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Office of Solid Waste

EPA

Environmental Fact Sheet

New Treatment Standards Finalized for K061 High Zinc Subcategory Wastes

Background

In the First Third land disposal restrictions rule of August 17, 1988, EPA determined that high temperature metal recovery (HTMR) was the best demonstrated available technology for treating K061 high zinc wastes (i.e., wastes containing at least 15% total zinc). However, believing that it lacked the authority to regulate the slag residues from the HTMR process as K061 wastes, EPA set a treatment standard of "no land disposal" for these wastes.

On June 26, 1990, the District of Columbia Circuit Court of Appeals invalidated the "no land disposal" standard and held that EPA is not jurisdictionally barred from promulgating a treatment standard for the slag. The Court remanded the case to EPA to determine whether to establish a treatment standard for slag residue. The Court did not dispute that HTMR represents the best demonstrated available technology for these wastes.

Currently, K061 wastes are subject to an interim treatment standard based on stabilization, which will expire on August 8, 1991. After that date, industry would not have been able to dispose of K061 wastes in or on the land if a new treatment standard had not been promulgated.

Action

EPA is finalizing concentration-based treatment standards for K061 nonwastewaters in the high zinc subcategory based on the analysis of slag residues from the HTMR processes. EPA is also finalizing a generic exclusion from the hazardous waste regulations for the slag resulting from the HTMR process if it satisfies certain conditions. A conditional exclusion from classification as a solid waste is also being granted for certain material that is partly (but not fully) reclaimed.

For More Information

To obtain further information, a copy of the Federal Register notice, or other fact sheets on the land disposal restrictions program, please call the RCRA Hotline Monday through Friday, 8:30 a.m. to 7:30 p.m. EST. The national toll-free number is (800) 424-9346; for the hearing impaired, it is (TDD) (800) 553-7672. In Washington, D.C., the number is (703) 920-9810 or TDD 486-3323.

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261, 268, and 271

CFRL-3973-8] ← RIN 2050-AD20

LAND DISPOSAL RESTRICTIONS FOR ELECTRIC ARC FURNACE DUST (K061)

VR

AGENCY: Environmental Protection Agency (EPA)

ACTION: Final rule

SUMMARY: The Environmental Protection Agency (EPA) is today finalizing treatment standards under the land disposal restrictions (LDR) program for a subcategory of the hazardous waste K061 (electric arc furnace dust) treatability group, namely nonwastewaters that contain equal to or greater than 15% total zinc (i.e., high zinc subcategory), determined at the point of initial generation. These treatment standards are based on the performance of high temperature metals recovery (HTMR) processes; specifically, the standards are based on analysis of slags from these processes. The Agency is also finalizing a generic exclusion from the derived-from rule for HTMR nonwastewater slag residues generated from processing K061, provided that these slag residues meet designated concentration levels, are disposed of in Subtitle D units, and exhibit no characteristics of hazardous waste. Furthermore, today's rule finalizes a conditional exclusion from classification as a solid waste for K061 HTMR splash condenser dross residue.

EFFECTIVE DATE: This final rule is effective on August 8, 1991.

ADDRESSES: The official record for this rulemaking is identified as docket F-91-K61P-FFFF, and is located in the EPA RCRA Docket, room 2427, 401 M Street, S.W., Washington, D.C. 20460. The docket is open from 9:00 a.m. to 4:00 p.m., Monday through Friday, except on federal holidays. An appointment must be made to examine the docket by calling (202) 475-9327. Up to 100 pages of a regulatory document may be copied at no cost; beyond 100 pages the cost is 15 cents per page.

FOR FURTHER INFORMATION CONTACT: For general information, contact the RCRA Hotline at (800) 424-9346 (toll free), (703) 920-9810 locally. For information on the final rule, contact the Waste Treatment Branch, Office of Solid Waste (OS-322W), U.S. Environmental Protection Agency, 401 M Street SW, Washington DC 20460, (703) 308-8434. For information on the BDAT treatment standard, contact Laura Lopez, Office of Solid Waste (OS-322W), U.S. Environmental Protection Agency, 401 M Street SW, Washington DC 20460, (703) 308-8457. For information on the generic exclusion, contact Bob Kayser, Office of Solid Waste (OS-333), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460, (202) 382-4770.

SUPPLEMENTARY INFORMATION:

Outline

I. Background

A. Summary of the Hazardous and Solid Waste Amendments of 1984 and the Land Disposal Restrictions Framework

The Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA), enacted on November 8, 1984, generally prohibit the land disposal of untreated hazardous wastes. HSWA requires the Agency to set ". . .levels or methods of treatment, if any, which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized" (RCRA section 3004(m)(1)). Wastes that meet the treatment standards established by EPA may be land disposed. For the purposes of the restrictions, HSWA defines land disposal to include any placement of hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave (RCRA section 3004(k)).

The land disposal restrictions are effective when promulgated, unless the Administrator grants a national capacity variance from the otherwise applicable statutory prohibition date and establishes a different date (not to

exceed two years) based on ". . .the earliest date on which adequate alternative treatment, recovery, or disposal capacity which protects human health and the environment will be available" (RCRA section 3004(h)(2)). The Administrator may also grant a case-by-case extension of the effective date for up to one year, renewable once for up to one additional year, when an applicant successfully makes certain demonstrations (RCRA section 3004(h)(3)). (See 55 FR 22526 for a more detailed discussion on national capacity variances and case-by-case extensions.)

In addition to prohibiting the land disposal of hazardous wastes, Congress prohibited storage of any waste which is prohibited from land disposal unless ". . .such storage is solely for the purpose of the accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment or disposal" (RCRA section 3004(j)).

B. Final Rule

Today's rule revises and finalizes treatment standards for K061 nonwastewaters in the high zinc subcategory (i.e., containing equal to or greater than 15% total zinc, determined at the point of initial generation). K061 wastes are defined in 40 CFR 261.32 as "Emission control dust/sludge from the primary production of steel in electric furnaces."

Concentration-based treatment standards for K061 high zinc nonwastewaters are based on the analysis of nonwastewater slag residues from HTMR processes. (Although these residues have been commonly referred to as "slag," there is some question whether all of the HTMR processes technically generate slags. Slag is generally considered a residue from a thermal process in which metals have been in a molten mixture. Since this does not necessarily occur in all HTMR processes, the nonwastewater residues from some of these processes technically would not be slags. In addition, HTMR processes generate residues other than slag. Section II.C.6. below discusses the regulatory status of certain non-slag HTMR residues.)

Today's rule also finalizes a generic exclusion for K061 nonwastewater residues if: (1) they are generated from the HTMR process; (2) they meet the generic exclusion levels for all constituents; (3) they are disposed of in a Subtitle D unit; and (4) they exhibit no hazardous waste characteristics.

Furthermore, today's rule finalizes an exclusion from classification as a solid waste under 40 CFR 261.4(a), for certain materials that are partially but not fully reclaimed. This variance applies to HTMR splash condenser dross residue

provided it is shipped in drums (if processed off-site) and provided that it is not land disposed at any point before recovery occurs.

II. Detailed Discussion of Final Rule

A. History of K061 Treatment Standards

EPA first promulgated treatment standards for nonwastewater forms of K061 in the First Third final rule on August 8, 1988 (53 FR 31162 - 31164). The Agency established two subcategories for nonwastewater forms of K061: the low zinc subcategory (less than 15% total zinc) and the high zinc subcategory (equal to or greater than 15% total zinc). EPA determined that zinc could be recovered on a routine basis from K061 wastes containing equal to or greater than 15% total zinc utilizing HTMR. Although HTMR technologies can recover zinc from some K061 containing less than 15% total zinc, EPA determined that the 15% level represented a reasonable cutoff for distinguishing between the two subcategories for K061 wastes. The treatment standard for the low zinc subcategory was based on the performance of stabilization. For the high zinc subcategory, the final standard was expressed as "no land disposal" based on the determination that HTMR represents BDAT (53 FR 31221). Due to a shortage in HTMR capacity, an interim numerical standard

based on the performance of stabilization was established until August 1990.

In the proposed Third Third rule (54 FR 48456-48457), the Agency requested comments on extending the existing interim standard of stabilization for another year. Because of the capacity shortage, the Agency decided to extend the interim standard for one additional year.

The Agency also proposed in the Third Third to amend the existing treatment standard for the high zinc subcategory K061 wastes to be resmelting in a high temperature metal recovery furnace. However, EPA decided not to amend the existing standard in the final rule, as the metals recovery standard was under review by a panel of the District of Columbia Circuit Court of Appeals (55 FR 22599). In a June 26, 1990 decision, the court remanded the issue to EPA for further consideration (API v. EPA, 906 F.2d 726 (D.C. Cir. 1990)).

Although EPA determined in the First Third rulemaking that HTMR was BDAT for treating high zinc K061 hazardous wastes, the Agency concluded that it probably lacked the authority to establish any treatment standards under the K061 waste code for the residues resulting from the metals reclamation process. In particular, the Agency indicated

that a jurisdictional bar could exist on regulating K061 dust as a "solid waste" within the meaning of RCRA Subtitle C once it entered a reclamation furnace where it functioned as, and was similar to, ordinary raw materials customarily processed in the industrial furnace. Therefore, residues derived from the reclamation process would not be derived from treating a hazardous waste. For purposes of the land disposal restrictions program, therefore, the residues would not be covered by the prohibition for K061 waste. The treatment standard of "no land disposal" reflected EPA's belief that slag residues from HTMR no longer carried the K061 waste code, so that no K061 waste was being disposed.

In its June 1990 decision, the court found it equally plausible that the K061 remained discarded throughout the waste treatment process and that residues from the process could still be classified as K061 (906 F.2d at 740-741). According to the court, the delivery of K061 waste to a metals reclamation facility is part of a mandatory waste treatment plan specified by EPA, and EPA can still consider it a solid waste under RCRA. Id. Therefore, the court held that EPA must reconsider its basis for declining to establish a treatment standard for K061 residues and remanded EPA's determination that HTMR slag residues are not covered by the

K061 prohibition. In doing so, the court created a situation where a hard hammer (an absolute prohibition on waste disposal except in a no migration unit) could apply to these residues. This is because the existing interim treatment standard, based on the performance of stabilization technology, will lapse on August 8, 1991.

In this proceeding, the Agency is acting primarily to keep this absolute prohibition from occurring. We are not making any definitive determination on some of the broader issues raised by the court's opinion regarding which materials are and are not solid wastes when destined for recycling. In our view, the court's remand reinstituted existing Agency rules without any jurisdictional override imposed by the indigenous principle. Under these rules, K061 destined for metals reclamation is a solid waste. 40 CFR 261.2(c)(3). Non-product residues from the metals reclamation process remain hazardous wastes under the K061 waste code by virtue of the derived-from rule in 40 CFR 261.3(c)(2). The court noted the legal validity of these rules in the course of its opinion. 906 F.2d at 740-42.

Many commenters urged the Agency to find that K061 waste reclaimed by HTMR processes is not a solid waste, either through interpretation of current rules, or by reference to

the initial opinion of the D.C. Circuit on recycling (AMC I, 824 F.2d 1177 (D.C. Cir. 1987)). They also maintained that by deferring comment on the issue, the Agency was in fact deciding that these materials must be solid wastes.

EPA disagrees. We repeat that we are allowing the Court's opinion and mandate to operate, at least for the time being. The status quo created by the Court's mandate and the existing regulations thus continues in effect. We repeat that this means that K061 waste destined for reclamation via HTMR is a solid waste under existing rules because it is a listed waste being reclaimed (40 CFR 261.2(c)) and because at present there is no indigenous principle operating to cut off application of the derived-from rule. 906 F.2d at 740-41.

Nevertheless, the Agency is presently engaged in a comprehensive reevaluation of its rules on recycling, and may ultimately articulate new principles which bear on the issue of the status of K061 and the slag and other residues resulting from the HTMR process. Before that reevaluation is completed, however, EPA is acting pursuant to the current regulatory regime as described above.

The Agency notes in response to comment that it is reexamining its approach in making waste/non-waste determinations. The Agency is considering linking decisions

on status as solid waste with environmental consequences of recycling activities. The API and AMC II (907 F.2d 1179 (D.C. Cir. 1990)) opinions invite a pragmatic, environmentally-based approach with their focus on whether a particular material destined for recycling is part of a waste disposal problem. Thus, the Agency would anticipate in future rulemakings on these issues that it would propose to examine not only that recycling is occurring but also the way these materials are managed before, during, and after recycling.

To the extent it is deemed necessary for EPA to address the policy implications of preserving the regulatory status quo (i.e., continuing to regulate K061 going to HTMR as a solid and hazardous waste and applying the derived-from rule to non-product residues), the Agency notes that this result is consistent with RCRA's cradle-to-grave mandate in that there will be strict supervision of toxic constituents from K061 throughout all phases of its management, including partitioning into non-product residues of the HTMR process. The fact that the residue output of the HTMR process can be used in a manner constituting disposal shows that the

continued management of residues is potentially part of the waste disposal problem (906 F.2d at 740), and thus that assertion of jurisdiction is warranted to further RCRA's traditional safety objectives. The Agency notes further, however, that it may be possible to advance these objectives, as well as RCRA's resource conservation and recovery purposes, by means other than full-scale regulatory controls. The Agency's disposition of the status of the splash condenser dross residue (see section II.C.6. below) illustrates how accommodation of both of these goals can be possible. Thus, we reiterate that today's action is not intended to forestall further Agency rulemaking dealing with questions of solid waste status and developing a regulatory scheme that may further both of the dual statutory purposes.

B. Development of Concentration-based Treatment Standards Based on Recovery for K061 High Zinc

1. Summary of Treatment Performance Data

For the First Third rule in August, 1988, EPA had two sets of TCLP (referring to the Toxicity Characteristic Leaching Procedure according to § 261.24) data on the nonwastewater residues resulting from two different HTMR processes that were recovering zinc from K061 wastes in the high zinc subcategory. One of these HTMR processes consists

of a series of Waelz kilns (a Waelz kiln is a type of rotary kiln), while the other was the SKF plasma arc furnace. At that time, however, EPA chose not to establish concentration-based treatment standards.

In September, 1990, additional TCLP data on residues from the recovery of zinc from K061 wastes in the high zinc subcategory (low in nickel and chromium) were submitted to the Agency by Horsehead Resource Development Company (HRD). This system uses a series of Waelz kilns, generating a crude zinc oxide and an iron-rich residue (referred to as "slag" in some FR notices, and in the API opinion) from the first kiln. The crude zinc oxide is typically sent to a second kiln for further separation after which it is normally suitable for smelting, while the iron-rich residue has been typically used as road aggregate. Based on the TCLP data for the iron-rich residue and the two sets of TCLP data submitted for the First Third rule, the Agency developed concentration-based treatment standards for 14 metals that were presented in the proposal.

During and after the close of the public comment period, the Agency received additional treatment performance data for other HTMR processes for K061 wastes. Treatment performance data representing properly designed and operated systems were

received, in particular, from International Mills Service (IMS) and International Metals Reclamation Company, Incorporated (Inmetco).

Data submitted by IMS demonstrate recovery of zinc, lead, and cadmium from K061 high zinc wastes utilizing a plasma furnace with an Imperial Smelting Process (ISP) zinc splash condenser. The splash condenser can produce prime western grade zinc (i.e., 98% zinc, less than 1.4% lead and 0.5% cadmium) and metallic lead as products (i.e., materials put to direct use without smelting). IMS submitted a total of 16 TCLP results for 14 metals from the slag residual generated in the primary furnace.

Inmetco submitted three sets of TCLP results for the slag residual generated during the recovery of nickel, chromium, and iron from K061 high zinc subcategory. Inmetco's HTMR system consists of a rotary hearth furnace with a wet scrubber followed by an electric furnace with a baghouse. Zinc-rich materials containing lead and cadmium are also recovered as baghouse dusts and scrubber sludges and sent (as K061 hazardous waste) for further recovery of zinc.

Other data submitted on residues from HTMR processes were determined by EPA to be insufficient to represent full scale operations or were determined not to be representative of a

properly operated system. Data and rationale for these determinations are provided in the background document for this rulemaking.

In a July 2, 1991 letter to all commenters on the proposed rule, EPA provided notice of additional data from HRD (collected during the First Third), and data submitted during the comment period by IMS and Inmetco. EPA also noticed for comment revised treatment standards derived from data used to develop the proposed standards and these new data.

2. Response to Major Comments on BDAT

EPA's responses to all comments are found in the Response to Comment Background Document. The following discussion summarizes the Agency's responses to the major comments on the development of BDAT treatment standards.

a. Use of HTMR Data from Recovery of Metals from Low Zinc K061

Commenters remarked that zinc is recovered from wastes containing less than 15% zinc; therefore, EPA should establish standards based on HTMR for all K061 wastes regardless of the zinc content. At the very least, commenters said that the Agency should use data that indicate the treatment performance of HTMR for wastes containing less

than 15% zinc in the treatment standard calculation for K061 wastes in the high zinc subcategory. Commenters emphasized that it is common practice, especially for commercial recovery facilities, to blend these subcategories to achieve appropriate feed compositions for recovery (some of which are only slightly below the 15% cutoff); hence, commenters argued that EPA must consider recovery performance for low zinc wastes since the high zinc standards would be most stringent and take precedence over the K061 low zinc standards based on stabilization. The high zinc/low zinc dilemma also affects facilities utilizing site-specific HTMR units since the zinc content of K061 can vary depending on the grade of steel produced (i.e., most facilities produce many different types depending on demand) and the amount of galvanized steel scrap fed to the electric furnace (i.e., zinc concentration in K061 increases as the amount of galvanized steel scrap feed increases).

The Agency agrees with the commenters and has used data demonstrating the HTMR performance of K061 wastes containing a mixture of high and low zinc subcategories but having an overall zinc content less than 15% to develop final treatment standards. The treatment standards adopted today, however, only apply to the high zinc subcategory. Commenters may be

correct that the continued subcategorization of K061 (i.e., into high zinc and low zinc subcategories) is unwarranted given that HTMR treatment (and probably other forms of treatment as well) are equally effective for each subcategory. Given the short time frame of this rulemaking, the Agency is not prepared to make a final decision on the issue at this time but may initiate further rulemaking in the near future. The Agency notes in addition, however, that mixtures of high and low zinc K061 are to come under the treatment standard for high zinc K061. This is because EPA regards this standard as more stringent than the low zinc K061 standard (the high zinc standard applies to more constituents), and because the HTMR process is the BDAT technology due to its resource recovery and waste minimization potential (plus effective metal immobilization). The Agency is adding language to 40 CFR 268.41(b) to clarify that mixtures of low and high zinc K061 are subject to the high zinc treatment standard.

b. Use of Stabilization Data

Several commenters submitted data for stabilization of K061 wastes. The data did not, however, include concentration data for zinc, nickel, or chromium in the untreated K061 wastes, leachate analyses for all 14 metals in

the stabilized residual, design and operating conditions, binder-to-waste ratios, water-to-waste ratios and/or waste-to-waste ratios. In the First Third final rule, EPA determined that HTMR represented BDAT for K061 wastes. These additional data did not cause the Agency to change its' decision. However, stabilization technologies may be used to achieve the treatment standards in today's rule (provided the standards are achieved through bona fide treatment rather than impermissible dilution).

c. Regulation of 14 Metals

Based on the new data discussed above, EPA is, today, promulgating treatment standards for all 14 of the metals that were proposed for regulation in K061 nonwastewaters in the high zinc subcategory. Except for vanadium, numerical standards for metals in TCLP leachates have been established. (As discussed below, the treatment standard for vanadium is promulgated as "reserved".)

In general, the Agency has decided to regulate all 14 metals for several reasons. First, information suggests that all 14 metals have a reasonably high potential for being present in any given K061 waste due to the nature of the steel manufacturing process from which the K061 is generated. Data on the composition of K061 indicate that these 14 metals

are present at varying concentrations in K061 wastes from different generating facilities. This appears to be related to the types of scrap materials smelted in the electric furnace, the metals added to make certain types of steel alloys, and/or the grade of steel produced. Additional information on the potential for K061 wastes to contain all 14 metals is provided in the BDAT background document for today's rule.

Second, since all 14 metals have the potential to be present in K061, they all, consequently, have the potential to be in the HTMR residues depending upon where the metals partition in the recovery process. Improper operation of the HTMR process could result in shifts in partitioning of certain metals to products (e.g., metal alloys), intermediates requiring further smelting, slag, or other nonwastewater residues. HTMR processes are highly dependent, at least in part, upon parameters such as the operating temperature of the heat zones, composition of metals and other elements in the feed, zone residence times, flow rates, oxidation/reduction conditions, and mixing. (See also the BDAT background document for an explanation of how the 14 metals typically partition in an HTMR unit and the principles behind the partitioning.) There is also an inherent

metallurgical interdependency between certain metals, based on their atomic structure. Such factors have led the Agency to the conclusion that all metal-bearing materials placed into the HTMR processes could affect the ultimate composition and leachability of metals from HTMR nonwastewater residues. The Agency believes, therefore, that regulation of all of the metals will provide a means of ensuring that the HTMR processes, when used to treat K061 wastes, are well-designed and well-operated (i.e., truly BDAT) with due consideration of all feed materials.

Third, since all 14 metals are potentially present in the treatment residues and are either hazardous to human health or the environment, EPA has developed treatment standards that will ensure the control of the leachability of all 14 metals. (See also the discussion of the regulation of zinc and vanadium, below.)

In general, commenters did not provide technical support or evidence to dispute that the fourteen metals should not be regulated. Rather, the commenters raised four major areas of concern regarding the regulation of all 14 metals: 1) only the four previous regulated metals should be regulated because not all 14 metals are present and that EPA regulated only four as interim standards; 2) the four metals currently

regulated in K061 wastes will control the leachability of the other metals; 3) HTMR does not treat all 14 metals; and 4) regulation of 14 metals will create an unnecessary analytical cost burden. The Agency disagrees with the commenters for the following reasons:

i. Previous Regulation of Four Metals

The Agency is not restricting the treatment standards to just the four previously regulated metals for the following reasons: 1) waste characterization data for untreated K061 wastes indicates the presence of all 14 metals in various concentrations; 2) additional information on how K061 wastes are generated indicate that all 14 metals also have a reasonably high potential for being present in any given untreated K061 waste; 3) the previous standards for the four metals were based on preliminary stabilization data rather than data from HTMR (which was determined to be BDAT); and 4) the previous standards for high zinc K061 wastes were only interim.

While the Agency had previously promulgated a treatment standard of "No Land Disposal" based on the use of HTMR, interim standards based on stabilization were established until HTMR capacity could come on-line. These standards regulated only four metals in K061 wastes based on the

available treatment data and were considered interim until the Agency could better examine performance data from HTMR units. At the time of the establishment of these interim standards, the Agency was unaware of the wide variety in metals composition of K061 wastes and did not, at that time, establish stabilization standards for all 14 metals.

ii. Control of Leachability

Based on the principles of the pyrometallurgical processes and the potential presence of all 14 metals in HTMR residues, the Agency does not believe regulation of only the four previously regulated metals will control the leachability of all 14 metals from these residues. Different metals partition to different HTMR residues (or products) at different concentrations depending on the design and operating conditions of the HTMR process. (There are, however, some chemical and physical properties of the metals that allow prediction and control of partitioning.) As a result, regulation of all 14 metals is necessary in order to account for the variability in potential differences in partitioning. In addition, data does not support that the leachability of any one particular metal (or group of metals) can be used to monitor the leachability of all of the other metals.

In fact, differences in the treatability of metals have also been demonstrated by conventional stabilization processes. Arsenic, selenium, barium, mercury, and hexavalent chromium have been demonstrated, for example, to be particularly difficult to stabilize using simple cementitious reagents. In addition, many wastes require special recipes of stabilization reagents in order to achieve optimum stabilization. (HTMR does, however, appear to be less sensitive than stabilization to variations in concentrations and less dependent on the chemical composition of the wastes.)

iii. HTMR as Treatment for Other Metals

HTMR provides treatment of all 14 metals through a combination of thermal recovery of metals (into products) and thermo-chemical stabilization (of residues). Treatment of the 14 metals is directly related to partitioning of the metals (based on the melting and boiling points of the metals and their compounds) as the waste is exposed to the high temperatures of the primary furnace. In general, HTMR provides treatment of the low-boiling point metals present in K061 by volatilization and subsequent recovery, while high-boiling point metals are thermo-chemically stabilized in HTMR residues such as slags. This thermo-chemical stabilization

of the non-volatile metals occurs due to the high temperatures present, the relatively efficient mixing conditions, the oxidation-reduction conditions in the primary furnace, and the presence of other inorganic constituents that act, in effect, as stabilization reagents. In fact, many of the same conventional cementitious stabilization reagents such as calcium, silica, and alumina are also used as additives in some HTMR processes to achieve desirable HTMR operating conditions as well as to enhance desirable slag properties.

In confirmation, since most of the leachability data for all 14 metals from HTMR residues show very low, non-detectable levels in TCLP leachates, the Agency concludes that the HTMR process does indeed treat all of the toxic metals.

iv. Potential Analytical Burden of 14 Metals

Several commenters said that the Agency should regulate only those metals for which K061 is listed, because requiring analysis of the additional metals will be burdensome. EPA disagrees. First, eight of the metals are included in the determination that the material is not TC toxic (i.e., D004-D011) prior to disposal. In addition, five more are currently regulated to verify that the waste can be delisted.

Moreover, it is the initial sample preparation that generally impacts the cost of metals analysis, rather than the instrumental analysis. In fact, most metals are analyzed using the same analytical instrument and the analysis for all 14 metals is performed simultaneously. As such, the addition of the other metals is not considered unduly burdensome.

d. Regulation of Zinc and Vanadium

Some commenters particularly stressed that zinc and vanadium should not be regulated. The Agency proposed to regulate zinc as an indicator of proper HTMR performance (i.e., indicating effective treatment). The Agency continues to believe that zinc is a good indicator of how effectively the system is recovering zinc. Poor zinc recovery seems to be related to poor maintenance of proper operating temperatures which can lead to less recovered material. This, in turn, will lead to more metals in the slag causing greater slag volumes and the potential for more metals to leach into the environment. This is significant because part of the reason EPA has selected HTMR as the BDAT technology is its resource recovery and volume reduction potential. The treatment standard for zinc helps ensure that these expected environmental benefits of using HTMR will occur. Improper removal of zinc can be, likewise, related to immobilization

of hazardous constituents that is not optimum. For example, the Agency has data demonstrating that when zinc is concentrated and leaches at higher levels in the slag, other constituents, such as lead, are also concentrated and leach at higher levels.

In addition, zinc has been shown to be an aquatic toxin. Since surface runoff of treated K061 wastes could potentially enter waterways, the Agency is concerned that improper recovery of zinc could lead to unacceptable zinc leachate levels entering aquatic ecosystems. Disposal of such a waste might still be unprotective of human health and the environment under the second prong of the land disposal prohibition test, notwithstanding that Appendix VIII hazardous constituents are immobilized. See NRDC v. EPA, 907 F.2d 1146, 1171-72 (D.C. Cir. 1990)(dissenting opinion). EPA is also considering adding zinc to 40 CFR Part 261 Appendix VIII, but is not doing so at this time. (It is also currently regulated under section 304 of the Clean Water Act as an aquatic toxin.)

Hence, EPA is finalizing a treatment standard for zinc as a means of ensuring that HTMR is operated optimally and thus achieves the statutory goals of immobilization of hazardous constituents, resource recovery and waste minimization.

With respect to vanadium, the Agency continues to believe that it is important to monitor vanadium concentrations in the TCLP leachate of K061 HTMR residues because there purportedly exist generators of K061 wastes containing high vanadium concentrations and certain vanadium compounds appear to be toxic. (Two vanadium compounds are specifically listed in Appendix VIII.) The Agency calculated a numerical standard for vanadium in K061 wastes based on a limited amount of detection limit data for vanadium; however, the Agency is promulgating the standard for vanadium as "reserved" for the following reasons: 1) vanadium, when present in K061 wastes, will partition in an HTMR unit to the slag residues (thus, eventual regulation is appropriate); 2) the form of the vanadium as it leaches from the slags or other HTMR residues is unknown; however, it is expected to be toxic (again , eventual regulation is appropriate); 3) EPA currently has no leachate data for K061 wastes containing high levels of vanadium, but such wastes probably exist (thus, EPA's current data may not be representative of those wastes); 4) several commenters indicated that vanadium leaches at levels higher than those proposed by the Agency, but submitted no data to demonstrate this phenomena; and 5) commenters also indicated potential problems in detecting

vanadium at the levels proposed. As a result of all of the above, the Agency has chosen to reserve the standard for vanadium until sufficient data and information become available. EPA also plans to resolve the issue of vanadium as a hazardous constituent in a later proceeding.

EPA notes further, however, that it is including a standard for vanadium as part of the generic exclusion from the derived-from rule for treated K061 dusts. See section II.C. below. Since vanadium is a constituent of K061 that can make the waste hazardous, the Agency believes it appropriate (particularly because there is a verified health-based level for vanadium) to include this constituent within the exclusion. See RCRA section 3001(f). The Agency's present inability to establish a reliable treatment standard for this constituent in all treated K061 wastes is likewise no bar to including vanadium within the exclusion.

3. Development of Final Concentration-based Standards

a. Data Used as the Basis of the Standards

EPA has determined that it is appropriate to develop treatment standards for K061 based on the performance of all properly designed and operated HTMR processes that have been demonstrated to recover metals from high zinc K061 wastes or mixtures containing high zinc K061 wastes. Data that meet

these requirements include: 1) three TCLP leachate analyses for all 14 metals and nine TCLP leachate analyses for the eight TC metals in the slag (i.e., IRM) generated by the HRD Waelz kiln process; 2) 16 TCLP leachate analyses for all 14 metals in the slag generated by the IMS plasma furnace process; 3) one TCLP leachate analysis for 10 metals in the slag generated by the SKF plasma furnace process; and 4) three TCLP leachate analyses for all 14 metals in the slag generated by the Inmetco electric furnace process.

b. Calculation of the Standards

These HTMR processes typically result in nonwastewater residues (e.g., slags) that leach relatively low levels (and in most cases nondetectable levels) of metals in a TCLP leachate. Commenters were concerned with the potential detection limit problems based on analytical equipment variability and TCLP digestion problems for the slag matrix. In addition, several commenters mentioned concerns about process variabilities due to different system configurations and feed variabilities caused by on-site recovery systems with sole-source feeds versus commercial recovery systems that blend many different K061 wastes.

The Agency has decided to develop treatment standards that reflect the performance of all of the various well-

operated HTMR technologies. This results in limits higher than those proposed. However, given that all of these technologies are capable of achieving substantial immobilization of hazardous constituents (though not identical levels of performance), EPA believes this result is appropriate. EPA notes further that certain apparent differences in performance result from different reported detection limits. Thus, for many of the metals, all of the reported data shows non-detectable levels of metals in the HTMR slag, but different limits of detection due to different slag matrices (or perhaps due to differing levels of performance by analytic laboratories). In these cases, EPA used the highest analytic detection limits in order to accommodate performance of as many of the well-operated HTMR technologies as possible. (EPA believes this is appropriate for this rulemaking, but would not necessarily adopt the same approach for other treatment standards, since it might not always reflect best treatment performance.)

As a result, the final standards have been calculated using the following BDAT methodology. First, treatment standards were determined for each process individually. Then, the four sets of standards were compared to each other. Based on this comparison, the Agency selected the highest

standard for each metal from each of the five processes to allow for process variability and detection limit difficulties. This approach derives limits achievable by all of the major HTMR technologies (and probably achievable by stabilization as well) since, properly operated, these technologies all appear capable of substantially reducing the mobility of metals in HTMR slags.

By establishing standards that are not based on a single optimized type of HTMR technology, the Agency recognizes that metal mobility in K061 residues may not be minimized to the maximum extent. However, EPA believes that the treatment standards developed today are appropriate. First, as noted above, these standards represent significant reduction in metal mobility. See section 3004(m) and 55 FR 6640, 641 n. 1 ("minimize" standard in section 3004 (m) does not require the elimination of every conceivable threat posed by disposal of a hazardous waste). Second, a more stringent standard, based on a particular HTMR technology, would be a type of technology-forcing standard that Congress did not appear to have in mind in promulgating section 3004(m). 130 Cong. Rec. S 9178 (daily ed. July 25, 1984) (statement of Sen. Chaffee); 56 FR at 12354. Third, the Agency notes that today's action is similar to standards developed for other

wastes codes (notably the K048-K052 wastes) where the Agency based treatment standards on treatment technologies may not achieve complete destruction or removal, but nevertheless achieve substantial reductions of toxics. 55 FR at 22596.

EPA notes that some of the treatment standards have increased slightly over the existing interim standards based upon performance of stabilization. Thus, the standards for both lead and cadmium are slightly higher in today's rule. The Agency does not regard the small difference (hundredths of parts per million) as of significance, particularly because the actual reported HTMR values in most cases are non-detectable in any event. In addition, the value for nickel based on HTMR performance is considerably higher (over an order of magnitude) than the existing interim standard. However, the standard based on stabilization was transferred from another waste (because the only K061 wastes for which EPA had data contained levels of nickel too low to be treated (see K061 Background Document for the First Third rulemaking)), whereas the standard in today's rule reflects treatment of a high nickel K061 waste. EPA thus believes that the higher nickel level adopted today more accurately reflects treatment performance. In addition, EPA would probably have to create a further subcategory (high

nickel/chromium K061) to accommodate treatment of high nickel/chromium wastes, which would result in a further and unnecessary complication of the rules, in the Agency's view. Thus, EPA does not believe that the higher nickel standards (or slightly higher lead and cadmium standards) promulgated today calls into question whether HTMR is the appropriate technology on which to base treatment standards.

To create an incentive for use of the more optimized HTMR technologies, however, the Agency is going forward with the proposed generic exclusion from the derived-from rule for residues meeting health-based standards (which for most of the metals are lower than the treatment standards). Based on the treatability data provided the Agency, slag residues from many of the newer processes should achieve these levels. The older processes, if properly operated (or possibly modified) also may be able to achieve these levels.

c. Standards for K061 High Zinc Nonwastewaters

The specific treatment standards are as follows:

BDAT TREATMENT STANDARDS FOR K061
[Nonwastewaters - High Zinc Subcategory]

Regulated Constituent	Maximum for any Single Composite Sample TCLP (mg/l)
Antimony	2.1
Arsenic	0.055
Barium	7.6
Beryllium	0.014
Cadmium	0.19
Chromium (Total)	0.33
Lead	0.37
Mercury	0.009
Nickel	5.0
Selenium	0.16
Silver	0.30
Thallium	0.078
Vanadium	reserved
Zinc	5.3

d. Decision not to Adopt the Proposed High Chromium/High Zinc Subcategory

In the proposal, EPA developed concentration-based treatment standards for K061 nonwastewaters in the high zinc subcategory based on HTMR as BDAT; however, EPA proposed to establish different treatment standards for these wastes based on their chromium/nickel content. While most of the high zinc subcategory K061 wastes are generated from the manufacturing of carbon steel and contain low concentrations of chromium and nickel, certain K061 wastes generated from stainless and specialty steel manufacturing, besides having a

high zinc content, may also contain recoverable levels of chromium and nickel (i.e., containing equal to or greater than 1.5% total nickel and chromium in combination). These wastes can be used to produce a remelt alloy containing nickel, chromium, and iron that can be used as a feedstock for stainless steel production.

In the proposal, the Agency stated that the HTMR process for recovering chromium/nickel from these K061 wastes may achieve a different level of treatment performance than the HTMR processes that are based primarily on the recovery of zinc from K061. EPA believed this was due to the differences in metal concentrations of the feed materials (in particular, with respect to zinc, nickel, and chromium) and the inherent differences in design and operation of the respective HTMR processes. Consequently, EPA proposed to divide the K061 high zinc subcategory into those wastes containing less than or equal to 1.5% nickel/chromium combination and those wastes containing greater than 1.5% nickel/chromium combination.

For the high zinc K061 wastes containing greater than 1.5% nickel/chromium combination, the Agency proposed to reserve the standards for nickel and chromium based on the assumption that the treatment performance would be different for these wastes and the lack of data demonstrating actual

performance. The decision to divide high zinc K061 based on the chromium/nickel content has been reevaluated and the Agency has determined, based on data submitted during the comment period, that the chromium/nickel HTMR recovery process achieves a similar level of performance as the HTMR processes designed and operated to recover only volatile metals such as zinc, lead, and cadmium. In addition, as discussed earlier, EPA has adopted a nickel standard reflecting treatment performance of a high nickel/chromium waste by HTMR. For these reasons, the Agency does not believe it necessary to promulgate a further regulatory subcategory for K061, nor to reserve treatment standards for nickel and chromium. Thus, the final rule establishes standards for chromium and nickel applicable to residues from the treating of all high zinc K061 nonwastewaters.

4. Use of Other Technologies

The Agency received several comments indicating that other non-HTMR recovery processes exist that can be used to recover metals from K061 nonwastewaters in both the low zinc and high zinc subcategories. These processes use a series of primarily hydrometallurgical technologies, including chemical precipitation, ion exchange, and electrowinning. These non-HTMR recovery processes, along with stabilization processes,

are not precluded from use by today's rule, provided the residues comply with the concentration-based standards prior to land disposal (assuming that land disposal occurs) and provided that these levels have not been achieved through the use of impermissible dilution.

C. Generic Exclusion of HTMR Nonwastewater Residues

1. Conditions for Exclusion

Residues from HTMR of K061 wastes in units identified as rotary kilns, flame reactors, electric furnaces, plasma arc furnaces, slag reactors, and rotary hearth furnace/electric furnace combinations or industrial furnaces (as defined in 40 CFR 260.10(6), (7), and (12)) are excluded from the hazardous waste regulations when disposed of in a Subtitle D unit, provided the residues meet the generic exclusion levels for all constituents, and provided the residues do not exhibit one or more of the hazardous waste characteristics. The reasons for specifying HTMR for the exclusion are provided in the section below called "Applicability to Other Types of Treated K061." In addition, the residues will be subject to the testing and tracking requirements described below.

The generic exclusion finalized today is the same action that was proposed; however, it was referred to as a "generic delisting" in the proposed rule. Today's action is more

accurately termed a generic exclusion from the derived-from rule under 261.3(c)(2). The term "delisting" is commonly used to describe the rulemaking process established under 40 CFR 260.20 and 260.22 to amend Part 261 on a waste-specific basis (by facility). The decision to generically exclude nonwastewater HTMR K061 residues was based on the fact that the treatment process is well-defined and thus does not require an in-depth evaluation of each facility's process. The Agency is determining that the "derived-from" rule's presumption of hazardousness no longer should apply to HTMR K061 residues with toxic metals treated to specified levels. The Agency has made this determination after considering the factors in RCRA section 3001(f) and after satisfying the underlying philosophy of the delisting provisions.

The generic exclusion levels include all of the toxic metals that might reasonably be expected to be present in the nonwastewater residues from processing K061 wastes by HTMR. (This is consistent with RCRA section 3001(f) requiring EPA to evaluate whether constituents in addition to those for which a waste is listed could make a waste hazardous.) The Agency has evaluated the treatment standard levels using its vertical and horizontal spread (VHS) landfill model, which predicts the potential for groundwater contamination from

wastes that are landfilled. See 50 FR 7882, 50 FR 48896, and the RCRA public docket for this notice for a detailed description of the VHS model and its parameters. Using the maximum contaminant levels (MCLs) or action levels and a waste volume of greater than 8,000 cubic yards per facility (a worst case estimate for purposes of the VHS model), EPA determined the following "generic" concentration levels which it considers safe to human health and the environment.

CONCENTRATION LEVELS OF K061 HTMR RESIDUALS FROM VHS MODELING''

[Nonwastewaters]

Constituent	Maximum for any Single Composite Sample TCLP (mg/l)
Antimony	0.063
Arsenic	0.32
Barium	6.3
Beryllium	0.0063
Cadmium	0.032
Chromium (Total)	0.63
Lead	0.095
Mercury	0.013
Nickel	0.63
Selenium	0.32
Silver	0.32
Thallium	0.013
Vanadium	1.26

EPA notes that the BDAT standards and VHS-based levels

are not identical, since each set was calculated for a different purpose: the BDAT standards are technology-based levels, while the VHS results derive from health-based modeling. In order to be eligible for the generic exclusion, the residues must meet the following concentration levels:

GENERIC EXCLUSION LEVELS OF K061 HTMR RESIDUES

[Nonwastewaters]

Constituent	Maximum for any Single Composite Sample TCLP (mg/l)
Antimony	0.063
Arsenic	0.055
Barium	6.3
Beryllium	0.0063
Cadmium	0.032
Chromium (total)	0.33
Lead	0.095
Mercury	0.009
Nickel	0.63
Selenium	0.16
Silver	0.30
Thallium	0.013
Vanadium	1.26

For five of these constituents (arsenic, chromium, mercury, selenium, and silver), the technology-based treatment standards are slightly lower than the exclusion levels based on VHS modeling. EPA does not regard these values as significantly different, however (the difference

ranges from .003 ppm (mercury) to .3 ppm (chromium)). Given that the Agency is excluding these wastes generically, rather than after a more individualized examination as part of a facility-specific delisting, EPA believes that it is prudent to use the slightly lower value for this exclusion. We note that today's action is consistent with the Agency's position in the Third Third rule, where it maintained that land disposal prohibitions can apply to wastes that are hazardous when they are generated, even if they are not hazardous when disposed of (see 55 FR 22652-22653). However, EPA is not invoking that principle to justify its decision here, given that the exclusion is generic and the values practically equivalent in any case.

We thus do not view the final rule as presenting the issue raised in comments of exclusion levels being based on technology-based levels. As just discussed, the final exclusion levels are either generated directly from a health-based model, or are so close to those levels as to be warranted for a generic exclusion.

EPA received numerous comments related to the general proposal of establishing generic waste exclusions. One commenter recommended that the Agency establish generic exclusion levels for all listed hazardous wastes, not just

the nonwastewater HTMR K061 residues. The Agency notes that it has modified the definition of solid and hazardous wastes in the past, and, in particular, has modified the "derived-from" rule of 40 CFR 261.3. During the development of the BDAT standards for nonwastewater HTMR K061 residues, the Agency recognized that these wastes do not always contain significant levels of leachable inorganic constituents. As a result, the Agency decided to couple the generic exclusion concept with the Part 268 provisions. The Agency may investigate other candidate waste types and modify the "derived-from" rule in the future, on a waste-specific basis, for wastes which warrant exclusion.

Another issue involved the decision to use Toxicity Characteristic Leaching Procedure (TCLP) rather than Extraction Procedure (EP) leach test values for the exclusion. One commenter questioned whether EPA was contemplating revisiting the existing exclusions, not only for K061 but for other metal-bearing wastes, to require TCLP testing to ensure regulatory and environmental consistency. The Agency is currently considering revisiting facility-specific exclusions where petitioners are required to test waste prior to disposal as nonhazardous. In addition, the Agency notes that it currently requires that petitioners

provide TCLP data in lieu of EP toxicity testing when submitting new petitions. However, any decision to require TCLP testing for existing exclusions based on EP data will be addressed in a separate Federal Register notice.

One commenter urged EPA to abolish the concept of a generic exclusion under 40 CFR 261.3 for nonwastewater HTMR K061 waste as EPA did not evaluate all of the factors involved in its own delisting protocols as part of the considerations for the exclusion. The commenter believed that EPA should separate the actions related to a generic exclusion from this land disposal restrictions rule. As discussed previously, today's action is not a "delisting," as the procedural requirements for delisting apply to persons seeking exclusion of a waste at a particular generating facility. However, in response to the commenter's concern about the Agency's assessment of the potential hazard of these wastes, the Agency believes that it has sufficiently assessed those hazards using the VHS landfill model. Furthermore, the Agency is establishing exclusion levels for all constituents that might make the waste hazardous. The Agency also believes that it has sufficient data demonstrating that nonwastewater HTMR K061 residues are not hazardous if they meet the specified conditions.

The Agency received comments stating that the VHS model greatly exaggerates potential ground water contamination. One commenter felt that the assumptions used in the model are all conservative and that, although some of the assumptions may not represent absolute worst-case conditions when considered individually, in total the model represents an extreme worst case. As a result, the commenter believed that exclusion levels calculated through the application of the VHS model's minimum dilution factor will be unduly conservative. Another commenter believed that delisting the K061 residue using solely the VHS model does not fully acknowledge the persistence and bioaccumulation potential of toxic metals (from the K061 residue) in the environment.

The Agency disagrees with these commenters. As modified, the generic exclusion requires facilities managing nonhazardous HTMR residues to dispose of the material in a Subtitle D disposal unit. As such, the Agency believes that it is appropriate to estimate the transport of contaminants using a ground water model that evaluates disposal conditions that could be encountered in a Subtitle D disposal setting, such as the VHS model. In applying the model, the Agency makes a variety of assumptions to account for a reasonable worst-case disposal scenario. The VHS model assumes that the

waste is disposed in an unlined landfill (a normal Subtitle D situation). The model mathematically simulates the migration of toxicant-bearing leachate from the waste into the uppermost aquifer, and the subsequent dilution of the toxicants due to dispersion within the aquifer. The Agency uses this model to predict the maximum concentration of the diluted toxicants at a hypothetical receptor well (or compliance point) located 500 feet from the disposal site. These are all situations that could arise in Subtitle D disposal settings. The VHS model was developed to be conservative, and because it is used as an evaluation tool to identify wastes to be excluded from regulation as hazardous, the Agency believes that its use is justified here.

Six commenters believed that the dilution and attenuation factor (DAF) employed by the Agency is inappropriately conservative. For the reasons just stated, the Agency believes a DAF of 6.3 is justified and necessary to ensure that wastes meet the Agency's levels of concern prior to being disposed of as nonhazardous.

The Agency notes that the generic exclusion levels for lead were lowered to reflect the new action level of 0.015 mg/l contained in an Office of Drinking Water regulation (56 FR 26460) which was promulgated after the proposed K061 rule.

Several commenters believe that it is inappropriate to base the maximum allowable exclusion level on the new action level for lead, instead of the MCL. The commenters noted that the recent lead rule did not immediately revoke the existing MCL, and allows the MCL to remain effective until November 9, 1992. Furthermore, they argue that the lead action level of 0.015 mg/l is not an enforceable, health-based standard, citing EPA's preamble language to the rule that states that the action level is not equivalent to an MCL. Commenters also noted that past delisting evaluations have used existing MCLs as the bases for delisting decisions, and that the current MCL of 0.05 mg/l should be used in today's rulemaking.

The commenters are correct in stating that delisting evaluations have used MCLs to derive acceptable delisting levels. However, in the absence of formal MCLs, the Agency has also used other appropriate health-based levels to establish delisting levels. In the absence of a new MCL for lead, the Agency believes that prudence requires that the exclusion level be established using the more conservative action level of 0.015 mg/l. EPA established the new treatment standard for lead instead of a MCL because, as EPA concluded in the preamble to the final rule, there is no

apparent threshold for various health effects associated with lead. Given that the Agency's goal is to minimize lead exposure among sensitive populations, however, the treatment standard with an action level was established. While the action level is not a formal MCL, EPA stated in the preamble to the lead rule that the level of 0.015 mg/l is "associated with substantial public health protection." (See 56 FR 26477.)

While the commenters are also correct in stating that the existing lead MCL of 0.05 mg/l will remain in effect until November 9, 1992, the Agency believes the use of this level in setting the exclusion level would be inappropriate. The effective date for the action level and accompanying treatment standard for lead were delayed in order to allow public drinking water systems sufficient time to comply with this new rule. The Agency does not believe that to establish exclusion levels using an old MCL that will soon be superseded by a more stringent standard is sufficiently protective of public health.

2. Product uses of residues from K061 treatment

The generic exclusion of K061 residues in this rule applies only to residues which are disposed of in Subtitle D units (i.e., landfills or piles). As EPA noted at proposal,

the majority of these slags are not landfilled, but rather are used in a manner constituting disposal as road base material, or (less often) as an anti-skid material (56 FR 15024). EPA solicited comment on methods to evaluate exposures from road base and anti-skid uses. Several commenters believed that the reliance on the VHS model for analyzing HTMR residues is inappropriate and unprotective when the material is used as an anti-skid or road bed material, since not all potential exposure pathways are evaluated. On the other hand, one commenter believed that the use of the VHS model greatly exaggerates the degree of ground water contamination that could result from use of HTMR residues as a road base material.

Although EPA received comments concerning possible risks from road uses (in particular, inhalation due to improper handling during transportation, and exposure to lead accumulation in dust and surface soils), no data, methods, or models were submitted. The Agency has decided that its regulatory tools for evaluating road base and anti-skid uses are too uncertain for the Agency to make a final decision at this time--particularly given the very short time-frame of this rulemaking--as to whether residue used as road base or anti-skid material should be excluded. The VHS model

evaluates possible risks posed by landfill disposal. It may also be suitable for evaluating residue used as a road base material, since this situation may be viewed as similar to (or more protective than) a capped landfill. The Agency has not had time to make a full technical assessment of this point. The VHS model alone may not be fully suitable for evaluating the safety of slag used as an anti-skid material, because this apparently uncontrolled use may present exposure pathways (i.e., airborne inhalation and surface runoff) that the model does not consider. Thus, the exclusion levels apply only for those modes of management that EPA currently feels confident in evaluating with the VHS model, namely disposal in a land disposal unit.

This case differs from other delistings in that EPA has never before evaluated a situation where the waste would be used in a manner constituting disposal, raising the concern that the VHS (or other groundwater model) no longer simulates a worst-case scenario. (EPA notes in addition that it has considered air blown dust exposure pathways in other delistings, but views the situation presented in today's action as different. Previous situations involved possible exposures from air-born losses in transit whereas today's action potentially involves continual deposit of waste over a

wide expanse of road systems.) Thus, EPA does not view today's action as calling into question determinations made in earlier, site-specific delistings.

Under current regulations, if a hazardous waste is used in a manner constituting disposal, it is exempt from further regulation, provided it undergoes a chemical reaction so as to be inseparable by physical means, and provided it meets the land disposal restrictions treatment standards for each hazardous constituent that it contains (40 CFR 266.20). Thus, under today's rule, such practices as use of the HTMR residue as road base or anti-skid material are not immediately prohibited (provided the residue meets the treatment standard). EPA intends shortly to propose amendments to 40 CFR 266.20 that may, if ultimately finalized, require further controls on all hazardous waste-derived products used in a manner constituting disposal, including a demonstration by the producer of such materials that the materials are used legitimately and safely. EPA intends to further evaluate the uses of K061 HTMR residue as part of that proceeding.

3. Tracking Requirements

The generic exclusion for K061 HTMR residues that meet the exclusion levels (in Part 261) and treatment standards

(in Part 268), and that do not exhibit any hazardous characteristics, is limited, as already discussed, to such waste that is disposed of in Subtitle D units. Because K061 HTMR residues are hazardous at the point of initial generation, EPA believes that tracking and certification are needed to ensure proper handling. A modified tracking system for the waste, like that promulgated in the Third Third rule for characteristic wastes that have met the treatment standards and exhibit no hazardous characteristics (55 FR 22662-22664), will apply. Under this tracking system, a notification and certification must be sent to the appropriate EPA Regional Administrator or State authorized to implement the Part 268 requirements for each shipment sent to a Subtitle D unit.

4. Testing Requirements

The land disposal restriction program imposes site-specific testing requirements in order to verify that regulatory requirements have been satisfied. The Agency proposed that, for the purpose of determining eligibility for the generic exclusion, testing of residues from HTMR of K061 be required at a frequency specified in the waste analysis plans of treatment facilities. The Agency solicited comment on whether more detailed testing requirements are necessary.

Some commenters argued that quarterly testing of composite samples of nonwastewater residues resulting from HTMR processing of K061 should be sufficient to demonstrate compliance with the exclusion criteria; other commenters indicated that a more frequent and detailed testing regime than occurs under waste analysis plans was necessary. Various commenters recommended monthly, weekly, or daily testing.

The Agency has decided to require that treatment facilities which wish to meet the exclusion requirements must test treated wastes at a frequency specified in their waste analysis plan in order to determine whether they have met the exclusion levels. See 40 CFR 268.7(b) and 55 FR 22669. In the case where treatment is performed at the generator's site in a way not requiring a permit, testing is required at a frequency specified in the self-implementing waste analysis plan required by 40 CFR 268.7(a)(4). However, at a minimum, a facility's waste analysis plan (or a generator's self-implementing waste analysis plan) must specify that composite samples of the K061 HTMR slag residues be collected and analyzed quarterly and/or when the process or operation changes (see 40 CFR 264.13(a)(3) and 265.13(a)(3)). The Agency believes that it is appropriate to allow the frequency

of testing beyond the quarterly minimum to be determined in the waste analysis plan, taking into account facility-specific factors such as waste types, waste variability, quantity, batch size, and type of treatment unit. The Agency believes that permit writers will consider these factors when establishing testing conditions in the waste analysis plans.

5. Applicability to Other Types of Treated K061

The exclusion discussed above applies only to those nonwastewater residues generated by HTMR processes, and not to others such as hydrometallurgical processes or stabilization. The Agency has insufficient data to fully evaluate the residues from hydrometallurgical processes; however, the limited available information indicates a high leachability. Moreover, given the Agency's current paucity of information, EPA has no idea what an appropriate testing regime for residues from hydrometallurgical processes would be, even assuming that these residues could meet the exclusion levels. EPA thus believes it unwarranted to make residues from hydrometallurgical recovery processes eligible for this generic exclusion at this time.

There are several reasons for not excluding stabilized residues generically. The HTMR residues demonstrate consistent leaching behavior whereas stabilized matrices are

quite variable. The chemical bonding that occurs in the high temperature and oxidation/reduction conditions within the HTMR units is inherently different than the bonding that forms the basis of cementitious and pozzolanic stabilization. In addition, the kinetics of the reaction forming the bonds in these HTMR processes are superior to the kinetics of bond formation in cementitious reactions. (Cement is not typically considered set until at a minimum of 72 hours and often not considered fully cured until after 28 days.) Stabilization has also been documented as a process that is highly matrix-dependent and prone to chemical interferences. (Data in support of this conclusion is located in the background documents to the First, Second, and Third Third rules.) Most commercial stabilization facilities have to develop special mixes for each waste type by selecting additives that will enhance curing time and/or product integrity (often measured by comprehensive strength).

Another reason for not allowing stabilized residues to be generically excluded is the possibility of impermissible dilution, which must be considered on a case-by-case basis with stabilization, but not with HTMR. Hence, facility-specific delistings are preferred for stabilized wastes so that the Agency can evaluate waste-to-binder and waste-to-

waste ratios and make a determination about treatment versus dilution. Finally, the Agency believes that HTMR is a preferred technique for managing the K061 waste over stabilization technologies, in light of its resource recovery potential, and in light of the differences in volumes of treated wastes. Stabilization generally increases volumes, while HTMR generally decreases volume. Thus, the Agency does not believe it warranted to develop a somewhat technically sketchy generic exclusion for stabilization.

EPA notes that it is not precluding the use of stabilization by today's rule, and that facility-specific delisting remains an option for stabilized K061 wastes. However, due to the inherent differences between HTMR and stabilization stated above and the fact that insufficient data currently exists to propose a generic exclusion for stabilized K061 wastes, the Agency has determined that the generic exclusion levels are not applicable to stabilized K061 residues. The Agency believes that more individualized consideration of stabilization is warranted before residues from the process are delisted.

6. Regulatory Status of Certain K061 Nonwastewater Residues from HTMR

A number of commenters raised the issue of the regulatory

status of nonwastewater residues from HTMR processes. Commenters suggested that the Agency approach the issue as an interpretation of the existing federal rules regarding recycling. We have responded to this point above. Other commenters questioned the regulatory status of other side streams, and urged that one side stream in particular, a dross from the splash condenser in an HTMR process which is sent off-site for zinc recovery or re-processed on-site in the HTMR process, not be classified as a solid waste.

Under the federal regulations, hazardous wastes destined for reclamation remain classified as solid and hazardous wastes until reclamation is completed. Reclamation is normally incomplete until the end-product of the process is fully recovered. 50 FR at 633, 634, 655. The line the Agency has traditionally drawn between partially and fully reclaimed material when thermal metal recovery is involved is that secondary materials remain wastes until smelting is completed. Id. at 634 (recovered metals only needing to be refined [the processing step following smelting] are products, not wastes). This interpretation is consistent with RCRA's cradle-to-grave mandate by retaining authority until a usable metal is recovered. Cf. API v. EPA, 906 F.2d at 741.

The rules also provide for a variance from solid waste classification for materials that have been partially but not fully reclaimed. 40 CFR 261.30(c). Criteria for granting a variance include the degree of processing that the material has undergone and the degree of further processing required, the value of the material after it has been reclaimed, the degree to which the initially-reclaimed material is like an analogous raw material, the extent to which an end market for the material is guaranteed, and (perhaps most importantly), the extent to which the initially-reclaimed material is handled to minimize loss. 40 CFR 260.31(c).

Applying these rules to the dross from HTMR splash condensers, EPA has decided to amend its rules by excluding from Subtitle C jurisdiction the splash condenser dross residue (hereafter referred to as SCDR) generated by certain HTMR processes. This material is specifically generated as the non-product skimming from the splash condenser, along with recovered zinc and lead meeting Western grade zinc metal specifications (i.e., 98% pure metals), which are products under the rules (see § 261.3(c)(2) final sentence). The dross is presently a solid waste because it is partially but not fully reclaimed (i.e., it still requires smelting or other recovery before a usable metal is extracted), and thus

would remain a K061 waste unless it is excluded from the rules. See 40 CFR 261.2(a)(1) and 56 FR at 7144. Based on public comment and corroborating information contained in the record for today's rule, the SCDR is collected directly from the splash condenser and drummed. It is then stored for short periods (not exceeding two weeks) and sold to a thermal zinc processing facility where it is used as a source of zinc, or reused on-site in the HTMR process, or reprocessed by HTMR on-site. (The SCDR normally contains 50-60% zinc.) At the thermal processing facility (where SCDR is shipped off-site), the drums are stored indoors in a secure manner (on concrete flooring, and with controls against airborne migration). The material is then processed for recovery by crushing, and, in combination with other feedstocks, grinding, and by thermal recovery of zinc.

The SCDR stream is small in volume. In addition, most of the toxic metals that originate in the K061 do not partition to the SCDR: approximately 90% partition to zinc and lead products or to baghouse dusts. Those toxic metals remaining in the SCDR have reduced mobility from the original K061. The SCDR does not exhibit a characteristic of hazardous waste. SCDR is also changed in physical form from the original K061. It is no longer a dust, but rather is a

solidified matrix.

The Agency evaluated the material against the criteria for determining whether a waste that is partially but not fully reclaimed should still be classified as a solid waste (40 CFR 260.31(c)). Although these criteria were established for a variance determination, EPA believes that they are relevant in determining whether this material should be considered to be "discarded" within the meaning of § 261.2(a)(1). The Agency has received adequate information in this case to exclude the material by rule. In particular, the Agency finds that the SCDR results from substantial processing (as shown by the volume reduction, partitioning of toxic metals to other outputs of the process, change in physical form, and reduction in mobility of toxic metals) (see § 260.31(c)(1)); that the material is sold for value (or reprocessed on-site to recover high concentrations of zinc) (see § 260.31(c)(2)); that the material contains zinc concentrations comparable to those of other non-waste secondary sources of zinc (and more zinc than natural ores) (see § 260.31(c)(3)); that an end market for the material appears assured (see § 260.31(c)(4)); and that it is handled safely up to the point of final reclamation (see § 260.31(c)(5)).

Based on these factors, the Agency has decided to exclude the SCDR from RCRA jurisdiction when it is utilized as a source of zinc in zinc recovery operations, provided it is shipped in drums (if it is sent off-site) and that there is no land disposal of the material before it is recycled. Thus, for example, the material remains a solid waste if it is stored in piles on the land. In such a case, it would be "part of the waste disposal problem," and hence discarded. American Mining Congress v. EPA, 907 F.2d at 1186. In addition, in order for this exclusion to be implementable and to serve as a check against mishandling, EPA is interpreting current rules to require that the HTMR facility maintain a one-time notice in its operating record or other files stating that the SCDR is generated, then excluded, and what its disposition is. See § 268.7(a)(6), 56 FR 3878.

D. Capacity Discussion

In the proposed rule to establish treatment standards under the land disposal restrictions for high zinc K061 wastes, EPA determined that sufficient capacity exists to treat these wastes and requested comments on its capacity analysis. EPA notes that the inquiry is in some ways academic, given that the time for granting national capacity variances for K061 ended in August 1990. See RCRA section

3004(h)(2). Nevertheless, the information on capacity should be useful to the regulated community and has a bearing on whether portions of today's rule are adopted pursuant to HSWA; therefore, we are presenting it here. It also has some bearing on whether there is any need to perpetuate the existing standards based on stabilization.

Commenters to the proposed rule focused on HTMR capacity. The Agency received comments suggesting that there may not be sufficient HTMR capacity to treat the volumes of high zinc K061 that are generated. Other commenters submitted information to EPA suggesting that other treatment technologies in addition to HTMR (stabilization and extractive metallurgy) can meet the treatment standards for high zinc K061. While the Agency has determined that HTMR is BDAT for high zinc K061, today's rule does not preclude the use of other treatment technologies that can meet the treatment standards established for this waste. For today's rule, the Agency has confirmed the generation volume of high zinc K061 and the available treatment capacity for these wastes.

1. Waste Generation

In the proposed rule, EPA estimated that approximately 500,000 tons of high zinc K061 are generated annually. EPA

contacted Horsehead Resource Development Company (HRD) and the American Iron and Steel Institute (AISI) to obtain estimates of the annual generation of high zinc K061. HRD is the primary commercial facility that is currently recovering zinc from K061 wastes in HTMR units. HRD's most recent estimate is that the national generation of high zinc K061 will be approximately 415,000 tons in 1991. AISI, a trade association representing a substantial portion of the generators of all K061 wastes, provides a different estimate of K061 generation. Based on steel production in 1989, AISI estimates that approximately 285,000 tons of high zinc K061 were generated in 1989, which is consistent with data from the TSDR Survey. In this capacity analysis, EPA is using the higher and more recent estimate of 415,000 tons of annual generation of high zinc K061.

2. Current Management Practices

The Agency has received data indicating that most high zinc K061 (about 90 percent) that is treated currently goes through HTMR. The volume of high zinc K061 being stabilized and subsequently land disposed is thus quite low. The Agency believes that this may be due to the existing incentives to recycle high zinc K061. Stabilization and landfilling costs are high, and some states have provided tax incentives not to

land dispose of hazardous wastes. Thus, the generators of high zinc K061 that are treating their wastes are doing so primarily by recycling their wastes through HTMR.

3. Available Capacity

In the proposed rule, EPA estimated that the total available HTMR capacity (both commercial and non-commercial) was 553,000 tons per year. The Agency received comments indicating that some of this capacity may not be available and that a substantial portion of HTMR capacity is used to treat low zinc K061. The Agency has confirmed that approximately 550,000 tons of HTMR capacity are currently available to recover zinc through HTMR. However, the bulk of this capacity comes from older processes that may not be capable of achieving the better levels of performance characteristic of more recent HTMR.

Michigan Disposal, Inc. submitted a comment to EPA claiming that chemical fixation and stabilization techniques can meet the K061 treatment standards. Michigan Disposal's current stabilization capacity for high zinc K061 is approximately 100,000 tons per year. In addition to HTMR and stabilization, extractive metallurgy technologies are available to recover zinc from K061 wastes. Encycle submitted a comment to the Agency showing that their metal

recovery process can successfully recover zinc from K061 wastes. Encycle's current extractive metallurgy treatment capacity is approximately 30,000 tons per year. No commenter submitted data to challenge the claim that technologies other than HTMR can meet the treatment standards for high zinc K061.

4. Capacity Implications

Based on the information presented above, sufficient HTMR capacity exists to handle the 1991 demand for zinc recovery from K061 wastes, and excess stabilization and extractive metallurgy capacity is also available. Therefore, the Agency has determined that there is sufficient capacity to handle the volumes of high zinc K061 requiring treatment. However, if substantial portions of HTMR capacity become unavailable, the situation would differ. This point is relevant in determining whether the exclusions in today's rule are promulgated pursuant to HSWA authority.

III. State Authority

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 HSWA, 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 obliged 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 nonauthorized 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. While States must still adopt HSWA-related provisions as State law to retain final

authorization, HSWA applies in authorized States in the interim.

B. Effect on State Authorizations

Today's final rule for treatment standards is finalized pursuant to section 3004(d) through (k) and (m) of RCRA. Therefore, it will be added to Table 1 in 40 CFR 271.1(j), which identifies the Federal program requirements that are promulgated pursuant to HSWA and take effect in all States, regardless of their authorization status. As noted above, EPA will implement today's rule in authorized States until their programs are modified to adopt these rules and the modification is approved by EPA. Because the rule is finalized pursuant to HSWA, a State submitting a program modification may apply to receive either 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. The procedures and schedule for State program modifications for either interim or final authorization are described in 40 CFR 271.21. The deadline by which the States must modify their programs to adopt today's rule is July 1, 1993. It should be noted that HSWA interim authorization will expire on January 1, 1993 (see 40 CFR 271.24(c)).

An issue arises as to whether the generic exclusion from the derived-from rule and the conditional exclusion from being a solid waste for splash condenser dross residue in the rule are adopted pursuant to HSWA. EPA views this entire rule, including the exclusions, as a HSWA regulation because it is a necessary part of the process of setting prohibitions and treatment standards for K061 wastes. The Agency has determined that the HTMR process is BDAT for K061 wastes. Comments have indicated persuasively that without relief from the derived-from rule and solid waste status a number of HTMR processes will not be commercially viable. This is particularly true of the newer, optimized HTMR processes that are capable of generating residues below the generic exclusion levels. See, e.g., Comments of International Mill Service Inc., pp. 49-57. The Agency believes it important to assure existence of the truly best available technology, namely the newer, optimized HTMR operations, to process K061 wastes. The generic exclusion from the derived-from rule and conditional exclusion from being a solid waste is a necessary step in assuring existence of this optimized capacity, and so is an integral part of the whole prohibition/treatment standard process. Consequently, the Agency views these exclusions to be adopted pursuant to HSWA.

Section 40 CFR 271.21(e)(2) requires States that have final authorization to modify their programs to reflect Federal program changes and to submit the modification to EPA for approval. The deadline by which the State must modify its program to adopt this regulation will be determined by the promulgation of the final rule in accordance with 40 CFR 271.21(e). These deadlines can be extended in certain cases (see 40 CFR 271.21(e)(3)). Once EPA approves the modification, the State requirements become Subtitle C RCRA requirements.

Authorized States are only required to modify their programs when EPA promulgates Federal regulations that are more stringent or broader in scope than the existing Federal regulations. For those Federal program changes that are less stringent or reduce the scope of the Federal program, States are not required to modify their programs. This is a result of section 3009 of RCRA, which allows States to impose regulations in addition to those in the Federal program. EPA has determined that the generic exclusion and the conditional exclusion for splash condenser dross residue are less stringent or reduce the scope of the Federal program. Therefore, authorized States are not required to modify their programs to adopt regulations that are equivalent or

substantially equivalent.

States with authorized RCRA programs may already have requirements similar to those in today's rule. These State regulations have not been assessed against the Federal regulations being finalized today to determine whether they meet the tests for authorization. Thus, a State is not authorized to implement these requirements in lieu of EPA until the State program modification is approved. Of course, States with existing standards may continue to administer and enforce their standards as a matter of State law. In implementing the Federal program, EPA will work with States under agreements to minimize duplication of efforts. In many cases, EPA will be able to defer to the States in their efforts to implement their programs rather than take separate actions under Federal authority.

States that submit official applications for final authorization less than 12 months after the effective date of these regulations are not required to include standards equivalent to these regulations in their application. However, the State must modify its program by the deadline set forth in 40 CFR 271.21(e). States that submit official applications for final authorization 12 months after the effective date of these regulations must include standards

equivalent to these regulations in their application. The requirements a State must meet when submitting its final authorization application are set forth in 40 CFR 271.3.

IV. Regulatory Impact

A. Executive Order 12291

Executive Order 12291 requires that the regulatory impact of potential Agency actions be evaluated as part of the process of developing regulations. In addition, Executive Order 12291 requires that regulatory agencies prepare a Regulatory Impact Analysis in connection with major rules (Section 3). Major rules are defined in section 1(b) as those which are likely to result in an annual effect on the economy of $100 million or more, a major increase in costs or prices for consumers or individual industries, or significant adverse effects on competition, employment, investment, productivity, innovation, or international trade.

Today's rule establishes treatment standards for a waste originally regulated in the First Third land disposal restrictions rule (53 FR 31162). The Regulatory Impact Analysis (RIA) for the First Third rule costed the K061 high zinc wastes based on HTMR. The post-regulatory cost for a volume of K061 high zinc waste of approximately 172,000 tons

was estimated to be $58 million per year (1987 dollars).

Today's rule establishes numerical treatment standards based on HTMR. Currently, due to construction of additional recovery process capacity, the Agency has determined that there is adequate HTMR capacity for K061 high zinc wastes. The Agency estimates that 415,000 tons of K061 high zinc are generated each year. Of this volume, the Agency estimates approximately 90% to be undergoing treatment by use of HTMR, with the remaining 10% going to stabilization.

Therefore, in the worst case assumption, only 10% of high zinc K061 would be affected by today's rule. If the 10% annual generation portion of high zinc K061 which is now being treated by stabilization was to be treated by HTMR, the incremental cost of this change is estimated to be $1 million per year. This alteration in management practices represents the most severe cost scenario which could be incurred as a result of this rule. However, generic exclusion of the residue from the HTMR process will spare the industry Subtitle C disposal costs; this savings has not been reflected in the annual incremental cost estimate provided above, and would make the cost lower than the $1 million estimated. Therefore, it is estimated that this rule will not impose a large cost upon industry, and is estimated to be

a minor rule according to Executive Order 12291.

This rule was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291.

B. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., whenever an agency is required to issue a general notice of rulemaking for any final rule, it must prepare and make available for public comment a Regulatory Flexibility Analysis which describes the impact of the rule on small entities (i.e., small business, small organizations, and small government jurisdictions). The Administrator may certify, however, that the rule will not have a significant economic impact on a substantial number of small entities. Since the rule allows the regulated community to continue to use existing management practices, and in the worst case scenario only affects 10% of high zinc K061 waste, the Administrator certifies that this regulation will not have a significant economic impact on a substantial number of small entities, and therefore, does not require a Regulatory Flexibility Analysis.

C. Paperwork Reduction Act

The information collection requirements in this rule were promulgated in previous land disposal restriction rulemakings

and 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 number 2050-0085. No new information collection requirements are being promulgated today.

Send comments regarding any aspect of this collection of information to Chief, Information Policy Branch, PM-223Y, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503, marked "Attention: Desk Officer for EPA."

V. List of Subjects in 40 CFR Parts 261, 268, and 271. Administrative practice and procedure, Designated facility, Environmental protection, Hazardous materials, Hazardous materials transportation, Hazardous waste, Intergovernmental relations, Labeling, Packaging and containers, Penalties, Recycling, Reporting and recordkeeping requirements, Waste treatment and disposal.

Dated: AUG 08 1991

~~Acting~~

~~William K. Reilly~~
F. Henry Habicht
Administrator

VR

CERTIFIED TO BE TRUE COPY OF ORIGINAL
Vickie Reed 8-9-94

For the reasons set out in the preamble, Title 40, Chapter I, of the Code of Federal Regulations is amended as follows:

PART 261-IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

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

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

2. In § 261.3 paragraph (c)(2)(ii)(C) is added to read as follows:

§ 261.3 Definition of hazardous waste.

* * * * *

(c) * * *

(2) * * *

(ii) * * *

(C) Nonwastewater residues, such as slag, resulting from high temperature metals recovery (HTMR) processing of K061 waste, in units identified as rotary kilns, flame reactors, electric furnaces, plasma arc furnaces, slag reactors, rotary hearth furnace/electric furnace combinations or industrial furnaces (as defined in 40 CFR 260.10(6), (7), and (12)), that are disposed in Subtitle D units, provided that these residues meet the generic exclusion levels identified below for all constituents, and exhibit no characteristics of

hazardous waste. Testing requirements must be incorporated in a facility's waste analysis plan or a generator's self-implementing waste analysis plan; at a minimum, composite samples of residues must be collected and analyzed quarterly and/or when the process or operation generating the waste changes. The generic exclusion levels are:

Constituent	(mg/1) Maximum for any single composite sample
Antimony	0.063
Arsenic	0.055
Barium	6.3
Beryllium	0.0063
Cadmium	0.032
Chromium (total)	0.33
Lead	0.095
Mercury	0.009
Nickel	0.63
Selenium	0.16
Silver	0.30
Thallium	0.013
Vanadium	1.26

For each shipment of K061 HTMR residues sent to a Subtitle D unit that meets the generic exclusion levels for all constituents, and does not exhibit any characteristic, a notification and certification must be sent to the appropriate EPA Regional Administrator (or delegated representative) or State authorized to implement Part 268 requirements. The notification must include the following

information: (1) the name and address of the Subtitle D unit receiving the waste shipment; (2) the EPA hazardous waste number and treatability group at the initial point of generation; (3) the treatment standards applicable to the waste at the initial point of generation. The certification must be signed by an authorized representative and must state as follows: "I certify under penalty of law that the generic exclusion levels for all constituents have been met without impermissible dilution and that no characteristic of hazardous waste is exhibited. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

* * * * *

3. In § 261.4 paragraph (a)(11) is added to read as follows:

§ 261.4 Exclusions.

(a) * * * *

(11) Nonwastewater splash condenser dross residue from the treatment of K061 in high temperature metals recovery units, provided it is shipped in drums (if shipped) and not land disposed before recovery.

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PART 268-LAND DISPOSAL RESTRICTIONS

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

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

2. In § 268.41, Table CCWE is amended by revising the entry for K061 (High Zinc Subcategory-greater than or equal to 15% Total Zinc-Effective until August 7th 1991) and by adding an entry for K061 (High Zinc Subcategory) and by revising paragraph (b) to read as follows:

§ 268.41 Treatment standards expressed as concentrations in waste extract.

(a) * * *

* * * * * *

Waste Code	Commercial Chemical Name	See Also	Regulated Hazardous Constituent	Wastewaters Concentration (mg/l)	Notes	Nonwastewaters Concentration (mg/l)	Notes
* *	* * *						
K061 High Zinc Subcategory	Electric Arc Furnace Dust	Table CCW in 268.43	Antimony	NA		2.1	
			Arsenic	NA		0.055	
			Barium	NA		7.6	
			Beryllium	NA		0.014	
			Cadmium	NA		0.19	
			Chromium (Total)	NA		0.33	
			Lead	NA		0.37	
			Mercury	NA		0.009	
			Nickel	NA		5	
			Selenium	NA		0.16	
			Silver	NA		0.3	
			Thallium	NA		0.078	
			Vanadium	NA		reserved	
			Zinc	NA		5.3	

~~3. In §268.41 paragraph (b) is amended to read as follows:~~ revised

(b) When wastes with differing treatment standards for a constituent of concern are combined for purposes of treatment, the treatment residue must meet the lowest treatment standard for the constituent of concern, except that mixtures of high and low zinc nonwastewater K061 are subject to the treatment standard for high zinc K061.

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~~3.~~ 4. In § 268.42, Table 2 is amended by ~~deleting~~ removing the entry for K061.

PART 271- REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

1. The authority citation for Part 271 continues to read as follows:

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

Subpart A-Requirements for Final Authorization

2. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of promulgation in the Federal Register, and by adding the date of publication and the Federal Register page numbers to the following entry in Table 2:

§ 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
* * * * *			
[Insert date of publication of final rule in the Federal Register].	Land disposal restrictions & generic exclusion for K061 nonwastewaters & conditional exclusion for K061 HTMR splash condenser dross residue	[Insert Federal Register page numbers]	Aug.8,1991
* * * * *			

* * * * *

Table 2.- Self Implementing Provisions of the Hazardous and Solid Waste Amendments of 1984

Effective date	Self-implementing provision	RCRA citation	Federal Register reference
* * * * *			
Aug. 8, 1991	Prohibition on land disposal	3004(g)(6)(A)	[Insert date

		of K061 high zinc nonwastewaters			of publication] 56 FR [Federal Register page numbers]
*	*	*	*	*	
*	*	*	*	*	

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

AUG -9 1991

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: Final Treatment Standards for K061 High Zinc Subcategory Wastes

FROM: Sylvia K. Lowrance, Director
Office of Solid Waste

TO: Waste Management Division Directors
Regions I-X

The Administrator recently signed the final rule on the treatment standards for K061 nonwastewaters (electric arc furnace dust). I have attached a copy of the rule and its Environmental Fact Sneet.

The rule finalizes concentration-based treatment standards for K061 nonwastewaters in the high zinc subcategory (i.e., containing at least 15 percent total zinc). These standards are based on the analysis of nonwastewater residues from High Temperature Metals Recovery (HTMR) processes. The rule also finalizes a generic exclusion from the hazardous waste regulations for HTMR residues if they satisfy certain conditions. Finally, a conditional exclusion from classification as a solid waste is being granted for certain material that is partly (but not fully) reclaimed.

If you need more specific information or assistance, please have your staff contact Sue Slotnick at FTS 398-8462. If you or your staff want additional copies of the rule or the Fact Sheet, please call Kathy Bruneske in the RCRA Docket at FTS 475-7231. The general public can obtain copies by calling the toll-free RCRA Hotline at (800) 424-9346.

Attachments

cc: Waste Management Branch Chiefs
Community Relations Coordinators