can not be recycled in an economically viable way, and do not warrant stabilization because of low silver toxicity.

For all these reasons the appropriate agency action is to delete silver as TC waste criteria. If this is not done, CMA strongly recommends that EPA not promulgate any technology based LDR treatment level for silver more stringent than the current D011 standard, acting on EPA's own information that silver does not cause adverse health or environmental effects.

RESPONSE:

The commenter urged EPA not to lower the silver treatment standard beyond the point where threats are minimized, and stated that the proposed level of 0.14 mg/L exceeds that point.

In response, the Agency points out that the characteristic, or TC levels, are the levels at which constituents are clearly hazardous, not the levels at which threats from the constituents are minimized. See 55 FR at 22652 (June 1, 1990); 51 FR at 21648 (June 13, 1986); 55 FR 11798 (March 29, 1990). EPA finds, for purposes of this rule, that none of the treatment standards are established below levels at which threats to human health and the environment are minimized. This finding stems from the Agency's inability at the present time to establish concentration levels for hazardous constituents which represent levels at which threats to human health and the environment are minimized. Unless the Agency determines national-level, risk-based concentration levels that achieve the "minimized threat" requirement for a particular wastestream, the Agency believes that BDAT treatment (as reflected by the UTS levels) best fulfills the statutory charge. Reliance upon BDAT treatment removes, as much as possible, the inherent uncertainty associated with use of predictive models in ascertaining the effects of land disposal. 55 FR at 6642 (February 26, 1990).

The commenter has urged that EPA remove silver from the TC list, or retain the current treatment standards for silver, given that EPA already has the necessary data on the low level of threat caused by silver in the environment, and states that the Agency already has the necessary data. EPA does not agree that it has the information and analyses needed to take either action.

EPA is in the process of determining whether silver should remain on the TC list at 40 CFR

261.24 (b) Table 1, or whether the current TC level should be altered. In addition, EPA continues its work on the Hazardous Waste Identification Rule (HWIR) to establish risk-based exit levels for hazardous wastes. The Agency is not yet able to establish a nationally-applicable risk-based level for silver that fulfills the statutory charge of minimizing threats of hazardous waste to human health and the environment.

The process of establishing such a level is technically complex; EPA is currently modeling the ecological and human health effects of exposure to silver through numerous pathways. Several issues remain unresolved concerning human health and environmental risk. The Agency recently acquired studies indicating that silver may be connected to central nervous system and other non-cancer effects in humans. (Rungby, J. and G. Danscher, 1984, Hypoactivity in silver exposed rats, Acta. Pharmacol. Toxicol. 55: 398-401, as cited in ATSDR, 1990; Shavlovski et al, 1995, Embryotoxicity of silver ions is diminished by ceruloplasm--further evidence for its role in the transport of copper, Biometals; Ohbo, Y., H. Fukuzako, K. Takeuchi, and M. Takigawa, 1996, Argyria and convulsive siezures caused by ingestion of silver in a patient with schizophrenia, Psychiatry and Clinical Neurosciences. 50:89-90; and Wetshofen, M., and H. Schafer, 1986, Generalized argyrosis in man: neurotological, ultrastructural, and X-ray microanalytical findings,. Arch. Otorhinolaryngol., 243:260-264.) The draft Reference Dose for these effects have not been finalized by the Agency for use in risk assessments. (A Reference Dose is a benchmark level for chronic toxicity that is protective of human health.) In addition to potential adverse human health effects, uncertainties and concerns also remain for potential adverse environmental effects. Although EPA removed the Maximum Contaminant Level (MCL) for silver in drinking water, the Ambient Water Quality Criteria remain in effect due to potential aquatic toxicity. Further areas of uncertainty are how silver speciates after release (i.e. which valence state of silver would be present). The issue could be important since potential toxic effects differ depending on the species of silver present. In short, EPA's work on understanding risks from disposal of silver-containing hazardous wastes is ongoing, and it would be premature to establish a treatment standard based on risk at this time.

In the absence of such "minimize threat" levels for hazardous constituents, the Agency establishes standards based on Best Demonstrated Available Technology (BDAT). (See full explanation in the preamble of the Phase II Final LDR rule at 59 FR 47986, September 19, 1994.) The fact that the UTS for nonwastewater forms of silver is being lowered (made more stringent) from the existing level of 0.30mg/L to 0.14 mg/L is due to new data on what treatment technology achieves. As explained in the summary of this preamble section (Section III: Revised Land Disposal Restrictions for Metal Constituents in All Hazardous Wastes, Including Toxic Characteristic Metals), technology-based standards are the best assurance that threat is minimized, given the uncertainty as to the level at which threats of hazardous waste disposal are minimized.

EPA expects that the new treatment standard for silver wastes will have little, if any impact on the regulated community. As stated by commenters, high-silver wastes are generally recycled due to their economic value and are covered by the special streamlined standards for recyclable materials utilized for precious metal recovery at 40 CFR Part 266.70 Subpart F. Moreover, the Regulatory Impact Analysis for this rule estimated that the new, more stringent UTS levels for metal constituents, including silver, will not increase compliance costs. This is because the current treatment methods already achieve the new standard of 0.11 in silver *nonwastewaters*.

(Achievability of the UTS for TC silver *wastewaters* is not an issue; EPA received no comments nor data on its proposal to apply the existing UTS of 0.43 mg/L.)

Thus, the Agency is promulgating the *wastewater* standard of 0.43 mg/L as proposed and the *nonwastewater* standard of 0.14 mg/L. If EPA changes the status of silver on the TC list, EPA will revisit the treatment standards for silver wastes.

The commenter also states "the standards will not apply to high concentration silver materials because they are already recycled, but will apply to low silver concentration wastes that are listed as hazardous for other reasons." Continuing, the commenter states "the regulation of low concentration silver wastes as hazardous may actually reduce the recovery of silver because it is more expensive to meet the recordkeeping requirements for shipping and storage of hazardous wastes." EPA's response is that the Phase IV rule is unlikely to affect the management of silver wastes. As the commenter states, the high-silver wastes (D011) are typically recycled. The only way in which the Phase IV rule affects other silver-containing wastes is to make the treatment standard somewhat more stringent for nonwastewater forms, from a level of 0.30 to 0.14 mg/L. Contrary to the commenter's statement, Phase IV will not require new recordkeeping requirements for low-silver wastes, because these wastes are already subject to the LDR treatment standards. In fact, EPA estimates that the new standards will not impose any change in treatment regimes or compliance costs for any of the silver-containing wastes. (For more information on the latter point, refer to the Regulatory Impact Analysis in the docket for this rule.)

COMMENT 2P4P-00018 Collier, Shannon, Rill & Scott, PLLC for Specialty Steel Industry of North America (SSINA)

1. 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 II, 1997, p. I 1. EPA should either raise the UTS level for silver to the current TC level (5.0 mg/1) or retain the current level of 0.3 mg/I.

RESPONSE:

The Agency does not have an adequate basis for taking the actions recommended by some commenters, i.e. to remove silver from the TC list, or regulate it at a less stringent level than the proposed treatment standard. EPA is in the process of determining whether silver should remain on the TC list at 40 CFR 261.24 (b) Table 1, or whether the current TC level should be altered. In addition, EPA continues its work on the Hazardous Waste Identification Rule (HWIR) to establish risk-based exit levels for hazardous wastes. The Agency is not yet able to establish a nationally-applicable risk-based level for silver that fulfills the statutory charge of minimizing threats of hazardous waste to human health and the environment.

The process of establishing such a level is technically complex; EPA is currently modeling the ecological and human health effects of exposure to silver through numerous pathways. Several issues remain unresolved concerning human health and environmental risk. The Agency recently acquired studies indicating that silver may be connected to central nervous system and other non-cancer effects in humans. (Rungby, J. and G. Danscher, 1984, Hypoactivity in silver exposed rats, Acta. Pharmacol. Toxicol. 55: 398-401, as cited in ATSDR, 1990; Shavlovski et al, 1995, Embryotoxicity of silver ions is diminished by ceruloplasm--further evidence for its role in the transport of copper, Biometals; Ohbo, Y., H. Fukuzako, K. Takeuchi, and M. Takigawa, 1996, Argyria and convulsive siezures caused by ingestion of silver in a patient with schizophrenia, Psychiatry and Clinical Neurosciences. 50:89-90; and Wetshofen, M., and H. Schafer, 1986, Generalized argyrosis in man: neurotological, ultrastructural, and X-ray microanalytical findings,. Arch. Otorhinolaryngol., 243:260-264.) The draft Reference Dose for these effects have not been finalized by the Agency for use in risk assessments. (A Reference Dose is a benchmark level for chronic toxicity that is protective of human health.) In addition to potential adverse human health effects, uncertainties and concerns also remain for potential adverse environmental effects. Although EPA removed the Maximum Contaminant Level (MCL) for silver in drinking water, the Ambient Water Quality Criteria remain in effect due to potential aquatic toxicity. Further areas of uncertainty are how silver speciates after release (i.e. which valence state of silver would be present). The issue could be important since potential toxic effects differ depending on the species of silver present. In short, EPA's work on understanding risks from disposal of silver-containing hazardous wastes is ongoing, and it would be premature to establish a treatment standard based on risk at this time.

In the absence of such "minimize threat" levels for hazardous constituents, the Agency establishes standards based on Best Demonstrated Available Technology (BDAT). (See full explanation in the preamble of the Phase II Final LDR rule at 59 FR 47986, September 19, 1994.) The fact that the UTS for nonwastewater forms of silver is being lowered (made more stringent) from the existing level of 0.30mg/L to 0.14 mg/L is due to new data on what treatment technology achieves. As explained in the summary of this preamble section (Section III: Revised Land Disposal Restrictions for Metal Constituents in All Hazardous Wastes, Including Toxic Characteristic Metals), technology-based standards are the best assurance that threat is minimized, given the uncertainty as to the level at which threats of hazardous waste disposal are minimized.

EPA expects that the new treatment standard for silver wastes will have little, if any impact on the regulated community. As stated by commenters, high-silver wastes are generally recycled due to their economic value and are covered by the special streamlined standards for recyclable materials utilized for precious metal recovery at 40 CFR Part 266.70 Subpart F. Moreover, the Regulatory Impact Analysis for this rule estimated that the new, more stringent UTS levels for metal constituents, including silver, will not increase compliance costs. This is because the current treatment methods already achieve the new standard of 0.11 in silver *nonwastewaters*. (Achievability of the UTS for TC silver *wastewaters* is not an issue; EPA received no comments nor data on its proposal to apply the existing UTS of 0.43 mg/L.)

Thus, the Agency is promulgating the *wastewater* standard of 0.43 mg/L as proposed and the *nonwastewater* standard of 0.14 mg/L. If EPA changes the status of silver on the TC list, EPA will revisit the treatment standards for silver wastes.

2P4P-00022
Eastman Kodak Company

Eastman Kodak Company ("Kodak") is the primary U.S. manufacturer of photographic films, papers, chemicals, and other imaging products. Many of our products use silver halide technology. When reuse and recycling are not feasible, treatment and disposal are part of our waste management strategy. Because the proposed Phase IV Land Disposal Restriction (LDR) regulations and their regulatory approaches may impact the treatment and disposal of our manufacturing waste and the waste generated by our customers, we are commenting on the proposed options for treatment standards for D011 Silver Toxicity Characteristic (TC) Wastes. Kodak commended EPA for proposing to raise the Universal Treatment Standard (UTS) for silver based on toxicity data in its May 10, 1996 Phase IV LDR reproposal. It is unfortunate that EPA has not completed the toxicological evaluation so it can promulgate the proposed risk-based silver standard and instead has defaulted to a technology-based standard. The information has existed for several years to complete this evaluation and we recommend that EPA complete this toxicological evaluation of silver before promulgating the final Phase IV LDR rule, so that the silver standard can be risk based. The following detailed comments support this position.

The D011 Silver LDR Standard Already Minimizes Risk, So There is No Need to Reduce it Further.
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.

Section 3004(a) of the RCRA statute directs the EPA to establish performance standards that would be applicable to owners and operators of facilities for the treatment, storage, or disposal of hazardous waste identified or listed under Subtitle C, in order to protect human health and the environment. Section 3004(m)(1) of the statute also directs the EPA to take into consideration the reduction in toxicity of the waste, as well as a reduction in the migration potential of the waste bound for land disposal. Both of those directives are aimed at a level of risk, with treatment expected to achieve a level at which the constituent would no longer pose a significant threat to human health and the environment. The Agency has stated that its ultimate policy preference is to establish risk-based levels that represent minimized threat levels, thus capping the extent of hazardous waste treatment (58 FR 48095, September 14, 1993). At the same time, the Agency suggested that such an approach was "formidable and very controversial". The technical issues included "assessing exposure pathways other than migration to ground water, taking environmental risk into account, and developing adequate toxicological information for the hazardous constituents controlled by the hazardous waste program".

Rather than being "formidable and very controversial," the establishment of treatment standards for silver based on risk should be simple and non-controversial because the Agency already has the necessary data. There have been numerous toxicological studies performed on silver that support the conclusion that chronic exposure to low levels of silver does not pose a hazard to human health. Publications by the Agency for Toxic Substances and Disease Registry (ATSDR) - the ATSDR Draft Toxicological Profile; the EPA - the U. S. EPA Drinking Water Criteria Document for Silver, and the EPA Drinking Water Health Advisory for Silver; and the National Research Council (NRC) - the NRC Drinking Water and Health Document all substantiate this fact. The lowest level of silver administered in drinking water and reported to cause adverse health effects in experimental animals is 150 mg/I, much higher than the levels chosen for regulation.

Research results, previously shared with EPA, have documented the substantial reductions in toxicity of silver in groundwater, surface water and sea water by complexation with natural ligands and adsorption to particulate matter and sediments. The silver complexes that are formed in natural waters have very low toxicity. Additionally, EPA's own data have documented that silver is not mobile in soils and sediments, and thus does not pose any potential for adverse environmental or health effects.

In conclusion, toxicity data alreadv exists that verifies that the current LDR treatment standard minimizes threat to human health and the environment.

The LDR Treatment Standard for Silver Should Not Be Lowered Because Silver's Low Toxicity Warrants it's Removal from the TC List.

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.
Silver was included as a D011 Toxicity Characteristic waste solely based on the Maximum Contaminant Level (MCL) for silver under the Safe Drinking Water Act. The agency stated that, "... if EPA determines, within the scope of the Safe Drinking Water Act rulemaking, that silver does not pose a threat to human health and the environment, the Agency will consider proposing the deletion of silver from the list of TC constituents" (55 FR II 812, March 29, 1990). On January 30, 1991 EPA deleted the silver MCL, because EPA determined "... the only potential adverse effect from exposure to silver in drinking water is argyria (a discoloration of the eye and skin). EPA considers argyria a cosmetic effect since it does not impair body function." (56 FR 3573, January 30, 1991). In addition, there are no case reports of argyria as a result of ingestion of water or soil. On December 12, 1992 EPA removed silver from Human Health Criteria in the Water Quality Criteria Recommendations (5 7 FR 6091 0, December 12, 1992). Because EPA

determined that silver does not bioaccumulate and is not a hazard to wildlife, the Office of Water deleted silver from Table 6-B of "Pollutants that are Bioaccumulative Chemicals of Concern" in the Final Water Quality Guidance for the Great Lakes System (60 FR 15393, March 23, 1995). More recently, in an August 22, 1995 letter from EPA to Senator Christopher Bond, Michael Shapiro indicated EPA was seeking information to expedite EPA's decision whether to delete silver from the TC list, and to support possible future rule-making activities.

EPA stated in the May 10, 1996 Notice of Data Availability that "concern about aquatic toxicity remains." The only studies that show significant aquatic toxicity from silver are based on the silver ion, usually silver nitrate, which is not the form of silver that occurs in natural ecosystems. The silver complexes that are formed in natural waters, such as silver chloride and silver sulfide, have very low toxicity. Research results, previously shared with EPA (LeBlanc, et. al., 1984; Cooley, et. al., 1988), have documented the substantial reduction in toxicity of silver that occurs in natural waters (groundwater, surface water and sea water) due to complexation with natural ligands and adsorption to particulate matter and sediments. Additionally, EPA's own data have documented that silver is not mobile in soils and sediments, and thus does not pose any potential for adverse environmental or health effects. (Galbraith, et. al., 1972; Klusman and Edwards, 1976; Larsen, et. al., 1973; Smith and Carson, 1977; and Wachter, 1977).

Based on these EPA conclusions, it is contradictory to increase the treatment required before land disposal, at the same time that EPA is seriously considering deleting silver as a TC waste criterion. It is more appropriate to use this as an opportunity to complete this review and remove silver from the TC waste list.

Deregulation of silver will increase the recovery of silver, without any adverse environmental impact.

The regulation of low concentration silver wastes as a hazardous waste reduces the recovery of silver. It is more expensive to meet the record keeping requirements for shipping and storage of hazardous waste, therefore silver recovery is more likely to occur on-site with small less efficient equipment rather than being aggregated in large batches for more sophisticated and efficient recovery. There is no indication that the hazardous waste record keeping, storage and transportation requirements help the environment. In fact they actually reduce the recovery of silver, so more of it winds up in the environment.

In this current notice, EPA states that the silver LDR standards will have little impact because almost all silver wastes are recycled. Although the quantity of silver bearing D011 waste disposed may be small, these standards will apply to Underlying Hazardous Constituents (UHCS) in all hazardous wastes. In practice, the standards will not cause additional high concentration silver materials to be recycled, because they are already recycled, but will affect very low silver concentration wastes that are listed as hazardous for other reasons, but have silver present as an UHC. Wastes with only 0.11 mg/l of silver can not be recycled in an economically viable way, and do not warrant stabilization because of low silver toxicity.

Recommendations
For all these reasons the appropriate agency action is to delete silver as TC waste criteria. If this is not done, Kodak strongly recommends that EPA not promulgate any technology based LDR treatment level for silver more stringent than the current D011 standard until acting on EPA's own information that silver does not cause adverse health or environmental effects.

RESPONSE:

The commenter stated that the proposed treatment standard of 0.14 mg/L for silver exceeds the point at which there could be a threat to human health or the environment. The commenter recommends that EPA remove silver from the TC list or at least avoid setting a lower treatment standard than the current TC level.

The Agency points out that the characteristic, or TC levels, are the levels at which constituents are clearly hazardous, not the levels at which threats from the constituents are minimized. See 55 FR at 22652 (June 1, 1990); 51 FR at 21648 (June 13, 1986); 55 FR 11798 (March 29, 1990). EPA finds, for purposes of this rule, that none of the treatment standards are established below levels at which threats to human health and the environment are minimized. This finding stems from the Agency's inability at the present time to establish concentration levels for hazardous constituents which represent levels at which threats to human health and the environment are minimized. Unless the Agency determines national-level, risk-based concentration levels that achieve the "minimized threat" requirement for a particular wastestream, the Agency believes that BDAT treatment (as reflected by the UTS levels) best fulfills the statutory charge. Reliance upon BDAT treatment removes, as much as possible, the inherent uncertainty associated with use of predictive models in ascertaining the effects of land disposal. 55 FR at 6642 (February 26, 1990).

The Agency does not have an adequate basis for removing silver from the TC list, or regulating it at a less stringent level than the proposed treatment standard. EPA is in the process of determining whether silver should remain on the TC list at 40 CFR 261.24 (b) Table 1, or whether the current TC level should be altered. In addition, EPA continues its work on the Hazardous Waste Identification Rule (HWIR) to establish risk-based exit levels for hazardous wastes. The Agency is not yet able to establish a nationally-applicable risk-based level for silver that fulfills the statutory charge of minimizing threats of hazardous waste to human health and the environment.

The process of establishing such a level is technically complex; EPA is currently modeling the ecological and human health effects of exposure to silver through numerous pathways. Several issues remain unresolved concerning human health and environmental risk. The Agency recently acquired studies indicating that silver may be connected to central nervous system and other non-cancer effects in humans. (Rungby, J. and G. Danscher, 1984, Hypoactivity in silver exposed rats, Acta. Pharmacol. Toxicol. 55: 398-401, as cited in ATSDR, 1990; Shavlovski et al, 1995, Embryotoxicity of silver ions is diminished by ceruloplasm--further evidence for its role in the transport of copper, Biometals; Ohbo, Y., H. Fukuzako, K. Takeuchi, and M. Takigawa, 1996, Argyria and convulsive siezures caused by ingestion of silver in a patient with schizophrenia, Psychiatry and Clinical Neurosciences. 50:89-90; and Wetshofen, M., and H. Schafer, 1986, Generalized argyrosis in man: neurotological, ultrastructural, and X-ray microanalytical findings,. Arch. Otorhinolaryngol., 243:260-264.) The draft Reference Dose for these effects have not been finalized by the Agency for use in risk assessments. (A Reference Dose is a benchmark level for chronic toxicity that is protective of human health.) In addition to potential adverse human health effects, uncertainties and concerns also remain for potential adverse environmental effects. Although EPA removed the Maximum Contaminant Level (MCL) for silver in drinking water, the Ambient Water Quality Criteria remain in effect due to potential aquatic toxicity. Further areas of uncertainty are how silver speciates after release (i.e. which valence state of silver would be present). The issue could be important since potential toxic effects differ depending on the species of silver present. In short, EPA's work on understanding risks from disposal of silver-containing hazardous wastes is ongoing, and it would be premature to establish a treatment standard based on risk at this time.

In the absence of such "minimize threat" levels for hazardous constituents, the Agency establishes standards based on Best Demonstrated Available Technology (BDAT). (See full explanation in the preamble of the Phase II Final LDR rule at 59 FR 47986, September 19, 1994.) The fact that the UTS for nonwastewater forms of silver is being lowered (made more stringent) from the existing level of 0.30mg/L to 0.14 mg/L is due to new data on what treatment technology achieves. As explained in the summary of this preamble section (Section III: Revised Land Disposal Restrictions for Metal Constituents in All Hazardous Wastes, Including Toxic Characteristic Metals), technology-based standards are the best assurance that threat is minimized, given the uncertainty as to the level at which threats of hazardous waste disposal are minimized.

EPA expects that the new treatment standard for silver wastes will have little, if any impact on the regulated community. As stated by commenters, high-silver wastes are generally recycled due to their economic value and are covered by the special streamlined standards for recyclable materials utilized for precious metal recovery at 40 CFR Part 266.70 Subpart F. Moreover, the Regulatory Impact Analysis for this rule estimated that the new, more stringent UTS levels for metal constituents, including silver, will not increase compliance costs. This is because the current treatment methods already achieve the new standard of 0.11 in silver *nonwastewaters*. (Achievability of the UTS for TC silver *wastewaters* is not an issue; EPA received no comments nor data on its proposal to apply the existing UTS of 0.43 mg/L.)

2P4P-00045 The Silver Council

The Silver Council works with regulatory agencies and the regulated community to promote the development of scientifically based regulations that allow for environmentally sound and cost-effective recovery of silver from photographic-processing operations. In the Phase IV Notice of May 10, 1996 (61 FR 21418), the Agency seemed to be moving in that direction, taking silver toxicity data into consideration in developing treatment standards for D011 wastes. In discussing the silver treatment standards in that notice, EPA stated "concern about aquatic toxicity remains," but the Agency did not request aquatic toxicity data on silver at that time. The Silver Council has provided extensive data on silver in aquatic environments to the Hazardous Waste Identification

Division of the Office of Solid Waste (OSW) for use in EPA's ongoing investigation of the TC regulation of silver. Now, one year after EPA's May 1996 notice, the Agency still contends it has no "definitive risk information" on silver and, therefore, has proposed technology-based treatment standards for silver-containing wastes. As part of today's submittal, The Silver Council is providing the Waste Treatment Branch with information on current scientific research on the fate and effects of silver in aquatic systems. Upon reviewing this information, which is summarized below, the Agency should be able to promulgate a risk-based treatment standard for silver, rather than defaulting to technology-based standards such as those proposed in the May 12, 1997 notice.

Availability and Effects of Silver in Aquatic Systems

It is well documented that the free silver ion (Ag^+) is highly toxic to aquatic organisms in laboratory tests. Such studies have compared the toxicity of the silver ion, as silver nitrate (AgNO3), with that of silver compounds commonly found in the environment. Silver sulfide, silver chloride, and silver-thiosulfate complex (the form found in photo-processing wastes) were found to be several orders of magnitude less toxic than the free silver ion. In one study, silver sulfide was found to be 15,000 times less acutely toxic and silver-thiosulfate complex was 17,500 times less acutely toxic to fathead minnows than ionic silver (LeBlanc et al., 1984). Silver has been shown to bind readily to organic solids and ligands in the aquatic environment, forming stable, insoluble compounds, resulting in the greatly reduced toxicity of silver in natural systems. (See Petering, 1976; Cooley et al., 1988; Cooper & Jolly, 1970.)

A recent study demonstrated that silver compounds and complexes are orders of magnitude less toxic to freshwater fish than ionic silver (as $AgNO^3$). In one study, 96-hour and 168-hour LC_{50} values for rainbow trout of silver-thiosulfate complex $(AgS_20_3)_n$ were 13,000 and 15,000 times greater (i.e., less toxic) than comparable LC_{50} values for silver nitrate: 161,000 and 137,000 ug/L, respectively, versus 11.7 and 9.1 ug/L. The experimenters were unable to determine the LC_{50} for silver chloride because of its low solubility. No mortality was observed at the highest test concentration, 100,000 ug of silver per liter (Hogstrand *et al.*, 1996).

Complete citations for the studies described above, along with numerous other studies on the environmental effects of silver, are contained in the annotated bibliography included as an attachment to these comments. We hope that EPA, and specifically, the Waste Treatment Branch, will find the results of this research useful in supporting the development of risk-based treatment standards for silver-bearing wastes under the LDR program.

EPA's Rationale for Revising the Universal Treatment Standard for Silver

EPA is correct in stating that silver wastes are frequently recycled due to the economic value of silver and that this activity is subject to the streamlined requirements of 40 CFR Part 266, Subpart F. The application of these reduced requirements by the various states, however, is far from uniform. The Silver Council finds puzzling the statement by EPA that "there may be little or no land disposal of silver wastes, hence little or no impact of applying a new treatment standard." To our knowledge, this is not an appropriate basis for promulgating more stringent regulations. If anything, the fact that very little silver-bearing waste is disposed in landfills justifies less stringent regulation, particularly in light of scientific studies showing that silver is immobile in soil matrices and does not present a threat to ground water. (See section entitled *Fate and Effects of Silver in Sludges, Soils, and Plants* in the attached bibliography.)

Summary and Conclusions

Despite EPA's stated concerns over the aquatic toxicity of silver in the May 1996 notice, the Agency was considering revising the universal treatment standard for silver upward to 5.0 mg/L, "given the low risk to human health." Based on the lack of human health effects associated with silver and the additional research submitted today on silver's environmental effects, The Silver Council believes EPA now has sufficient information to support the development of risk-based treatment standards for silver.

Given EPA's stated preference for promulgating risk-based levels (September 14, 1993; 58 FR 48095) that are consistent with the "minimize threat" mandate under section 3004(m) of RCRA, as amended by HSWA, it is difficult to understand EPA's reliance on technology-based standards for silver in this notice. We understand that the Waste Treatment Branch (WTB) would not be the body making a decision on whether to remove silver from the TC list and we would not expect such action as part of an LDR rulemaking. Nonetheless, it seems reasonable and appropriate for WTB to use the same peer-reviewed data we have provided to other divisions within OSW to support development of risk-based treatment standards for silver-containing wastes.

RESPONSE:

The commenter has urged that EPA retain the current treatment standards for silver unless the treatment standard is based on risk. EPA is in the process of determining whether silver should remain on the TC list at 40 CFR 261.24 (b) Table 1, or whether the current TC level should be altered. In addition, EPA continues its work on the Hazardous Waste Identification Rule (HWIR) to establish risk-based exit levels for hazardous wastes. The Agency is not yet able to establish a nationally-applicable risk-based level for silver that fulfills the statutory charge of minimizing threats of hazardous waste to human health and the environment.

The process of establishing such a level is technically complex; EPA is currently modeling the ecological and human health effects of exposure to silver through numerous pathways. Several issues remain unresolved concerning human health and environmental risk. The Agency recently acquired studies indicating that silver may be connected to central nervous system and other non-cancer effects in humans. (Rungby, J. and G. Danscher, 1984, Hypoactivity in silver exposed rats, Acta. Pharmacol. Toxicol. 55: 398-401, as cited in ATSDR, 1990; Shavlovski et al, 1995, Embryotoxicity of silver ions is diminished by ceruloplasm--further evidence for its role in the transport of copper, Biometals; Ohbo, Y., H. Fukuzako, K. Takeuchi, and M. Takigawa, 1996, Argyria and convulsive siezures caused by ingestion of silver in a patient with schizophrenia, Psychiatry and Clinical Neurosciences. 50:89-90; and Wetshofen, M., and H. Schafer, 1986, Generalized argyrosis in man: neurotological, ultrastructural, and X-ray microanalytical findings,.

Arch. Otorhinolaryngol., 243:260-264.) The draft Reference Dose for these effects have not been finalized by the Agency for use in risk assessments. (A Reference Dose is a benchmark level for chronic toxicity that is protective of human health.) In addition to potential adverse human health effects, uncertainties and concerns also remain for potential adverse environmental effects. Although EPA removed the Maximum Contaminant Level (MCL) for silver in drinking water, the Ambient Water Quality Criteria remain in effect due to potential aquatic toxicity. Further areas of uncertainty are how silver speciates after release (i.e. which valence state of silver would be present). The issue could be important since potential toxic effects differ depending on the species of silver present. In short, EPA's work on understanding risks from disposal of silver-containing hazardous wastes is ongoing, and it would be premature to establish a treatment standard based on risk at this time.

In the absence of such "minimize threat" levels for hazardous constituents, the Agency establishes standards based on Best Demonstrated Available Technology (BDAT). (See full explanation in the preamble of the Phase II Final LDR rule at 59 FR 47986, September 19, 1994.) The fact that the UTS for nonwastewater forms of silver is being lowered (made more stringent) from the existing level of 0.30mg/L to 0.14 mg/L is due to new data on what treatment technology achieves. As explained in the summary of this preamble section (Section III: Revised Land Disposal Restrictions for Metal Constituents in All Hazardous Wastes, Including Toxic Characteristic Metals), technology-based standards are the best assurance that threat is minimized, given the uncertainty as to the level at which threats of hazardous waste disposal are minimized.

EPA expects that the new treatment standard for silver wastes will have little, if any impact on the regulated community. As stated by commenters, high-silver wastes are generally recycled due to their economic value and are covered by the special streamlined standards for recyclable materials utilized for precious metal recovery at 40 CFR Part 266.70 Subpart F. Moreover, the Regulatory Impact Analysis for this rule estimated that the new, more stringent UTS levels for metal constituents, including silver, will not increase compliance costs. This is because the current treatment methods already achieve the new standard of 0.11 in silver *nonwastewaters*. (Achievability of the UTS for TC silver *wastewaters* is not an issue; EPA received no comments nor data on its proposal to apply the existing UTS of 0.43 mg/L.)

Thus, the Agency is promulgating the *wastewater* standard of 0.43 mg/L as proposed and the *nonwastewater* standard of 0.14 mg/L. If EPA changes the status of silver on the TC list, EPA will revisit the treatment standards for silver wastes.

2P4P-00057 Photo Marketing Association International

Photo Marketing Association International does not support the development of the technology-based treatment standards for silver (D011) outlined in the Second Supplemental Phase IV Land Disposal Restriction proposed rule. PMA recommends that EPA keep the treatment standards for silver at its current level unless the treatment standards are developed using risk-based information.

Silver Poses No Threat to Humans and the Environment:

In the background statement for the proposed LDR changes, it is stated that the premise of the LDR legislation is: "...risks posed by land disposal of hazardous wastes are inherently uncertain to evaluate and that land-based units are incapable of long-term containment. Land disposal units are engineered units that can and have failed in the past with significant consequences to human health and the environment. In keeping with the risk-based levels outlined in EPA's previously stated mandate for RCRA, there is strong evidence, from readily available EPA sources, to support no new technologically-based treatment standards for silver. The following statements are a listing of several items that indicate that silver is not a threat to human health and/or the environment:

! EPA's Office of Drinking Water deleted the MCL for silver in 1991. The reason cited for deleting the MCL was that the "only adverse effect from silver is Argyria." EPA considers Argyria to be a cosmetic problem since it does not impair the functioning of the body or present other physiological problems (56 FR 3573).

! Silver does not bioaccumulate and poses no hazard to wildlife. EPA's Office of Water included silver in its list of chemicals that do not bioaccumulate. (Table 6B 60 FR 15392)

! EPA studies show that silver is basically immobile in the environment. (U.S. EPA Report 600/3-86/030, 1986)

! Silver was not included as a contaminant of concern in the EPA sludge regulations and therefore sludges can be land-applied, or managed in landfills or wastepiles, (58 FR 9348-9415)

! Silver regularly forms strong insoluble complexes with naturally occurring chloride sulfides and organic carbons and is not bioavailable. (The Silver Council, Annotated Bibliography on Silver)

! EPA's Office of Solid waste is studying the appropriateness of deleting silver from the TC characteristic list (62 FR 22351, Unified Agenda)

The Basis for Technology-Based Treatment Standards is Questionable:

In consideration of the citations listed above, it appears that the basis for including silver in the proposed LDR rule is unsubstantiated. Section III C (62 FR 26044) of the proposed rules states: "... the ultimate requirement that the standard (LDR) be sufficient to minimize threats to human health and the environments." Additionally, the Hazardous Waste Identification Division in the Office of Solid Waste was provided extensive data in 1996 (by the Silver Council) that further outlines that silver is not a threat to human health or the environment.

Furthermore, a statement in the background section of the May 12, 1997 proposed rule (62 FR 26042) supports our position. In the text, it is written, "EPA estimates that the direct measurable benefits associated with the land disposal restrictions treatment standards in this rule are limited relative to the costs that will be incurred. The relative priority of addressing these risks could be questioned. However, we do not believe for this specific action, that a simple cost effective measure alone provides a sufficient basis for decision making." Considering this statement and EPA's own documentation showing that there is little or no long term environmental risks for silver, it appears that the only potential basis for including silver in this supplemental regulation would be to impose additional cost on commercial and industrial users of silver. This is obviously not an appropriate reason for promulgating additional regulations especially when you consider the "minimize threat" basis for LDR regulations.

The Basis for Revision of the Universal Treatment Standard:

There is additional evidence that there is little reason for he inclusion of silver in these regulations. In the section concerning the proposed revision of UTS for Silver (Section III D 6, 62 FR 26046), it is stated, “There may be little or no land disposal of silver wastes, hence little or no impact of applying a new treatment standard." This may be a true statement, but we must strongly question this logic as an appropriate reason to promulgate additional regulations, especially considering Vice President Gore's continuing efforts to remove unnecessary and outdated rules.

Waste Stream Information:

In the photo processing industry, the primary sources of potentially land-disposed wastes containing silver are sensitized goods, i.e. discarded film, negatives and print papers. TCLP testing of sensitized goods shows that there is not a significant release of silver from these wastes if they are disposed in landfills (see attached document). The other source for land disposed silver is POTW sludges. Over 99% of photo processors discharge wastes to POTWs after silver recovery and POTW sludges are exempted from RCRA regulation. To reiterate, there is not a significant volume of silver-containing wastes being land disposed at this and additional treatment standards are unnecessary.

Summary

There appears to be very little reason to include silver in the Phase IV LDR rule. EPA's Office of Water and Office of Drinking Water each recognized that silver does not pose a threat to wildlife and humans (respectively) and have made changes in their regulations to reflect these facts. The forms of silver that are released to the environment are not mobile in soils, are not a bio-accumulation concern for wildlife, and readily bind with naturally occurring particulate matter to form stable and biologically unavailable complexes.

The whole premise for developing a technology-based LDR treatment standard for silver is unsubstantiated and Photo Marketing Association International does not support the development of the proposed technology-based LDR treatment standard for silver. Should there be a need for further development of a LDR treatment standards, it should be on a risk- based standard basis only.

TCLP Results for Silver in Assorted Films and Papers

The following manufacturers of photographic films and papers ran TCLP tests on some of their products, yielding these results.

AGFA DIVISION, BAYER CORPORATION
Unprocessed graphic arts films: <0.03 ppm
Photographic and graphic arts papers: <0.03 ppm
(black and white)

Unprocessed industrial x-ray film: <0.03 ppm

FUJI PHOTO FILM U.S.A

Motion picture film
(processed and unprocessed): <0.02 ppm

Unprocessed and professional film: <0.02 ppm
Processed professional film: <0.02 ppm
Professional NHG paper: <0.02 ppm
Microfilm negative
(processed and unprocessed): <0.02 ppm

Graphic arts film
(processed and unprocessed): <0.02 ppm

KONICA U.S.A.
Unprocessed color photographic paper: 0.044 ppm
Processed color Photographic paper: 0.00046 ppm
EASTMAN-.KODAK COMPANY
Photographic films: < 0.02 ppm

Photographic papers: < 0.03 ppm

Kodak also conducted TCLP testing on samples of silver flake resulting from electrolytic recovery and samples of sludge from a chemical recovery cartridge (CRC). The silver flake samples leached silver at 0.04 ppm and silver as not detectable in the CRC sludge, demonstrating immobility and low leaching of silver.

RESPONSE:

The commenter has urged that EPA retain the current treatment standards for silver unless the treatment standard is based on risk. While EPA has acquired data on the risks from silver, and undertaken analyses of it, the work is not yet complete.

EPA is in the process of determining whether silver should remain on the TC list at 40 CFR 261.24 (b) Table 1, or whether the current TC level should be altered. In addition, EPA continues its work on the Hazardous Waste Identification Rule (HWIR) to establish risk-based exit levels for hazardous wastes. The Agency is not yet able to establish a nationally-applicable risk-based level for silver that fulfills the statutory charge of minimizing threats of hazardous waste to human health and the environment.

The process of establishing such a level is technically complex; EPA is currently modeling the ecological and human health effects of exposure to silver through numerous pathways. Several issues remain unresolved concerning human health and environmental risk. The Agency recently acquired studies indicating that silver may be connected to central nervous system and other non-cancer effects in humans. (Rungby, J. and G. Danscher, 1984, Hypoactivity in silver exposed rats, Acta. Pharmacol. Toxicol. 55: 398-401, as cited in ATSDR, 1990; Shavlovski et al, 1995, Embryotoxicity of silver ions is diminished by ceruloplasm--further evidence for its role in the transport of copper, Biometals; Ohbo, Y., H. Fukuzako, K. Takeuchi, and M. Takigawa, 1996, Argyria and convulsive siezures caused by ingestion of silver in a patient with schizophrenia, Psychiatry and Clinical Neurosciences. 50:89-90; and Wetshofen, M., and H. Schafer, 1986, Generalized argyrosis in man: neurotological, ultrastructural, and X-ray microanalytical findings,. Arch. Otorhinolaryngol., 243:260-264.) The draft Reference Dose for these effects have not been finalized by the Agency for use in risk assessments. (A Reference Dose is a benchmark level for chronic toxicity that is protective of human health.) In addition to potential adverse human health effects, uncertainties and concerns also remain for potential adverse environmental effects. Although EPA removed the Maximum Contaminant Level (MCL) for silver in drinking water, the Ambient Water Quality Criteria remain in effect due to potential aquatic toxicity. Further areas of uncertainty are how silver speciates after release (i.e. which valence state of silver would be present). The issue could be important since potential toxic effects differ depending on the species of silver present. In short, EPA's work on understanding risks from disposal of silver-containing hazardous wastes is ongoing, and it would be premature to establish a treatment standard based on risk at this time.

In the absence of such "minimize threat" levels for hazardous constituents, the Agency establishes standards based on Best Demonstrated Available Technology (BDAT). (See full explanation in the preamble of the Phase II Final LDR rule at 59 FR 47986, September 19, 1994.) The fact that the UTS for nonwastewater forms of silver is being lowered (made more stringent) from the existing level of 0.30mg/L to 0.14 mg/L is due to new data on what treatment technology achieves. As explained in the summary of this preamble section (Section III: Revised Land Disposal Restrictions for Metal Constituents in All Hazardous

Wastes, Including Toxic Characteristic Metals), technology-based standards are the best assurance that threat is minimized, given the uncertainty as to the level at which threats of hazardous waste disposal are minimized.

EPA expects that the new treatment standard for silver wastes will have little, if any impact on the regulated community. As stated by commenters, high-silver wastes are generally recycled due to their economic value and are covered by the special streamlined standards for recyclable materials utilized for precious metal recovery at 40 CFR Part 266.70 Subpart F. Moreover, the Regulatory Impact Analysis for this rule estimated that the new, more stringent UTS levels for metal constituents, including silver, will not increase compliance costs. This is because the current treatment methods already achieve the new standard of 0.11 in silver *nonwastewaters*. (Achievability of the UTS for TC silver *wastewaters* is not an issue; EPA received no comments nor data on its proposal to apply the existing UTS of 0.43 mg/L.)

Thus, the Agency is promulgating the *wastewater* standard of 0.43 mg/L as proposed and the *nonwastewater* standard of 0.14 mg/L. If EPA changes the status of silver on the TC list, EPA will revisit the treatment standards for silver wastes.

2P4P-00074 New York State Department of Environmental Conservation

As an example, DEC would disagree with the lowering of the Universal Treatment Standard (UTS) for silver. most available data would indicate that silver has a very stringent proposed UTS (0.11 mg/1) in relationship to health-based risks and environmental mobility. EPA also believes that most silver wastes are recycled and, therefore, are not land disposed, and yet proposes to lower the UTS level, based on technology alone. Because available technology may be able to achieve a particular level of treatment, this should not dictate whether or not a standard is needed to protect human health and the environment. DEC does not believe that statutory mandates are best served by such overregulation. The current UTS for nonwastewater silver wastes (0.30 mg/l by TCLP) is sufficiently protective in light of economic incentives for recycling silver and statistically established low toxicity.

RESPONSE:

The commenter has urged that EPA retain the current treatment standards for silver, given information on the low level of threat caused by silver in the environment, and states that the Agency already has the necessary data. While EPA has acquired data on the risks from silver, and undertaken analyses of it, the work is not yet complete.

EPA is in the process of determining whether silver should remain on the TC list at 40 CFR 261.24 (b) Table 1, or whether the current TC level should be altered. In addition, EPA continues its work on the Hazardous Waste Identification Rule (HWIR) to establish risk-based exit levels for hazardous wastes. The Agency is not yet able to establish a nationally-applicable risk-based level for silver that fulfills the statutory charge of minimizing threats of hazardous waste to human health and the environment.

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Thus, the Agency is promulgating the *wastewater* standard of 0.43 mg/L as proposed and the *nonwastewater* standard of 0.14 mg/L. If EPA changes the status of silver on the TC list, EPA will revisit the treatment standards for silver wastes.

2P4P-00086 DuPont

8. DuPONT BELIEVES THAT THE PROPOSED REVISION TO THE SILVER UTS LEVEL IS UNWARRANTED

As noted by the Agency in this proposed rulemaking, questions remain as to the need to retain silver as a TC metal based on its low toxicity. In light of that waste classification activity within the Agency, which DuPont understands is continuing, it is inappropriate to make a change in the treatment standards for wastes which may be removed from the Subtitle C regulatory system. Presumably, that is why the Agency previously proposed, as one of the options, to retain the level at 5 mg/l.

The Agency has proposed to lower the Universal Treatment Standard for silver based on performance of HTMR and stabilization technologies. The ability of a technology to achieve a level is not, however, sufficient justification for setting the standard at that level. Use of HTMR or stabilization technologies to reduce the silver levels in wastes from one non-economical level to another is wasteful of treatment resources. Contrary to the Agency's presumption, some silver recovery operations yield wastes which must achieve the LDR standards prior to disposal.

RESPONSE:
HERE

EPA is in the process of determining whether silver should remain on the TC list at 40 CFR 261.24 (b) Table 1, or whether the current TC level should be altered. In addition, EPA continues its work on the Hazardous Waste Identification Rule (HWIR) to establish risk-based exit levels for hazardous wastes. The Agency is not yet able to establish a nationally-applicable risk-based level for silver that fulfills the statutory charge of minimizing threats of hazardous waste to human health and the environment. Nor is the Agency prepared to say that the TC level is one which minimizes threats, given the remaining questions about risks from silver.

The process of silver risks is technically complex; EPA is currently modeling the ecological and human health effects of exposure to silver through numerous pathways. Several issues remain unresolved concerning human health and environmental risk. The Agency recently acquired studies indicating that silver may be connected to central nervous system and other non-cancer effects in humans. (Rungby, J. and G. Danscher, 1984, Hypoactivity in silver exposed rats, Acta. Pharmacol. Toxicol. 55: 398-401, as cited in ATSDR, 1990; Shavlovski et al, 1995, Embryotoxicity of silver ions is diminished by ceruloplasm--further evidence for its role in the transport of copper, Biometals; Ohbo, Y., H. Fukuzako, K. Takeuchi, and M. Takigawa, 1996, Argyria and convulsive siezures caused by ingestion of silver in a patient with schizophrenia, Psychiatry and Clinical Neurosciences. 50:89-90; and Wetshofen, M., and H. Schafer, 1986, Generalized argyrosis in man: neurotological, ultrastructural, and X-ray microanalytical findings,. Arch. Otorhinolaryngol., 243:260-264.) The draft Reference Dose for these effects have not been finalized by the Agency for use in risk assessments. (A Reference Dose is a benchmark level for chronic toxicity that is protective of human health.) In addition to potential adverse human health effects, uncertainties and concerns also remain for potential adverse environmental effects. Although EPA removed the Maximum Contaminant Level (MCL) for silver in drinking water, the Ambient Water Quality Criteria remain in effect due to potential aquatic toxicity. Further areas of uncertainty are how silver speciates after release (i.e. which valence state of silver would be present). The issue could be important since potential toxic effects differ depending on the species of silver present. In short, EPA's work on understanding risks from disposal of silver-containing hazardous wastes is ongoing, and it would be premature to establish a treatment standard based on risk at this time.

In the absence of such "minimize threat" levels for hazardous constituents, the Agency establishes standards based on Best Demonstrated Available Technology (BDAT). (See full explanation in the preamble of the Phase II Final LDR rule at 59 FR 47986, September 19, 1994.) The fact that the UTS for nonwastewater forms of silver is being lowered (made more stringent) from the existing level of 0.30mg/L to 0.14 mg/L is due to new data on what treatment technology achieves. As explained in the summary of this preamble section (Section III: Revised Land Disposal Restrictions for Metal Constituents in All Hazardous Wastes, Including Toxic Characteristic Metals), technology-based standards are the best assurance that threat is minimized, given the uncertainty as to the level at which threats of hazardous waste disposal are minimized.

EPA expects that the new treatment standard for silver wastes will have little, if any impact on the regulated community. As stated by commenters, high-silver wastes are generally recycled due to their economic value and are covered by the special streamlined standards for recyclable materials utilized for precious metal recovery at 40 CFR Part 266.70 Subpart F. Moreover, the Regulatory Impact Analysis for this rule estimated that the new, more stringent UTS levels for metal constituents, including silver, will not increase compliance costs. This is because the current treatment methods already achieve the new standard of 0.11 in silver *nonwastewaters*. (Achievability of the UTS for TC silver *wastewaters* is not an issue; EPA received no comments nor data on its proposal to apply the existing UTS of 0.43 mg/L.)

Thus, the Agency is promulgating the *wastewater* standard of 0.43 mg/L as proposed and the *nonwastewater* standard of 0.14 mg/L. If EPA changes the status of silver on the TC list, EPA will revisit the treatment standards for silver wastes.

2P4P-L0001 Photographic & Imaging Manufacturers Association, Inc.

We join with The Silver Council's position as expertly set forth in their letter to you under date of August 1, 1997. We believe EPA has more than sufficient information to promulgate a risk-based treatment standard for silver. We trust that your office will thoroughly review the available data on the fate and effect of silver and take advantage of the Silver Council's offer to provide copies of any of the studies set forth in their bibliography.

RESPONSE:

While EPA has acquired data on the risks from silver, and undertaken analyses of it, the work is not yet complete. EPA is in the process of determining whether silver should remain on the TC list at 40 CFR 261.24 (b) Table 1, or whether the current TC level should be altered. In addition, EPA continues its work on the Hazardous Waste Identification Rule (HWIR) to establish risk-based exit levels for hazardous wastes. The Agency is not yet able to establish a nationally-applicable risk-based level for silver that fulfills the statutory charge of minimizing threats of hazardous waste to human health and the environment.

The process of establishing such a level is technically complex; EPA is currently modeling the ecological and human health effects of exposure to silver through numerous pathways. Several issues remain unresolved concerning human health and environmental risk. The Agency recently acquired studies indicating that silver may be connected to central nervous system and other non-cancer effects in humans. (Rungby, J. and G. Danscher, 1984, Hypoactivity in silver exposed rats, Acta. Pharmacol. Toxicol. 55: 398-401, as cited in ATSDR, 1990; Shavlovski et al, 1995, Embryotoxicity of silver ions is diminished by ceruloplasm--further evidence for its role in the transport of copper, Biometals; Ohbo, Y., H. Fukuzako, K. Takeuchi, and M. Takigawa, 1996, Argyria and convulsive siezures caused by ingestion of silver in a patient with schizophrenia, Psychiatry and Clinical Neurosciences. 50:89-90; and Wetshofen, M., and H. Schafer, 1986, Generalized argyrosis in man: neurotological, ultrastructural, and X-ray microanalytical findings,. Arch. Otorhinolaryngol., 243:260-264.) The draft Reference Dose for these effects have not been finalized by the Agency for use in risk assessments. (A Reference Dose is a benchmark level for chronic toxicity that is protective of human health.) In addition to potential adverse human health effects, uncertainties and concerns also remain for potential adverse environmental effects. Although EPA removed the Maximum Contaminant Level (MCL) for silver in drinking water, the Ambient Water Quality Criteria remain in effect due to potential aquatic toxicity. Further areas of uncertainty are how silver speciates after release (i.e. which valence state of silver would be present). The issue could be important since potential toxic effects differ depending on the species of silver present. In short, EPA's work on understanding risks from disposal of silver-containing hazardous wastes is ongoing, and it would be premature to establish a treatment standard based on risk at this time.

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All Hazardous Wastes, Including Toxic Characteristic Metals), technology-based standards are the best assurance that threat is minimized, given the uncertainty as to the level at which threats of hazardous waste disposal are minimized.

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Thus, the Agency is promulgating the *wastewater* standard of 0.43 mg/L as proposed and the *nonwastewater* standard of 0.14 mg/L. If EPA changes the status of silver on the TC list, EPA will revisit the treatment standards for silver wastes.

1. 2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

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.

C. The Proposed Standard for Silver

EPA has proposed to reduce the UTS/BDAT standard for silver from 0.30 mg/L to 0.11 mg/L, based upon 1994 grab sample data for INMETCO's slag.[fn9: 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 26046/3.] Various commenters have suggested that, because human health risks from silver are low, silver should be removed from the list of Toxicity Characteristic ("TC") metals or that, at the very least, the UTS/BDAT standard for silver should be set at the TC level of 5.0 mg/L. See 62 Fed. Reg. at 26046/3. We believe these suggestions are well founded. EPA itself has recognized that silver does not present a significant human health risk and, accordingly, deleted the national primary drinking water standard maximum contaminant level for silver in 1991. See 56 Fed. Reg. 3526, 3573 (January 30, 1991). For similar reasons, the Agency currently is considering raising the TC level for silver or doing away with it altogether. See Inside EPA, July 11, 1997, p. 11. In these circumstances, we believe EPA should raise the UTS/BDAT standard for silver to the current TC level of 5.0 mg/L. Even if EPA is reluctant to do so at this time, we see no good reason to lower the UTS/BDAT standard for silver below the existing level of 0.30 mg/L, a level that clearly can be said to "substantially diminish the toxicity of [silver-containing] waste" within the meaning of section 3004(m) of RCRA. If the standard for silver is to be changed, however, it should not be reduced to 0.11 mg/L.

As noted above, the proposed standard is based on 1994 grab sample data from INMETCO. We now have more recent grab sample data for levels of silver in TCLP extract from INMETCO's slag. Those data, representing 74 grab samples collected during the months of January through May 1997, are presented in Attachment 1 to these Comments, along with the 40 data points from 1994 that EPA used to calculate the proposed UTS/BDAT standard for silver of 0.11 mg/L. Attachment 2 to these Comments shows the results of applying EPA's "C_{99}" BDAT methodology to the combined set of 114 data points from Attachment 1. The "C_{99}" treatment standard value for silver resulting from this calculation is 0.19 mg/L (with a variability factor of 4.53). While we believe the UTS/BDAT standard for silver should be increased to the TC level of 5.0 mg/L or left unchanged, we submit that if it is adjusted to reflect INMETCO's grab sample data, the value of 0.19 mg/L calculated in Attachment 2 would be a more appropriate UTS/BDAT standard than the value of 0.11

mg/L proposed by EPA.

For the reasons discussed above, the proposed UTS/BDAT nonwastewater standard for silver should be adjusted upward to a level of at least 0.19 mg/L (assuming there is any reason to set the standard for silver below the TC level of 5.0 mg/L, which we doubt), and EPA should give further consideration to whether the proposed standard of 0.02 mg/L for beryllium can be met by stabilization technologies when higher beryllium content wastes are being treated.

Response:

The Agency thanks the commenter for providing additional grab sample data for silver. The Agency has identified a technical error in the BDAT determination of the proposed silver standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a "Z-score" outlier test. The Agency corrected this error and re-calculated the silver treatment standard and is promulgating the UTS for silver at 0.14 mg/l TCLP. In addition, the Agency also incorporated the new data submitted by the commenter (the new data came from the same HTMR unit as the old data) in determining the new UTS for silver. The new standard is less stringent than the proposed standard, and the Agency believes that this standard is readily achievable by commercial treatment technologies such as stabilization and HTMR. Based on data submitted in response to the proposal the Agency received additional data from INMETCO on its HTMR on silver -containing wastes. With the previous data, used to calculate the treatment standard in the Second Supplemental, the Agency has 114 data points on silver treatment. The range of the treated values were 0.0100 mg/L TCLP to 0.5000 mg/L TCLP, with a mean value of 0.0419 mg/L TCLP. With the application of the BDAT methodology for calculating the treatment standard, three outliers were identified as a result of the Z-score test (0.5, 0.29,0.41). The resultant data, 111 data points, were used to calculate the treatment standard of 0.14 mg/L TCLP and all met the treatment standard of 0.14 mg/L TCLP. BCI/ABR also submitted data on the treatment of silver in response to the Second Supplemental, 106 data points were submitted all of which meet the treatment standard; the minimum silver concentration in the treated waste was 0.0100 mg/L TCLP, while the maximum value was 0.1300 mg/L TCLP.

At this time, the Agency is not able to establish a risk-based level for silver. The Agency is currently examining the human and ecological risks of silver to determine whether changes in silver's status as a TC metal is warranted. Due to the uncertainty about the degree of risk to aquatic life, EPA is not able to establish a nationally- applicable minimized threat level for silver. Moreover, silver wastes are generally recycled due to their economic value and are covered by the special streamlined standards for recyclable material utilized for precious metal recovery at 40 CFR Part 266.70 Subpart F. Little or no waste will be affected by the new D011 standard, and the Agency estimates no costs will be incurred as a result of this rule. Thus, the Agency is promulgating the nonwastewater standard of 0.14 mg/L TCLP.

2. 2P4P-00016 Chemical Manufacturer's Association

The Chemical Manufacturer's Association (CMA) is pleased to have the opportunity to comment on EPA's proposed rule relating to its Phase IV revisions to the land disposal restrictions and Bevill exclusion issues. (62 F.R. 26041, May 12, 1997). CMA represents over 90% of the productive capacity for basic industrial chemicals in the United States. Incidental to the manufacture of these chemicals, CMA member companies generate and manage hazardous wastes that are subject to the land disposal restrictions enacted in the Resource Conservation and Recovery Act (RCRA). CMA has previously commented on virtually all aspects of the land disposal restrictions (LDR) program. In addition, some of our members manage Bevill exempt material.

The attached comments address specific aspects of the Agency's proposal which affect our members. In general, CMA supports EPA's changes to the LDR treatment variance provisions, conditional exclusions from the definition of solid waste, and the use of the "significantly affected" test for Bevill-exempt fossil fuel combustion waste and cement kiln dust.

However, CMA requests that EPA retain the current land disposal restriction treatment levels for silver because they already minimize risk. We also urge EPA to abandon its proposed "immediate reuse" test for distinguishing between solid waste since it is neither authorized by the statute and does not comport with good industrial practices.

1. EXECUTIVE SUMMARY

The Chemical Manufacturer's Association (CMA) appreciates the opportunity to comment on the United States Environmental Protection Agency (EPA) proposed Phase IV Land Disposal Restrictions (LDR) rule and Bevill exclusion issues. (62 F.R. 26041, May 12,1997). CMA is a nonprofit trade association whose member companies represent more than 90% of the productive capacity for basic industrial chemicals in the United States. Incidental to the manufacture of these chemicals, CMA member companies generate and manage hazardous wastes that are subject to the land disposal restrictions treatment requirements and are affected by this rule. In addition, CMA members manage Bevill exempt waste.

In its proposal, EPA has asked for comment on (1) revised Universal Treatment Standards for twelve metal constituents, (2) a conditional exclusion for Bevill-exempt secondary materials, (3) revised policies regarding the co-processing of materials with Bevill-exempt waste, and (4) a clarified policy on EPA- approved variances from hazardous waste treatment.

In our comments we:

- Urge EPA to not lower the LDR treatment standard for silver because the proposed technology-based level is beyond the point where threats are further minimized.
- Urge EPA to not adopt an "immediate reuse" test for delineating which secondary materials are excluded from the definition of solid waste. The immediate reuse test is not authorized by the statute and has no legitimate role in defining what is a solid waste.
- Support the use of the "significantly affected" test for fossil fuel combustion waste and cement kiln dust, while opposing it as a mechanism for determining the regulatory status of mining wastes. If EPA adopts the test, however, we believe that it should be *applied only* where Bevill-exempt mining wastes are co-processed with either hazardous secondary materials or hazardous waste.
- Finally, we support EPA's proposed changes to the LDR treatment variance provisions. CMA applauds the Agency for proposing to correct the language in 40 C.F.R § 268.44(a) and believes this clarification will reduce the possibility of different interpretations by EPA Regions and States as they review treatment standard variance petitions.

Response:

The Agency disagrees with the commenter that the technology-based standards are beyond the point where threats are further minimized. The Agency notes that the LDR program is based on the premise that regulated constituents are to be treated using the BDAT to minimize threats to human health and the environment, unless it can be determined with reasonable certainty (see section 3004 (d) (1)) that short-term and long-term threats can be minimized at a higher level. Thus, the root requirement of the LDR program is that the treatment of hazardous wastes is to "substantially reduce the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized," RCRA 3004(m)(1). To date, in the absence of a reliable means of quantifying when threats are minimized, EPA has implemented this requirement to reflect BDAT technologies, in order to assure substantial reductions of a waste's toxicity and mobility before land disposal. See 56FR6641 (Feb 26, 1990). The Agency believes that these technology-based standards provide treatment that minimizes threat to human health and the environment.

In addition, the Agency has identified a technical error in the BDAT determination of the proposed silver standard. In applying the BDAT methodology and calculating the treatment standard, EPA failed to perform a "Z-score" outlier test. The Agency corrected this error and re-calculated the silver treatment standard and is promulgating the UTS for silver at 0.14 mg/l TCLP. In addition, the Agency also incorporated the grab sampling new data submitted by INMETCO (the new data came from the same HTMR unit as the old data) in determining the new UTS for silver. The new standard is less stringent than the proposed standard, and the Agency believes that this standard is readily achievable by commercial treatment technologies such as stabilization and HTMR. In addition to the data used in the calculation of the treatment standard, the Agency received additional data in response to the Second Supplemental, this data from Battery Council International/Association of Battery

Recyclers consisted of 106 data points on silver, all of which met the UTS for silver. In addition, data collected by the Agency showed that stabilization would be able to support a much lower treatment standard of 0.0084 mg/L TCLP. In addition, information submitted by the Environmental Treatment Council indicated that their data could support a treatment standard of 0.10 mg/L TCLP for silver nonwastewaters.

3. 2P4P-00017 Battery Council International (BCI) and Association of Battery Recyclers (ABR)

I. THE PROPOSED LEAD, SILVER, ANTIMONY, BERYLLIUM, AND THALLIUM TREATMENT STANDARDS ARE NOT ACHIEVABLE WITH BDAT

A concentration-based treatment standard must be set at a performance level achievable by application of the Best Demonstrated Available Technology (BDAT).[fn 2: 51 Fed. Reg. 40,572, 40,578 (1986); *Hazardous Waste Treatment Council v. United States EPA*, 886 F.2d 355, 364-65 (D.C. Cir. 1989), *cert. denied,* 498 U.S. 849 (1990).] To identify BDAT for the treatment of a particular waste, EPA has recognized that it must consider three factors: whether the technology is "best demonstrated;" whether it is "available;" and whether it is the "best applicable" technology.[fn 3: 55 Fed. Reg. 22,536.]

A treatment technology is considered to be "demonstrated" when full-scale treatment operations are currently being used to treat that waste.[fn4: *Id.*] To be considered "available," the technology must not be proprietary or a patented process that cannot be purchased or licensed from the proprietor. (I.e., it must be "commercially available.") It also must substantially diminish the toxicity of the waste or reduce the likelihood of migration of hazardous constituents from the waste.[fn5: *Id.*] To be "applicable," a technology must theoretically be able to treat the waste.[fn6: *Id.*]

The proposed treatment standards do not meet these criteria. For one thing, the high temperature metals recovery technologies (HTMR) to which EPA points as capable of meeting its proposed standards are not BDAT. First, they are not demonstrably capable of handling D008 wastes. They handle D006 and K061 wastes, the chemistry of which is vastly different from D008. Second, they are not commercially available.

BDAT in fact is the stabilization process employed by existing secondary smelters. However, data submitted to EPA by BCI and ABR on November 27,1995 (BCI's comments are attached as "Exhibit 1") and a new database (attached as "Exhibit 2") show that no facility in the secondary lead industry can meet EPA's proposed treatment standards for lead, silver, antimony, beryllium, and thallium. Thus, EPA has not demonstrated that stabilization technologies are capable of meeting its proposed treatment standards. Instead, the data supports setting standards at the levels set forth above, in the Summary section of these comments.

A. HTMR Technologies to Meet the Proposed D008 Nonwastewater Treatment Standards are Neither Demonstrated nor Available

The HTMR technologies asserted by EPA as capable of treating D008 wastes to its proposed treatment standards are not demonstrated. The chemistry of D008 wastes is vastly different from the chemistries of D006 and K061 wastes. But EPA reviewed and relied upon only D006 and K061 treatment data in concluding that HTMR technologies could meet the treatment standards D006 wastes include paint, plating sludges, wastewater treatment sludges, and a wide variety of other waste materials derived from the manufacture and reclamation of nickel-cadmium batteries and other cadmium-related products. D006 wastes typically include various concentrations of cadmium, nickel, zinc, and chromium. Waste streams from particular facilities tend to be relatively consistent in chemical makeup. D006 wastes rarely contain antimony, arsenic, and selenium, which are abundant in D008 wastes.

K061 wastes are derived from the steel making process. The chemical constituents of K061 are iron, zinc, chromium, nickel, and lead oxides. K061 wastes also typically contain very little antimony, arsenic, and selenium. As with D006 waste streams at particular facilities tend to have reasonably consistent chemical characteristics.

In contrast, the D008 wastes generated from lead-acid battery recycling operations and from the cleanup of contaminated soils and debris tend to be massive, solid, and extremely variable. Their chemical and physical characteristics can vary significantly depending upon individual processes and the feedstocks used to produce them. They may include substantial quantities of calcium, sodium, and other alkaline earth oxides as well as sulfur, selenium, antimony, and arsenic. These elements are essentially non-existent in D006 and K061 wastes.

The chemical differences between D008 wastes and D006 and K061 wastes render the HTMR process less effective in treating D008 wastes to EPA*s proposed treatment levels. Moreover, many D008 wastes (e.g., secondary smelter slags) are already the residues of an HTMR process. They thus contain significant quantities of silica and iron oxides which further impedes the ability of additional HTMR processes to remove elements such as lead, antimony, and selenium.

In addition, the HTMR technology used by EPA to determine the BDAT (known as the Horsehead Resource Development Company Inc.'s Waelz kiln series process and the INMETCO HTMR process) are not "commercially available" to treat D008 nonwastewaters. Both processes are patented and very expensive. Neither has been built into any of the lead battery industry's operations or otherwise applied to battery-reclamation slags. Moreover, no facility operating either process is permitted to accept and store D008 wastes.

D. The Proper Treatment Standards

Data collected and analyzed by BCI and ABR establishes that the proper treatment standards should be the following:

Barium 21	mg/l
Cadmium 0.20	mg/l

Chromium 0.85 mg/l
Lead 9.46 mg/l
Selenium 5.7 mg/l
Silver 0.22 mg/l
Antimony 2.98 mg/l
Beryllium 0.13 mg/l
Nickel 13.6 mg/l
Thallium 0.79 mg/l
Vanadium 1.6 mg/l
Zinc 4.3 mg/l

As has been amply discussed, EPA's proposed treatment standards for lead, silver, antimony, beryllium, and thallium should not be set below the levels identified above.

Response:

The Agency notes that the commenter may be correct in stating that the chemistry of D008 waste is different from the chemistries of D006 and K061 wastes. However, the important issue here is that the many of the wastes which we used to evaluate and determine the treatment standard were particularly difficult to treat due to the high total and leachable levels of metals, pH variations, and the presence of multiple metal waste streams. With respect to silver, and all other metal constituents, the Agency determined that there were two technologies that were BDAT, HTMR and stabilization. The Agency collected silver treatment data from both these technologies and determined treatment standards for both. In order to allow for maximum flexibility in achieving the treatment standard, the Agency chose the higher of the two standards. By doing this the Agency feels that it has provided for process variability, waste variability and detection limit difficulties. The Agency believes that this approach is consistent with the intent of UTS and derives limits achievable by both HTMR and stabilization technologies. See the following documents, “Development of Metal Treatment Standards”, “Calculation of Universal Treatment Standard for HTMR Residues Using Data Submitted by Horseheaad Research Development Co. and INMETCO” ; and “Final Revised Calculation of Treatment Standards Using Data Obtained From Rollins Environmental’s Highway 36 Commercial Waste Treatment Facility and GNB’s Frisco, Texas Waste Treatment Facility”. In addition, the Agency made an evaluation as to whether D006 and K061 wastes were as diffcult to treat as D008. For this determination, EPA examines the waste characteristics that affect performance such as (I) the concentrations of undesirable volatile metals, (ii) the metal constituent boiling points, and (iii) the thermal conductivity of the waste. In addition, EPA also examines the design and operating parameters of the technology. Based on the evaluation of these waste characteristics that affect performance, the Agency determined that well operated HTMR facilities can meet the treatment standards for D008 wastes. See “Determination of Equivalent Treatment”.

The Agency notes that HTMR technology is currently being implemented on a full-scale basis and is being used to treat TC metal wastes and therefore is considered a "demonstrated" technology. The Agency has conducted extensive research on commercially demonstrated and available metal recovery technologies and developed detailed profiles of metal recovery technologies applicable for metal-bearing wastes (See the "profiles of metal recovery technologies for mineral processing and other metal-bearing hazardous wastes," U.S. EPA, April 30, 1997). Also, the treatment performance data obtained and reviewed by the Agency from HTMR facilities indicate that the TC metal-bearing wastes can be treated to the UTS. In addition, the Agency notes that the mere existence of the secondary lead smelting industry itself proves the applicability of HTMR to D008 wastes.

EPA also recognizes that HTMR may be the best technology for all TC metal wastes. For the same reason, the Agency is establishing a concentration-based standard rather than requiring a specific technology. To compile further evidence regarding the treatability of TC metal wastes, including D008 wastes, to the UTS, the Agency conducted site visits to commercial hazardous waste treatment facilities and collected additional stabilization and HTMR treatment performance data that better represent the diversity of metal wastes than those previously used. The treatment performance data (based on grab samples) represented 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, mineral processing wastes, baghouse dust, soils, pot solids, recycling by-products, and sludge. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony. The Agency also collected data on stabilization of silver wastes with untreated concentrations ranging from 0.0046 to 5.7 mg/L TCLP and treated concentrations ranging from 0.0046 to 0.0577 mg/L TCLP. (All below the final standard of 0.11). The Agency compared the treatment standards developed based on stabilization and HTMR and selected the highest (less stringent) standard for each metal to establish the UTS, thus, allowing for process variability and detection limit difficulties.

In addition, the Agency has identified a technical error in the BDAT determination of the proposed silver standard. In applying the BDAT methodology and calculating the treatment standard, EPA failed to perform a "Z-score" outlier test. The Agency corrected this error and re-calculated the silver treatment standard and is promulgating the UTS for silver at 0.14 mg/l TCLP. In addition, the Agency also incorporated the grab sampling new data submitted by INMETCO (the new data came from the same HTMR unit as the old data) in determining the new UTS for silver. The new standard is less stringent than the proposed standard, and the Agency believes that this standard is readily achievable by commercial treatment technologies such as stabilization and HTMR. In addition to the data used in the calculation of the treatment standard, the Agency received additional data in response to the Second Supplemental, this data was also from Battery Council International/Association of Battery Recyclers and consisted of 106 data points on silver, all of which met the UTS for silver. In addition, data collected by the Agency showed that stabilization would be able to support a much lower treatment standard of 0.0084 mg/L TCLP. In addition, information submitted by the Environmental Treatment Council indicated that their data could support a treatment standard of 0.10 mg/L TCLP for silver nonwastewaters.

With respect to the specific data submitted with this comment, the Agency reviewed the data and found the data to be seriously lacking in form and quality assurance/quality control prerequisites. Specifically, the data submitted to the Agency were: (1) based on composite samples rather than grab samples, the latter being the only type used to develop BDAT treatment standards; (2) lacking in any quality assurance/quality control documentation; and (3) not accompanied with specific treatment information, or any indication that performance of the treatment process was in fact optimized. Therefore, the Agency was unable to use the data for developing the BDAT treatment standards. However, based on new data submitted by the commenter in response to the Second Supplemental, these data indicated that based on the 106 data points for silver, all could meet the final UTS of 0.14 mg/L TCLP.

The new standard is less stringent than the proposed standard, and the Agency believes that this standard is readily achievable by commercial treatment technologies such as stabilization and HTMR. See discussion above.

The Agency also would like to note that if a particular waste possesses unique properties that make it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

4. 2P4P-00018 Collier, Shannon, Rill & Scott, PLLC for Specialty Steel Industry of North America (SSINA)

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 II, 1997, p. I 1. EPA should either raise the UTS level for silver to the current TC level (5.0 mg/1) or retain the current level of 0.3 mg/l.

Response:

The Agency notes that the BDAT treatment standard determination for silver is independent of other programs and initiatives within the Agency. Notwithstanding ongoing work to quantify risk posed by exposure to silver (as well as most of the other hazardous constituents), the Agency is not yet able to reliably quantify levels which short and long-term threats to human health and the environment are minimized. The determination requires developing a multi-pathway methodology that has proven to be of exceptional difficulty, and on which there currently is nothing like consensus. The Agency finds, for the purpose of this rule, that none of the treatment standards are established below levels at which pose threats to human health and the environment. Unless the Agency determines risk-based concentration levels that achieve the minimized threat requirement for a particular waste stream, EPA believes that BDAT treatment, as reflected in the UTS, best fulfills the statutory charge of section 3004(m).

In addition, the Agency has identified a technical error in the BDAT determination of the proposed silver standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. The Agency corrected this error and re-calculated the silver treatment standard and is promulgating the UTS for silver at 0.14 mg/l TCLP. In addition, the Agency also incorporated the grab sampling new data submitted by INMETCO (the new data came from the same HTMR unit as the old data) in determining the new UTS for silver. The new standard is less stringent than the proposed standard, and the Agency believes that this standard is readily achievable by commercial treatment technologies such as stabilization and HTMR.

5. 2P4P-00045 The Silver Council

The Silver Council works with regulatory agencies and the regulated community to promote the development of scientifically based regulations that allow for environmentally sound and cost-effective recovery of silver from photographic-processing operations. In the Phase IV Notice of May 10, 1996 (61 FR 21418), the Agency seemed to be moving in that direction, taking silver toxicity data into consideration in developing treatment standards for D011 wastes. In discussing the silver treatment standards in that notice, EPA stated "concern about aquatic toxicity remains," but the Agency did not request aquatic toxicity data on silver at that time. The Silver Council has provided extensive data on silver in aquatic environments to the Hazardous Waste Identification Division of the Office of Solid Waste (OSW) for use in EPA's ongoing investigation of the TC regulation of silver. Now, one year after EPA's May 1996 notice, the Agency still contends it has no "definitive risk information" on silver and, therefore, has proposed technology-based treatment standards for silver-containing wastes. As part of today's submittal, The Silver Council is providing the Waste Treatment Branch with information on current scientific research on the fate and effects of silver in aquatic systems. Upon reviewing this information, which is summarized below, the Agency should be able to promulgate a risk-based treatment standard for silver, rather than defaulting to technology-based standards such as those proposed in the May 12, 1997 notice.

Availability and Effects of Silver in Aquatic Systems

It is well documented that the free silver ion (Ag^+) is highly toxic to aquatic organisms in laboratory tests. Such studies have compared the toxicity of the silver ion, as silver nitrate (AgNO3), with that of silver compounds commonly found in the environment. Silver sulfide, silver chloride, and silver-thiosulfate complex (the form found in photo-processing wastes) were found to be several orders of magnitude less toxic than the free silver ion. In one study, silver sulfide was found to be 15,000 times less acutely toxic and silver-thiosulfate complex was 17,500 times less acutely toxic to fathead minnows than ionic silver (LeBlanc et al., 1984). Silver has been shown to bind readily to organic solids and ligands in the aquatic environment, forming stable, insoluble compounds, resulting in the greatly reduced toxicity of silver in natural systems. (See Petering, 1976; Cooley et al., 1988; Cooper & Jolly, 1970.)

A recent study demonstrated that silver compounds and complexes are orders of magnitude less toxic to freshwater fish than ionic silver (as $AgNO^3$). In one study, 96-hour and 168-hour LC_{50} values for rainbow trout of silver-thiosulfate complex $(AgS_2 0_3)_n$ were 13,000 and 15,000 times greater (i.e., less toxic) than comparable LC_{50} values for silver nitrate: 161,000 and 137,000 ug/L, respectively, versus 11.7 and 9.1 ug/L. The experimenters were unable to determine the LC_{50} for silver chloride because of its low solubility. No mortality was observed at the highest test concentration, 100,000 ug of silver per liter (Hogstrand *et al.*, 1996).

Complete citations for the studies described above, along with numerous other studies on the environmental effects of silver, are contained in the annotated bibliography included as an attachment to these comments. We hope that EPA, and specifically, the Waste Treatment Branch, will find the results of this research useful in supporting the development of risk-based treatment standards for silver-bearing wastes under the LDR program.

Response:

The Agency appreciates the information provided by the commenter on the effects of silver in aquatic systems. However, the Agency reminds the commenter that the LDR program is based on the premise that regulated constituents are to be treated using the BDAT to minimize threats to human health and the environment. The Agency has developed technology-based standards for silver-bearing wastes under the LDR program. The root requirement of the LDR program is that the treatment of hazardous wastes is to "substantially reduce the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized." RCRA 3004(m)(1). To date, in the absence of a reliable means of quantifying when threats are minimized, EPA has implemented this requirement to reflect BDAT technologies, in order to assure substantial reductions of a waste's toxicity and mobility before land disposal. See 56FR6641 (Feb 26, 1990). The Agency believes that these technology-based standards provide treatment that minimizes threat to human health and the environment. It is also noted that EPA is conducting a multi pathway ecological risk study to help determine whether changes in the regulatory status of silver are needed. Also, EPA continues to revise and evaluate the models associated with the HWIR proposal. EPA believes that it would be premature to make revisions to the standards based on the draft HWIR models. Until the completion of these studies, silver will remain a TC metal, and D011 waste must meet the established BDAT treatment standard.

6. 2P4P-00057 Photo Marketing Association International

Photo Marketing Association International is submitting comments on the supplemental proposed rule to the Phase IV Land Disposal Restrictions outlined in the May 12, 1997 Federal Register (62 FR 26041). These comments are provided on behalf of our 17,000 member facilities.

Photo Marketing Association International (PMA) is the non-profit trade association for photo imaging retailers and processors worldwide PMA principle member classes of trade include photo/video retailers, retail mini labs, wholesale labs, professional labs and photo equipment repair firms. Other members include school photographers, teachers of photography at all levels, photo studios, and corporate, university, and government processing facilities.

Waste Stream Information:

In the photo processing industry, the primary sources of potentially land-disposed wastes containing silver are sensitized goods, i.e. discarded film, negatives and print papers. TCLP testing of sensitized goods shows that there is not a significant release of silver from these wastes if they are disposed in landfills (see attached document). The other source for land disposed silver is POTW sludges. Over 99% of photo processors discharge wastes to POTWs after silver recovery and POTW sludges are exempted from RCRA regulation. To reiterate, there is not a significant volume of silver-containing wastes being land disposed at this time and additional treatment standards are unnecessary.

TCLP Results for Silver in Assorted Films and Papers

The following manufacturers of photographic films and papers ran TCLP tests on some of their products, yielding these results.

AGFA DIVISION, BAYER CORPORATION

Unprocessed graphic arts films:	<0.03 ppm
Photographic and graphic arts papers: (black and white)	<0.03 ppm
Unprocessed industrial x-ray film:	<0.03 ppm

FUJI PHOTO FILM U.S.A

Motion picture film (processed and unprocessed):	<0.02 ppm

Unprocessed and professional film: <0.02 ppm
Processed professional film: <0.02 ppm
Professional NHG paper: <0.02 ppm
Microfilm negative
(processed and unprocessed): <0.02 ppm

Graphic arts film
(processed and unprocessed): <0.02 ppm

<u>KONICA U.S.A.</u>
Unprocessed color photographic paper: 0.044 ppm
Processed color Photographic paper: 0.00046 ppm
<u>EASTMAN-.KODAK COMPANY</u>
Photographic films: < 0.02 ppm

Photographic papers: < 0.03 ppm

Kodak also conducted TCLP testing on samples of silver flake resulting from electrolytic recovery and samples of sludge from a chemical recovery cartridge (CRC). The silver flake samples leached silver at 0.04 ppm and silver as not detectable in the CRC sludge, demonstrating immobility and low leaching of silver.

Response:

The Agency appreciates the data provided by the commenter on silver TCLP results. The silver TCLP data provided by the commenter for 13 samples are well below the treatment standard of 0.14 mg/L TCLP for silver. These data clearly indicate the treatability of silver to the UTS levels, however, the data also indicates that the waste would not be hazardous as generated because the TC for silver is 5.0 mg/L TCLP. With respect to the comment on the necessity of additional treatment standard for silver, the Agency notes that, EPA is conducting a multipathway ecological risk study to help determine whether changes in the regulatory status of silver are needed. Until the completion of this study, silver will remain a TC metal, and D011 waste must meet the established BDAT treatment standard.

In addition, the Agency has identified a technical error in the BDAT determination of the proposed silver standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. The Agency corrected this error and re-calculated the silver treatment standard and is promulgating the UTS for silver at 0.14 mg/l TCLP. In addition, the Agency also incorporated the grab sampling new data submitted by INMETCO (the new data came from the same HTMR unit as the old data) in determining the new UTS for silver. The new standard is less stringent than the proposed standard, and the Agency believes that this standard is readily achievable by commercial treatment technologies such as stabilization and HTMR.

7. 2P4P-00074 New York State Department of Environmental Conservation

As an example, DEC would disagree with the lowering of the Universal Treatment Standard (UTS) for silver. Most available data would indicate that silver has a very stringent proposed UTS (0.11 mg/1) in relationship to health-based risks and environmental mobility. EPA also believes that most silver wastes are recycled and, therefore, are not land disposed, and yet proposes to lower the UTS level, based on technology alone. Because available technology may be able to achieve a particular level of treatment, this should not dictate whether or not a standard is needed to protect human health and the environment. DEC does not believe that statutory mandates are best served by such overregulation. The current UTS for nonwastewater silver wastes (0.30 mg/l by TCLP) is sufficiently protective in light of economic incentives for recycling silver and statistically established low toxicity.

Response:

The Agency reminds the commenter that the LDR program is based on the premise that regulated constituents are to be treated using the BDAT to minimize threats to human health and the environment. The Agency has developed technology-based standards for silver-bearing wastes under the LDR program. The root requirement of the LDR program is that treatment of hazardous wastes is to "substantially reduce the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized." RCRA 3004(m)(1). To date, in the absence of a reliable means of quantifying when threats are minimized, EPA has implemented this requirement to reflect BDAT technologies, in order to assure substantial reductions of a waste's toxicity and mobility before land disposal. See 56FR6641 (Feb 26, 1990). The Agency believes these technology-based standards provide treatment that minimizes threat to human health and the environment. It is also noted that EPA is conducting a multipathway ecological risk study to help determine whether changes in the regulatory status of silver are needed. In addition, EPA continues to revise and evaluate the models associated with the HWIR proposal. EPA believes that it would be premature to make revisions to the standards based on the draft HWIR models. Until the completion of these studies, silver will remain a TC metal, and D011 waste must meet the established BDAT treatment standard.

In addition, the Agency has identified a technical error in the BDAT determination of the proposed silver standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a "Z-score" outlier test. The Agency corrected this error and re-calculated the silver treatment standard and is promulgating the UTS for silver at 0.14 mg/l TCLP. In addition, the Agency also incorporated the grab sampling new data submitted by INMETCO (the new data came from the same HTMR unit as the old data) in determining the new UTS for silver. The new standard is less stringent than the proposed standard, and the Agency believes that this standard is readily achievable by commercial treatment technologies such as stabilization and HTMR.

8. 2P4P-00086 DuPont

DuPont is pleased to submit 1 original, 2 paper and one computer disk ASCII file copy of our comments on the Environmental Protection Agency's supplemental proposed rule on Phase IV of the land disposal restrictions related to treatment Standards for Metal Wastes and Mineral Processing Wastes, Mineral Processing and Bevill Exclusion Issues, and the Use of Hazardous Waste as Fill published in the Federal Register on May 12, 1997. DuPont is a generator and treater of hazardous wastes which are potentially impacted by this rulemaking, once final. DuPont has participated in the development of the comments submitted by the Chemical Manufacturer's Association and supports those comments. DuPont has also participated, through it's subsidiary Conoco, in the development of comments submitted by the American Petroleum Institute and we also support those comments. If there are questions regarding any of the information provided in this package, please call me at 302-774-8056. DuPont appreciates your consideration of these comments.

8. DuPONT BELIEVES THAT THE PROPOSED REVISION TO THE SILVER UTS LEVEL IS UNWARRANTED

As noted by the Agency in this proposed rulemaking, questions remain as to the need to retain silver as a TC metal based on its low toxicity. In light of that waste classification activity within the Agency, which DuPont understands is continuing, it is inappropriate to make a change in the treatment standards for wastes which may be removed from the Subtitle C regulatory system. Presumably, that is why the Agency previously proposed, as one of the options, to retain the level at 5 mg/l.

The Agency has proposed to lower the Universal Treatment Standard for silver based on performance of HTMR and stabilization technologies. The ability of a technology to achieve a level is not, however, sufficient justification for setting the standard at that level. Use of HTMR or stabilization technologies to reduce the silver levels in wastes from one non-economical level to another is wasteful of treatment resources. Contrary to the Agency's presumption, some silver recovery operations yield wastes which must achieve the LDR standards prior to disposal. Additional reagents and attendant volume increases will be required to stabilize wastes to these proposed lower levels, resulting in larger waste disposal amounts with no attendant environmental benefit.

Response:

The Agency notes that the BDAT treatment standard determination for silver is independent of other programs and initiatives within the Agency. However, the Agency reminds the commenter that the LDR program is based on the premise that regulated constituents are to be treated using the BDAT to minimize threats to human health and the environment. The Agency has developed technology-based standards for silver-bearing wastes under the LDR program. The root requirement of the LDR program is that treatment of hazardous wastes is to “substantially reduce the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized.” RCRA 3004(m)(1). To date, in the absence of a reliable means of quantifying when threats are minimized, EPA has implemented this requirement to reflect BDAT technologies, in order to assure substantial reductions of a waste’s toxicity and mobility before land disposal. See 56FR6641 (Feb 26, 1990). The Agency believes these technology-based standards provide treatment that minimizes threat to human health and the environment. It is also noted that EPA is conducting a multipathway ecological risk study to help determine whether changes in the regulatory status of silver are needed. In addition, EPA continues to revise and evaluate the models associated with the HWIR proposal. EPA believes that it would be premature to make revisions to the standards based on the draft HWIR models. Until the completion of these studies, silver will remain a TC metal, and D011 waste must meet the established BDAT treatment standard.

In addition, the Agency has identified a technical error in the BDAT determination of the proposed silver standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. The Agency corrected this error and re-calculated the silver treatment standard and is promulgating the UTS for silver at 0.14 mg/l TCLP. In addition, the Agency also incorporated the grab sampling new data submitted by INMETCO (the new data came from the same HTMR unit as the old data) in determining the new UTS for silver. The new standard is less stringent than the proposed standard, and the Agency believes that this standard is readily achievable by commercial treatment technologies such as stabilization and HTMR.

9. 2P4P-L1001 Photographic & Imaging Manufacturers Association

The Photographic & Imaging Manufacturers Association is a voluntary trade association --composed of companies that manufacture photographic and imaging products. Such products include consumer and professional film and paper, medical, dental and industrial X-ray, microfilm, graphic arts, and photoprocessing chemistry. Our members account for over 90% of the above products shipped to the U.S. market.

The photographic industry is the largest industrial user of silver in the United States. Silver is absolutely essential to the image-forming process in traditional photography. We have worked long and hard with the EPA to provide data on the fate, transport and effect of silver in the environment. The industry has provided a wealth of information to the Office of Solid Waste and has been involved with The Silver Council in making the case for a scientifically-based regulatory scheme for silver.

We join with The Silver Council's position as expertly set forth in their letter to you under date of August 1, 1997. We believe EPA has more than sufficient information to promulgate a risk-based treatment standard for silver.

We trust that your office will thoroughly review the available data on the fate and effect of silver and take advantage from Silver Council's offer to provide copies of any of the studies set forth in their bibliography.

Response:

The Agency thanks the commenter for providing comments on the silver treatment standard. With respect to risk-based standards for silver, the Agency notes that the LDR program is based on the premise that regulated constituents are to be treated using the BDAT to minimize threats to human health and the environment. The Agency has developed technology-based standards for silver-bearing wastes under the LDR program. The root requirement of the LDR program is that the treatment of hazardous wastes is to "substantially reduce the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized." RCRA 3004(m)(1). To date, in the absence of a reliable means of quantifying when threats are minimized, EPA has implemented this requirement to reflect BDAT technologies, in order to assure substantial reductions of a waste's toxicity and mobility before land disposal. See 56FR6641 (Feb 26, 1990). The Agency believes that these technology-based standards provide treatment that minimizes threat to human health and the environment. It is also noted that EPA is conducting a multi pathway ecological risk study to help determine whether changes in the regulatory status of silver are needed. Also, EPA continues to revise and evaluate the models associated with the HWIR proposal. EPA believes that it would be premature to make revisions to the standards based on the draft HWIR models. Until the completion of these studies, silver will remain a TC metal, and D011 waste must meet the established BDAT treatment standard.

10. 2P4P-L1003 Environmental Technology Council

The ETC has reviewed the reproposed treatment standards for TC metal wastes and is generally supportive of the proposed levels. In these comments, the ETC provides data demonstrating that these standards are readily achievable through the use of proven, available technology.

In Appendix **A** of these comments are data from the treatment of a variety of TC metal bearing hazardous wastes. All data were generated in compliance with EPA's BDAT Background Document on Quality Assurance / Quality Control Procedures and Methodology (1 991). These data reflect the ability of commercially available technology to meet the proposed treatment standards today. The data were gathered from five separate sites around the country, and include the results of treatment on a wide variety of wastes.

The ETC is providing these data for the EPA to add to its present treatment standard database. In addition, to determine if the proposed standards were achievable, ETC statistically analyzed our data for this submission. Table I compares the results of this statistical analysis of new data with EPA's proposed treatment standards.

Table 1 Comparison of Nonwastewater Treatment Standards Statistically Derived from ETC Data to Proposed EPA Treatment Standards

METAL (WASTE CODE)	PROPOSED EPA STANDARD	TREATMENTSTANDARD STATISTICALLY DERIVED FROM ETC DATA(PPM)
BARIUM (D005)	21.0	1.5
CADMIUM (D006)	0.20	0.10
CHROMIUM (D007)	0.85	2.30*
LEAD (D008)	0.75	1.20*
SELENIUM (D010)	5.7	0.40
SILVER (D011)	0.11	0.10

*In ETC's data set for both Chromium and Lead, one (possibly outlier) data point accounts for the calculated treatment level that is higher than EPA's proposed standard. If this data point is removed, the levels based on ETC's data would actually be lower than EPA*s proposed standards.

While the ETC data must be used in conjunction with EPA's existing database and not as a stand-alone to establish new treatment standards, it is interesting to note that ETC's data support treatment standards virtually identical to EPA's proposal for Cadmium and Silver, and lower treatment standards for Barium and Selenium.

This data demonstrate that well-run treatment systems are capable of meeting the proposed treatment standards. In fact, the ETC members have been meeting metals treatment standards similar to those in this proposal for years. Many non-TC waste streams have metal treatment standards already associated with them. These metal treatment standards are based on the metal Universal Treatment Standards (UTS) which are more stringent than the present Characteristic Treatment Standards.

While the waste matrix can alter the ability of a specific treatment regime to stabilize a specific metal, the ETC feels strongly that years of data and experience demonstrate that a well-run treatment system can effectively stabilize regulated metals to the proposed limits. The Council knows that TC metal wastes react no differently to a well run treatment system, and the experience of our member companies backs this up.

In September, 1996 EPA reviewed treatment data and capabilities at three separate sites and found:

> "The performance data represented 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 wastes treated included mineral processing wastes, baghouse dust, battery slag, soils, pot solids, recycling by-products, and sludge. TCLP values in the untreated wastes included 4430 mg/l lead, 1580 mg/l chromium, 82 mg/l barium, and 4280 mg/l cadmium. In addition, numerous waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, while other waste streams had a significant concentration of combination metals including: lead and cadmium, barium and lead, and chromium and antimony."

The Agency compared the data from these site visits with previously acquired data on the performance of HTMR. This analysis resulted in the reproposed TC metal treatment standards in the supplemental proposal. The reproposed standards corroborate ETC member-firms' knowledge of the capabilities of a well-run treatment system. The additional data provided in our comments add more data points in support of these treatment standards. ETC strongly urges the EPA to adopt the TC metal treatment standards in this supplemental proposal.

Response:

The Agency thanks the commenter for providing data and supporting the proposed treatment standard for silver. However, the Agency has identified a technical error in the BDAT determination of the proposed silver standard. In applying the BDAT methodology for calculating the treatment standard, EPA failed to perform a “Z-score” outlier test. The Agency corrected this error and re-calculated the silver treatment standard and is promulgating the UTS for silver at 0.14 mg/l TCLP. In addition, the Agency also incorporated the grab sampling new data submitted by INMETCO (the new data came from the same HTMR unit as the old data) in determining the new UTS for silver. The new standard is less stringent than the proposed standard, and the Agency believes that this standard is readily achievable by commercial treatment technologies such as stabilization and HTMR.

2P4P-000075 U.S. Department of Defense (DoD)

F. Waste specific prohibitions - Toxicity Characteristic Metal Wastes. (Proposed 268.32(a) and (d), 62 FR 26072)

EPA Proposal - Paragraph (d) indicates that soil and debris contaminated with D004-D011 wastes (268.32(a)) can be land disposed after the applicable treatment standards specified in subpart D are met (268.32(d)(1)).

DoD Comment - EPA needs to clarify that, consistent with the "contained in policy," soil that has been treated to meet applicable LDR treatment standards does not need to be disposed of in a subtitle C unit (i.e., can be disposed of in a subtitle D unit, used as fill, etc.)

RESPONSE

If the contaminated soil contained a listed hazardous waste or exhibited a characteristic of hazardous waste at the time of treatment, both would continue to be subject to RCRA Subtitle C regulations. Agency oversight and a site-specific decision is still required before any treated soil can exit the system of RCRA regulations. Note, the contained-in policy is unaffected by today's soil-specific treatment standards.

2P4P-00100 Koppers Industries, Inc. (KII)

KII currently operates 15 wood preserving plants in the United States. KII believes that treatment standards that may be appropriate for process generated wastes are not appropriate for environmental media encountered during site remedial work, such as soil or ground water. Requiring material generated during remediation to meet LDRs prior to replacement in land discourages site cleanup and/or encourages cleanup scenarios which are actually less protective of human health and environment than might otherwise be chosen.

[Note: The above comment excerpt is also included in the general metal issues section.]

RESPONSE

EPA believes the commenter's concerns are addressed by today's finalized LDR soil-specific treatment standards. The soil-specific treatment standards require the reduction of hazardous constituent concentrations by 90 % with treatment for any given constituent capped at 10 times the universal treatment standard (UTS). The Agency believes these standards are achievable for soils. The data supporting the alternative treatment standards for soils containing hazardous wastes are based on non-combustion technologies, namely biological treatment, chemical extraction, dechlorination technologies, soil vapor extraction, soil washing, and stabilization (for metals). EPA believes these technologies are feasible alternatives to the direct incineration of soils. See the Soil Treatability Analysis Report (April 1998, USEPA) in this docket.

Although the Agency believes these treatment standards can be achieved, there may be situations where the minimized threat level is higher than today's soil-specific standards. Thus, in today's rule the Agency is allowing risk-based variance determinations for only contaminated soil. The risk-based variance determinations is evaluated through the site-specific variance process set out in 40 CFR 268.44(h). In addition, the treatment variance process is still available for soil if the petitioner can show that their soil cannot be treated to meet the treatment standards based on the performance of the technologies the Agency considered in establishing the soil-specific standards or that the application of the soil treatment standards is inappropriate in that, for example, it would present unacceptable risks to on-site workers.

Phase IV Second Supplemental Proposed Rule:
Comments and Responses on Thallium

1. 2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

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.

Response:

The Agency thanks the commenter for supporting the thallium treatment standard.

2. 2P4P-00017 Battery Council International (BCI) and Association of Battery Recyclers (ABR)

I. THE PROPOSED LEAD, SILVER, ANTIMONY, BERYLLIUM, AND THALLIUM TREATMENT STANDARDS ARE NOT ACHIEVABLE WITH BDAT

A concentration-based treatment standard must be set at a performance level achievable by application of the Best Demonstrated Available Technology (BDAT).[fn 2: 51 Fed. Reg. 40,572, 40,578 (1986); *Hazardous Waste Treatment Council v. United States EPA*, 886 F.2d 355, 364-65 (D.C. Cir. 1989), *cert. denied*, 498 U.S. 849 (1990).] To identify BDAT for the treatment of a particular waste, EPA has recognized that it must consider three factors: whether the technology is "best demonstrated;" whether it is "available;" and whether it is the "best applicable" technology.[fn 3: 55 Fed. Reg. 22,536.]

A treatment technology is considered to be "demonstrated" when full-scale treatment operations are currently being used to treat that waste.[fn4: *Id.*] To be considered "available," the technology must not be proprietary or a patented process that cannot be purchased or licensed from the proprietor. (I.e., it must be "commercially available.") It also must substantially diminish the toxicity of the waste or reduce the likelihood of migration of hazardous constituents from the waste.[fn5: *Id.*] To be "applicable," a technology must theoretically be able to treat the waste.[fn6: *Id.*]

The proposed treatment standards do not meet these criteria. For one thing, the high temperature metals recovery technologies (HTMR) to which EPA points as capable of meeting its proposed standards are not BDAT. First, they are not demonstrably capable of handling D008 wastes. They handle D006 and K061 wastes, the chemistry of which is vastly different from D008. Second, they are not commercially available.

BDAT in fact is the stabilization process employed by existing secondary smelters. However, data submitted to EPA by BCI and ABR on November 27,1995 (BCI's comments are attached as "Exhibit 1") and a new database (attached as "Exhibit 2") show that no facility in the secondary lead industry can meet EPA's proposed treatment standards for lead, silver, antimony, beryllium, and thallium. Thus, EPA has not demonstrated that stabilization technologies are capable of meeting its proposed treatment standards. Instead, the data supports setting standards at the levels set forth above, in the Summary section of these comments.

D. The Proper Treatment Standards

Data collected and analyzed by BCI and ABR establishes that the proper treatment standards should be the following:

Barium	21	mg/l
Cadmium	0.20	mg/l
Chromium	0.85	mg/l

Lead 9.46 mg/l
Selenium 5.7 mg/l
Silver 0.22 mg/l
Antimony 2.98 mg/l
Beryllium 0.13 mg/l
Nickel 13.6 mg/l
Thallium 0.79 mg/l
Vanadium 1.6 mg/l
Zinc 4.3 mg/l

As has been amply discussed, EPA's proposed treatment standards for lead, silver, antimony, beryllium, and thallium should not be set below the levels identified above.

Response:

The Agency notes that the commenter may be correct in stating that the chemistry of D008 waste is different from the chemistries of D006 and K061 wastes. However, the important issue here is that the D006 and K061 wastes are more difficult to treat compared to D008 wastes. EPA, when transferring treatment standards from one waste to another, determines whether the BDAT will achieve the same level of performance on an untested waste that it achieved on a previously tested waste. For this determination, EPA examines the waste characteristics that affect performance such as (I) the concentrations of undesirable volatile metals, (ii) the metal constituent boiling points, and (iii) the thermal conductivity of the waste. In addition, EPA also examines the design and operating parameters of the technology. Based on the evaluation of these waste characteristics that affect performance, the Agency determined that well operated HTMR facilities can meet the treatment standards for D008 wastes.

The Agency notes that HTMR technology is currently being implemented on a full-scale basis and is being used to treat TC metal wastes and therefore is considered a “demonstrated” technology. The Agency has conducted extensive research on commercially demonstrated and available metal recovery technologies and developed detailed profiles of metal recovery technologies applicable for metal-bearing wastes (See the “profiles of metal recovery technologies for mineral processing and other metal-bearing hazardous wastes,” U.S. EPA, April 30, 1997). Also, the treatment performance data obtained and reviewed by the Agency from HTMR facilities indicate that the TC metal-bearing wastes can be treated to the UTS. In addition, the Agency notes that the mere existence of the secondary lead smelting industry itself proves the applicability of HTMR to D008 wastes.

EPA also recognizes that HTMR may be the best technology for all TC metal wastes. For the same reason, the Agency is establishing a concentration-based standard rather than requiring a specific technology. To compile further evidence regarding the treatability of TC metal wastes, including D008 wastes, to the UTS, the Agency conducted site visits to commercial hazardous waste treatment facilities and collected additional stabilization and HTMR treatment performance data that better represent the diversity of metal wastes than those previously used. The treatment performance data (based on grab samples) represented 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, mineral processing wastes, baghouse dust, soils, pot solids, recycling by-products, and sludge. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony. The Agency compared the treatment standards developed based on stabilization and HTMR and selected the highest (less stringent) standard for each metal to establish the UTS, thus, allowing for process variability and detection limit difficulties.

The Agency also reviewed the data submitted by the commenter, and found the data to be seriously lacking in form and quality assurance/quality control prerequisites. Specifically, the data submitted to the Agency were: (1) lacking in any quality assurance/quality control documentation; and (2) not accompanied with specific treatment information, or any indication that performance of the treatment process was in fact optimized. Therefore, the Agency was unable to use the data for developing the BDAT treatment standards.

The Agency also would like to note that if a particular waste possesses unique properties that make it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

3. 2P4P-00025 RSR Corporation

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.

Response:

The Agency disagrees with the commenter’s statement that EPA has not demonstrated the capability and availability of commercial treatment technologies. The Agency has provided adequate data to show the capability and availability of commercial treatment technologies (stabilization and HTMR) for treating the TC metals to the UTS levels. (See the BDAT background document for this rule). 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) represented 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. These waste streams contained multiple metals which would be representative of a characteristic waste with UHCs, and significant concentrations of combination metals including: lead and cadmium, barium and lead, and chromium and antimony. Therefore, the Agency believes that the UTS proposed in the second supplemental proposal (62 FR 26041, May 12, 1997) for TC metals represent standards achievable through commercially available stabilization and HTMR technologies.

The Agency also reviewed the data submitted by BCI/ABR, and found the data to be seriously lacking in form and quality assurance/quality control prerequisites. Specifically, the data submitted to the Agency were: (1) lacking in any quality assurance/quality control documentation; and (2) not accompanied with specific treatment information, or any indication that performance of the treatment process was in fact optimized. Therefore, the Agency was unable to use the data for developing the BDAT treatment standards.

The Agency also would like to note that if a particular waste possesses unique properties that make it more difficult to treat than the waste on which the standards are based, the affected party may petition the Agency for a treatability variance as per 40 CFR 268.44 on a case-by-case basis.

4. 2P4P-00028 Laidlaw Environmental Services

Revised Treatment Standards for TC Metal Wastes

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.

Response:

The Agency thanks the commenter for their support on the thallium treatment standard. The Agency determined the proposed treatment standards 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." Therefore, the Agency notes that the UTS levels are determined based on BDAT for the most difficult to treat wastes and not solely based on the lowest level a treatment technology could achieve.

5. 2P4P-00087 Waste Management

II. Revised UTS for TC Metal Wastes

WM has provided comments and data to the Agency throughout the Phase IV process regarding the establishment of UTS for characteristic metal waste-streams. WM supports the Agency's efforts in reproposing higher standards than originally proposed for cadmium, lead, selenium, nickel, thallium, beryllium, and vanadium.

IV. Less Stringent Requirements (62 Fed. Reg. at 26,065)

In the discussion on the portions of the rule which the Agency believes are less stringent, the Agency indicates that the revised universal treatment standards for antimony, barium, beryllium, cadmium, lead, nickel, selenium, thallium, and vanadium are viewed as less stringent.

WM believes that this is incorrect based upon the proposed standards for antimony and thallium. Both of these metals have proposed standards which are more stringent than the current UTS levels. Therefore, the Agency should clarify that these standards are no less stringent in its final rule.

Response:

The Agency agrees with the commenter that the proposed standard for antimony is more stringent than the existing standard and the Agency will clarify this in the Phase IV final rule. However, the Agency notes that, as stated in the second supplemental proposed rule, the proposed standard for thallium (0.20 mg/l) is less stringent than the existing UTS (0.078 mg/l).

2P4P-00075 United States Department of Defense (DoD)

B. Waste Specific Prohibitions - Toxicity Characteristic Metal Waste. (Proposed 40 CFR 268.32(e), 62 FR 26072)

EPA Proposal - EPA proposes the following language:

> To determine whether a hazardous waste identified in this section exceeds the applicable treatment standard specified in 268.40, the initial generator must test a sample of the waste extract or the entire waste, depending on whether the treatment standards are expressed as concentrations in waste extract or the waste, or the generator may use knowledge of the waste. If the waste contains constituents (including underlying hazardous constituent in characteristic waste) in excess of the applicable Universal Treatment Standard levels of 268.48 of this Part, the waste is prohibited from land disposal, and all requirements of part 268 are applicable, except as otherwise specified.

DoD Comment - DoD believes the last sentence should be modified to read, "If the waste contains *hazardous constituents reasonably expected to be present* (including underlying hazardous constituents in characteristic waste) in excess of the applicable UTS..."

This will clarify that the intent of this language is not to require a determination for all 250+ constituents listed in 268.48, but rather to require a determination only for those constituents reasonably expected to be present in the waste at the point of generation. This would be consistent with the current definition of "underlying hazardous constituent" (UHC) provided in 40 CFR 268.2.

RESPONSE:

The Agency's intent is only for the generator to determine and treat for those underlying hazardous constituents reasonably expected to be present in the characteristic waste (D001-D043) at the point of generation, that are at concentrations above the universal treatment standards found in 40 CFR section 268.48. See definition of underlying hazardous constituents in 40 CFR section 268.2(i). See 40 CFR section 268.9(a).

2P4P-00078 EnviroSource Treatment and Disposal Services, Inc. (TDS) (Phase IV Second Supplemental Proposal)

One area of concern in the proposed rule is the application of Underlying Hazardous Constituents (UHC) to waste that is both hazardous for toxicity (metals) and regulated for PCBs under part 761 (TSCA). Currently, such wastes can be stabilized to meet the standards applicable to the metal constituents and are subsequently disposed of at a facility permitted under both RCRA and TSCA. EPA's proposal will effectively prohibit this approach by requiring the identification of

PCBs as a UHC, therefore establishing a treatment standard for PCBs of 10 ppm (40 CFR 268.48). Similar problems may result with specific UHC organics that are associated with PCBS, e.g. chlorinated benzenes are prevalent in PCB oils.

RCRA / TSCA wastes are predominately large volume (5,000 - 10,000 ton) remediation projects, e.g.. contaminated soil and debris, with typical PCB concentrations from 50 - 600 ppm. EPA has already established environmental data and health studies to support land disposal of PCB wastes in properly permitted facilities, and has in fact specifically decided not to regulate wastes with PCBs less than 50 ppm. By requiring compliance with the Universal Treatment Standard (UTS) for PCBS, EPA is essentially requiring incineration of all RCRA/TSCA wastes, a result that is not consistent with EPA's policy that combustion of large amounts of contaminated media is generally inappropriate. This problem is further compounded by the limited availability of incineration capacity for media contaminated with PCBS.

We recommend that EPA establish an exemption from the UHC requirement for wastes that are regulated under part 761 for PCB and that are hazardous wastes because they fail the toxicity characteristic for metal constituents (D004 -D011). A similar, but more expansive approach was taken by EPA for waste codes D018 - D043 (See 40 CFR 261.8).

RESPONSE

The Agency only exempted from the UHC requirement PCB-containing dielectric fluids that are fully regulated under TSCA and that are hazardous only because they fail the toxicity characteristic for hazardous waste codes D018 through D043 only. The Agency believes that the regulation of these TC organic wastes under TSCA is adequate to protect human health and the environment. However, for other PCB-containing wastes that are listed or exhibit a hazardous characteristic (which includes D004 through D017) are subject to all applicable subtitle C standards. See 55 FR 11841 March 29, 1990. The RCRA regulated constituents in these other PCB-containing wastes may not be adequately addressed by the TSCA regulations.

Soil contaminated with PCBs are eligible for the Agency's soil-specific treatment standards being finalized in today's rule. These standards require the reduction of hazardous constituent concentrations by 90 % with treatment for any given constituent capped at 10 times the universal treatment standard (UTS). The data supporting the alternative treatment standards for soils contaminated with PCBs are based on non-combustion technologies, namely chemical extraction, dechlorination technologies, thermal desorption and soil washing. EPA believes these technologies are feasible alternatives to the direct incineration of soils. For example, at the Moreau Superfund Site in New York, KPEG dechlorination of topsoil contaminated with up to 7,013 ppm of PCBs achieved an overall performance efficiency of 98.25 %. Likewise EPA's data show that thermal desorption is highly effective in decontaminating soil. The treated soil meeting the provision in 268.49 can be land disposed without further treatment. Other residues from these treatment practices may require further treatment prior to disposal. Report Identification No. 1B. See (1) Final/Proposed BDAT Background Document for Hazardous Soil, August 1993, docket

#F-93-CS2P-S0599; (2) Soil Treatability Database for the Proposed Land Disposal restrictions Rule for Hazardous Soil, docket #F-930CS2P-S0595; (3) Attachment C: Soil Database Treatability Database Output, docket #F-93-CS2P-S0595.C; and (4) Soil Treatability Analysis Report (April 1998, USEPA) in this docket to today's rule.

The Agency believes that these standards are achievable for contaminated soils. Although the Agency believes these standards are achievable, there may be situations where the minimized threat level is higher than today's soil-specific standards. Thus, in today's rule the Agency is allowing risk-based variance determinations for only contaminated soil. The risk-based variance determinations is evaluated through the site-specific variance process set out in 40 CFR 268.44(h). In addition, the treatment variance process is still available for soil if the petitioner can show that their soil cannot be treated to meet the treatment standards based on the performance of the technologies the Agency considered in establishing the soil-specific standards or that the application of the soil treatment standards is inappropriate in that, for example, it would present unacceptable risks to on-site workers.

Finally, in regards to the stabilization of organic-metal bearing wastes, the LDRs do not specifically prohibit the use of stabilization technologies to treat nonwastewaters containing hazardous organic constituents providing there is no impermissible dilution (including that which may occur through cross-media transfer of hazardous organic constituents). Subject to the relevant applicability sections, the stabilization process must occur in units subject to the Agency's rules in Parts 264 and 265 Subpart CC (establishing air emission standards for control of air emissions from hazardous waste tanks, containers and surface impoundments) which set out the usual measure of control for such air emissions. These rules were in some cases specifically tailored to provide flexibility for stabilization operations where the wastes contained volatile hazardous constituents. See, e.g., 40 CFR 264.1084.

The Agency is also considering whether to issue additional guidance on when stabilization or solidification of organic-bearing waste is appropriate and when it may constitute impermissible dilution. The Agency believes that the commenter's concerns about stabilization of organic-bearing waste (especially those that contain low UHC organic concentrations) has been adequately addressed above, but further guidance may prove to be worthwhile. Again, we note that LDRs do not specifically prohibit the use of stabilization or solidification to treat nonwastewaters containing hazardous organic constituents.

We note also that a treatment variance offers an opportunity to comply with LDRs through development of an alternative standard. If an organic-containing RCRA hazardous waste, treated by stabilization or solidification alone or in combination with another non-combustion technology, cannot meet the existing numeric treatment standards, then a generator or treatment facility may petition for a variance from the treatment standards. See 40 CFR 268.44(a) and 268.44 (h). This would also be addressed in any guidance memorandum that is developed.

2P42-L1003 Environmental Technology Council

5. PCBs Should Not Be An Underlying Hazardous Constituent

One area of concern is the application of Underlying Hazardous Constituents (UCHs) to waste that is both hazardous for toxicity (metals) and regulated for PCBs under 40 CFR Part 761 (TSCA). Currently, such wastes can be stabilized to meet the standards applicable to the metal constituents and are subsequently disposed of at a facility permitted under both RCRA and TSCA. EPA's proposal will effectively prohibit this approach by requiring the identification of PCBs as a UHC, therefore establishing a treatment standard for PCBs of 10 ppm (40 CFR 268.48).

RCRA / TSCA wastes are predominately large volume (5,000 - 10,000 ton) remediation projects, e.-g. contaminated soils and debris. EPA has already established environmental data and health studies to support a regulatory exemption for PCBs less than 50 ppm and permit land disposal of PCB wastes in properly approved facilities. We recommend that PCBs not be considered an Underlying Hazardous Constituent for TC metal hazardous wastes, similar to the current approach for D018 - D043 hazardous wastes.

RESPONSE

The Agency only exempted from the UHC requirement PCB-containing dielectric fluids that are fully regulated under TSCA and that are hazardous only because they fail the toxicity characteristic for hazardous waste codes D018 through D043 only. The Agency believes that the regulation of these TC organic wastes under TSCA is adequate to protect human health and the environment. However, for other PCB-containing wastes that are listed or exhibit a hazardous characteristic (which includes D004 through D017) are subject to all applicable subtitle C standards. See 55 FR 11841 March 29, 1990. The RCRA regulated constituents in these other PCB-containing wastes may not be adequately addressed by the TSCA regulations.

Soil contaminated with PCBs are eligible for the Agency’s soil-specific treatment standards being finalized in today’s rule. These standards require the reduction of hazardous constituent concentrations by 90 % with treatment for any given constituent capped at 10 times the universal treatment standard (UTS). The data supporting the alternative treatment standards for soils contaminated with PCBs are based on non-combustion technologies, namely chemical extraction, dechlorination technologies, thermal desorption and soil washing. EPA believes these technologies are feasible alternatives to the direct incineration of soils. For example, at the Moreau Superfund Site in New York, KPEG dechlorination of topsoil contaminated with up to 7,013 ppm of PCBs achieved an overall performance efficiency of 98.25 %. Likewise EPA’s data show that thermal desorption is highly effective in decontaminating soil. The treated soil meeting the provision in 268.49 can be land disposed without further treatment. Other residues from these treatment practices may require further treatment prior to disposal. Report Identification No. 1B. See (1) Final/Proposed BDAT Background Document for Hazardous Soil, August 1993, docket

#F-93-CS2P-S0599; (2) Soil Treatability Database for the Proposed Land Disposal restrictions Rule for Hazardous Soil, docket #F-930CS2P-S0595; (3) Attachment C: Soil Database Treatability Database Output, docket #F-93-CS2P-S0595.C; and (4) Soil Treatability Analysis Report (April 1998, USEPA) in this docket to today's rule.

The Agency believes that these standards are achievable for contaminated soils. Although the Agency believes these standards are achievable, there may be situations where the minimized threat level is higher than today's soil-specific standards. Thus, in today's rule the Agency is allowing risk-based variance determinations for only contaminated soil. The risk-based variance determinations is evaluated through the site-specific variance process set out in 40 CFR 268.44(h). In addition, the treatment variance process is still available for soil if the petitioner can show that their soil cannot be treated to meet the treatment standards based on the performance of the technologies the Agency considered in establishing the soil-specific standards or that the application of the soil treatment standards is inappropriate in that, for example, it would present unacceptable risks to on-site workers.

Finally, in regards to the stabilization of organic-metal bearing wastes, the LDRs do not specifically prohibit the use of stabilization technologies to treat nonwastewaters containing hazardous organic constituents providing there is no impermissible dilution (including that which may occur through cross-media transfer of hazardous organic constituents). Subject to the relevant applicability sections, the stabilization process must occur in units subject to the Agency's rules in Parts 264 and 265 Subpart CC (establishing air emission standards for control of air emissions from hazardous waste tanks, containers and surface impoundments) which set out the usual measure of control for such air emissions. These rules were in some cases specifically tailored to provide flexibility for stabilization operations where the wastes contained volatile hazardous constituents. See, e.g., 40 CFR 264.1084.

The Agency is also considering whether to issue additional guidance on when stabilization or solidification of organic-bearing waste is appropriate and when it may constitute impermissible dilution. The Agency believes that the commenter's concerns about stabilization of organic-bearing waste (especially those that contain low UHC organic concentrations) has been adequately addressed above, but further guidance may prove to be worthwhile. Again, we note that LDRs do not specifically prohibit the use of stabilization or solidification to treat nonwastewaters containing hazardous organic constituents.

We note also that a treatment variance offers an opportunity to comply with LDRs through development of an alternative standard. If an organic-containing RCRA hazardous waste, treated by stabilization or solidification alone or in combination with another non-combustion technology, cannot meet the existing numeric treatment standards, then a generator or treatment facility may petition for a variance from the treatment standards. See 40 CFR 268.44(a) and 268.44 (h). This would also be addressed in any guidance memorandum that is developed.

Supplemental Proposal to Phase IV LDR

Below is the Underground Injection Control (UIC) Program's response to the two comments to the First Phase IV supplemental proposed rulemaking published on January 25, 1996. The comments largely concern treatment and disposal of the iron chloride waste acid from the production of titanium dioxide. This is a characteristically hazardous wastestream that is not eligible for the Bevill Exemption. Please be advised that the responses given reflect the lastest UIC thinking since publishing of the Phase IV Second Supplemental rulemaking.

<u>Kronos, Inc. Comment</u>

Issue #1	Kronos supports EPA's proposed position to use the Toxic Characteristic Leaching Proceedure (TCLP) as the basis for determining whether mineral processing wastes are hazardous. Kronos also supports the Agency's decision to make the "Chloride-Ilmenite" process as a mineral processing waste not eligible for the Bevill Exemption. Finally, Kronos supports the Agency's application of UTS to the newly identified mineral processing wastes.
Response	***EPA agrees with the commentor that the TCLP should be the basis for determining whether mineral processing wastes are hazardous. Additionally, the Agency also agrees with the commenter's support of its decisions to apply UTS to newly identified mineral processing wastes and to designate the Chloride-ilmenite process as a mineral processing waste that is not eligible for the Bevill Exemption. The Agency wishes to point out that this wastestream was carefully studied inaccordance with the Agency's criteria according to Congressional intent and as directed by the D.C. Circuit Court of Appeals' (1988) ruling for Bevill Exemptions.*** (This is not a UIC comment, so modify as you see fit.)
Issue #2	Kronos opposes EPA's proposal to grant a two-year capacity variance for mineral processing wastes injected into Class I UIC wells. They see it as competitive favoritism through the inequitable application of environmental regulation. They stated that they have invested $40 million dollars in a state-of-the-art neutralization system to treat their mineral processing wastestream to meet UTS as well spent hundreds of thousands of dollars in annual operating and processing improvement cost. They have alleged that a competitor with a similar wastestream is enjoying "***a competitive advantage and substantial cost savings by***

avoiding, via deep well injection, the cost of treatment of this hazardous wastestream". Kronos feels that there is available commercial treatment of this type of wastestream by stabilization. They also suggest that the Agency has not fully investigated available off-site commercial disposal capacity through injection wells facilities with approved no-migration petitions. Kronos suggests that even if the Agency is factoring in cost of commercial disposal in evaluating a capacity variance, it should compare the costs incurred by those in the industry who have protractively chosen to comply in time to meet the anticipated regulatory deadlines.

Response ***The 2-year national capacity variance is being made available only to mineral processing waste disposal operations that need time to comply with LDR because of the their inability to seek off-site commercial treatment or disposal. Operators handling restricted wastestreams have to choose available waste management options that are legal, practical, environmentally sound, and based on their facility's plant design or layouts. EPA has studied and gathered much data on various waste management disposal practices for many years, in particular, deep well injection. Deep underground injection of hazardous waste through Class I injection wells has been determined by the Agency as a viable means of handling waste if the disposal well is properly sited and operated inaccordance with strict UIC regulations.***

Regarding the claim that the the Agency is allowing the "competitor" to have a competitive advantage by underground injection as opposed to treatment options, the Agency appreciates the effort of the commenter to have built and maintained a state-of-the-art treatment works, however, the Agency abstains from involvement in the business decisions of waste management operators. Additionally, the Agency also conducts economic impact analysis in its rulemaking to determine what affects, if any, a rule may have on the regulated community.

The Agency has also studied the competitor's plants disposing the subject wastestream by injection and found that their options are very limited because of logistical problems in managing the huge wastestream volumes generated from titanium dioxide production for the following reasons: (1) these facilities don't have onsite treatment capability at this time and will not before the effective ban date, (2) these wastestreams cannot be diluted as a means of decharacterization without causing serious operational problems to the facility (3) shipment of the hugh volumes of waste to off-site treatment is not feasible, practical or necessarily amenable to the centralized wastewater treatment systems, (4) shipment to commercial injection well facilities with approved no-migration petitions is not feasible at this time because these facilities have

permitting limitations on them (volume capacity, injection rates, operational parameters, etc.) that would preclude the injection of the huge volumes of waste, (5) even a no-migration petition demonstration proceedure (the most likely option) will not be completed in time to comply with the effective ban date. Also see the UIC Background Document to the final rule in the RCRA docket for a more detailed explanation.

DuPont White Pigment & Mineral Products

Issue #1	Dupont strongly supports the Agency's proposal of a two-year national capacity variance. They base this support on the removal of the Bevill exclusion and proposed promulgation of the LDR that will require it to remove the hazardous characteristic of acidic iron chloride and treat the wastestream to UTS levels, obtain a no-migration petition for continued disposal in UIC wells or deal with the iron chloride. They futher justify their need for the capacity variance by stating that there are sizable logistical problems and very large capital cost associated with this waste management that will require several years to deal with. In the mean time, there is no viable alternative. Even obtaining a no-migration petition will require sigificant work between the company and DuPont. The two-year capacity variance is required because the effective date will come before the no-migration approval is granted.
Response	***EPA is permitting the use of a two-year national capacity variance for titanium dioxide mineral processing wastes being injected in UIC Class I wells only. The time would be needed to bring these facilities into compliance with LDR. The Agency based its decision on a review of the onsite waste management options versus the serious logistical and possible environmental problems that would result from the shipping and handling of the huge volumes of waste offsite. The Agency further believes that some reasonable amount time will be needed to complete a no-migration petition demonstration to continue disposal in the injection wells. No-migration petitions have traditionally taken more than a year to complete. Also see the UIC Background Document to the final rule in the RCRA docket for a more detailed explanation.***

Phase IV Second Supplemental Proposed Rule:
Comments and Responses on Vanadium

1. 2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

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.

Response:

The Agency thanks the commenter for supporting the vanadium treatment standard. The Agency also notes that vanadium is not a UHC in characteristic wastes. Currently, vanadium is only regulated in two listed wastes -- P119 and P120. The Agency will clarify this in the Phase IV final rule.

2. 2P4P-00017 Battery Council International (BCI) and Association of Battery Recyclers (ABR)

Likewise, BCI and ABR support the Agency's proposed treatment standards for barium, cadmium, chromium, nickel, vanadium, and zinc. Although our data shows lower levels of treatment than currently proposed, these elements have not generally been prevalent in secondary smelter feedstock, and hence secondary smelter slag. Some of these elements, however, are likely to be increasingly utilized in the future as substitutes for more hazardous and toxic elements in products. Thus, they are likely to become prevalent in secondary smelter feedstock, and hence smelter slag. Nonetheless, the appropriate chemical interactions between these elements and some of the other TC metals will limit the ability of secondary smelters to achieve extremely low treatment levels. EPA, therefore, should recognize this issue and maintain the treatment standards for barium, cadmium, chromium, nickel, vanadium, and zinc as proposed. These levels will provide secondary smelters the flexibility to handle future changes in their feedstock.

Response:

The Agency thanks the commenter for their support on the vanadium treatment standard. The Agency also notes that vanadium is not a UHC in characteristic wastes. Currently, vanadium is only regulated in two listed wastes -- P119 and P120. The Agency will clarify this in the Phase IV final rule.

3. 2P4P-00028 Laidlaw Environmental Services

Revised Treatment Standards for TC Metal Wastes

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.

Response:

The Agency thanks the commenter for their support on the vanadium treatment standard. The Agency determined the proposed treatment standards 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." Therefore, the Agency notes that the UTS levels are determined based on BDAT for the most difficult to treat wastes and not solely based on the lowest level a treatment technology could achieve. The Agency also notes that vanadium is not a UHC in characteristic wastes. Currently, vanadium is only regulated in two listed wastes -- P119 and P120. The Agency will clarify this in the Phase IV final rule.

4. 2P4P-00087 Waste Management

II. Revised UTS for TC Metal Wastes

WM has provided comments and data to the Agency throughout the Phase IV process regarding the establishment of UTS for characteristic metal waste-streams. WM supports the Agency's efforts in reproposing higher standards than originally proposed for cadmium, lead, selenium, nickel, thallium, beryllium, and vanadium. The proposed changes for selenium (5.7 mg/l TCLP) and lead (0.75 mg/l TCLP) will improve WM's ability to treat such waste streams to the revised UTS. In addition to these general comments, WM is including comments on specific metals below.

Response:

The Agency thanks the commenter for their support on the vanadium treatment standard. The Agency also notes that vanadium is not a UHC in characteristic wastes. Currently, vanadium is only regulated in two listed wastes -- P119 and P120. The Agency will clarify this in the Phase IV final rule.

1. Proposed Exclusion of Wood Preserving Wastewaters and Spend Wood Preserving Solutions from Classification as Solid Waste under RCRA (p. 26055)

2P4P-00002 American Wood Preservers Institute

On behalf of our members and the pressure-treated wood industry, the American Wood Preservers Institute (AWPI) would like to express our appreciation for the efforts made by the Environmental Protection Agency in proposing to eliminate some administrative burdens on our industry through the proposed wastewater solid waste exclusion rule *(Federal Register*, May 12, 1997). We have enclosed comments on the proposal and we ask that you consider carefully each of our recommendations. We believe that our positions are reasonable and well within the guidelines that the EPA Office of Solid Waste is considering for the re-definition of solid waste. The net effect of this rule change is purely administrative there is no relaxation of the protection of human health and the environment.

We request to meet with the US EPA at the time you have developed specific language to promulgate this rule so that we can be assured that the specific wording is consistent with our understanding of the intent of the US EPA.

AWPI General Comments

AWPI applauds the US EPA for proposing an important step in eliminating some of the non-productive effects of the hazardous waste listings for waste generated by the wood preserving industry (e.g., F032, F034, F035). As we discuss in our "specific comments" to follow, the proposed rules neither relinquish any EPA authority nor do they increase risk to human health or the environment.

The hazardous waste listing definitions F032, F034, and F035 are among the very few that include &&wastewater" as part of the material deemed to be hazardous. In the other listings that contain wastewater *(i.e.,* K033, and K131), the wastewater in question is clearly a highly contaminated process stream that *can he limited and controlled easily by the generator.* In contrast, waste water in the wood preserving industry is overwhelmingly composed of rainwater, cleaning water, and recycled water collected on the EPA-required RCRA Subpart W drip pad. Avoidance of excessive rain water is being practiced at many plants by the installation of expensive roofs covering the drip pads. Unfortunately, the nature of the work (e.g., moving utility poles and stacks of railroad ties over acres of drip pad) has made construction of roofs unfeasible or uneconomical in many plants and it is impossible to avoid the collection of cleaning water on the Subpart W drip pad.

Moreover, many plants quickly recognized that the drip pad can be used for' collecting rainwater for use in the treating process in lieu using new groundwater or municipal water. Thus, in many plants, efforts have been made to use water collected on the drip pad in the process where contact with the preservatives is likely and this has become a standard practice that economizes the .

process as well as optimizes the use of water. Two examples that are widely practiced are use of the water from the drip pad as makeup water in the waterborne treating process and as a vacuum pump seal in oil-borne plants. ***Both uses offset fresh water that would otherwise have to be acquired, used, and/or discharged by the plant***.

Unfortunately, as a result of the way the listing was originally defined, all the water (including rainwater and cleaning water) collected on the drip pad was by definition a hazardous waste. Under previously promulgated exclusions (40 CFR 261.4(a)(9)(I) and (ii)) wood preserving solutions and wastewaters that *have been reclaimed* and are reused are excluded from the definition of solid waste. But, these exclusions leave the wastewater prior to reclamation (e.g., "on the drip pad") as a listed waste. This situation was of little practical consequence because of the careful management of the drip pads and recycling practices until inclusion of water collected on the drip pad in RCRA reporting statistics. The statistics made the wood treating plants appear to be very large hazardous waste generators and, in some states, the waste generation report was used as a basis for taxation.

Thus, two years ago, AWPI began working with EPA to amend the definitions and thereby eliminate the counter-' reductive aspect of the way the listings were defined. The objective of the AWPI efforts on behalf of our members has been to eliminate the arbitrary inflation of the waste generation statistics and related impediments to recycling caused by inclusion of rainwater, cleaning water, or recycled water in the figures. AWPI and our members are fully supportive of the Subpart W drip pad requirements, even for conditionally exempt small quantity generators, and desire to recycle and reuse water and other materials on-site to the extent technically possible.

In seeking to expand the exclusions from the definition of solid waste, our intent is to remove from the relevant defined hazardous wastes (e.g., F032, FO34 and F035) preservative solutions and wastewaters that are successfully and productively collected and recycled on-site with or without separation of excess water. The desired exclusion is in addition to existing exclusions, including the exclusions of preservative solutions and wastewaters:

> after reclamation (261.4(a)(9)(I) and (iii)];
> when recycled without reclamation [261.2(e)(1)];
> once discharged to a publicly owned treatment works [261.4(a)(1)(ii)]; or once discharged to a permitted industrial wastewater discharge [(261.4(a)(2)].

Thus, under the proposed exclusion, preservative solutions and wastewater collected on a drip pad (operated in compliance with Subpart WI is not counted as a hazardous waste except for any portion that has been mismanaged, stored for more than 90 days on the drip pad, or until shipped off-site as a solid waste. "Mismanagement" includes releases of reportable quantities of material (defined under CERCLA in 40 CFR 302.3, 302.6 and 302.8) from the drip pad to the land or groundwater and any releases to air or surface waters that are outside the limits of applicable permits. Should a spill of the water, in spite of best efforts, occur, this event should not affect the exclusion of the material that is properly managed. Any releases of wastewaters (F032, F034, F035) from the drip pad to the land or groundwater are both already subject to counting as generated waste and subject to all provisions of RCRA and CERCLA concerning remediation and liability. While many of our members' plants will become conditionally exempt small quantity generators under the exclusion, we agree that use of a Subpart W drip pad should be. a continuing requirement.

Because wastewaters that have been reclaimed [261.4(a)(9)(ii)] and wastewaters that are recycled (261.2(e)] without reclamation are already excluded from the definition of solid waste, the principal effects of this exclusion are in accounting, record keeping, and reporting under RCRA. This exclusion is similar in effect and scope to exclusions provided in other industries. For example, in 40 CFR 261.4(a)(10) EPA has excluded materials that otherwise would be listed (e.g., materials meeting the. definition of certain "K" listed wastes) or characteristically hazardous wastes when these materials are recycled or mixed with product prior to sale, conditioned only that the materials are not land disposed before recycling or mixing with product.

Another way of looking at this exclusion is that it recognizes the fict that the wood preserving solutions are being "contained-in" the natural medium (precipitation failing on the drip pad). It has been EPA s policy that when a listed hazardous waste is "contained in" an environmental medium, only the listed waste is considered to be hazardous and although the medium containing the listed waste must be managed as a hazardous waste until it is decontaminated. In the context of the commingling of precipitation with treating solutions on the drip pad, the existing listings (F032, F034, F035) are actually extensions of the "contained in" concept.

Finally, we observe that the US EPA has recently (November 19, 1996) discussed two options for redefining RCRA jurisdiction (i.e., the redefinition of solid waste). These options are termed the "Transfer-Based" Option and the "In-Commerce Option." Either of these options would have a generic effect throughout a wide range of manufacturing processes (not just wood preserving) that would have the effect of encompassing all the patchwork of exclusions found in 40 CFR 261.2(e) and 261.4, the exclusion discussed here, and more. We ' generally support the- US EPA's efforts in this process; but, given the uncertainty of the final general redefinition of solid waste, we encourage the EPA to promulgate the wastewater exclusion rule with due consideration of our specific comments, which follow.

AWPI Specific Comments

(1) *Materials are recycled and Reused On-Site in the Production Processor Their Original Intended Purpose*

Most of the water that is subject to this rulemaking, and subject to the F032, F034 and F035 listings, originated from precipitation and washing activities, not process water. To the extent that the phrase "original intended purpose" is operable, EPA has historically acknowledged that this water after reclamation (at which point it is no longer a solid waste [261.4(a)(9)(ii)]) can be used in a variety of specific applications essential to the treatment of wood such as vacuum pump seals. Thus, we believe that water collected for the drip pads, from all wood treating plants should be excluded from the definition of the listing if it is used as process water along with recycled drippage, reclaimed, and used on-site.

(2) Materials Managed to Prevent Release

AWPI agrees that the materials prior to reclamation must be, managed in a system (e.g., Subpart W drip pad) that prevents release. We oppose any language that would extend the EPA's RCRA authority to devices that have previously not been regulated under RCRA. In particular, any language that subjects devices that transmit or store non-RCRA waste or process water (e.g., water after reclamation) to RCRA inspection, is not appropriate.

(3) Units Can Be Visually or Otherwise Determined to Prevent Release

AWPI agrees that EPA should be able to enforce these rules by RCRA inspection as described in the manual *Wood Preserving Resources Conservation and Recovery Act (RCRA) Compliance Guide* (EPA 305-B-96-001); but for the reasons stated above, we are concerned about the use of the broad term "units" when referring to those portions of the system subject to RCRA inspection. The EPA should be specific as to what is subject to inspection and we believe the only units subject to this inspection should be the drip pad and conduits before the point the water is reclaimed or enters the water treatment system.

Although we are concerned with the potential for arbitrary enforcement, the term "visually or otherwise determined" may be acceptable if the pre-amble clarifies that not all conduits are subject to RCRA inspection and the conduits that are subject to RCRA inspection do not need to be scrubbed down, laboriously inspected, or disassembled. This is an issue that may require further discussion before a final rule is published.

(4) Drip Pads Must Comply with Subpart W Standards

AWPI agrees that regardless of the amount of material (e.g. rain water and drippage) that is collected on the Subpart W drip pad, the requirement for the drip pad is not removed.

(5) *Materials Derived-From the Process Residuals*

AWPI agrees that solids (e.g., sand and grit, wood chips, and debris collected on the drip pad) that are removed from the waters during reclamation and not recycled into the process remain hazardous wastes as is the current practice.

(6) Notification

Publication of the final rule by the US EPA should serve to notify all parties (the industry and the regulators) of the appropriate exclusion from the definition of solid waste and the effective date. We see no need for plant-by-plant notification to Federal or State regulators.

(7) *S pilled Materials*

There are two different cases of spilled materials:

(a) We agree that in the event of a simple spill, the material that is spilled is not covered by the exclusion. This spilled material is obviously not related to the normal operation of the drip pad and we cannot not see any reason to penalize the operator by counting the material successfully recycled from the drip pad because of an unrelated event at the plant.

(b) In the event that a breach of the Subpart W drip pad has occurred, the requirement that the material be "managed to prevent release" would dictate that water collected on the drip pap would be counted as hazardous waste until the drip pad is re-certified and that any leakage found outside the pad would be hazardous waste. But, it is impractical and inappropriate to attempt to retroactively identify water, which was successfully recycled or reclaimed within the production process, as waste.

EPA RESPONSE:

The Agency thanks the commenter for supporting the proposed exclusion from the definition of solid waste for wood preserving wastewaters and spent wood preserving solutions. EPA agrees that such an exclusion neither relinquishes EPA's regulatory authority nor does it increase risk to human health or the environment.

The commenter notes that the industry recycles its wastewaters and wood preserving solutions and argues that the current regulatory practice of counting these materials as newly generated listed waste prior to reclamation when they are being recycled is unnecessary. The Agency agrees that provided the industry meets certain conditions (specified in both the preamble and regulatory text of today's rule), it is unnecessary to regulate recycled wood preserving wastewaters and spent solutions as newly generated hazardous waste prior to reclamation. The commenter adds that the current practice of regulating these materials leads to high waste generator totals and that in some states these figures are used as a basis for taxation. The Agency finds that as long as the conditions placed upon today's exclusion are met, no essential environmental purpose is served by counting these wastes as hazardous waste. EPA acknowledges that the new exclusion may have an impact on state taxation issues. EPA, however, believes the exclusion is appropriate because the materials will not pose an environmental problem.

EPA appreciates that the commenter supports the existing Subpart W drip pad requirements, even for conditionally exempt small quantity generators (CESQGs) and that the commenter seeks to recycle and reuse water and other materials on-site to the extent feasible. The commenter clarified his desire to exclude the wood preserving wastes listed under F032, F034, and F035 from regulation as hazardous waste when "successfully and productively collected and recycled on-site." The Agency agrees, provided that all the conditions placed on the exclusion are met. The commenter seeks regulatory relief for wastewaters that are recycled either "with or without separation of excess water." EPA interprets this to mean that the commenter would like for the exclusion to apply to both water borne wood preserving recycling processes (which do not involve separation of excess water) and oil borne processes which do. At the time of proposal, EPA intended to create an exclusion only for plants using water borne preservatives. See, for example, the discussion at 62 Fed.Reg. 26057, col.1. EPA did not evaluate oil borne plants at the time. It is EPA's general understanding that all plants which use oil borne preservatives do not recycle wastewaters and spent solutions by using them in the work tank to treat wood. Rather, they reuse these wastewaters in cooling systems, vacuum seals, and other devices. EPA wants to limit today's exclusion to the type of reuse that it has studied--such as process wastes from the treatment of wood. EPA has not had time to investigate the jurisdictional and factual issues posed by the use of wastewaters for other, more ancillary, purposes. Consequently, EPA is not expanding the exclusion beyond the proposal. It applies only to water borne processes.

The commenter states that the exclusion he is seeking is "in addition to existing exclusions, including the exclusions of preservative solutions and wastewaters…" In responding to this comment, the Agency takes no position on the applicability of the regulatory provisions cited by the commenter to a particular wood treating process at a particular facility. To the extent that these provisions are subject to specific terms and conditions and a determination must be made as to whether these are being met, the Agency defers such determinations to the appropriate state or EPA regional authority. At the same time, EPA agrees that this new exclusion does not alter or affect the availability of any of the existing exclusions or exemptions.

The commenter's understanding of today's exclusion is that the excluded materials are not considered hazardous waste except for any porion that has been mismanaged or stored for longer than 90 days, or until shipped off-site as a solid waste The commenter goes on to define mismanagement and considers a hypothetical spill of the excluded materials. In the May 12, 1997 proposal, EPA requested comment as to when the exclusion, once claimed, would no longer apply. The spill issue is now addressed in the preamble to today's rule in the section entitled "Conditions Under Which the Exclusion Would No Longer Apply." EPA has decided that a spill or release of any size voids the conditional exclusion until the appropriate site Regional Administrator or State Director determines that the facility is again in compliance with the condition requiring management to prevent release. The exclusion is void for both the material that is released and the material that remains within the drip pad/ reuse system. EPA intends this to provide an incentive for plant owners and operators to quickly prevent future releases. EPA expects its Regional Administrators and all implementing state agencies to process requests to reinstate exclusions very promptly. EPA is not adopting the commenter's suggestion to provided "de minimis" quantity levels for releases based on CERCLA reportable quantities because we believe that the severity of a spill of the wastewaters and spent solutions excluded in today's rule is best determined on a case-by-case basis. A "de-minimis" quantity spill that at one plant may require little action could, at another plant, be an indication of a much more serious threat of release of wastewaters and spent solutions to the environment. Finally, the commenter seems to frequently suggest that EPA jurisdiction over the excluded materials is limited to their management on a Subpart W drip pad. Whether or not this is implied by the commenter, EPA rejects such an interpretation. In an attempt to clarify this matter, the preamble to today's rule includes a section entitled "Application of the Conditions to Units Other Than the Drip Pad."

EPA agrees with the commenter that compliance with Subpart W drip pad standards should be required regardless of whether a particular plant is a CESQG. One of the conditions we are placing upon this exclusion requires that "any drip pad used to manage the wastewaters and/or spent wood preserving solutions prior to reuse complies with the standards in Part 265, Subpart W, regardless of whether the plant generates a total of less than 100 kg/month of hazardous waste."

The Agency also agrees with the commenter that, provided all of the conditions placed upon this exclusion are met, the principal effects of this exclusion are in accounting , record keeping and reporting. Although EPA is aware that the commenter considers this exclusion to be analogous to others that the Agency has granted in the past, we do not consider it useful consider whether this "exclusion is similar in effect and scope to exclusions provided [to] other industries." In our view it is sufficient that this exclusion provides common-sense regulatory relief to this industry at this time, while continuing to ensure that the materials are managed to prevent loss and to prevent them from becoming part of the waste disposal problem.

EPA agrees that rainwater falling on the pad could be considered to be regulated as a hazardous waste under the "contained in" policy regarding mixtures of natural media and hazardous waste. Washwater, drippage and solids, such as wood chips, however are regulated under the "mixture" rule or the "derived from" rule. Today's exclusion, however, is not based on a finding that these rules no longer apply. Rather, it is based on a finding that these materials can be reused without becoming part of the waste disposal problem, so that they need not be regulated as solid wastes.

The commenter asserts that the Agency has said in the past that wood preserving wastewaters excluded from the definition of solid waste following reclamation may be used in areas of the wood treatment process such as vacuum pump seals.   The commenter therefore believes that today's exclusion should be extended to include wastewaters recycled at all wood treatment plants, water borne and oil borne. EPA's position on this issue is that only wood preserving wastewaters and spent wood preserving solutions recycled at water borne plants-by being reused as process water (provided that all of the conditions being finalized today are met) are covered in today's exclusion. As we stated above, EPA has not had time to investigate the jurisdictional and factual issues posed by the use of wastewaters for ancillary uses, such as in vacuum pump seals. Therefore, EPA is not expanding the exclusion beyond the proposal. It applies only to water borne processes, and only to reuse the wastewater for wood treatment.

The commenter opposes any language that would extend EPA's authority to devices that have previously not been regulated under RCRA, particularly any provision that would subject units that transmit or store wastewaters and spent solutions already excluded under 40 CFR (a) (9)(i) and (ii), (i.e., after reclamation occurs). EPA does not intend to claim authority to inspect units involved solely in the production process. EPA does, however, assert jurisdiction to inspect the pad, sumps, piping, and any holding tanks used before the wastewaters and spent solutions are placed in the product make-up tank. See 62 Fed. Reg. 26057, col. 3. EPA notes, however, that it expects holding tanks to be above-ground units that can be inspected easily outside the unit. EPA believes it needs to be able to inspect all such units in order to assure that the materials are handled so as to minimize loss and to prevent them from becoming part of the waste disposal problem.

EPA agrees with the commenter that regardless of the amount of materials excluded in today's rule that is collected on the Subpart W drip pad, the drip pad requirements remain in place. The Agency agrees with the commenter that solids that are removed from the wastewaters during reclamation (and therefore are not recycled along with the wastewaters) do not meet the terms of this exclusion and continue to be classified as hazardous waste.

EPA disagrees with the commenter that publication of the final rule should serve to adequately notify all parties of the exclusion and that therefore plant-by-plant notification is unnecessary. EPA does not consider publication of the final rule to provide adequate notice on the names and locations of wood preserving plants planning to operate under the conditional exclusion. Moreover, EPA is concerned that this commenter may have assumed that the exclusion would take effect nationwide upon publication. As explained in the wood preserving exclusion portion of the preamble to today's rule, in a section entitled "state authorization", this assumption is not correct. The exclusion will not take effect in any authorized state unless and until the state adopts it.

EPA considers notification to the appropriate regulatory agency to be essential to the proper implementation of this provision. In order to allow EPA and authorized states to verify that the conditions placed upon today's exclusion are properly met, it is important that wood preserving plants inform the appropriate Regional Administrator or State Director that they are claiming the exclusion and will therefore be reporting significantly lower waste generation totals. EPA is therefore revising the proposed exclusion to require a plant owner or operator (prior to operating pursuant to this exclusion) to submit to the appropriate Regional Administrator or State Director a one-time notification stating that the plant intends to claim the exclusion, and containing the following language: "I have read the applicable regulation establishing an exclusion for wood preserving wastewaters and spent wood preserving solutions and understand it requires me to comply at all times with the conditions set out in the regulation." The plant must maintain a copy of that document in its on-site records for a period of no less than 3 years from the date specified in the notice.

The commenter's final remarks concerned the regulatory status of spilled materials and whether a spill of the excluded materials should affect a plant's ability to claim the exclusion. Based upon this comment, EPA has decided that it is necessary to clarify the effect of a violation of any condition, including the condition prohibiting spills, on wastewaters and spent solutions generated after a violation occurs. EPA has decided that the exclusion is void once the spill or release is discovered and remains void until the plant owner or operator notifies the appropriate regulatory agency, and the agency determines that the problem has been adequately addressed. EPA believes it is appropriate to impose this requirement even for spills, because the significance of a spill may vary greatly from plant to plant and from incident to incident. EPA hopes that a reviewing agency would quickly reinstate the exemption after a one-time spill, particularly if the spill is small, and would not require specific actions to correct the problem. In contrast, EPA would expect the reviewing agency to require specific actions (such as creation and implementation of a spill prevention plan) for a plant that experienced repeated spills. EPA believes the severity of any violation and the precise actions needed to return the plant to compliance can best be assessed on a case-by-case basis. EPA has added language to the regulation to clarify this issue. It applies to all of the conditions of the exclusion.

2P4P-00035 Utility Solid Waste Activities Group (USWAG)

VI. USWAG SUPPORTS EPA'S PROPOSAL TO EXCLUDE WOOD PRESERVING WASTEWATERS AND SPENT WOOD PRESERVING SOLUTIONS FROM REGULATION AS HAZARDOUS WASTE.

USWAG supports EPA's proposal to exclude recycled wood preserving wastewaters and spent wood preserving solutions from regulation as hazardous waste. 62 Fed. Reg. at 26055-58. While USWAG members do not generate these wastes, USWAG supports the Agency's efforts to make its hazardous waste regulations distinguish more accurately between in-process materials and wastes.

In the case of wood preserving solutions, USWAG believes that the Agency has correctly recognized that, when these materials are reused within an industrial process, they never become wastes subject to RCRA regulation. USWAG supports the Agency's recognition that imposing hazardous waste regulation on these materials, which remain within the manufacturing process, disrupts that process without materially enhancing protection of human health and the environment.

EPA RESPONSE:

EPA appreciates the commenter’s support of the proposed exclusion. The commenter correctly observes that the Agency is, by finalizing this provision, distinguishing between in-process materials (used to treat wood) and wastes (from wood preserving operations). However it is important for the commenter to recognize that in promulgating this exclusion, the Agency is not making a generic statement that is necessarily relevant to other industries. This provision was crafted specifically for a particular segment of the wood preserving industry based upon our determination that so long as that segment of the industry complies with a number of established conditions, it is unnecessary to regulate their recycled wastewaters and spent solutions as solid waste prior to reclamation. This exclusion is industry specific and should not be read as an indicator of how EPA might handle future regulatory determinations.

2P4P-00042 Law Office of David J. Lennett (for Environmental Defense Fund, Mineral Policy Center, Southwest Research and Information Center, North Santiam Watershed Council, Pamlico-Tar River Foundation, Siskiyou Regional Education Project, Okanogan Highlands Alliance, and the Louisiana Environmental Action Network

IX. PROPOSED EXCLUSION FOR WOOD PRESERVING WASTEWATERS

EPA proposes to exclude wastewaters and spent wood preserving solutions from the definition of solid waste (and thus from RCRA regulation) where they are reused onsite in the production process and managed in accordance with certain conditions intended to prevent releases. See 62 FR 26055-58. From the outset, it must be noted the principal motivation for this proposal is the regulated community's desire to escape state waste generation taxes, and the associated political pressure placed on the Agency by certain members of Congress. [FN 111: See 62 FR 26056] And because the Agency has not undertaken an independent investigation of industry recycling practices, and is therefore wholly dependent on industry submissions for the factual underpinnings of the proposal, there are important data gaps regarding the nature and extent of this reuse practice.

For example, wood preserving facilities can be divided into two groups: waterborne (using chromated copper arsenate as a preservative) and oilborne (using pentachlorophenol or creosote as a preservative). While it is the Agency's "understanding" that reuse of wastewaters is standard practice at waterborne facilities due in large part to zero discharge Clean Water Act requirements no such "understanding" is conveyed for oilborne facilities. [FN 112:62 FR 26056-57.] Moreover, while EPA "believes" the recycling of wastewaters and spent wood preserving solutions is "essential" to the financial well-being of waterborne wood preserving plants, no similar finding is made with respect to oilborne plants. [FN 113: 62 FR 26056.] Consequently, the level of EPA fact finding attached to this proposal is suspect generally, but in the case of oilborne plants, is particularly lacking since the Agency is unable to make the requisite legitimate reuse findings for these facilities.

An additional area of inquiry completely ignored in EPA's proposal is the effect of the exemption on the regulation of the non-exempt hazardous wastes at wood preserving facilities. Specifically, both the State of Oregon and EDF previously expressed concern about the potential for the remaining hazardous wastes to escape RCRA regulation at some facilities, even when land disposed. The loss of RCRA controls would occur if the monthly generation rate decreased below 100 kg/mo once the wastewaters and spent wood preserving solutions are excluded from RCRA regulation, thereby enabling wood preserving facility owners/operators to invoke the small quantity generator exemption. [FN 114: See the June 10, 1996 EDF Comments on the May 10, 1996 NODA, p.4 (which are hereby incorporated by reference); 40 CFR 261.5(a).] While this loss of RCRA controls through the small quantity generator exemption is not unusual, the bases for the wood preserving listing determinations makes this case very different from other applications of the small quantity generator exemption.

When EPA listed the wood preserving wastes as hazardous in December 1990, EPA considered whether the wastes should be listed as acutely hazardous or merely hazardous. Significantly, EPA elected not to list the wastes as acutely hazardous, in large part because "the existing regulations are adequate to regulate wastes designated as toxic", and "the significance of designating a waste as acutely hazardous is now greatly diminished, if necessary at all" [FN 115:55 FR 50467 (December 11, 1990).] Specifically, EPA cited the RCRA LDR provisions, the minimum technology requirements, and the RCRA omnibus authorities as all applying to the "toxic" wastes, and as a result, the acutely hazardous listing would not result in superior environmental protection." [FN 116: 55 FR 50467.]

However, none of these requirements apply to the non-exempt wood preserving wastes if EPA finalizes the proposal and the wastes are subject to the small quantity generator exemption. In contrast, because acutely hazardous wastes are subject to a much lower quantity cutoff (1 kg/mo) for a RCRA exemption, the wastes would remain subject to the EPA cited RCRA controls if the A ency had listed the wood preserving wastes as acutely hazardous. [FN 117: See 40 CFR 261.5(e).] Therefore, EPA's rationale for the non-acutely hazardous waste listing is no longer true if EPA finalizes the solid waste exclusion as proposed.

The wood preserving wastes at issue should not be land disposed without prior treatment, particularly in municipal waste landfills or other nonhazardous waste units. The toxic contaminants in these wastes are mobile, present in concentrations greatly exceeding applicable health-based standards, and are unlikely to degrade in the environment prior to reaching receptors. [FN 118:55 FR 50459.] As EPA stated when it promulgated LDR treatment standards for these wastes:

> ... In addition, for these wastes, the presence of extremely toxic hazardous constituents (arsenic, D/F, PCP), plus the widespread contamination already caused by past land disposal of these wastes (see e.g. the background document to the Listing rules for F032, F034, and F035) warrant treatment which effectively destroys, removes, or immobilizes hazardous constituents to the promulgated levels. [FN 119: 62 FR 26003 (May 12, 1997).]

Consequently, should EPA finalize the solid waste exclusion, EPA must place another condition on the exclusion that requires wood preserving facilities to include the quantities of the wastewaters and spent wood preserving solutions when determining eligibility for the 40 CFR 261.5 provisions. Otherwise, EPA must repropose the wood preserving listings as acutely hazardous given the substantial change in circumstances since the hazardous waste listings, and change the basis for listing these wastes prior to or at the same time the solid waste exclusion is finalized. [FN 120: Pursuant to Section 7006(a)(1) of RCRA, EPA's finalization of the proposed solid waste exclusion without rectifying the potential loss of RCRA controls over the non-exempt F032, F034, and F035 hazardous wastes would constitute new grounds to challenge EPA's failure to list these wastes as acutely hazardous.]

In Section IX of the comments, the proposed exclusion for certain wood preserving wastewaters and spent solutions is addressed. We find the Agency has failed to conduct the independent fact finding necessary to justify the exclusion, particularly for oilborne facilities. Moreover, insofar as the proposed exclusion would enable non-recycled wastes to escape RCRA regulation by operation of the small quantity generator exemption, the proposal reopens the issue as to whether the wood preserving wastes should be listed as acutely hazardous so RCRA controls over the disposed wastes are maintained. The non-recycled wood preserving wastes at issue should not be land disposed without prior treatment, particularly in municipal waste landfills or other nonhazardous waste units.

EPA RESPONSE:

EPA acknowledges that the exclusion may reduce hazardous waste taxes for some facilities. Nevertheless, EPA believes that the exclusion is warranted because the materials appear to be used as part of the production process and do not appear to contribute to waste management problems when managed in accordance with the conditions in the final rule.

As the commenter accurately points out, the Agency did not undertake an independent investigation of industry recycling practices when crafting the proposed exclusion for recycled wood preserving wastewaters and spent wood preserving solutions. However, EPA has considerable knowledge of industry practices based upon years of experience regulating the wood preserving industry’s waste management and recycling practices. Additionally, prior to issuing our proposal EPA asked for and received comment on whether such a provision was appropriate from industry, states and environmental representatives. Therefore, we reject the statement that EPA is “wholly dependent on industry submissions for the factual underpinnings of the proposal.” As for the commenter’s assertion that “there are important data gaps regarding the nature and extent of this reuse practice,” we have acknowledged as much in both the proposal and in today’s rule by granting the exclusion only to those wood preserving operations that we are convinced routinely reuse their wastewaters and spent solutions to treat wood (i.e., water borne processes). We stated in the preamble to today’s rule that "EPA has not had time to investigate the jurisdictional and factual issues posed by the use of wastewaters for other, more ancillary, purposes. Consequently, EPA is not expanding the exclusion beyond the proposal. It applies only to water borne processes.”

Finally, the commenter suggested that EPA “place another condition on the exclusion that requires wood preserving facilities to include the quantities of the wastewaters and spent wood preserving solutions when determining eligibility for the 40 CFR 261.5 provisions.” The commenter suggests the EPA failed to address the effect of the exemption on the regulation of non-exempt hazardous wastes at wood preserving facilities, especially should these facilities become conditionally exempt small quantity generators (CESQGs)—as provided for under 40 CFR 261.5—solely by virtue of qualifying today's exclusion for wastewaters and spent solutions. As was stated in the preamble to today's rule, the Agency lacks (and the commenter did not provide) sufficient information about the volumes of these other wastes and the risks they pose to promulgate a rule creating an exception to the long-established CESQG exemption for them. In arguing that EPA's rationale for not designating the listed wood preserving wastes as acutely hazardous in the December 1990 listing (55 Fed.Reg. 50467) is no longer true if EPA finalizes the solid waste exclusion as proposed, the commenter fails to indicate how this situation differs from that of a wood preserving facility that was already a CESQG at the time of the listing. Had the Agency determined at that time that these wastes were so toxic that no one generating them should be allowed to claim CESQG status, it would have articulated this conclusion and promulgated an exception to the CESQG regulations. Instead, the listing operated like all other hazardous waste listings--applying to quantities generated above the CESQG quantity limits. The commenter further supports his claim by quoting from the December 1990 preamble the Agency's assertion that "the existing regulations are adequate to regulate wastes designated as toxic" and "the significance of designating a waste as acutely hazardous is now greatly diminished, if necessary at all." In December 1990, generators (including wood preservers) meeting the 40 CFR 261.5 criteria qualified for CESQG status, under the same regulatory scheme that the commenter quotes EPA as deeming "adequate to regulate wastes designated as toxic."The mere fact the in 1990 EPA considered these wastes as a class to be more toxic than some others that it had listed does not require the Agency to deny CESQG Status to facilities that meet the CESQG quantity limits as a result of today's rule. The actual amounts and toxicities of other wastes meeting the listing description generated at facilities relying on today's rule may vary widely. Moreover, in 1990 EPA allowed generators of these waste streams who produced quantities small enough to meet CESQG exemption to take advantage of that exemption. The commentor did not challenge EPA's failure to create an exception to the CESQG provisions at that time. EPA sees no basis for distinguishing between generators whose quantities were small enough to qualify for the exemption in 1990 and generators whose quantities will be small enough as a result of today's rule. The commentor has offered no justification or grounds for such a distinction, either. Since the CESQG exemption has been available to generators of these wastes since the listings were promulgated, EPA's decision to continue to allow it to operate does not reopen any issues in the December 1990 rulemaking. At some future date should EPA receive actual data that indicates an increased risk posed by wood preserving plants that are CESQG, we may at that time be willing to revisit our decision concerning the regulation of these facilities.

2P4P-00074 New York State Department of Environmental Conservation

Proposed Exclusion of Wood Preserving Wastewaters and Spent Wood Preserving

Solutions

DEC agrees with EPA on exclusion of wood preserving wastewaters and preserving solutions. The exclusion, as outlined in preamble, seems to meet the criteria for consideration of reclassification as a solid waste, contingent upon EPA requiring notification to appropriate state officials and RCRA regulation for materials exiting the "recycling loop" via spills or intended management as a waste.

EPA RESPONSE:

EPA appreciates the commenter’s support of the exclusion for recycled wood preserving wastewaters and concurs with the commenter’s observation that the exclusion as outlined in the preamble to the proposed rule meets the criteria for being reclassified as being outside the definition of solid waste, provided that certain conditions are met.

Among those conditions is a requirement for the owner or operator of a wood preserving plant claiming an exclusion for his recycled wastewaters and spent solutions to notify the appropriate regulatory agency (prior to operating pursuant to this exclusion) that the plant intends to claim the exclusion. EPA considers such notification to be essential to the proper implementation of this provision. In order to allow EPA and authorized states to verify that the conditions placed upon today’s exclusion are properly met, it is important that wood preserving plants inform the appropriate Regional Administrator or State Director that they will be reporting significantly lower waste generation totals. The one-time notification to the appropriate Regional Administrator or State Director must state that the plant intends to claim the exclusion, and must contain the following language: “I have read the applicable regulation establishing an exclusion for wood preserving wastewaters and spent wood preserving solutions and understand it requires me to comply at all times with the conditions set out in the regulation.” The plant must maintain a copy of that document in its on-site records for a period of no less than 3 years from the date specified in the notice.

The commenter’s desire to see continued regulation of materials that are not recycled (either because they are spilled or sent for waste management) is addressed in the preamble to today’s rule. EPA decided that it is necessary to clarify the effect of a violation of any condition, including the condition prohibiting spills, on wastewaters and spent solutions generated after a violation occurs. EPA has decided that the exclusion should not be available until the plant owner or operator notifies the appropriate regulatory agency, and the agency determines that the problem has been adequately addressed. EPA believes it is appropriate to impose this requirement even for spills, because the significance of a spill may vary greatly from plant to plant and from incident to incident. EPA hopes that a reviewing agency would quickly reinstate the exemption after a one-time spill, particularly if the spill is small, and would not require specific actions to correct the problem. In contrast, EPA would expect the reviewing agency to require specific actions (such as creation and implementation of a spill prevention plan) for a plant that experienced repeated spills. EPA believes the severity of any violation and the precise actions needed to return the plant to compliance can best be assessed on a case-by-case basis. EPA has added language to the regulation to clarify this issue. It applies to all of the conditions of the exclusion. Materials managed as hazardous waste rather than being recycled would of course not qualify for this exclusion.

Phase IV Second Supplemental Proposed Rule: Comments and Responses on Zinc

1. 2P4P-00010 International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.

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.

Response:

The Agency thanks the commenter for supporting the zinc treatment standard. The Agency also notes that zinc is not a UHCs in characteristic wastes. Currently zinc is only regulated in K061 wastes. The Agency will clarify this in the Phase IV final rule.

2. 2P4P-00032 Savage Zinc, Incorporated

These comments are submitted by Savage Zinc, Incorporated through its legal counsel in response to the Supplemental Notice of Proposed Rulemaking issued by the United States Environmental Protection Agency ("U.S. EPA" or the "Agency") entitled "Land Disposal Restrictions Phase IV: Second Supplemental Proposal on Treatment Standards for Metal Wastes and Mineral Processing Wastes, Mineral Processing and Bevill Exclusion Issues, and the Use of Hazardous Waste as Fill," 62 Fed. Reg. 26,041 (May 12, 1997), hereinafter referred to as the "'97 Phase IV Rule."

Savage Zinc, Incorporated appreciates this opportunity to comment. We urge EPA to reconsider this rulemaking and to reevaluate each of the specific requirements of the rule in light of industry comments.

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.

Response:

The Agency agrees with the commenter that zinc is not a UHC in characteristic wastes. Currently, zinc is only regulated in K061 wastes. The Agency will clarify this in the Phase IV final rule.

3. 2P4P-00039 American Iron and Steel Institute (AISI)

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.

V. UNIVERSAL TREATMENT STANDARD ISSUES

A. EPA Should Not Maintain Treatment Standards for Zinc

EPA has proposed to decrease the universal treatment standard ("UTS") for zinc from 5.3 mg/l in a Toxicity Characteristic Leaching Procedure ("TCLP") extract to 4.3 mg/l. As the Agency notes, even with the proposed revision, zinc would not be an underlying hazardous constituent. Thus, the change would not in any way affect the treatment requirements for characteristic hazardous wastes. However, the change would affect the treatment standards for listed hazardous wastes, including the following wastes of particular interest to the iron and steel industry: K061, K062, and F006.

AISI has long opposed, and continues to oppose, the maintenance of a treatment standard for zinc. AISI recognizes that the D.C. Circuit upheld the establishment of a zinc treatment standard in Steel Manufacturers Ass*n v. EPA, 27 F.3d 642, 648 (D.C. Cir. 1994) ("SMA"). However, the basis for the Court*s decision is no longer valid. Accordingly, EPA must not just revise, but remove, the treatment standard for zinc.

The D.C. Circuit started its analysis by acknowledging that zinc is not a hazardous constituent listed in Appendix VIII of 40 C.F.R. Part 261. It nevertheless held that EPA could set a treatment standard for zinc if such a standard would minimize threats from constituents that are Appendix VIII hazardous constituents. [fn9:The D.C. Circuit previously made it clear that treatment standards must provide some significant benefit in terms of protection of human health or the environment. See Hazardous Waste Treatment Council v. EPA, 886 F.2d 355, 362 (D.C. Cir. 1989), cert. denied, 498 U.S. 849 (1990) ("it [would be] unreasonable for EPA to promulgate treatment standards wholly without regard to whether there might be a threat to man or nature"); see also 55 Fed. Reg. 6640, 6641 n.1 (February 26, 1990) ("the Agency does not believe that this standard requires the elimination of every conceivable threat"). This requirement is particularly difficult to satisfy where, as here, a standard is being set for a constituent that is not itself hazardous. Moreover, because the treatment standard in question is a “universal” standard, EPA must show, as a general matter for all wastes, that the standard provides significant environmental protection] After considering the justifications provided by EPA, the Court concluded that the Agency satisfied its burden by showing that “maximizing zinc recovery [in a high-temperature metals recovery (“HTMR”) unit] would lower the volume of zinc in the slag -- and, logically, the overall volume of slag itself.” 27 F.3d at 649. According to the Court, “[minimizing the volume of ... slag ... promotes RCRA*s abiding goal of reducing or eliminating the generation of hazardous wastes.” Id.

The treatment standards at issue in SMA were based on HTMR as the Best Demonstrated Available Technology (“BDAT”) for K061. See 56 Fed. Reg. 41,164, 41,167 (August 19, 1991) (noting that the Agency was not changing its decision in the “First Third” LDR rule designating HTMR as BDAT for K061). However, EPA*s position on the BDAT for metal-bearing wastes has changed since that time. The Agency now maintains that both HTMR and stabilization are BDAT. See 62 Fed. Reg. at 26,044. Indeed, the proposed new UTS for zinc is based on the performance of stabilization technologies. See id. at 26,047.

Even if zinc concentrations are a reliable indicator of the extent to which waste volumes have been reduced through the HTMR process, there is no reason to believe that they have any relevance to the minimization of risks through stabilization. Unlike HTMR processes, stabilization processes tend to increase waste volumes. Thus, the concentration of leachable zinc has no relationship to the minimization of risks through a reduction in waste volume (as was the case in SMA). EPA also has failed to demonstrate that the concentration of leachable zinc has any relationship to the minimization of risks in any other way (e.g., through a reduction in the mobility of metals that are Appendix VIII hazardous constituents).

Assuming, for the sake of argument only, that the Agency could somehow demonstrate that low leachable zinc concentrations in residues from both HTMR processes and stabilization processes correlate to low mobility of hazardous constituents, EPA still would not be justified in maintaining a treatment standard for zinc. Hundreds of hazardous constituents, including approximately a dozen metals, already have universal treatment standards. The best indicator of whether the mobility of these constituents has been minimized is the concentration of those constituents in a TCLP extract, not the concentration of zinc in the TCLP extract. There is simply no logical basis for maintaining a UTS for zinc.

Response:

The Agency notes that zinc is not a UHC in characteristic wastes. Currently, zinc is only regulated in K061 wastes. The Agency will clarify this in the Phase IV final rule.