To better protect beaches, coasts, and the marine environment from pollution, the Environmental Protection Agency (EPA), relying upon existing Clean Water Act authorities, shall expeditiously propose new science-based regulations, as necessary, to ensure appropriate levels of protection for the marine environment. Such regulations may include the identification of areas that warrant additional pollution protections and the enhancement of marine water quality standards. The EPA shall consult with the Federal agencies identified in subsection 4(a) of this order, States, territories, tribes, and the public in the development of such new regulations.

EPA believes that revisions to the Ocean Discharge Criteria (also called the section 403 regulations) is the most appropriate approach to implementing the order.

In 1972, Congress passed the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA). Under the CWA, point source discharges (*i.e.,* discharges from municipal and industrial facilities) to waters of the United States must obtain a National Pollutant Discharge Elimination System (NPDES) permit, which requires compliance with technology- and water quality-based treatment standards. In addition, because of the complexity and ecological significance of marine ecosystems, discharges to the marine environment beyond the baseline (*i.e.,* the territorial sea, contiguous zone, and oceans) must also comply with section 403 of the CWA (section 403), which specifically addresses impacts from such point sources on marine resources.

The current Ocean Discharge Criteria regulations consider 10 criteria in evaluating NPDES permits for discharges into marine waters. These criteria emphasize an assessment of the impact of an ocean discharge both on the biological community in the area of the discharge and on surrounding biological communities. The current regulations governing section 403 were issued in 1980. Revising these regulations could potentially impact holders of NPDES permits that discharge into ocean waters and anyone who might apply for such a permit in the future.

EPA is holding these five meetings to present EPA's plans for section 403 regulatory revisions in support of the Executive Order. These meetings will provide the interested public an opportunity to comment on EPA's approach for regulatory revisions and to present data or opinions regarding the impacts of ocean discharges under CWA section 403 on the ocean environment.

These five meetings will provide an opportunity for the interested public to comment on EPA's approach to meeting the requirements of the Executive Order. Specifically, the Agency may reconsider revising the existing scientific standards for protecting coastal and ocean waters under section 403 of the Clean Water Act, and proposing a list of Special Aquatic Sites (SAS's). The Agency's actions may also include strengthening the existing regulations regarding permits to discharge into ocean waters under section 403 of the CWA, including specific protection for SAS's in ocean waters.

Dated: July 7, 2000.

Robert H. Wayland III,

Director, Office of Wetlands, Oceans, and Watersheds.

[FR Doc. 00–17751 Filed 7–11–00; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 261, 268 and 271

[FRL–6729–4]

RIN 2050–AE65

Land Disposal Restrictions; Treatment Standards for Spent Potliners From Primary Aluminum Reduction (K088) and Regulatory Classification of K088 Vitrification Units

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule.

SUMMARY: EPA is proposing to revise certain treatment standards for spent potliners from primary aluminum reduction (EPA hazardous waste: K088) under its Land Disposal Restrictions (LDR) program. These revisions are a direct result of an Agency commitment to investigate whether a more permanent treatment standard for K088 is appropriate. If promulgated, nonwastewaster forms of K088 waste would have to meet a new treatment standard, measured by a version of the Toxicity Characteristic Leaching Procedure (TCLP) that uses deionized water as the leaching fluid. The Agency is also proposing to revise the treatment standards for total and amenable cyanide in K088 nonwastewaters. Finally, the Agency is proposing to classify K088 vitrification units as RCRA Subpart X miscellaneous treatment units. As a final matter, we discuss the appropriateness of extending the rationale and regulatory status applied in this proposed rule for K088-vitrification units to all vitrification units treating RCRA hazardous waste.

DATES: Written and electronic comments must be received on or before September 11, 2000.

ADDRESSES: Commenters should submit an original and two copies of their comments referencing Docket No. F–2000–TSSP–FFFFF to: the RCRA Information Center (RIC), U.S. Environmental Protection Agency Headquarters (5305G), Ariel Rios Building, 1200 Pennsylvania Avenue NW., Washington, DC 20460. Courier deliveries of comments should be submitted to the RIC at the address listed below. Comments may also be submitted electronically through the Internet to: RCRA-docket@epamail.epa.gov. Comments in electronic format should also be identified by the docket number F–2000–TSSP–FFFFF. Submit electronic comments as an ASCII file and avoid the use of special characters and any form of encryption. If possible, EPA's Office of Solid Waste (OSW) would also like to receive an additional copy of the comments on disk in WordPerfect 6.1 file format.

Commenters should not submit electronically any confidential business information (CBI). An original and two copies of the CBI must be submitted separately to: Regina Magbie, RCRA CBI Document Control Officer, Office of Solid Waste (5305W), U.S. EPA, Ariel Rios Building, 1200 Pennsylvania Avenue NW., Washington, DC 20460.

The Agency will consider the public comments during development of any final rule related to this action. The Agency urges commenters submitting data in support of their views to include data evidence that appropriate quality assurance/quality control (QA/QC) procedures were followed in generating the data. Data that the Agency cannot verify through QA/QC documentation may be given less consideration or disregarded in developing regulatory options for the final rule. For guidance see Final Best Demonstrated Available Technology (BDAT) Background Document for Quality Assurance/ Quality Control Procedures and Methodology; USEPA, October 23, 1991.

Public comments and supporting materials are available for viewing in the RIC, located at Crystal Gateway One, 1235 Jefferson Davis Highway, First Floor, Arlington, Virginia. The RIC is open from 9 a.m. to 4 p.m., Monday through Friday, except for Federal holidays. To review docket materials, the public must make an appointment by calling 703–603–9230. The public may copy a maximum of 100 pages from any regulatory docket at no charge. Additional copies cost $0.15 per page.

The docket index and notice are available electronically. See the Supplementary Information section for information on accessing it.

FOR FURTHER INFORMATION CONTACT: For general information, contact the RCRA Hotline at (800) 424–9346 (toll-free) or TDD (800) 553–7672 (hearing impaired). In the Washington, DC, metropolitan area, call (703) 412–9810 or TDD (703) 412–3323. For specific information, contact Elaine Eby or John Austin, Office of Solid Waste (5302W), U.S. Environmental Protection Agency, Ariel Rios Building, 1200 Pennsylvania Avenue, NW., Washington, DC 20460. Elaine Eby may be reached at 703–308–8449, eby.elaine@epamail.epa.gov; and John Austin may be reached at 703–308–0436, austin.john@epamail.epa.gov. For information on the capacity analysis, contact C. Pan Lee (5302W) at 703–308–8478, lee.cpan@epamail.epa.gov. For questions on the regulatory impact analysis, contact Linda Martin (5307W) at 703–605–0768, martin.linda@epamail.epa.gov.

SUPPLEMENTARY INFORMATION:

Availability of Rule on Internet

Please follow these instructions to access the rule: From the World Wide Web (WWW), type http://www.epa.gov/epaoswer/hazwaste/ldr/index.html.

Affected Entities

Entities potentially affected by this action are generators of spent aluminum potliner from primary aluminum reduction, or entities that treat, store, transport, or dispose of these wastes.

Category	Affected entities
Industry	Generators of the following listed wastes, or entities that treat, store, transport, or dispose of these wastes. K088—Spent potliners from primary aluminum reduction. All RCRA Hazardous Waste—Treated using a vitrification technology.

This table is not intended to be exhaustive, but provides a guide for readers regarding entities likely to be affected by this action. This table lists those entities of which EPA now is aware that potentially could be affected by this action. Other entities not listed in the table also could be affected. To determine whether your facility is regulated by this action, you should examine 40 CFR parts 260 and 261 carefully in concert with the amended rules found at the end of this **Federal Register** document. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

How Can I Influence EPA's Thinking on this Rule?

In developing this proposal, we tried to address the concerns of all our stakeholders. Your comments will help us improve this rule. We invite you to provide different views on options we propose, new approaches we have not considered, new data, how this rule may affect you, or other relevant information. We welcome your views on all aspects of this proposed rule, but we request comments in particular on the items in the following Table.

PRIMARY AREAS UPON WHICH COMMENTS ARE REQUESTED

- The selection of BDAT;
- The proposed treatment standards for cyanide and fluoride;
- The time required before treatment capacity capable of meeting the revised treatment standards will be available;
- The classification of K088 vitrification units as miscellaneous Subpart X treatment units;
- The analytical approach taken to estimate compliance costs and potential economic impacts; and,
- Data to refine the time frame to construct a vitrification unit and commercial pricing of the Vortec technology.

Your comments will be most effective if you follow the suggestions below:

- Explain your views as clearly as possible and why you feel that way.
- Provide technical and cost data to support your views.
- If you estimate potential costs, explain how you arrived at the estimate.
- Tell us which parts you support, as well as those with which you disagree.
- Provide specific examples to illustrate your concerns.
- Offer specific alternatives.
- Refer your comments to specific sections of the proposal, such as the units or page numbers of the preamble, or the regulatory sections.
- Make sure to submit your comments by the deadline in this notice.
- Be sure to include the name, date, and docket number with your comments.

Table of Contents

I. Background

A. How Is K088 Waste Generated?

K088 (spent potliner from primary aluminum reduction as listed in 40 CFR 261.32) is generated by the aluminum manufacturing industry. Aluminum production occurs in four distinct steps: (1) mining of bauxite ores; (2) refining of bauxite to produce alumina (aluminum oxide); (3) reduction of alumina to aluminum metal; and (4) casting of the molten aluminum. Bauxite is refined by dissolving alumina in a molten cryolite bath. Next, alumina is reduced to aluminum metal. This reduction process requires high purity aluminum oxide, carbon, electrical power, and an electrolytic cell. An electric current reduces the alumina to aluminum metal in electrolytic cells, called pots. These pots consist of a steel shell lined with brick with an inner lining of carbon. During pot service, the liner is degraded and broken down. Upon failure of a liner in a pot, the cell is emptied, cooled, and the lining is removed. In 1980, EPA originally listed spent potliners as a RCRA hazardous waste and assigned the hazardous waste code K088. See 45 FR 47832.

B. What Is the Regulatory History of K088 in the LDR Program?

The Phase III—Land Disposal Restrictions Rule (61 FR 15566, April 8, 1996) prohibited the land disposal of K088 spent potliner unless the waste satisfies the section 3004(m) treatment standard established in the same rulemaking. The Phase III rule established treatment standards, expressed as numerical concentration limits, for various regulated constituents in the waste—25 in all, with standards for both wastewaters and nonwastewaters. These constituents included cyanide, fluoride, toxic metals (including arsenic), and a group of organic compounds called polycyclic aromatic hydrocarbons (PAHs).

With the exception of fluoride, the treatment standard limits established for K088 were equivalent to the universal treatment standards. See 61 FR 15585; see also 40 CFR 268.48 (Universal Treatment Standards Table). The fluoride standard was based generally on data submitted in a delisting petition for K088 waste from the Reynolds Metals Company. These data were generated from the operation of Reynold's proprietary treatment process for spent potliners.

In the Phase III rule, the Agency granted a nine-month national capacity variance pursuant to section 3004(h)(2) to allow facilities generating K088 adequate time to work out treatment and disposal logistics. See 61 FR 15589. Subsequent developments then took an unexpected turn. Unanticipated performance problems in the Reynolds treatment process resulted in treatment residues whose actual leachate (as measured in the landfill leachate collection system at the company's disposal site) contained markedly higher concentrations of arsenic and fluoride than predicted by the Toxicity Characteristic Leaching Procedure (TCLP), the analytical test used to measure performance of the treatment technology for certain hazardous constituents in K088. Two of the 22 regulated constituents of concern, namely, arsenic and fluoride were significantly more soluble in highly alkaline conditions (the actual disposal environment of the landfill Reynolds was using for disposal) than acidic conditions (the situation modeled by the TCLP). 62 FR 1992, 1993 (January 14, 1997). In addition, the company was disposing of the treatment residues in non-subtitle C units.

EPA concluded that further time was needed to evaluate whether adequate protective treatment capacity was available (within the meaning of RCRA section 3004(h)(2)), and, as part of this determination, whether Reynold's practices in fact satisfied the mandate of section 3004(m) that threats posed by land disposal of the hazardous waste be minimized through treatment. Until these questions were answered and a finding of sufficient protective treatment capacity made, EPA determined that insufficient treatment capacity existed for K088 waste because Reynolds, at the time, was the only available commercial treatment facility for spent potliners. Consequently, on January 14, 1997, we extended the existing national capacity variance, and postponed implementing the land disposal prohibition for an additional six months to be able to study the efficacy of the Reynolds treatment process and the resulting leachate. See generally 62 FR 1992.

In July 1997, EPA, after further study and negotiation with affected parties, announced that Reynolds treatment does reduce the overall toxicity associated with the waste, and, by virtue of an Enforcement Order, that disposal of treatment residues would occur only in units meeting subtitle C standards. This was an improvement over the disposal of untreated spent potliner and provided protective treatment capacity. See 62 FR 37696 (July 14, 1997). On October 8, 1997, the national capacity extension ended and the prohibition on land disposal of untreated spent potliner took effect.

C. How Has Past Litigation Affected K088 Treatment Standards?

Petitions for judicial review of the Phase III rule and the January 1997 and July 1997 rules were filed by Columbia Falls Aluminum Company and other aluminum producers from the Pacific Northwest. The petitioners argued among other things that the use of the Toxicity Characteristic Leaching Procedure (TCLP) did not accurately predict the leaching of waste constituents, particularly arsenic and fluoride, to the environment and that it was therefore arbitrary to measure compliance with the treatment standard using this test. The United States Court of Appeals for the District of Columbia Circuit decided on April 3, 1998, that EPA's use of the TCLP as a basis for setting treatment standards for K088 was arbitrary and capricious for those constituents for which the TCLP demonstratively and significantly under-predicted the amount of the constituent that would leach (139 F.3d 914; see also 63 FR 28571, May 26, 1998 (EPA's interpretation of the Court's opinion)). The Court vacated all the K088 treatment standards and the prohibition on land disposal even though only two of the 54 hazardous constituents for which EPA established treatment standards, namely arsenic and fluoride nonwastewaters, were implicated and despite the Court's expressed statement that its decision did not affect the viability of the concentration limits established for other constituents (139 F.3d at 923–24). In its decision, the Court specifically invited EPA to file a motion to delay issuance of the mandate in this case for a reasonable time in order to develop a replacement standard. *Id.*

On May 18, 1998, we filed a motion with the Court to stay its mandate for four months while we promulgated a replacement prohibition and accompanying treatment standards. The Court granted this motion, indicating that its mandate would not become effective before September 24, 1998. On September 21, 1998, we promulgated interim replacement standards for K088 waste.[1] (See 63 FR 51254, September 24,

[1] The following wastewater and nonwastewater standards were promulgated in this rule: acenapthene, anthracene, benz(a)anthracene, benzo(a) pyrene, benzo(a)fluoranthene, benzo(b)fluoranthene, benzo(g,h,i)perylene,

Continued

1998). We did not, however, replace the treatment standard for fluoride, one of the two constituents for which the TCLP markedly under predicted its leaching potential in treated K088. We determined that significant technical effort would be needed to develop a replacement treatment standard for this constituent—a task that could not be achieved by the D.C. Circuit's deadline of September 24, 1998.[2] We did commit, however, to investigating and if appropriate developing a more permanent treatment standard for K088—an effort we expected to be completed within two years. We stated that a new treatment standard for spent potliners (K088) would hopefully be based on the performance of a treatment technology that resulted in the immobilization of arsenic and fluoride, as well as the other toxic metals in the waste. At that time, we were aware of numerous technologies that showed promise for the treatment of K088 waste, a number of which we viewed as close to being commercially available. We stated that more information was needed to characterize the performance of these technologies, as well as to assess their safety and (in some cases) the safety of the hazardous waste-derived products which may be generated as part of these treatment processes. Chemical Waste Management, 976 F.2d at 17 (treatment technologies whose air emissions are not adequately controlled are not treating in conformance with requirements of section 3004(m)).

D. Today's Proposal

This brings us to today's proposal. Over the last 18 months we have gathered additional data and information on treatment technologies that may be evaluated as the basis for a permanent treatment standard for K088 waste. We have investigated technologies such as vitrification, gasification, and alkaline chlorination, among others. Our emphasis has been on the overall environmental benefits of these technologies including, of course, the performance of these technologies on the treatment of cyanide as well as the two constituents of special concern to the Court, namely arsenic and fluoride. Concurrent with this analysis we have evaluated various analytical methods for measuring fluoride and arsenic concentrations in K088 waste. We have also considered several regulatory implementation approaches for K088 vitrification units and appropriate emission controls for these units.

As a result of these efforts, we are proposing a four-part regulatory strategy for K088 treatment—a strategy that provides environmental protection, but also flexibility with regard to regulatory compliance. The four basic components being discussed in today's proposal include: (1) Revised treatment standards for cyanide and fluoride in K088 nonwastewaters; (2) regulation of K088 vitrification units as RCRA Subpart X miscellaneous treatment units; (3) required air controls on K088 vitrification units; and (4) regulatory status of the outputs of K088-vitrification units.[3] Today's preamble is structured to address each of these components individually and in the order that they have been presented here.

II. Proposed Revisions to K088 Treatment Standards

In this section we discuss proposed revisions to the treatment standards for fluoride, total cyanide, and amenable cyanide in K088 nonwastewaters. We discuss the analytical method proposed to measure compliance with the proposed fluoride treatment standard for K088 nonwastewaters, the identification of treatment processes and performance data for K088, the determination of Best Demonstrated Available Technology or BDAT, and today's proposed treatment standards.

A. Why Is EPA Proposing Changes for Cyanide and Fluoride in K088?

The September 21, 1998 interim final rule committed EPA to the development of a more permanent treatment standard for K088 waste. Cyanide and fluoride were two of the hazardous constituents for which treatment standard development had previously proved problematic. K088 waste contains extremely high concentrations of these constituents, much higher than any of the other regulated constituents in the waste.[4] Furthermore, spent potliners are listed as a hazardous waste because of high concentrations and large amounts of toxic cyanide. See 40 CFR Part 261, Appendix VII (basis for listing K088); 62 FR 37696.[5] Concentrations of cyanide have been found in untreated potliners as high as 5800 mg/kg. Past land disposal of these wastes have resulted in cyanide groundwater contamination. Indeed, EPA has stated repeatedly (and reiterates here) that control of cyanide is the most important objective of the K088 treatment standard, given cyanide's toxicity, concentration in these wastes, and potential to migrate from these wastes in high concentration, as shown by the historic damage incidents. See, e.g., 63 FR 51256; 51261.

K088 also contains high concentrations of fluoride. Often concentrations of fluoride in untreated potliner are greater than ten percent and some data suggest that untreated potliner may have concentrations of fluoride at greater than 20 percent. Most of this fluoride is in the form of soluble sodium fluoride. Unless this fluoride is recovered or effectively immobilized, the high concentrations of soluble fluoride found in K088 have significant potential to contaminate surface water and ground water and cause significant adverse effects to human health and the environment.

New performance data collected as part of developing this proposed rule show that the cyanide present in K088 waste can be readily treated to levels far below the current treatment standard using a vitrification process. These data also show that fluoride can be recovered and reused within the aluminum

chrysene, dibenzo(a,h)anthacene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, antimony, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium, silver, and cyanide. The nonwastewater treatment standards for cyanide and the above-listed organic constituents, and all of the standards for wastewaters, are based on a total composition concentration analysis. The nonwastewater treatment standards for the metal constituents are based on analysis using the Toxicity Characteristic Leaching Procedure (TCLP). The interim treatment standard for arsenic nonwastewaters was set at 26.1 mg/kg total arsenic (mineral acid soluble).

[2] We determined that, as a practical matter the requirements of the other metal treatment standards for K088 would result in some immobilization of fluoride as well, and that looking at the totality of additional environmental protection gained from the interim replacement standards for the suite of hazardous constituents involved, in lieu of the land disposal of untreated K088 waste, would constitute the best practical approach to minimizing threats to human health and the environment (even without a fluoride treatment standard). EPA did commit to additional study of fluoride treatment as part of the longer-term effort to establish more permanent treatment standards for K088 waste.

[3] We note that although much the discussion in today's notice is in the context of how to regulate K088 vitrification units, the rationale for regarding these units as Subpart X miscellaneous treatment units would logically extend to all vitrification units treating various hazardous wastes. Thus, all vitrification units, whether direct-fired or indirectly heated and irrespective of the waste treated or recycled, would be classified as Subpart X treatment units. The Agency solicits your comments on the extension of this approach to all vitrification units treating hazardous waste.

[4] As an example, the concentrations of cyanide and fluoride in K088 waste from the Ormet Primary Aluminum facility in Hannibal, Ohio averaged approximately 700 mg/kg and 60,000 mg/kg respectively. All other regulated constituents measured well below the LDR treatment standards in the treated waste. See also, *Proposed Best Demonstrated Available Technology (BDAT) Background Document for Spent Aluminum Potliners—K088,*USEPA, December 1999.

[5] *See also* 60 FR 11702, 11723 n. 11 (Mar. 2, 1995) (notice of proposed treatment standards emphasizing the importance of destroying cyanide and PAHs).

reduction process as well as sold as product to other industrial sectors. See Chemical Waste Management v. EPA, 976 F.2d 2, 27 (D.C. Cir. 1992) (remanding treatment standards as failing to minimize threats when more aggressive treatment was demonstrated to exist). Accordingly, we are proposing to amend to current cyanide treatment standards based on this new performance data as well as proposing a new treatment standard for fluoride nonwastewaters that will encourage fluoride recycling and reuse.

B. What Analytical Methods Were Used to Measure Cyanide and Fluoride Concentrations In K088 Waste?

The proposed treatment standards for both total and amenable cyanides in nonwastewaters are based upon analysis using Method 9010 or 9012, found in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW–846, as incorporated by reference in 40 CFR 260.11. These analyses require a sample size of 10 grams and a distillation time of one hour and 15 minutes. This is the analytical method already required for cyanide in all the existing treatment standards.

Today's notice also proposes the use of a revised test for analyzing fluoride in K088 nonwastewaters. This test uses a version of the Toxicity Characteristic Leaching Procedure (TCLP) that uses deionized water as the leaching fluid (ASTM Method D3987–85 (1999)). The prior treatment standard for fluoride was based on TCLP analysis following treatment that converted the fluoride present in untreated K088 waste to generally insoluble calcium fluoride. (See 61 FR 15584, April 8, 1996.) However, the solubility of calcium fluoride is a function of pH. Because the TCLP tests use a simulated leachate with enough buffering capacity to lower the leachate pH to more acidic conditions, the calcium fluoride would be substantially less soluble than would be the case under actual field conditions. At the more acidic pH of the TCLP test, fluoride concentrations in treated waste were measured at less than 48 mg/L TCLP (the old treatment standard promulgated in the Phase III rule, 61 FR 15584, April 8, 1996), while measured concentrations in actual alkaline landfill leachate can be much higher, approximately 2200 mg/L. Had the original Phase III test been performed using de-ionized water as the leachate fluid, we expect that test results would have more closely tracked with the actual field measurement because the simulated leachate used in testing would not be buffered.

More recent leachate test results support this hypothesis. Fluoride results using deionized water leach ranged from 730–940 mg/L in the December 6, 1996, Special Laboratory Report, from Reynolds Metals Company. Actual leachate results from ''landfill—cell 1'' in which these wastes were placed have ranged from 664 to 1120 mg/L (April 1998 to August 1999), although values of approximately 2200 mg/L were initially observed from cell 1.

Testing of fluoride concentrations in K088 nonwastewaters, using a version of the TCLP with de-ionized water as the leachate fluid (ASTM Method D3987–85 (1999)), appears to be a workable solution to the pH-fluoride solubility concerns and a suitable measure of treatment performance. With de-ionized water as the leachate test fluid, leachate pH is controlled by the physical properties of the waste (and not the artificial buffering capacity of the test fluid), and more closely correlates with monofill conditions.

In developing this proposal, we also considered whether to conduct leach testing under more aggressive conditions, such as the very alkaline conditions (pH >12) that have been observed at the Gum Springs facility. Ultimately, the lack of a broadly-accepted test method, the variability of site conditions, concerns about transferability of results to other wastes or sites, and time constraints led us to reject this approach for developing today's proposal. We also evaluated the potential of a column-based test, although acceptable for rulemaking development, would not facilitate rapid assessment of compliance after promulgation of the standard. This was seen as a significant drawback not only for EPA, but for regulated entities as well, since column tests normally require weeks to conduct, and most treatment facilities lack multi-week storage capacity for treatment residues. Also, basing standards on alkaline leach or column-based testing conditions would entail the development and proposal of a new analytical procedure whereas the deionized water leach test has been fully vetted.[6] As such, we have collected performance data on K088 treatment using the alternative analytical method being proposed today.

[6] The development and proposal of a new analytical procedure would raise concerns related to the goals of the National Technology Transfer and Advancement Act of 1995. See today's preamble discussion under *National Technology Transfer and Advancement Act* for a further discussion.

C. How Are Treatment Standards Developed?

In the Land Disposal Restrictions (LDR) program, two types of treatment standards have been established by EPA: (1) numerical concentration-based treatment limits for each regulated constituent of concern; and (2) methods of treatment that must be used to treat a particular constituent or constituents(s). In either case, the treatment standard is based on a technology determined to be the ''Best Demonstrated Available Technology'' or BDAT. The BDAT determination consists of four steps: The first step is the identification of all possible technologies that, in theory, can treat a particular waste. The second step involves a determination of which of these technologies are demonstrated, defined as available on a full-scale basis.[7] Third, from the list of demonstrated technologies, we determine which are available, i.e., those which can be purchased and provide substantial treatment. Finally, available technologies are evaluated based on their treatment performance. EPA typically calculates numerical treatment standards or establishes a method of treatment based on the performance of that technology (or sometimes technologies) shown to perform best on a waste or waste constituent.

However, when evaluating any hazardous waste treatment process, we keep in mind other important environmental objectives. Consequently, within the LDR program and more specifically the BDAT process, a hierarchy of preferred options exists for evaluating treatment and recycling technologies. This hierarchy is part of a broader waste management goal to promote source reduction that is less or no production of hazardous waste, and recycling or reuse (i.e, all the waste generated is used as a feedstock in the same process or another process.) Next, in descending order of preference, are options for hazardous waste management and the establishment of LDR treatment standards. First, are treatment technologies that recover chemical value from the waste for reuse. This option may result in some residuals needing to be land disposed but the preferred techniques would also significantly reduce the quantity and toxicity of any waste destined for land disposal. Further down the hierarchy are treatment technologies that reduce the quantity and toxicity *without*

[7] Bench or pilot scale data may be considered if the full-scale technology is nevertheless in use or commercially available.

recovery of materials for reuse. Finally, at the lowest rung, are treatment technologies that only lower toxicity or the potential for migration. These may even increase the volume of materials for land disposal, e.g., metals stabilization.

If a treatment technology treats hazardous constituents, recovers chemical value from the waste, and meets our BDAT criteria, it will typically be our preference when establishing LDR standards. Treatment standards based on ''treatment/recovery'' are developed in one of two ways by: (1) establishing a required method of treatment, e.g. ''lead recovery or RLEAD''; or (2) establishing numerical concentrations levels based on hazardous constituent concentrations in the recycling (i.e., treatment) residue. Presently, there are 14 waste codes that directly require or include recycling as their treatment standard. See 40 CFR 268.40. We recognize, however, that not all hazardous waste within a specific waste listing may be recyclable. Generally, that is why we establish concentration-based numerical standards instead of requiring mandatory recycling of a particular constituent. Although numerical standards can be based on a recycling technology, any technology (other than prohibited technologies) can be used to meet the treatment standard. In general, this type of approach meets our LDR goal of encouraging environmentally sound recycling at the same time providing the regulated community with flexibility in meeting the treatment standards.[8]

We have identified a range of treatment and recycling practices as applicable to K088 waste. Most of these processes, however, are still under development and are not full-scale operating units so they cannot be the basis of BDAT. What we find encouraging however, is that all of the processes being investigated are recovery or recycling-based. Many of these processes recover reusable chemical value from the spent potliner from either the fluoride or the unburned carbon contained in the waste. Some of these technologies also claim to process the K088 into marketable products. We are encouraged by the prospect of K088 management with some of these alternative processes. However, at the present time and for purposes of this proposal, we are only in a position to evaluate the three existent facilities known to be treating K088 waste.

The Reynolds Metals Company facility in Gum Springs, Arkansas, the Ormet Primary Aluminum facility in Hannibal, Ohio, and the Chemical Waste Management of the Northwest, Incorporated facility in Arlington, Oregon (herein referred to as Reynolds, Ormet, and CWMNW respectively) presently operate the three treatment facilities for K088 waste in the U.S. All three of these facilities maintain full-scale treatment operations and currently meet all the existing treatment standards for K088 waste found in § 268.40. Reynolds and CWMNW operate commercial treatment operations, while Ormet operates a private on-site treatment facility not involved in the commercial treatment of K088. All three of these treatment units are considered available as defined by our BDAT methodology and have had their treatment performance data evaluated for establishment of treatment standards for fluoride, cyanide and arsenic.[9]

D. Our Analysis of Performance Data and BDAT Determination

In 1999, we collected and analyzed treatment performance data from Ormet. We also reviewed performance data submitted by CWMNW. We compared these data to existing performance data from Reynolds. Our analysis shows that the Vortec technology, used at the Ormet facility, provides highly effective treatment of cyanide in addition to being a highly effective *recovery* process for fluoride. Furthermore, the process has also been shown to be effective in the immobilization of residual fluoride.

Conversely, Reynolds and CWMNW operate treatment only facilities for K088 waste. They do not recycle or recover the fluoride value in the waste. Reynolds and CWMNW performance data show that both treatment processes are less effective than Ormet in the destruction of cyanide and the immobilization of residual fluoride.

TABLE 1.—COMPARISON OF AVERAGE CONCENTRATIONS OF CYANIDE AND FLUORIDE IN ORMET, REYNOLDS, AND CWMNW UNTREATED AND TREATED POTLINERS[10]

Facility	Untreated cyanide (mg/kg)	Treated cyanide (mg/kg)	Untreated fluoride (mg/kg)	Treated fluoride (mg/kg)	Treated leachable fluoride (mg/L)
Ormet	670	<0.5	62,775	38.5	2.15
Reynolds	2,770	77	81,100	44,700	552
CWMNW[11]	CBI	CBI	CBI	CBI	CBI

As shown in Table 1, data from the Ormet treatment/recovery process showed cyanide concentrations in the treated potliner measuring below detectable limits (<0.5 mg/kg). This comports with a greater than 99.9% destruction of the cyanide. Conversely, treatment performance data from Reynolds showed untreated potliners with an average cyanide concentration of 77 mg/kg (92–94% total destruction of cyanide).[12] Data from CWMNW showed treatment of the cyanide below the current treatment standard of 590 mg/kg, but well above the average performance concentrations achieved by Ormet.

The Ormet process also removes and recovers from the untreated potliner approximately 99.9% total fluoride. Residual concentrations of fluoride in the treated potliner averaged 38.5 mg/kg total fluoride. Leachable fluoride

[8] The Agency would like to reiterate here that although we have proposed promulgating numerical treatment standards for K088 waste, EPA is aware of only one privately-owned facility that can meet the standards being proposed today. The vitrification technology that has formed the basis of the proposed standards does however meet all the criteria necessary for developing BDAT as identified in 51 FR 40588, November 7, 1986.

[9] As previously discussed, the determination of BDAT is a four-step process. When the Agency determines that a treatment is available, it must be available for purchase if the technology is patented or proprietary and it must provide substantial treatment. Ormet operates a private treatment unit which was purchased from the Vortec Corporation. This technology can be purchased, and as discussed in the following sections data indicate that substantial treatment of K088 occurs.

[10] Amenable concentrations of cyanide in the Ormet untreated and treated potliner averaged 322 mg/kg and <0.5 mg/kg respectively. No average amenable cyanide concentrations were reported by Reynolds.

concentration in the treated potliner averaged 2.15 mg/L total fluoride.[13] Conversely, fluoride concentrations in the treated potliner from Reynolds' averaged 44,700 mg/kg with leachate values averaging 552 mg/kg.

As such, we have initially determined Ormet's treatment process as BDAT for fluoride and cyanide in K088 waste.[14] Ormet's performance data show cyanide destruction values exceeding those obtained by both Reynolds and CWMNW. Furthermore, Ormet's ability to recovery fluoride values for the untreated potliner, coupled with effective immobilization of the residual fluoride in the treated potliner, indicate a treatment process superior to Reynolds and CWMNW.

While the data strongly support this BDAT determination, it is imperative, however, that we discuss here, the issue of ''most-difficult-to-treat'' waste. In the LDR program, we generally prefer to establish a treatment standard based on a waste that we determine to be the most difficult to treat. We usually consider the ''most-difficult-to-treat'' waste, as being the waste with the highest constituent concentration(s) of concern. It is therefore assumed that if a treatment technology can treat a highly concentrated waste, then it can also treat lower concentrations with equal effectiveness. However, we have encountered cases where data and information on different treatment technologies is limited in scope and does not represent the most difficult to treat waste. In these situations, our engineering judgment has played a crucial role in supporting the BDAT determination.

Today's rule is such a case. As mentioned earlier, Ormet is a privately-owned K088 treatment facility. It does not commercially treat K088 waste (although the treatment technology it uses is commercially available, as explained earlier). Because of this, the treatment performance data that we gathered at the Ormet facility reflects the treatment of only one type of K088 waste—Ormet's. Reynolds, the largest commercial treater of K088 waste treats K088 from more than 15 aluminum reduction facilities and has a much broader concentration range of K088 regulated constituents. As indicated by Table 1, the average concentration of cyanide in Ormet's untreated potliner was well below the average concentration of cyanide in Reynold's untreated potliner (670 mg/kg versus 2,770 mg/kg). Based on this information, one might be tempted to conclude that Ormet's waste is not the most difficult to treat for cyanide. However, based on an extensive engineering review of the process at Ormet, and our findings that the treatment unit is well-designed and operated and has a robust combination of time, temperature and mixing within the unit, we are confident that higher concentrations of cyanide, (such as those encountered by Reynolds) will be easily destroyed by this process.[15] Furthermore, we have determined that the Ormet process is matrix independent for cyanide and capable of destroying any concentration of cyanide contained in a K088 waste to below the detection limit. Therefore, we believe that the treatment standards being proposed today for both total and amenable cyanide are appropriate.

Similarly, the average concentration of total fluoride in the Reynolds untreated potliner was 81,000 mg/kg, exceeding the average concentration in Ormet's waste of 62,775 mg/kg. However, we conclude, for similar engineering reasons, that the process employed at Ormet is capable of providing effective recovery and immobilization of fluoride independent of the concentration of fluoride contained in the untreated K088 waste. That is, virtually all of the fluoride will partition to the vitrification baghouse dust, and is then recoverable. The remainder of the fluoride will be immobilized in the treatment residue.

EPA notes that the proposed standard for cyanide would no longer be the universal treatment standard (UTS). The UTS is normally our preferred option, but here the improved cyanide treatment performance from vitrification of K088 (over two and one-half orders of magnitude) is striking. In addition, the Ormet vitrification process appears to optimize recovery/treatment of fluoride, so that improved treatment of both cyanide and fluoride will go together. The proposed treatment standards thus reflect both of these linked treatment improvements. The Agency requests comment as to whether the assumptions made in this ''difficult to treat'' determination are valid and our conclusions are correct. Additional discussion on this matter can be found in the technical background document supporting this proposed rulemaking and is available in the docket.

E. How Does The Treatment Work?

The K088 treatment technology used at Ormet can be generally described as a direct-fired vitrification system that destroys cyanide, while recovering fluoride for reuse. In this treatment, the K088 along with other additives are mixed together and then vitrified to form a residue or glass-like ''frit,'' while effectively partitioning the fluoride for reuse. The fluoride that does not partition is immobilized within the frit.

The unit performing this operation is referred to as a combustion melting system (CMS ™) which was licensed by Ormet from the Vortec Corporation. The CMS ™ consists of a Counter Rotating Vortex (CRV) reactor, a cyclone melter, and a separator/reservoir. The process involves the rapid suspension heating of finely crushed K088 waste, sand, and limestone in a preheater prior to physical and chemical melting that occurs within a cyclone reactor. The reactor is a refractory-lined, water-cooled, carbon steel vessel. Natural gas and preheated air are used to achieve temperatures of approximately 2400° F in the reactor. Materials begin to melt in the reactor and flow downward to the cyclone melter. Melting of the waste and other additives, as well as the combustion of the cyanide and other organics, is completed in this vessel and the resultant molten glass is separated from the combustion gas. The molten glass is dropped into a water quench tank where it solidifies into a frit.

The separated combustion gas is used to preheat the air entering the reactor, and is then sent to a baghouse to remove sodium fluoride (this residue is referred to as the primary baghouse dust). Arsenic, if present, would likewise partition to the baghouse because of its high volatility. The exhaust from the baghouse is then transferred into the potroom dry scrubber system, which is a baghouse air pollution control device using alumina to dry scrub fluoride from aluminum reduction pot exhaust gases. Here, gaseous fluoride is removed and additional particulate removal occurs. The material from the dry scrubber system (referred to as secondary baghouse dust) is fluoride-enriched alumina material that is also reused.

[11] The K088 performance data from Chemical Waste Management of the Northwest, Inc. has been claimed confidential business information. The reader is referred to the background document supporting this proposal for additional information.

[12] The percent destruction of cyanide by the Reynolds process was calculated using data found in Table 3–1 of the ''Proposed Best Demonstrated Available Technology (BDAT) Background Document for Spent Aluminum Potliners—K088''.

[15] The Agency has also concluded that in addition to the destruction of cyanide, polycyclic aromatic hydrocarbons (PAHs) will also be destroyed in this process, independent of their initial concentration in the untreated potliner. See the technical background document for this proposed rule for additional discussion on the technical engineering analysis used to make this determination.

F. Calculation of the Proposed Treatment Standards for Cyanide and Fluoride

Based on an analysis of the entire treatment process, the Agency concludes that the revised treatment standards for fluoride and cyanide will be derived from the concentrations of these constituents as measured in the treated potliner or glass frit. We do so for two reasons. First, the baghouse dust is fluoride-rich material that can be sold as a product or recycled back into the aluminum reduction pots as an electrolyte. Second, the glass frit is the primary residual from the treatment of K088 and will likely be land disposed at some point either after its use as a product or immediately if the glass frit market cannot sustain all the frit that is generated.[16]

EPA took four samples of the frit and analyzed them for total cyanide, amenable cyanide and fluoride. The data for total cyanide in the glass frit consisted of 4 data points all of which measured total cyanide concentrations at below detectable levels (<0.5 mg/kg). Based on these data, a treatment standard of 1.3 mg/kg for total cyanide was calculated. The data for amenable cyanide also included four data points all of which measured below detectable levels (<0.5 mg/kg) in the frit. Based on these data, a treatment standard of 1.4 mg/kg for amenable cyanide was calculated. The difference results from differing recovery factors in the two calculations.

Data was also collected on the leachability of fluoride in the glass frit using the deionized water leach test (ASTM Method D3987–85(1999)). The leach test is a measure of the immobility of the fluoride in the treated matrix. Data results as measured on the frit were: 1.9, 2.3, 1.9, and 2.5 (mg/L).[17] Based on these data, a treatment standard of 2.7 mg/L fluoride was calculated.

To resolve the compliance problem that would result from having a total cyanide value less than the amenable cyanide value, we propose that both total and amenable cyanide have the same compliance values. Therefore, EPA is today proposing revised treatment standards of 1.4 mg/kg total cyanide and 1.4 mg/kg amenable cyanide for K088 nonwastewaters. We are also proposing a new treatment standard for fluoride in K088 nonwastewaters, 2.7 mg/L fluoride, when measured by a version of the Toxicity Characteristic Leaching Procedure with deionized water as the leaching fluid (ASTM Method D3987–85 (1999)). It should be noted that we are *not* proposing to revise any of the other treatment standards for K088 waste found in 40 CFR 268.48.

The numerical treatment standards proposed in today's notice are performance standards reflecting the levels achieved by the BDAT. We emphasize that we are not proposing to require the use of any particular treatment technology. Any technology or combination of technologies not otherwise prohibited (*i.e.*, impermissible dilution) can be used to achieve these standards.[18] The establishment of concentration-based treatment standard provides the regulated community with the greatest amount of flexibility in meeting the treatment standards.

Evaluation of the performance data from Reynolds and CWMNW show that these treatment processes cannot generally achieve the proposed treatment standards which, in practical terms, means that existing treatment technologies that do not recover and substantially immobilize fluoride will need to be modified or replaced. See ''Best Demonstrated Available Technology (BDAT) Background Document for Spent Aluminum Potliners—K088'' for additional discussion. However, as previously mentioned, we are aware of several promising technologies being developed for K088—all of which recover fluoride. Preliminary information further suggest that these technologies would be successful in meeting the treatment standards being proposed today. We request any data and information on any developing technologies currently being investigated by the primary aluminum industry or other for the treatments of K088 waste. Furthermore, we solicit your comments on the achievability of these proposed treatment standards as well as EPA's assumptions regarding the technical and economic feasibility of recycling the fluoride dust.

During the development of this proposal, we did consider several other regulatory options in lieu of the treatment standards being proposed today. One option we considered was the development of a separate treatability group and treatment standard for ''Baghouse Dust from K088 Vitrification Processes—No Land Disposal Based On Recycling.'' This option was explored because clarification might be needed as to the management of the dust, i.e., no land disposal. We determined, however, that the addition of a second, separate standard for K088 baghouse dust had no practical advantage over the proposed standard and rejected this option for two reasons: (1) The baghouse dust is a high quality product that can be recycled within the aluminum industry or other industrial processes; and (2) the proposed treatment standard of 2.7 mg/L *cannot* be met by the baghouse dust and, therefore, for all practical purposes, it must be recycled.[19]

We also considered a ''Fluoride Recycling plus 268.48 Standards'' requirement for all of K088 waste. This option would *require* some type of fluoride recycling to occur in addition to treatment to meet the concentration-based treatment standards (both existing and proposed). The option we are proposing already effectively provides this result since the baghouse dust would not meet the numerical standards if land disposed, and thus its recycling is essentially compelled.

G. Why Isn't the Agency Proposing to Revise the Treatment Standard for Arsenic in K088?

During the development of the revised treatment standards for cyanide and fluoride, we also evaluated the possibility of revising the nonwastewater treatment standard for arsenic. The current treatment standard for arsenic in K088 nonwastewaters is 26.1 mg/kg total arsenic. The development of a revised arsenic treatment standard in this proposal proved problematic for two reasons. First, Ormet's untreated potliners have extremely low concentrations of arsenic, measuring between 3.1 and 4.0 mg/kg, and therefore could not be considered ''most-difficult to treat'' for BDAT purposes.[20] Second, performance data

[16] As a condition of their recycling exemption from the State of Ohio Ormet Primary Aluminum must recycle the glass frit. It is reasonable to expect however, that if additional vitrification units are constructed and brought on-line or if the Ormet unit is permitted as a miscellaneous Subpart X unit, an excess of glass frit may occur, resulting in the land disposal of this material.

[17] Confirmatory experimental data collected by the Agency on June 15, 1999 show that leachate concentrations of the fluoride when tested in a pH range of 11.5–12.5 are 1.8, 2.1, 2.0, and 2.1 mg/L. These data suggest that the residual fluoride that remains in the glass frit is immobilized at an alkaline pH range from 8 (the pH at which the deionized water leach test was conducted) to 12.5.

[18] Of course, dilution of the waste as a means to comply with the standard is prohibited. Also wastes that are generated in such a way as to naturally meet the standard can be land disposed without treatment.

[19] If for some reason, the baghouse dust cannot be recycled, the generator may petition the Agency for a treatability variance as outlined in § 268.44.

[20] Performance data from the Ormet facility show that arsenic concentrations in the treated potliner (*i.e.*, glass frit) measured below detectable limits (<2mg/kg) in all samples analyzed. See ''Proposed Best Demonstrated Available Technology(BDAT) Background Document for Spent Aluminum

from the Ormet process indicates that arsenic is not immobilized in the treated potliner.[21] Rather it partitions (because of its high volatility) to the baghouse dust, which is then be recycled back into the aluminum reduction pots or sold as product. Of course, trace amounts of arsenic may not be collected in the baghouse and would be contained ultimately in the stack emissions. We do not have data indicating at what level either of these two potential events might occur and, therefore, cannot make a judgment about the efficacy of an arsenic recycling standard or the probability or degree of environmental concern about potential releases of arsenic to the air or land. However, later in this notice, we are proposing an approach to assure that emissions from these devices do not present significant environmental threats.

EPA has therefore decided tentatively not to alter the existing arsenic treatment standard. That standard reflects total arsenic concentrations in the land disposed treatment residue from higher-arsenic potliners, and also is designed to prevent significant additions of arsenic via the treatment process (that is, the arsenic remaining in the treatment residues would reflect arsenic in the potliners in the first place). See 63 FR at 51,257–58 (Sept. 24, 1998). Given the current questions regarding whether any superior means of arsenic treatment presently exists, EPA is not in a position to propose a different standard at this time.

While we are not at this time proposing an alternative to the total arsenic standards now in place for K088, we foresee only very limited impacts upon the continuing development of alternative recycling and treatment technologies for K088 by other companies. We note however that should a K088 recycling process be constructed that has, as one of its residuals for land disposal, arsenic at total levels above the current standard, current regulations would prevent disposal of the residual. We emphasize that this does not render the process unusable. However, the generator would have to petition for a variance from the current treatment standard in accordance with 40 CFR 268.44 or for a rulemaking in accordance with 40 CFR 260.20 for the Agency to set appropriate alternative treatment standards. EPA also could adjust the arsenic standard as part of this rulemaking if we receive sufficient information as part of the comment process and the appropriate notice and comment protocols (*e.g.*, a Notice of Data Availability (NODA)) are met.

We are informally engaged in a broader effort to gather data on the effectiveness of current arsenic treatment methods and may revise the arsenic treatment standards for K088 or all hazardous waste upon the completion of these studies, if warranted. In the interim, as part of this docket, we are soliciting your comments on arsenic treatment methods in general, the use of these treatment methods for arsenic in K088, and our technical questions about the Ormet process (particularly with respect to its apparent inability to immobilize arsenic contained in K088).

III. Regulation of K088 Vitrification Units

Because new treatment units are likely to be needed to treat the 120,000 tons of K088 generated each year to achieve compliance with today's proposed standards, the issue of the regulatory status of K088 vitrification units has arisen. We discuss in this section several options for regulating K088 vitrification units and propose that they should be miscellaneous treatment units under RCRA. Furthermore, we propose that these units should be subject to a particular suite of emission controls irrespective of whether the unit recycles K088 treatment residuals back into the aluminum making process or into other products. Furthermore, we note that although the discussion in today's notice is in the context of how to regulate K088 vitrification units, the rationale for regarding these units as Subpart X miscellaneous treatment units would logically extend to all vitrification units treating other hazardous waste. Thus, all vitrification units, whether direct-fired or indirectly heated and irrespective of the waste treated or recycled, would be classified as Subpart X treatment units. Therefore, the Agency solicits your comments on the extension of this approach to all vitrification units treating hazardous waste.

A. Why Are K088 Vitrification Units Generating Glass Frit Subject to RCRA Subtitle C?

The initial issue requiring resolution is whether spent potliners are a solid waste when they are processed by a vitrification unit that generates glass frit and recyclable baghouse dust, both of which can be put to productive use. The argument goes that spent potliners are used as an ingredient in a glass production process, and so are not a solid waste based on 40 CFR 261.2 (e)(1). This subsection excludes from the regulatory definition of solid waste those secondary materials that are used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed. Because this regulation contains a proviso that the process not be reclamation, it is necessary to argue further that the recovery of fluoride values in the baghouse dust is not reclamation to fit within the cited exemption.

Although the issue is not entirely clear-cut, EPA takes the view here that vitrification of K088 is a hazardous waste treatment process, notwithstanding that recovery of something usable can result. *Marine Shale Processors* v. *United States*, 81 F. 3d 1371, 1380 (5th Cir. 1996); *United States* v. *Marine Shale Processors*, 81 F. 3d 1361, 1366 (5th Cir. 1996). These cases indicate that units producing a product may still be engaged in hazardous waste treatment subject to regulation.

Certain traditional criteria suggest that the best way to characterize the process is as conventional treatment plus recycling. For example, we know that spent potliners contain high concentrations of cyanide which is present in concentrations well in excess of that needed to produce glass frit.[22] See *Marine Shale Processors* v. *United States*, 81 F. 3d at 1381–83 and n.3 (concentrations of hazardous constituents in excess of those needed to produce a product are a critical indication that conventional waste treatment, rather than recycling, is occurring). Spent potliners may also

Potliners—K088'' which is available in the RCRA docket supporting this rule for additional detail.

[21] One might think that because the universal treatment standard for arsenic is based on the performance of slag vitrification (see 54 FR 48372 (Nov. 22, 1989)), and because Ormet operates a vitrification process, this process should become the basis for a revised arsenic treatment standard. However, all vitrification processes are not identical. The Ormet process does not appear to chemically bind the arsenic inside a glass-like matrix or frit. Thus, we are uncertain about the underlying similarity or difference between Ormet's vitrification process and slag vitrification (about which we do not have an abundance of data). In addition, we have questions on whether the high concentration of fluoride in the K088 can interfere with some vitrification processes; whether the high carbon concentration in the K088 acts as a reducing agent and inhibits some vitrification processes; and whether the high gas flow and limited solubility of arsenic in molten silica is distinct from slag vitrification. (See USEPA, Treatment Technology Background Document, 1991).

[22] Information suggests that there are certain waste constituents, such as fluoride, that may interfere with the vitrification process if they are present at high levels. However, in Ormet's vitrification process, the fluoride is volatilized and captured in the baghouse, thereby generating two usable outputs; (1) glass frit with low fluoride concentrations; and (2) fluoride-rich dust.

contain relatively high concentrations of carcinogenic polycyclic aromatic hydrocarbons, which do not contribute to the process at all. *United States* v. *Marine Shale Processors*, 81 F. 3d at 1366 ([a] substance cannot be an ingredient in making something if it is merely along for the ride); see also 60 FR at 11723 and n.11 (March 2, 1995) where EPA suggested that K088 could meet the criteria of being ''inherently waste like'' under section 261.2(d) for these reasons. The economics of the vitrification process also suggest that waste treatment is occurring at least in part, since generators of K088 would pay the vitrification facility to process the material, most likely at or near the going rate for hazardous waste treatment. See memorandum from Sylvia K. Lowrance, Director, Office of Solid Waste, to Hazardous Waste Management Division Directors, Regions I–X, entitled ''F006 Recycling,'', dated April 26, 1989, which states that the economics of the process are a criterion for legitimate recycling (*i.e.*, whether most of the revenue come from charging generators for managing their wastes or from the sale of the product). We note, of course, that the recovered fluoride can be sold by the treatment facility.

From a strictly definitional standpoint, the recovery of fluoride values in baghouse dust at least arguably meets the definition of reclamation in § 261.1(c)(4) (which is recovery of contained values in a matrix as a usable end product, the example in the rule being recovery of lead from a spent battery). Here we observe that fluoride in spent potliners being treated by the Ormet vitrification process is recovered as an air pollution control dust and can be returned to the aluminum reduction process as an agent to lower the melting point of the molten cryolite bath used to reduce aluminum from alumina. This means that under § 261.2(e)(1)(i), the fluoride recovery operation is reclamation and that fluoride recovery does not qualify strictly for the current overall recycling exclusion from RCRA. This is a separate proposition from identifying as BDAT a process that includes strong elements of recycling or reclamation in its broadest sense, which are preferred outcomes in the waste management hierarchy.

For these reasons, the Agency interpretation here is that vitrification of spent potliners is best viewed as a type of hazardous waste treatment, notwithstanding the elements of recycling, reclamation, and reuse. Hence, absent some regulatory exemption, some form of subtitle C rule regulatory controls are appropriate. The selection of appropriate controls under RCRA section 3004 and 3005 is a matter within our discretion. The next section discusses what those controls ought to be, with the chief focus on the air emissions from the treatment process.

B. What Hazards May Be Posed by Emissions From K088 Vitrification Units?

K088 can contain toxic constituents at significant concentrations as shown below [23]:

Constituent	Concentration (mg/kg)
Total cyanide	5,800 (0.58%)
Fluoride	135,000 (13.5%)
Beryllium	32
Chromium	59
Lead	26
Arsenic	27.6
Nickel	64
Polycyclic aromatic hydrocarbons	Up to 2,000 (0.2%)

Although cyanide and polycyclic aromatic hydrocarbons (PAHs) are relatively easy to destroy in a combustion system, improper combustion could result in high emissions from untreated compounds in the incoming waste or from products of incomplete combustion. Similarly, the metals present in K088 will condense as the combustion gas is cooled and can be effectively controlled using particulate matter control equipment such as a baghouse. Improper design, operation, or maintenance of the particulate matter control equipment could cause high metals emissions, however. Finally, the high levels of fluoride in K088 could result in unsafe emissions of hydrogen fluoride if the gas cleaning system is not properly designed, operated, and maintained.

C. What Regulatory Options Is EPA Considering?

We considered a number of control approaches under RCRA for K088 vitrification units, partly based on traditional classification criteria, including those for an incinerator, industrial furnace, or Subpart X miscellaneous treatment unit. We also considered whether the potential hazards posed by vitrification unit air emissions should be controlled by establishing MACT (Maximum Achievable Control Technology) standards under Section 112 of the Clean Air Act instead of using RCRA authorities. We discuss below our current thinking on these options and propose that K088 vitrification units can most effectively and efficiently controlled under our program for RCRA Subpart X miscellaneous treatment units. We also propose to have these units be presumptively subject to the recent MACT hazardous waste incinerator standards as a point of departure in developing the suite of Subpart X permit conditions to be imposed, irrespective of whether the facility engages in recycling of K088.

Incinerator Approach. While the one operating K088 vitrification system at Ormet uses controlled flame combustion and therefore meets the RCRA definition of an incinerator in 40 CFR 260.10, glass vitrification units can also be heated indirectly using electricity. See US EPA, Treatment Technology Background Document, January 1991, at p. 114. Indirectly heated units would be outside of the RCRA definition of an incinerator in § 260.10. To simplify decisions on regulatory classification, we propose to regulate all vitrification units the same given that their primary function is essentially the same (i.e., they treat waste by vitrification) whether or not the unit is direct-fired.[24] This would

[23] Source: USEPA, Proposed Best Demonstrated Available Technology (BDAT) Background document for Spent Aluminum Potliners—K088. The concentrations presented represent the maximum concentrations of contaminant. K088 also contains other toxic metals at lower concentrations, including cadmium, and selenium.

[24] See 60 FR at 11,723 (March 2, 1995) (K088 treatment devices should be subject to uniform standards if possible, given that they are performing the same function and are likely to pose the same types of risks).

avoid significant implementation issues for EPA and for individual State and regional permit writers, especially if custom-designed vitrification units employ variations in design and operation or experience variations in emissions that may derive from controlled flame combustion versus indirect heating configurations. We wish to avoid unnecessary confusion and controversy (with attendant delays) in any permit implementation scheme. This would not be feasible under § 260.10 and an incinerator approach unless we were assured that all current and future units would be direct-fired. We can reach a workable solution by other means (see Subpart X discussion below).

Industrial Furnace Approach. Vitrification units that are an integral component of a manufacturing process could potentially be considered a type of smelting, melting, or refining furnace (SMRF) that is listed as a category of industrial furnace under the regulatory definition in 40 CFR 260.10. Although the Agency had originally intended the SMRF category of industrial furnaces to apply to metallurgical furnaces, one could possibly interpret the category to also include glass or slag vitrification furnaces as a type of melting furnace. We considered whether it would be appropriate to explicitly add K088 vitrification units to the list of industrial furnaces in § 260.10 through this rulemaking. Under this approach, emission standards could be established under Subpart H of Part 266 and implemented through the BIF permit process under RCRA.

To be considered an industrial furnace, however, the unit must be an integral component of a manufacturing process and must use thermal treatment ''to accomplish recovery of material products;'' see also Marine Shale, 81 F. 3d at 1381–83 construing this definition. As discussed earlier, there are elements of waste treatment about these K088 vitrifying activities. In addition, unlike currently recognized industrial furnaces, the outputs of the vitrification process are entirely the result of K088 input and treatment and are not, for example, historical production processes that are using waste as an ingredient substitute.

We initially conclude that classifying K088 vitrification units as industrial furnaces is problematic. Ormet asserts that the frit is marketable for a variety of uses, including polishing and grinding, backing for asphalt shingles, molding for steel castings and as cullet in glass or ceramic manufacturing. The fluoride can be sold as a flux to steel mills as well as being recycled as a electrolyte in the aluminum industry. If, however, the market for the frit or the fluoride dust is not sustainable, the facility would not meet the primary criterion for an industrial furnace. See *Marine Shale* v. *United States*, 81 F.3d at 1383–84 (device listed as an industrial furnace which does not in fact engage in recovery of material products is not an industrial furnace, since industrial furnaces, by definition, must be used primarily to accomplish recovery of material products). We do not have any evidence that the current markets can use the amount of purported product that would be generated by vitrification processes treating 120,000 tons of K088 each year. Indeed, the amounts involved suggest caution about assuming constant demand, especially for the frit.

Finally, it is not a good use of constrained Agency resources to proceed with a rulemaking to list K088 vitrification units as industrial furnaces in § 260.10 and then to establish standards specific to those units. This is particularly the case here given that we expect only a few facilities to be constructed to meet the treatment capacity demand and given the availability of recently-upgraded emission standards for incinerators that can be applied through the Subpart X approach discussed next.

Subpart X Miscellaneous Treatment Unit Approach. Early on, the RCRA program recognized that treatment units (including thermal) may not fit easily into any existing classification, including those for incinerators and BIFs. As a result, EPA created a category known as Subpart X miscellaneous units.[25]

Design and operational conditions are developed for Subpart X units on a facility-by-facility basis by a regional or state permit writer, who has wide flexibility to impose conditions appropriate to protecting human health and the environment. 40 CFR 264.601. Typically, Subpart X permit writers are expected to incorporate existing standards for other types of units that would address the same or similar types of environmental and regulatory concerns. For example, Subpart X thermal treatment unit permits would likely incorporate many or all permit conditions and standards developed for other thermal units burning hazardous waste, *e.g.*, incinerators. See the discussion below giving further guidance on appropriate air emission standards for K088 vitrification units.

The Subpart X miscellaneous unit approach therefore offers implementation flexibility that de-emphasizes our somewhat rigid regulatory definitions and optimizes the ability of regulatory agencies to impose appropriate, environmentally protective conditions on a case-by-case basis. (A trade-off is the uncertainty of not knowing in advance what standards apply to a given activity, plus the administrative burden and inefficiencies of dealing with units on an ad hoc basis. These problems appear resolvable here, as explained below, because there are likely to be only a few units involved, and we are indicating a potential starting point for emission standards in this rulemaking.)

Using Subpart X as the umbrella approach for K088 vitrification units thereby offers an opportunity to avoid the potential implementation confusion and additional regulatory burdens involved in the two alternative approaches discussed above.[26] We would be able to address the permitting of K088 vitrification units in a consolidated fashion that would make unnecessary the need to engage in lengthy discussions about how regulatory definitions would apply. Rather, time and effort would be spent on characterizing the design, operation, and emissions of K088 treatment units

[25] Subpart X refers to the permit standards under Subpart X, Part 264, for units not eligible for interim status. Miscellaneous thermal treatment units operating under interim status are subject to Subpart P, Part 265.

[26] Use of the Subpart X miscellaneous unit approach may also be appropriate for other K088 treatment units (whether vitrification or not) that do not fit neatly into the previously described categories. These units may be evaluated on a case-by case basis or at such time that their operation is imminent. For these units, the Subpart X miscellaneous unit approach would again offer implementation flexibility and allow regulators to impose appropriate, environmentally protective conditions on a case-by-case basis.

and developing appropriate regulatory control. We also note that this is basically the approach the Agency previously used to implement controls for both direct-fired and indirect-fired carbon regeneration units. See 56 FR at 7200 (Feb. 21, 1991).

1. K088 Vitrification Units Should Be Regulated Even If Engaged in Bona Fide Recycling

We have discussed earlier the Agency's view that vitrification of K088 is a form of waste treatment, not excluded recycling. However, under EPA regulations (see 40 CFR 261.6(c)), the corollary issue of a recycling unit being exempt from permitting warrants brief mention. Under § 261.6(c), certain types of Subpart X recycling units have been regarded as exempt from permitting—either under application of EPA's own regulations or under a state's authorized implementing regulations. Today, we are proposing to regulate K088 vitrification units regardless of whether or not processing of hazardous waste K088 might otherwise be considered to be exempt recycling under current permit regulations in § 261.6(c).

Our proposed approach is consistent with EPA's general approach to regulate air emissions from hazardous waste recycling activities. Under current RCRA regulations, treatment units (other than industrial furnaces) that recycle hazardous waste are still subject to the standards of Parts 264 and 265. See 40 CFR 261.6(d). Likewise, industrial furnaces are subject to air emission standards in 40 CFR Part 266 when they burn hazardous waste for any purpose except certain types of metal recovery. Even if a K088 vitrification unit were to be viewed as being engaged in bona fide recycling of K088 along with its conventional treatment of that waste, today's proposed regulations would not allow this particular type of unit to be exempt from permitting and a full suite of appropriate emission standards. This is, at least in part, because K088 can contain high concentrations of toxic compounds. Improper design, operation, or maintenance of the reactor or gas cleaning system could result in emissions of toxic compounds at levels that could pose a hazard to human health and the environment. In addition, we note that, as discussed above, if we were not to classify K088 vitrification units as miscellaneous treatment units potentially eligible for the recycling exemption, direct-fired units could be appropriately classified as incinerators subject to the recently promulgated MACT incinerator standards.

2. Standards Applicable to K088 Vitrification Units

As discussed above, a Subpart X miscellaneous treatment unit classification is particularly apt because we expect it will result in appropriate emission controls, allowed for a consolidated implementation scheme, and avoid controversy over RCRA definitional issues. Permits issued under Subpart X must contain terms and provisions as necessary on a case-by-case basis to ensure protection of human health and the environment. See 40 CFR 264.601. This broad performance standard can be viewed as being another potential source of controversy and attendant delay for the construction and operation of new, properly controlled K088 vitrification units.[27] Therefore, we are also proposing, as part of the Subpart X approach, that permit writers must consider the recently-promulgated hazardous waste incinerator standards[28] as the point of departure for any Subpart X K088 vitrification unit.

This means that, absent factors suggesting otherwise, a K088 vitrification unit would be subject to the same standards as a hazardous waste incinerator (see 64 FR at 52993–94 (Sept. 30, 1999). Applying the incinerator MACT standards to K088 vitrification units could be accomplished either through direct regulatory provisions that can be added to 40 CFR Part 265 or via guidance to permit writers on how to approach developing permit conditions for these units on a site-by-site basis. Under either approach, if a particular incinerator standard is not technically applicable to the type of device or if it is unnecessary to ensure protection, then the permit writer is free to develop a technical justification as to why that particular standard should not be included in a permit. Again, this implementation scheme should shift the dialogue from one of definitional classification to one focused on the unit controls necessary to adequately protect the public and the environment. And, as noted above, it also offers the implementation advantage of having one type of permitting scheme for all K088 treatment unit designs, regardless of whether they are directly or indirectly fired.

We have looked closely at whether the MACT hazardous waste incinerator standards are the most appropriate for K088 vitrification units, and conclude that those standards are technically appropriate and necessary to address the hazards posed by toxic metal and nonmetal emissions from these units. Two issues should be discussed, however. First, K088 vitrification units may not feed enough chlorine to exceed the MACT incinerator standards for hydrogen chloride and chlorine gas, combined, even if emissions are uncontrolled. Our MACT regulations minimize the compliance burden in such cases by waiving emissions testing, and requiring only monitoring of feedrate to document that the standards could not be exceeded if emissions were uncontrolled. This approach can certainly be considered by permit writers dealing with K088 vitrification units. Second, the MACT incinerator standards do not establish controls specific to hydrogen fluoride, which is potentially a significant pollutant from K088 vitrification units. Accordingly, permit writers must consider whether additional permit conditions are needed to ensure that emissions of hydrogen fluoride do not pose a hazard to human health and the environment.

3. Availability of Interim Status for Existing K088 Treatment Units

A K088 vitrification unit is currently in operation at the Ormet Primary Aluminum Reduction facility in Hannibal, Ohio. At least some of the frit and baghouse dust from the vitrification unit appear to be recycled for beneficial use. As a State authorized to implement the applicable RCRA standards, Ohio has previously determined that this vitrification unit is excluded from RCRA regulation. As discussed above, when viewing this issue from a national policy perspective (and not on the site-specific factors that Ohio may have relied upon in its determination), we are persuaded that K088 vitrification units should be regulated for a number of reasons already discussed above, some of which are independent of whether recycling is deemed to occur. The status of the existing Ormet K088 vitrification unit could therefore become an issue under today's proposal, and regulatory confusion could easily result.

Because of the potential for confusion as to the proper classification and

[27] A RCRA storage permit is a necessity in all cases where storage occurs (except storage falling within the 90-day storage provisions of 40 CFR 262.34). Thus, RCRA permitting may be needed at a given site for reasons other than the vitrification unit itself.

[28] As noted earlier, these MACT standards are also protective of human health and the environment and are therefore presumptively appropriate for inclusion in RCRA Subpart X permits. See 64 FR at 52834, col. 3 (Sept. 30, 1999) (EPA concludes that the MACT standards are generally protective of human health and the environment).

ultimately the proper emission controls that should apply to any existing K088 vitrification facility, it would be appropriate for a state, should it so chose, to use the authority of 270.10(c) to allow an existing facility to submit Part A of a RCRA permit application and to operate under the interim status standards of Subpart P, Part 265, within 30 days of the date of promulgation of these revised LDRs for K088. See 60 FR at 11,723 (March 2, 1995) noting that it may be appropriate for EPA to make the substantial confusion finding because of unclear status of potential K088 treatment technologies. Questions about other interim status issues (such as adding a vitrification unit as a change in interim status) should be addressed to the Region or State administering the RCRA permit regulations at the plant location.

4. Why We Are Not Developing Separate MACT Standards Solely for K088 Vitrification Units?

Under this potential rulemaking option, we could use the authority of section 112(d) of the Clean Air Act to establish technology-based MACT (maximum achievable control technology) standards solely for these units. In such a case, RCRA air emission standards may be unnecessary since the MACT standards could also be sufficiently protective of human health and the environment. See RCRA section 1006(b) allowing EPA to defer RCRA regulation where it may unnecessarily duplicate provisions adopted under other environmental statutes, including the Clean Air Act.

Most significant from our perspective is the prospective resource commitment needed to develop MACT standards specific to K088 vitrification units. Such an effort has not been planned to date, and this effort would divert already constrained Agency resources to develop a regulatory regime applicable possibly only to a handful of units. Indeed, under a worst case scenario, the MACT standards development process could take as long or longer than a case-by-case permitting approach under Subpart X for new treatment facilities. This is particularly true if several units can be built quickly, but we need to wait for full-scale operations to obtain the emissions testing data to develop national MACT standards. In addition, we have concluded that the recently-promulgated MACT incinerator standards (perhaps with an additional standard to control hydrogen fluoride) would address the potential air emissions concerns that we now have. Starting a separate rulemaking would appear to be unnecessary from an environmental protection standpoint.

On balance, given that we expect that only a handful of new sources would be needed to meet the K088 treatment capacity demand and the existence of standards that can be applied to these Units, it does not appear cost-effective for the Agency to pursue a separate rulemaking to develop MACT standards to control emissions specifically from these sources. Rather, it appears more appropriate to adopt a RCRA Subpart X approach for regulating K088 vitrification units.

D. What Rule Changes Are Being Proposed To Regulate K088 Vitrification Units as Miscellaneous Treatment Units?

To enable K088 vitrification units to be able to be regulated as miscellaneous treatment units, we propose to revise the definition of an incinerator in § 260.10 to specifically exclude K088 vitrification units. This would ensure that direct-fired vitrification units are not classified as incinerators. In addition, we propose to add a definition for K088 vitrification unit. See proposed amendments to § 260.10. Because K088 vitrification units would not meet the definition of incinerator or boiler, and because K088 vitrification units are not listed as a type of industrial furnace, they would not qualify as BIFs and therefore would be classified by default as miscellaneous treatment units (along with sludge dryers and carbon regeneration units, for example). Please note that we are also requesting comment on whether to expand these regulatory changes to include all vitrification units and/or all types of K088 treatment units (whether vitrification or not).

E. What Is the Status of the Outputs From a K088 Vitrification Process?

As discussed above, Ormet's treatment process, which can be defined as a K088 vitrification process, generates two treatment residuals: a glass frit which is usable as a commercial product and a fluoride-rich baghouse dust that can be recycled back into the aluminum reduction pots as electrolyte or sold as a product for other industrial uses such as steel making. EPA is proposing here that both of these output streams be classified as products, and no longer solid wastes, provided certain conditions are satisfied. When put to productive use, this will avoid inappropriate Subtitle C regulation of these recycling activities. We will address the conditions for the glass frit and the fluoride-rich baghouse dust separately.

First, the glass frit, would be required to meet *all* the numerical treatment standards for K088 and it would have to be recycled. The Agency is proposing that this product be required to meet the LDR treatment standards to ensure the effective treatment of cyanide, fluoride and other regulated constituents in K088. Furthermore, it is important to note that at some point this product could be land disposed and there exists a need to address potential environmental consequences of this land disposal. By having to meet the K088 treatment standards, the glass frit is subject to a set of treatment standards that minimize threats to human health and the environment. We reiterate here, that if the glass frit is not recycled, it is still a K088 waste and must meet the treatment standards found in § 268.40 prior to land disposal in a Subtitle C land disposal unit.

The proposed conditions for the baghouse dusts are that they be recycled (e.g., returned for use to a primary aluminum process or to another process) and not be land disposed (i.e., placed on the land) before reintroduction into these industrial processes. This proposal is consistent with the principle (applicable to reclamation processes) found in existing rules. See § 261.3(c)(2)(i) stating that the output of a reclamation process typically is no longer a solid waste and § 261.2(e)(i) indicating that secondary materials put to direct use ordinarily are not solid wastes. EPA is proposing these conditions for two central reasons: (1) the baghouse dust is similar to raw materials currently utilized by industry in terms of physical properties and types and concentrations of hazardous constituents; [29] and (2) the concentration of fluoride in the baghouse dust is so high (and greatly in excess of the levels proposed as the treatment standard today for fluoride) that EPA is uncertain that other dispositions would be safe. The proposed exclusion limits the type of recycling of the baghouse dust to situations where the dust is used as an ingredient, or is used for material recovery (i.e., reclaimed) by being reintroduced into other industrial processes (normally primary aluminum

[29] The fluoride-rich baghouse dust can be used as a reducing agent for metals processed in iron and steel furnaces, the can also serve as a substitute for fluor-spar (calcium fluoride) which is typically between 95–100 pure calcium fluoride. Preliminary analysis of the baghouse dust show the concentration of all regulated organic constituents at below detectable levels (<.330 mg/kg). Analysis of the 11 UTS metals show leachate levels well below the K088 treatment standards. Cyanide concentrations are also below detectable levels (<.5 mg/kg).

or potentially steel production). EPA has added this qualification in the unlikely event that the baghouse dust would be burned as a fuel (probably not legitimate recycling in any case). It is our understanding that the proposed language covers all of the current and contemplated means of recycling the baghouse dust. The condition on there being no land disposal before return to the primary aluminum process is necessary to ensure that the basic LDR goal is not derogated. These baghouse dusts would not meet today's proposed treatment standards for fluoride, so that allowing their land disposal (in the guise of products stored on the land prior to recycling) would be inconsistent with the purpose of the LDR program, the prohibition and treatment standards for spent potliners, and our goal to ensure that recycling does not present threats to human health and the environment.[30]

In addition, EPA is including the standard condition that both these materials not be accumulated speculatively before recycling. Such prolonged storage would be inconsistent with the proposed product status, and indeed would raise the same types of concerns that the RCRA storage prohibition (codified in § 268.50) is intended to stop.

IV. Status of Interim Standards and Proposed Effective Date for Amended Standards

Typically, prohibitions on land disposal of hazardous waste are to take effect immediately upon promulgation, but may be postponed for two years on a national basis and (potentially) two more years on a case-by-case basis from the ''earliest date on which adequate alternative treatment, recovery or disposal capacity that protects human health and the environment will be available.'' RCRA section 3004(h)(2). Here, however, spent potliners are already prohibited from land disposal (as of September 24, 1998; 63 FR 51254). Thus, the period during which EPA could conceivably issue any type of variance based on the available treatment capacity is already running out (less than a year remains on the potential national capacity variance period) and could already have expired by the time EPA issues a final rule adopting amended K088 treatment standards. A basic question, therefore, is whether there should be any lapse in the existing prohibition and treatment standards during the time it takes for additional treatment capacity to be created to treat K088 to the proposed treatment standards (assuming EPA adopts them). A second question is when the effective date should be for the amended standards (again, assuming EPA adopts them). These questions are discussed below.

A. Are the Interim Standards Still in Effect?

EPA proposes that there should be no lapse in the existing prohibition and treatment standards because if there were, land disposal of untreated spent potliners could resume. As EPA has explained at length, this result would be directly at odds with the central objective of the land disposal restriction statutory provisions. See 63 FR 51255–256. Moreover, EPA has already determined that there currently exists adequately protective treatment and disposal capacity for spent potliners treated to meet the existing (interim) treatment standards. See 62 FR 37696–697. Thus, EPA knows of no reason to justify eliminating the existing land disposal prohibition and treatment standards during the period before additional treatment capacity capable of meeting the proposed standards becomes available.

B. When Should the New Treatment Standards Take Effect?

EPA is guided by the overall objective of section 3004(h): treatment standards which best accomplish the objective of section 3004(m) to minimize threats posed by land disposal—should take effect as soon as possible, consistent with availability of protective treatment capacity. Therefore, we estimated how long it will take for available treatment capacity to be created and satisfy the proposed treatment standards.[31] We are basing the proposed effective date for today's treatment standards on this estimate.

Because a land disposal prohibition and interim treatment standards for K088 waste already exist under the interim rule of September 24, 1998, we propose as noted above to leave these requirements in place until the final rule adopting amended treatment standards becomes effective. Furthermore, although there are no legal constraints to limit EPA's potential implementation time period for a final rule amending these treatment standards, EPA will establish an appropriate effective date based on the projected availability of treatment or recovery capacity that can meet today's proposed treatment standards.

Key determinants of K088 generation include primary aluminum production rates (which vary from year to year), the useful life spans of different types of potliners, the lag time between aluminum production and waste generation, and occasional increases in potliner waste generation due to production starts and stops. To compare the required treatment or recovery capacity to available commercial capacity that can meet today's proposed treatment standards, EPA combined all data presented in previous rulemakings and used the 1997 Biennial Reporting System (BRS) to update these data. At the present time, EPA estimates that approximately 80,000–100,000 tons per year of K088 waste would require alternative management to meet the proposed treatment standards.

The majority of available commercial K088 waste treatment capacity in the United States exists at the Reynolds Gum Springs facility in Arkansas. This facility uses a thermal treatment system capable of treating approximately 120,000 tons of K088 waste per year and meeting the interim treatment standards promulgated on September 24, 1998. Two additional U.S. facilities have available technology to treat K088 waste to the interim standards. They are Chemical Waste Management of the Northwest, Inc. (CWMNW), which uses a combination of chemical oxidation and stabilization to treat commercial K088 waste, and a primary aluminum producer, Ormet, which uses a Vortec vitrification system to manage its own K088 waste. Other technologies, under development, although appearing to be promising, are not yet operating commercially.

In today's proposed rule, EPA would amend the treatment standards based on vitrification performance data and thus significantly lower the existing treatment standards for fluoride and total and amenable cyanide in K088 nonwastewaters. Available data suggest that the existing treatment process at the Reynolds Gum Springs facility cannot meet the proposed treatment standard for cyanide (both total and amenable) and fluoride for most (and perhaps all) of the K088 wastes currently being treated at the facility. Even if Reynolds can reconfigure or adjust its thermal

[30] It should be noted however that although the arsenic found in the baghouse would not meet the treatment standard for arsenic in K088 nonwastewaters (26.1 mg/kg), as part of the development of this proposed rule, we subjected this waste to numerous alternative arsenic leach tests, using a variety of leachate media. Based on our preliminary analysis, the leachate from the baghouse dust would not fail the TCLP for arsenic (5 mg/L) nor would it fail using any number of alternate leach tests. See the background document supporting this rule for additional discussion.

[31] The data and detailed analysis on the effective date for proposed treatment standards can be found in the Background Document to Establish the Effective Date for Amended Treatment Standards in the docket for this proposed rulemaking.

treatment process or purchase an additional treatment system, a substantial amount of time may be required. CWMNW, the other commercial treatment facility, will not meet the proposed treatment standards for total and amenable cyanide and fluoride in K088 with its current chemical treatment. Therefore, there is uncertainty whether CWMNW will continue to provide treatment capacity to meet the amended treatment standards for K088 waste.

At this time, among K088 generators, only Ormet appears to have an on-site management treatment technology (vitrification) capable of meeting the proposed treatment standards. The Ormet unit's capacity is up to 10,000 tons per year. The treatment capacity is based on Ormet's own waste generation and the company has no plans to expand its on-site capacity or accept K088 from other generators.

Based on this information, we find that no commercial vitrification or equivalent capacity currently exists that could meet the proposed treatment standards for K088 waste. Nevertheless, projects to construct plants for spent potliner recycling are currently in the planning phase. For example, in 1997, Vortec and Ormet formed a joint technology development enterprise (SPL Recycling, LLC) to assist in the development of waste recycling projects in the aluminum industry. Also, Reynolds is examining recycling technologies potentially capable of meeting the revised treatment standards. Some primary aluminum producers are also investigating recycling technologies to handle their K088 waste. Although other firms are also studying alternative K088 treatment or recycling technologies or processes (e.g., gasification, the ''Alcoa-Selca'' process, and the Spent Potliner Test Plan by AshGrove Cement Company). Most of these technologies and processes have not yet been proven commercially, and uncertainty exists about their potential to meet the proposed treatment standards.

The amount of time needed to establish sufficient vitrification or equivalent capacity for all K088 wastes—which essentially dictates our selection of an effective date for the amended standards—is affected by the need for treatment facilities to conduct full design and engineering assessments, negotiate contractual agreements, obtain permits from appropriate regulatory agencies, construct the systems, set up the appropriate infrastructures, and make other logistical arrangements necessary to receive, store, treat and recycle or dispose of K088 wastes. Such a process can take years to accomplish. For example, approximately two years were needed to before Ormet's vitrification system became operational. Using this example and other information noted in the background document for this analysis of the appropriate effective date for this rule, EPA is proposing to delay the effective date for two years following final rule promulgation. Although two years may or may not be adequate for certain systems to become operational and meet the proposed treatment standards for K088 waste, the length of time needed depends on whether the facility has an existing treatment system or will build a new system. For example, if a facility has an existing thermal system capable of treating K088 waste already, then it may replace its existing system with a vitrification device to meet the proposed requirements and new treatment standards if EPA adopts them. EPA will consider comments and other available information to adjust the time required before treatment capacity capable of meeting the revised treatment standards will be available.

In today's rule, as discussed above, EPA is not soliciting comments on the land disposal prohibition or interim standards for K088 waste. EPA is requesting capacity data and information solely to better assess when treatment or recovery capacity could become available and meet the proposed treatment standards. EPA is also seeking comments on whether two years after the final rule effective date is a sufficient time period to allow for adequate treatment or recovery capacity to become operational.

V. Compliance and Implementation

A. Applicability of Rule in Authorized States

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. Following authorization, EPA retains enforcement authority under sections 3008, 3013, and 7003 of RCRA, although authorized States have primary enforcement responsibility. The standards and requirements for authorization are found in 40 CFR Part 271.

Prior to the Hazardous and Solid Waste Amendments (HSWA) of 1984, a State with final authorization administered its hazardous waste program in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State, and EPA could not issue permits for any facilities that the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obligated to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under RCRA section 3006(g), new requirements and prohibitions imposed by HSWA take effect in authorized States at the same time that they take effect in unauthorized States. EPA is directed to carry out these requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted authorization to do so.

Today's proposal would be promulgated pursuant to sections 3004 (g)(4) and (m) of RCRA. It either directly implements these provisions or, in the case of the provisions relating to classification of K088 treatment devices and their outputs, is necessary to implement the section 3004 (g) and (m) K088 treatment standards. Therefore, when promulgated, the Agency would add the rule to Table 1 in 40 CFR 271.1(j), which identifies the Federal program requirements that are promulgated pursuant to HSWA. This rule would be effective in all States immediately pursuant to RCRA section 3006(g). States may apply for final authorization for the HSWA provisions in Table 1, as discussed in the following section of this preamble.

B. Effect on State Authorization

As noted above, when promulgated, EPA will implement today's rule in authorized States until they modify their programs to adopt these rules and the modification is approved by EPA. Because today's rule would be promulgated pursuant to HSWA, a State submitting a program modification may apply to receive interim or final authorization under RCRA section 3006(g)(2) or 3006(b), respectively, on the basis of requirements that are substantially equivalent or equivalent to EPA's. However, with respect to the classification of K088 thermal treatment devices as Subpart X units for permitting purposes, we note that many states already have authorization to issue Subpart X permits. Therefore, as a practical matter, these States would continue to be the appropriate permitting authority for K088 thermal treatment devices after promulgation of this rule. If a state is not yet authorized for Subpart X permitting, we encourage those States to apply for Subpart X authority as soon as possible after issuance of this proposal and not wait

until promulgation of the final rule. The procedures and schedule for State program modifications for final authorization are described in 40 CFR 271.21. All HSWA interim authorizations will expire January 1, 2003. (See § 271.24 and 57 FR 60132, December 18, 1992.)

VI. Regulatory Requirements

A. Regulatory Impact Analysis Pursuant to Executive Order 12866

Under Executive Order 12866, (58 FR 51735, October 4, 1993) the Agency must determine whether a regulatory action is ''significant'' and therefore subject to OMB review and the requirements of the Executive Order. The Order defines a ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect, in a material way, the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.''

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a ''significant regulatory action'' because of novel policy reasons. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record. The Agency estimated the costs of today's proposed rule to determine if it is a significant regulation as defined by the Executive Order. Because the treatment standards for K088 promulgated in the September 28, 1998 final rule (Interim Treatment Standards for Spent Aluminum Potliners from Primary Aluminum Reduction) have remained in effect, treatment costs for spent aluminum potliner have already been accounted for. Accordingly, EPA believes that there are no costs associated with the existing treatment standards in today's proposed rule. (According to the Court, none of the standards measured by means other than TCLP were affected by the ruling, 139 F.3d at 923, so no costs should be attributed to treating constituents other than cyanide and fluoride under this rule in any case.) Incremental annual treatment costs for cyanide and fluoride attributed to today's proposed rule range from a low estimate of $12.4 million to a high estimate of $36.8 million. The high treatment estimate of $36.8 million is not economically significant according to the definition in Executive Order 12866. These treatment estimates represent only direct expenditures for treatment of cyanide and fluoride attributable to today's proposed rule.

Discussion of the methodology used for estimating the costs and economic impacts attributable to today's proposed rule for K088 wastes may be found in the background document ''Economic Assessment for Revised LDR Treatment Standards for Spent Aluminum Potliner (K088)'' which was placed in the docket for today's proposed rule. EPA requests comments on the analytical approach to estimate the costs of today's proposed rule, as well as on the economic analysis background document. Further, EPA requests data (cost and/or engineering) to further refine assumptions underlying the implementation of Vortec. Of particular interest to EPA is information on actual commercial costs of the Vortec technology.

1. Methodology Section

The Agency examined reported values for K088 generation from prior Agency estimates in the Phase III LDR final rule to estimate the volumes of K088 affected by today's rule, to determine the national level incremental costs (for both the baseline and three post-regulatory scenarios) and economic impacts. Economic impacts were estimated based upon incremental costs as a percent of sales for three different scenarios. It should be noted that these are hypothetical scenarios, and do not necessarily predict the actual course of action potentially taken by any particular treatment facility. The Agency believes these three hypothetical scenarios to be a reasonable representation of the potential range of possible outcomes of this proposed rule. However, scenario two is thought to be the least likely of the three hypothetical scenarios, and is presented primarily for illustrative purposes. Scenario's one and three represent the range of anticipated responses given the current political environment in which the aluminum industry operates: on-site or off-site treatment in the northwest U.S. versus commercial treatment at the Reynolds Aluminum, Gum Springs, Arkansas facility. The Agency requests comments on these three hypothetical scenarios as well as any alternative scenarios in response to the proposed rule.

Scenario 1: Assumes two facilities will be available for treating K088, one owned by Reynolds, and one storage facility owned by CWMNW. Both facilities are assumed to be retrofitted with the Vortec technology to meet the revised treatment standards;

Scenario 2: Assumes only the treatment facility owned by Reynolds will be available. This facility is assumed to be retrofitted with the Vortec technology; and

Scenario 3: Assumes that facilities in the Pacific Northwest treat on-site using the Vortec technology (using a cost structure similar to the Ormet facility in Hannibal, Ohio), and assumes that the Reynolds facility also will be retrofitted with the Vortec technology.

The basis for the baseline thresholds are the engineering design capacity for one facility and current treatment rates at another. Under the baseline, the existing Reynolds off-site thermal treatment system located in Gum Springs, Arkansas has a design treatment capacity of 120,000 tons per year. Only, 48,455 tons of this capacity were utilized in 1998. The existing CWMNW off-site storage/treatment facility located near Arlington, Oregon has a treatment capacity of 60,000 tons per year based on a communication with the facility that they currently are treating K088 at a rate of 5,000 tons per month.

Unit costs for crushers, impact mills, hammer mills, and on-site Vortec Combustion Melt Systems are scaled based on cost estimates known or developed for certain capacities. Capital costs are scaled to the 0.6 power and operation & maintenance costs are scaled to the 0.9 power to reflect economies of scale with varying capacities. In its simplest form, the equations are as follows:

$$\text{Scaled Capital Cost} = (\text{Known Capital Cost}) * (\text{New Capacity}/\text{Known Capacity})^{0.6}$$

$$\text{Scaled O\&M Cost} = (\text{Known O\&M Cost}) * (\text{New Capacity}/\text{Known Capacity})^{0.9}$$

For off-site Vortec Combustion Melt Systems, unit prices are not scaled based on capacity. Instead a range of unit costs (based on vitrification and incineration market pricing assumed to be high estimates) are used to represent the range of potential commercial pricing that may occur within the post-regulation K088 treatment market.

EPA knows of only two full-scale Vortec systems that have been constructed to date. One plant treats radioactive-contaminated soil and the

other treats K088. They have capacities of 12,950 tons per year and 7,000 tons per year, respectively. The Vortec technology has been licensed to Japan's Mitsubishi Kasei Engineering Co. for the treatment of municipal incinerator ash which is typically generated in larger amounts than K088 annually. This indicates that larger design capacities are likely feasible. The economic assessment estimates costs for systems ranging in capacity from 3,150 tons per year to 85,000 tons per year. We have assumed that, similar to other larger vitrification technologies, Vortec capacities can be built through multiple lines and combining storage requirements. Costs will be higher for multiple lines because not all fixed costs can be shared among lines. These potentially higher costs have been captured within the range of market price proxies used based on vitrification and incineration commercial operations to estimate potential cost impacts.

EPA chose a rate of 50 percent debt to 50 percent equity (or 1.0 debt-equity ratio) as a proxy for actual industry debt-equity structures. The debt-equity ratio may shed some light on the cost of financing the capital expenditures to fully comply with the proposed rule. While the cost of debt financing (interest expenditures) is readily apparent, the cost of equity financing may be more difficult to discern. While many of the larger companies are less reliant on debt financing (*e.g.,* Reynolds Metals and ALCOA have respective debt-equity ratio of approximately 0.7 and 0.5), some of the publicly traded firms are heavily reliant on debt capital (*e.g.,* Kaiser Aluminum has a debt-equity ratio of 35). Data were not obtained for closely-held companies in the industry; EPA assumes that these companies' debt-equity positions would be similar to other aluminum industries (*e.g.,* extruded aluminum, aluminum foundries, die-cast aluminum and secondary nonferrous metals) for which data are available. A review of consolidated financial statements in these related industries (as published in Robert Morris Associates Annual Statement Studies) showed debt-equity ratios in the 1.0 to 1.5 range. We selected a debt-equity ratio of 1.0 rather than other values because it is near the midpoint of the 0.5 to 0.7 (Reynolds Metals and ALCOA) and 1.0 to 1.5 (Robert Morris Associates Annual Statement Studies) ranges. We request comment on the appropriateness of these debt-equity ratios for use in the aluminum industry.

Crusher, impact mill, and hammer mill cost estimates include the following capital cost elements:

- Access road,
- Site preparation (grading),
- Concrete slab on grade,
- Structural steel,
- Conveyor,
- Storage silo (1-day),
- Hopper,
- Crusher, impact mill, or hammer mill equipment purchase and installation costs,
- Pilot test of crusher, impact mill or hammer mill,
- Vibratory screen,
- Instrumentation and electrical,
- Indirect capital cost allowances (permits at 1.25%, insurance and bonding at 2%, construction management at 6%, engineering design at 5%, project management at 2.5%, and overhead and profit at 20%), and
- Contingency on direct and indirect capital costs at 15%.

Crusher, impact mill, and hammer mill cost estimates include the following operation and maintenance cost elements:

- Operator oversight,
- Maintenance labor,
- Maintenance material at 7% of capital,
- Electricity,
- Indirect O&M allowances (project management at 5%), and
- Contingency on direct and indirect O&M costs at 10%.

On-site Vortec Combustion Melting System cost estimates were not developed from the ground up similar to the crushing and milling cost estimates. They were estimated based on scaling aggregate costs obtained from literature. The Department of Energy (DOE) spent $11.6 million to construct a 12,950 ton per year system to treat radioactively contaminated soil in Paducah, Kentucky. EPA assumed that this cost estimate included all the capital cost components listed. In a recent communication with Ormet Primary Aluminum Corporation on February 1, 2000, it was estimated that it would cost $10 million today to construct a similar-sized 7,000 ton per year system to the one they are operating currently. Ormet had to make several modifications to the system and actually spent more than $10 million. Others likely can learn from their experience which is why they estimated only $10 million. EPA did not modify the Paducah cost estimate even though it may be a high estimate for future construction given the others will learn from their experience thus lowering their costs. For O&M costs, we assumed a unit cost at the high end of the $150–$300/ton range estimated for a NHW vitrification system. In recent communication with Ormet, they estimate it cost them less than $300 per ton (excluding depreciation) to operate and maintain their systems.

Off-site Vortec Combustion Melting System cost estimates were not developed from the ground up similar to the crushing and milling cost estimates. Unit price estimates were developed using market unit price estimates for commercial vitrification and commercial incineration as a proxy for the range of potential market pricing. This range of commercial unit prices should account for all the potential costs included in the list of cost elements in the question.

Under Scenario 3, EPA assumed crusher, impact mill, and hammer mill capacity based on current K088 generation rates for that plant. EPA further assumed that additional capacity could be added in the future in generation rates increased. ''Site-specific'' was changed to ''current K088 generation.'' However, for the Vortec Combustion Melting System, a design capacity that is 40 percent greater than the plants current K088 generation rate was assumed. EPA assumed it would be more difficult to add capacity in the future for the Vortec system and that the initial investment for additional capacity will be made now rather than later.

2. Results

a. Volume Results. EPA estimated an average of 87,746 tons annually for purposes of assessing cost and economic impacts from today's proposed rule. This estimate is based upon the total reported generated quantity managed in 1997, including the 1995 reported quantity for Kaiser Aluminum & Chemical Corporation, Mead, Washington.[32] Moreover, spent potliner (SPL) generation is in the range of 80,000 to 100,000 tons annually.[33] An additional 20,000 tons reported in the 1997 BRS (including leachate and wastestreams that carried other EPA waste codes) were excluded from the economic analysis as they were determined not to be within the scope of today's rule. Previous analyses were based upon generation of an estimated 120,000 tons of SPL annually. This estimate was based upon available data sources from the Phase III Land Disposal Restrictions Final Rule (61 FR 15566, April 8, 1996.). The current K088 treatment standards became effective in

[32] Kaiser Aluminum and Chemical Corp., Mead, Washington facility did not report generating K088 in the 1997 Biennnial Reporting System (BRS). K088 generation data reported in the 1995 BRS were used instead.

[33] Background Document to Establish the Effective Date (March 2000, Section II, Required Capacity) in the docket for today's rule.

September 1998, therefore, several of the reported management practices (*i.e.*, off-site incineration, on-/off-site landfill, and off-site stabilization) did not meet the standard.

The baseline scenario assumes that of the 87,746 tons of spent aluminum potliner generated annually, 47,724 tons currently go to the Reynolds facility for treatment and Subtitle C disposal; 34,854 tons to the CWMNW facility for storage, and 5,170 tons are generated and treated on-site (non-commercially) using the Vortec technology at the Ormet facility. To establish the baseline management unit costs for the economic impact analysis, transportation costs were determined for each aluminum smelter.

b. Cost Results. As stated above, because this rule only modifies the treatment standard for cyanide and establishes a treatment standard for fluoride, the Agency believes that this rule does not impose significant incremental treatment costs associated with treating K088. EPA has estimated transportation, permitting, and treatment costs for K088. Incremental annual treatment costs attributable to today's proposed rule range from $12.4 million under Scenario 1 to $36.8 million under Scenario 2. Capacity currently exists at the CWMNW to treat all stored K088 to current treatment standards, therefore, costs of storage are not included in cost estimates. [34] Transportation and permitting costs are estimated to range from $4.5 million to $11.8 million. EPA previously estimated treatment costs between $6.4 million and $42 million for the LDR Phase III final rule. 61 FR 15566,15591(April 8, 1996). EPA notes that new K088 treatment technologies are currently being developed that may significantly lower K088 treatment costs nationally. [35] EPA does not believe that this proposed rule will create barriers to market entry for firms wishing to provide alternative treatment capacity for spent aluminum potliner. Estimated economic impacts reflect direct expenditures to construct using Vortec and do not reflect the full costs of compliance.

EPA has also estimated the potential value of the fluoride-rich baghouse dust that is a by-product of the Vortec process. In 1994, approximately 73% of reported fluorspar consumed in the U.S. was used in the production of hydrofluoric acid; 10% as a fluxing agent in steelmaking; and, 17% in aluminum fluoride manufacture, primary aluminum production, glass manufacture, enamels, welding-rod coatings, and other miscellaneous end uses or products. Fluorspar prices are driven to a large extent by activities in China, including major increases in Chinese exports and the resulting competition between Chinese exporters and the introduction of Chinese export quotas and license fees. The average U.S. Gulf port price per ton, dry basis, for acid grade fluorspar is $122. The current licensing fee for Chinese (acid grade) fluorspar is $39. This price per ton represents the average delivered price of Chinese, Mexican, and South African acid grade at Gulf port.

About 90,000 tons of K088 waste were reported managed in the U.S. in 1997. The estimated cost per ton of the Vortec system (excluding permitting prices) ranges from $483 to $693. The Agency has assumed that this estimated treatment cost per ton includes both the generation cost of fluoride-rich material, as well as cyanide removal. The Agency does not have data to isolate the cost of cyanide removal; this cost is included in the overall treatment cost using the Vortec process. Annual cost impacts of the proposed rule were estimated to range from about $12 million to $37 million in aggregate for all facilities. About 5,250 tons of fluoride-rich material (assuming 100% of the fluoride baghouse dust is marketed as fluorspar) are generated annually in the U.S. Based upon the $122 price per ton for acid grade fluorspar, the resulting estimated value of the fluoride-rich baghouse dust is $640,500.

c. Economic Impact Results. To estimate potential economic impacts resulting from today's proposed rule, EPA has used first order economic impact measures such as the estimated incremental management unit costs of today's final rule as a percentage of affected firms' sales and/or revenues. Individual facilities were considered in the analysis. Annual sales for each facility were estimated from overall industry production data and industry capacity. Total industry capacity estimates were taken from USGS data. Industry production divided by industry capacity determined the overall capacity utilization. Sales for each facility were approximated assuming that they each produced aluminum at this capacity utilization rate of approximately 88 percent. When the annual costs of regulation are less than one percent of a firms annual sales or revenues, this analysis presumes that the regulation does not pose a significant economic impact on the affected facilities absent information to the contrary. In 1997, U.S., primary aluminum production was an estimated 4.0 million metric tons of aluminum at an average market price of $1,542 per ton yielding total sales of $6.1 billion.[36] The $36.8 million high estimate of the incremental treatment cost estimate represents only 0.6 percent of the total value of the aluminum sold by primary aluminum producers. It is likely, as discussed, that treatment costs will decrease as new firms develop commercial technologies for K088. As a result, this proposed rule will not pose a significant economic impact on primary aluminum producers in the United States. More detailed information on this estimate can be found in the economic assessment placed into today's docket.

d. Benefits Assessment. EPA has not conducted a quantitative assessment of actual benefits from this proposed rule. Because today's proposed rule promulgates a revised treatment standard for cyanide and establishes a treatment standard for fluoride in K088, the Agency believes that there may be a reduction in the levels of cyanide and fluoride in leachate, which may reduce human health risks in the event of a landfill liner failure and subsequent actual exposure by any nearby populations.

Since the proposed rule is technology-based (and not risk-based) the Agency has not conducted a data collection and analysis of actual cyanide

[34] Chemical Waste Management has received approximately 30,000 tons of K088 to-date, of which approximately 10,000 tons have already been treated. Further, Chemical Waste Management continues to receive 2,000 tons of additional K088 per month, while treating 5,000 tons of K088 per month. Net effect is a 3,000 ton per month reduction in stored K088. Personal communication with Steve Seed, Chemical Waste Management, and Linda Martin U.S.E.P.A., January 5, 2000.

[35] For example, previously Reynolds Metals Company has provided data indicating that the treatment of disposal cost of their process, though variable depending on a series of factors, is between $200 and $500 per ton. Personal Communication with Jack Gates, Vice-President, Reynolds Metals Company, September 28, 1994 as cited in Regulatory Impact Analysis of the Phase III Land Disposal Restrictions Final Rule, U.S. Environmental Protection Agency, Office of Solid Waste, February 15, 1996. Recently, Waste Management has quoted treatment and disposal charges at $160 per ton for treatment capacity now being developed at its Arlington, Oregon facility. Letter from Mitchell S. Hahn, Manager, Environmental Health and Safety, Waste Management Inc. to Paul A. Borst, Economist, USEPA, Office of Solid Waste, June 4, 1998. The Waste Management treatment and disposal charge is determined by subtracting the $85 storage price from a new customer price of $245 per ton. Transportation costs are not factored into this estimate. Of the $160 per ton treatment and storage cost, $80 per ton is attributable to treatment and $80 is attributable to disposal. Personal Communication with Mitch Hahn, Chemical Waste Management, and Paul Borst, U.S.E.P.A. August 13, 1998.

[36] Mineral Commodity Summaries 1999, U.S. Department of the Interior, U.S. Geological Survey.

contamination. However, the Agency has reviewed the available actual damage incidents with respect to the potential for spent aluminum potliner to release free cyanide, and cyanide's mobility and persistence following release. Specifically, the July 7, 1980 background document for the original spent aluminum potliner (K088) listing identified a damage case involving Kaiser Aluminum's Mead Works. Kaiser's facility is situated 150 feet above the Spokane aquifer which is used for private wells and drains into the Little Spokane River. Leachate from a lagoon containing potliners and sludge leached through the ground and contaminated the aquifer with cyanide. Eighteen wells were contaminated, some having cyanide levels in excess of 1,000 ppb. Kaiser had to provide alternative sources of drinking water to the affected owners and upgrade and seal the leaking lagoon.

B. Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), 5 USC 601 et seq.

The RFA generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For the reasons stated above, in the estimated costs discussion of section X.A.2, the Agency does not believe that today's proposed rule will have a significant impact on a substantial number of small entities. The overall economic impact of today's proposed rule to promulgate revised treatment standards for total and amenable cyanide and establish a treatment standard for fluoride in spent aluminum potliner results in annual incremental costs ranging from $12.4 million to $36.8 million.

The proposed rule will affect an estimated 22 aluminum smelting companies. Of the companies in question, 21 are expected to incur costs. For purposes of assessing the impacts of today's proposed rule on small entities, small entity is defined as: a small business that has less than 1,000 employees; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field. No more than one facility is estimated to be small according to the Small Business Administration definition for small for SIC 3334 (Primary Production of Aluminum). After considering the economic impacts of today's proposed rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. We have determined that the preliminary estimate of the impact on affected facilities indicates compliance costs may exceed 1% of sales for this facility. The overall impact to the entire affected population of facilities is expected to range from 0.0 to 1.9 percent of sales, however, only under the assumption that the only K088 management facility will be the Reynolds facility in Arkansas.

Although this proposed rule will not have a significant economic impact on a substantial number of small entities, EPA nonetheless has tried to reduce the impact of this rule on small entities. EPA has sought data to determine available treatment technologies for establishment of treatment standards for cyanide and fluoride, as well as available markets for recycled K088.

We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts. More information on this analysis can be found in the background document ''Economic Assessment for Revised LDR Treatment Standards for Spent Aluminum Potliner (K088)'' placed in the public docket.

C. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for Federal Agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under Section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that this rule does not include a Federal mandate that may result in estimated costs of $100 million or more in the aggregate to either State, local, or tribal governments or the private sector in one year. The rule would not impose any federal intergovernmental mandate because it imposes no enforceable duty upon State, tribal or local governments. States, tribes and local governments would have no compliance costs under this rule. It is expected that states will adopt similar rules, and submit those rules for inclusion in their authorized RCRA programs, but they have no legally enforceable duty to do so. For the same reasons, EPA also has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. In addition, as discussed above, the private sector is not expected to incur costs exceeding $100 million. EPA has fulfilled the requirement for analysis under the Unfunded Mandates Reform Act.

D. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks (62 FR 19885, April 23, 1997), applies to any rule that: (1) is determined to be ''economically significant'' as defined under E.O. 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the

environmental health or safety effects of the planned rule on children; and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This proposed rule is not subject to the Executive Order because this is not an economically significant regulatory action as defined by Executive Order 12866, and because the Agency does not have reason to believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. The Agency has concluded this because this rulemaking proposes treatment standards for hazardous constituents in spent aluminum potliner that minimizes both short-term and long-term threats to human health and the environment. The environmental health risks or safety risks addresses by this action do not have a disproportionate effect on children.

The public is invited to submit or identify peer-reviewed studies and data, of which the Agency may not be aware, that assessed the results of early life exposure to K088 waste or its regulated constituents of concern, e.g., cyanide, fluoride, arsenic, and polycyclic aromatic hydrocarbons.

E. Environmental Justice Executive Order 12898

EPA is committed to addressing environmental justice concerns and is assuming a leadership role in environmental justice initiatives to enhance environmental quality for all residents of the United States. The Agency's goals are to ensure that no segment of the population, regardless of race, color, national origin, or income bears disproportionately high and adverse human health and environmental impacts as a result of EPA's policies, programs, and activities, and that all people live in clean and sustainable communities. In response to Executive Order 12898 and to concerns voiced by many groups outside the Agency, EPA's Office of Solid Waste and Emergency Response formed an Environmental Justice Task Force to analyze the array of environmental justice issues specific to waste programs and to develop an overall strategy to identify and address these issues (OSWER Directive No. 9200.3–17).

Today's proposed rule covers K088 spent potliner wastes from primary aluminum operations. It is not certain whether the environmental problems addressed by this rule could disproportionately effect minority or low income communities, due to the location of primary aluminum operations. Because today's proposed rule establishes treatment standards for K088 being land disposed, the Agency does not believe that today's rule will increase risks from K088. It is, therefore, not expected to result in any disproportionately negative impacts on minority or low income communities relative to affluent or non-minority communities.

F. Paperwork Reduction Act

To the extent that this rule imposes any information collection requirements under existing RCRA regulations promulgated in previous rulemakings, those requirements have been approved by the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, and have been assigned OMB control numbers 2050–120 (ICR No. 1573, Part B Permit Application); 2050–120 (ICR 1571, General Facility Standards); 2050–0028 (ICR 261, Notification to Obtain an EPA ID); 2050–0034 (ICR 262, Part A Permit Application); 2050–0039 (ICR 801, Hazardous Waste Manifest); 2050–0035 (ICR 820, Generator Standards); and 2050-0024 (ICR 976, Biennial Report).

G. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (''NTTAA''), Pub. L. No. 104–113, § 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This proposed rulemaking involves technical standards. Existing determination methods are employed for the analysis of cyanide in the treated waste and fluoride in the deionized water leachate from the treated waste. As stated above, today's action proposes a revised treatment standard for fluoride in nonwastewaters, based on a recognized version of the toxicity characteristic leaching procedure, ASTM Method D3987–85 (1999) Standard Test Method for Shake Extraction of the Solid Waste With Water. This is a consensus method.

H. Executive Order 13084: Consultation and Coordination with Indian Tribal Governments

Under Executive Order 13084, EPA may not issue a regulation that is not required by statute, that significantly or uniquely affects the communities of Indian tribal governments, and that imposes substantial direct compliance costs on those communities, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments. If the mandate is unfunded, EPA must provide to the Office of Management and Budget, in a separately identified section of the preamble to the rule, a description of the extent of EPA's prior consultation with representatives of affected tribal governments, a summary of the nature of their concerns, and a statement supporting the need to issue the regulation. In addition, Executive Order 13084 requires EPA to develop an effective process permitting elected and other representatives of Indian tribal governments ''to provide meaningful and timely input to the development of regulatory policies on matters that significantly or uniquely affect their communities.''

Today's rule does not significantly or uniquely affect the communities of Indian tribal governments. Aluminum potliners are not currently generated or treated on any known Indian tribal lands. Today's proposal does not create a mandate on State, local or tribal governments. The proposal would not impose any enforceable duties on these entities. Accordingly, the requirements of section 3(b) of Executive Order 13084 do not apply to this proposed rule.

I. Executive Order 13132 (Federalism)

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implication.'' ''Policies that have federalism implication'' is defined in the Executive Order to include regulation that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.'' Under Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds

necessary to pay the direct compliance costs incurred by State and local government, or EPA consults with State and local officials early in the process of developing the proposed regulation. EPA also may not issue a regulation that has federalism implications and that preempts State law unless the Agency consults with State and local officials early in the process of developing the proposed regulation.

If EPA complies by consulting, Executive Order 13132 requires EPA to provide to the Office of Management and Budget (OMB), in a separately identified section of the preamble to the rule, a federalism summary impact statement (FSIS). The FSIS must include a description of the extent of EPA's prior consultation with State and local officials, a summary of the nature of their concerns and the Agency's position supporting the need to issue the regulation, and a statement of the extent to which the concerns of State and local officials have been met. Also when EPA transmits a draft final rule with federalism implication to OMB for review pursuant to Executive Order 12866, EPA must include a certification from the Agency's Federalism Official stating that EPA has met the requirements of Executive Order 13132 in a meaningful and timely manner.

This proposed rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Thus, the requirements of section 6 of the Executive Order do not apply to this proposed rule.

List of Subjects

40 CFR Part 260

Environmental protection, Administrative practice and procedure, Confidential business information, Hazardous waste.

40 CFR Part 261

Environmental protection, Hazardous materials, Recycling, Waste treatment and disposal.

40 CFR Part 268

Environmental protection, Hazardous waste, Reporting and recordkeeping requirements.

40 CFR Part 271

Environmental protection, Administrative practice and procedure, Confidential business information, Hazardous material transportation, Hazardous waste, Indians-lands, Intergovernmental relations, Penalties, Reporting and recordkeeping requirements, Water pollution control, Water supply.

Dated: June 27, 2000.

Carol M. Browner,

Administrator.

For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is proposed to be amended as follows:

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

I. In part 260:

1. The authority citation for part 260 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921–6927, 6930, 6934, 6935, 6937, 6938, 6939, and 6974.

Subpart B—[Amended]

2. Section 260.10 is amended by revising the definition of ''incinerator'' and adding the definition of ''K088 vitrification unit'' in alphabetical order to read as follows:

§ 260.10 Definitions.

* * * * *

Incinerator means any enclosed device that:

(1) Uses controlled flame combustion and neither meets the criteria for classification as a boiler, sludge dryer, carbon regeneration unit, or K088 vitrification unit, nor is listed as an industrial furnace; or

(2) Meets the definition of infrared incinerator or plasma arc incinerator.

* * * * *

K088 vitrification unit means an enclosed device in which K088 waste and other materials are introduced into a pool of molten glass and whereby waste components that are dissolved or suspended in the molten matrix are subsequently entrapped or chemically bound in the matrix upon cooling to form a solid mass. Such units are classified as other thermal treatment units.

* * * * *

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

II. In part 261:

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, 6924(y), and 6938.

2. Section 261.4 is amended by adding paragraphs, (a)(20) and (a)(21) to read as follows:

§ 261.4 Exclusions.

(a) * * *

(20) Glass frit generated by the vitrification of K088, provided the frit is recycled legitimately and is not accumulated speculatively (as defined in § 261.1(c)(8)) and meets the requirements of § 268.40 of this chapter.

(21) Fluoride-rich baghouse dust generated by the vitrification of K088, provided the dust is recycled legitimately as an ingredient or for reclamation by introduction into industrial processes and is not land disposed (i.e., placed on the land) before doing so and is not accumulated speculatively (as defined in § 261.1(c)(8)) of this chapter.

* * * * *

3. Section 261.6 is amended by revising the last sentence of paragraph (c)(1) to read as follows:

§ 261.6 Requirements for recyclable materials.

* * * * *

(c)(1) * * * (The recycling process itself is exempt from regulation except as provided in § 261.6(d) and except that K088 vitrification units are not exempt from regulation.)

* * * * *

PART 268—LAND DISPOSAL RESTRICTIONS

II. In part 268:

1. The authority citation for part 268 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6924.

2. Section 268.40 is amended by revising the entry for K088 in the table entitled Treatment Standards For Hazardous Wastes and adding footnote 12 to read as follows:

TREATMENT STANDARDS FOR HAZARDOUS WASTES

[Note: NA means not applicable]

Waste code	Waste description and treatment/regulatory subcategory[1]	Regulated hazardous constituent		Wastewaters	Nonwastewaters
		Common name	CAS[2] number	Concentration in mg/L[3], or technology code[4]	Concentration in mg/kg[5] unless noted as mg/L TCLP, or technology code
*	*	*	*	*	*
K088	Spent potliner from primary aluminum reduction.	Acenaphthalene	83–32–9	0.059	3.4
		Anthracene	120–12–7	0.059	3.4
		Benzo(a)anthracene	56–55–3	0.059	3.4
		Benzo(a)pyrene	50–32–8	0.061	3.4
		Benzo(b)fluoranthene	205–99–2	0.11	6.8
		Benzo(k)fluoranthene	207–08–9	0.11	6.8
		Benzo(g,h,i)perylene	191–24–2	0.0055	1.8
		Chrysene	218–01–9	0.059	3.4
		Dibenz(a,h)anthracene	53–70–3	0.055	8.2
		Fluoranthene	206–44–0	0.068	3.4
		Indeno(1,2,3,-c,d)pyrene	193–39–5	0.0055	3.4
		Phenanthrene	85–01–8	0.059	5.6
		Pyrene	129–00–0	0.067	8.2
		Antimony	7440–39–3	1.9	1.15 mg/L TCLP
		Arsenic	7440–38–2	1.4	26.1 mg/kg
		Barium	7440–39–3	1.2	21.0 mg/L TCLP
		Beryllium	7440–41–7	0.82	1.22 mg/L TCLP
		Cadmium	7440–43–9	0.69	0.11 mg/L TCLP
		Chromium (Total)	7440–47–3	2.77	0.60 mg/L TCLP
		Lead	7439–92–1	0.69	0.75 mg/L TCLP
		Mercury	7439–97–6	0.15	0.025 mg/L TCLP
		Nickel	7440–02–0	3.98	11.0 mg/L TCLP
		Selenium	7782–49–2	0.82	5.7 mg/L TCLP
		Silver	7440–22–4	0.43	0.14 mg/L TCLP
		Cyanide (Total)[7]	57–12–5	1.2	1.4 mg/kg
		Cyanide (Amenable)[7]	57–12–5	0.86	1.4 mg/kg
		Fluoride	16984–48–8	35	2.7 mg/L Deionized TCLP[12]
*	*	*	*	*	*

Footnotes to Treatment Standard Table 268.40

[1] The waste descriptions provided in this table do not replace waste descriptions in 40 CFR 261. Descriptions of Treatment/Regulatory Subcategories are provided, as needed, to distinguish between applicability of different standards.

[2] CAS means Chemical Abstract Services. When the waste code and/or regulated constituents are described as a combination of a chemical with its salts

and/or esters, the CAS number is given for the parent compound only.

[3] Concentration standards for wastewaters are expressed in mg/L and are based on analysis of composite samples.

[4] All treatment standards expressed as a Technology Code or combination of Technology Codes are explained in detail in 40 CFR 268.42 Table 1—Technology Codes and Descriptions of Technology-Based Standards.

[5] Except for Metals (EP or TCLP) and Cyanides (Total and Amenable) the nonwastewater treatment standards expressed as a concentration were established, in part, based upon incineration in units operated in accordance with the technical requirements of 40 CFR Part 264 Subpart O or Part 265 Subpart O, or based upon combustion in fuel substitution units operating in accordance with applicable technical requirements. A facility may comply with these treatment standards according to provisions in 40 CFR 268.40(d). All concentration standards for nonwastewaters are based on analysis of grab samples.

* * * * *

[7] Both Cyanides (Total) and Cyanides (Amenable) for nonwastewaters are to be analyzed using Method 9010 or 9012, found in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication SW 846, as incorporated by reference in 40 CFR 260.11, with a sample size of 10 grams and a distillation time of one hour and 15 minutes.

* * * * *

[12] Fluoride extraction must be performed using ASTM Method D3987–85(1999) Standard Test Method for Shake Extraction of Solid Waste with Water.

* * * * *

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

3. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

4. Section 271.1(j) is amended by adding the following entries to Table 1 and Table 2 in chronological order by date of publication to read as follows.

§ 271.1 Purpose and scope.

* * * * *

(j) * * *

TABLE 1.—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Promulgation date	Title of regulation	Federal Register reference	Effective date
*	*	*	*
[date of final signature].	Treatment Standards for Hazardous Waste K088	*Federal Register* page numbers.	*[date of signature]*
*	*	*	*

TABLE 2.—SELF-IMPLEMENTING PROVISIONS OF THE SOLID WASTE AMENDMENTS OF 1984

Effective date	Self-implementing provision	RCRA citation	Federal Register reference
*	*	*	*
[date of final signature].	Prohibition on land disposal of K088 wastes, and prohibition on land disposal of radioactive waste mixed with K088 wastes, including soil and debris.	3004(g)(4)(C) and 3004(m).	*[date of publication of final rule]* [FR page numbers].
*	*	*	*

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[FR Doc. 00–16965 Filed 7–11–00; 8:45 am]
BILLING CODE 6560–50–U

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 271

[FRL–6732–9]

Delaware: Final Authorization of State Hazardous Waste Management Program Revisions

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The EPA proposes to grant final authorization to the hazardous waste program revisions submitted by Delaware. In the ''Rules and Regulations'' section of this **Federal Register**, EPA is authorizing the State's program revisions as an immediate final rule without prior proposal because EPA views this action as noncontroversial and anticipates no adverse comments. The Agency has explained the reasons for this authorization in the preamble to the immediate final rule. If EPA does not receive adverse written comments, the immediate final rule will become effective and the Agency will not take further action on this proposal. If EPA receives adverse written comments, EPA will withdraw the immediate final rule and it will not take effect. EPA will then address public comments in a later final rule based on this proposal. EPA may not provide further opportunity for comment. Any parties interested in commenting on this action must do so at this time.

DATES: Written comments must be received on or before August 11, 2000.

ADDRESSES: Mail written comments to Lillie Ellerbe, Mailcode 3WC21, RCRA State Programs Branch, U.S. EPA Region III, 1650 Arch Street, Philadelphia, PA 19103, Phone number: (215) 814–5454. You can examine copies of the materials submitted by Delaware during normal business hours at the following locations: EPA Region III, Library, 2nd Floor, 1650 Arch Street, Philadelphia, PA 19103, Phone number: (215) 814–5254; or Department of Natural Resources & Environmental Control, Division of Air & Waste Management, 89