BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

PETITION OF BIG RIVER ZINC CORPORATION FOR AN ADJUSTED STANDARD UNDER 35 ILL. ADM. CODE 720.131(c)	AS 08- (Adjusted Standard-RCRA)

NOTICE OF FILING

To: Pollution Control Board, Attn: Clerk
100 West Randolph Street
James R. Thompson Center, Suite 11-500
Chicago, IL 60601-3218

Division of Legal Counsel
Illinois Environmental Protection Agency
1021 N. Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board the attached Petition for Adjusted Standard of Big River Zinc Corporation, a copy of which is herewith served upon you.

Jennifer T. Nijman

Date: April 1, 2008

Jennifer T. Nijman
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10 S. LaSalle Street, Suite 3600
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ADJUSTED STANDARD PETITION

Big River Zinc Corporation ("BRZ"), by its undersigned counsel, requests an amendment to its existing adjusted standard ("AS-99-3") to revise Condition 2.a (1). Currently, Condition 2.a (1) to AS-99-3 requires BRZ to conduct its two-step process of (i) washing zinc oxide to remove inorganic salts, and (ii) conducting electrolytic refining, both at BRZ's refinery in Sauget, Illinois. BRZ requests that Condition 2.a (1) be revised to allow BRZ to continue its process of accepting partially recovered zinc oxide from suppliers and washing the zinc oxide at BRZ's refinery in Sauget, Illinois, but then to *either* (i) continue the electrolytic refining process at BRZ's facility as described in AS-99-3, (ii) sell the washed zinc oxide to third parties for further refining, *or* (iii) return the washed zinc oxide to the suppliers for sale to another refiner. In each case, the final product is a valuable, reclaimed zinc product. This revised Condition does not alter the previous substance or findings of the Pollution Control Board ("Board"), is supported by the Board's opinion in *In re* Horsehead Resource and Development Company, Inc., (Feb. 17, 2000), AS 00-2, and allows BRZ needed flexibility in its operations.

I. Background

Until February 2006, BRZ operated an electrolytic zinc refinery in Sauget, St. Clair County, Illinois. BRZ used various zinc-containing materials as feedstock for its refinery. One of the zinc-containing materials BRZ used as feed was "EAF zinc oxide". This material was recovered by High Temperature Metals Recycling ("HTMR") processes from Electric Arc Furnace Dust ("EAFD") generated during steel production in electric arc furnaces. This secondary zinc oxide material would ordinarily be considered a "solid waste" and a "hazardous waste" under the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §§ 6901 *et seq.*, and corresponding Illinois hazardous waste laws and regulations. In AS-99-3, this Board found that, pursuant to 35 Ill. Adm. Code 720.131(c), the secondary zinc oxide material is not a solid waste, and therefore not a hazardous waste. The Board's Order states, "The Board finds that that zinc oxide material produced by subjecting electric arc furnace (EAF) dust from the primary production of steel (K061 under 35 Ill. Admin Code 721.132) to a high temperature metals recovery (HTMR) process is not a solid waste and grants BRZ an adjusted standard under 35 Ill. Adm. Code 720.131(c)." A copy of the Board's Opinion and Order is ached as Att. A (and incorporated by reference). The Board added as Condition 2.a (1) to the adjusted standard that the "not solid waste" determination only applies to EAF zinc oxide material "that is to be processed through BRZ's electrolytic zinc refinery in Sauget, St. Clair County, Illinois" (Att. A, Condition 2.a (1), p. 18). [1]

BRZ now requests that the Board amend Condition 2.a (1) to provide that BRZ is not limited to conducting the complete refining process at its Sauget facility, but that BRZ may perform washing of the EAF zinc oxide (to remove inorganic salts) supplied to it by third parties or by its

[1] BRZ has filed a Motion to Incorporate the record of AS-99-3 into these proceedings for the Board's reference.

parent, ZincOx, and then *either* (i) continue the electrolytic refining process at BRZ's facility as described in AS-99-3, (ii) sell the washed zinc oxide to third parties for further refining, *or* (iii) return the washed zinc oxide to the original supplier for sale to another refiner. The washed EAF zinc oxide would be destined to undergo processing for further recovery of an end product at either BRZ's facility or another entity's facility. [2]

II. Analysis and Petition Content Requirements

The Board requires that certain informational requirements be included in each petition for adjusted standard. 35 Ill. Adm. Code 104.406. In this case, however, BRZ seeks only a revision to a Condition of its existing adjusted standard. As a result, many of the informational requirements in 104.406 are not applicable because they apply to the initial "solid waste" determination previously made by the Board regarding the EAF zinc oxide supplied to BRZ.

a) Standard from which Adjusted Standard is Sought. The Board's Order in AS-99-3 already provides BRZ with an exception to the determination of "solid waste" for the EAF zinc oxide pursuant to 35 Ill. Adm. Code 720.131(c). BRZ requests that a Condition to AS-99-3 be revised as described herein.

b) Whether the regulation was promulgated to implement ... RCRA.... The 720.131(c) regulation was promulgated to implement the State program concerning RCRA. As noted above, however, BRZ seeks only a revision to a Condition and not a new solid waste declassification under the regulation.

[2] BRZ received a second adjusted standard from the Board for the Sauget facility in November 2006. AS-06-4. In that case, the Board found that electric arc furnace dust, without HTMR treatment, was not a solid waste for the purposes of further refinement in new leach, solvent extraction, electrowinning (LSXEW) technology. BRZ was unable to install the proposed LSXEW process due to rising costs of the technology. Portions of BRZ's petition and the Board's Opinion and Order are nevertheless included in BRZ's motion to incorporate the record because the documents include updated descriptions of the BRZ facility and the zinc market.

c) Level of Justification as Specified by the Regulation. Section 720.131(c) includes specific criteria to be assessed when making a determination that materials that have been reclaimed, but must be reclaimed further, are not solid wastes. The Board's Opinion and Order in AS-99-3 contains a detailed analysis of the criteria and the Board's analysis is not affected by this requested amendment. The Board determined that the zinc oxide dust processed in HTMR ("EAF zinc oxide") is not a solid waste. "The Board will determine that those materials that have been reclaimed but must be reclaimed further before recovery is completed are not solid wastes if, after *initial reclamation*, the resulting material is commodity-like (even though it is not yet a commercial product, and has to be reclaimed further)." (Att. A, p.3). The Board found the initial reclamation to be the HTMR process which is conducted by BRZ's suppliers to create the EAF zinc oxide. The Board then applied the relevant criteria to the HTMR process and found the resulting EAF zinc oxide supplied to BRZ to be commodity-like and therefore not a solid waste. [3]

d) Nature of Petitioner's Activity that is the Subject of the Proposed Adjusted Standard. BRZ will continue to process the same EAF zinc oxide material (treated by HTMR) already exempted by the Board, and further reclamation will still take place. Thus, the Board need not reconsider the 720.131(c) criteria. The only change to the adjusted standard is the location at which the final steps of the reclaiming process may occur. Instead of the electrolytic process occurring at BRZ's facility in all cases, BRZ plans to wash the EAF zinc oxide supplied to it and then *either* (i) continue the electrolytic refining process at BRZ's facility as described in AS-99-3, (ii) sell the washed zinc oxide to third parties for further refining, *or* (iii) return the washed zinc oxide to the suppliers

[3] The Board specifically stated that "EAF zinc oxide that is washed to remove contaminants (inorganic salts) is being 'reclaimed.'" Att. A at p. 11.

for sale to another refiner. BRZ will enter into contracts with its suppliers or third party refiners to ensure the final reclaiming occurs. A description of BRZ's process, including the washing step, is included the Board's Opinion and Order and in the record for AS-99-3. Att. A, pp. 8-9.

BRZ is not currently operating its electrolytic zinc refinery because it has been unable to find sufficient amounts of feedstock at competitive prices to support ongoing refining. See In re Big River Zinc, Opinion and Order AS 06-4, p. 5. Upon receipt of this amendment to its adjusted standard, BRZ plans to enter into agreements with its suppliers of EAF zinc oxide to begin receiving sufficient quantities of EAF zinc oxide for washing. BRZ will then reopen the washing building at its refinery. See Affidavit of George Obeldobel, attached at Att. B. BRZ may expand its washing plant in the future and then reopen the entire electrolytic refinery as its supply of feedstock increases. Id.

e) Efforts to Comply with Regulation. BRZ's petition in AS-99-3 describes the consequences of the EAF zinc oxide being classified as solid waste and BRZ's need to acquire EAF zinc oxide to supplement the mined zinc oxide concentrates it otherwise purchased as feed for its zinc refinery. BRZ seeks to reopen the washing plant at its refining facility to conduct the washing step of the reclamation process. If Condition 2.a (1) (requiring both the washing and further refining to take place at BRZ's Sauget facility) is not revised, BRZ's facility will remain shuttered due to BRZ's inability to find sufficient amounts of feedstock at competitive prices to support ongoing refining. See In re Big River Zinc, AS 06-4, p. 5. Additional analysis of the need for and benefits of washing the EAF zinc oxide is provided in the Affidavit of George Obeldobel at Att. B.

f) Proposed Adjusted Standard. BRZ does not seek a change to the determination that the initial reclamation is commodity-like and therefore not a solid waste. BRZ only requests that the Board amend Condition 2.a (1) of AS-99-3 to provide that BRZ is not limited to conducting the complete refining process at its Sauget facility, but that BRZ may perform washing of the EAF zinc oxide (to remove inorganic salts), and then *either* (i) continue the electrolytic refining process at BRZ's facility as described in AS-99-3, (ii) sell the washed zinc oxide to third parties for further refining, *or* (iii) return the washed zinc oxide to the suppliers for sale to another refiner. The EAF zinc oxide would be destined to undergo processing for further recovery of an end product at either BRZ's facility or another entity's facility.

BRZ proposes that Condition 2.a (1) of AS-99-3 be revised as follows:

"2. the adjusted standard is subject to the following conditions:

a. The determination described in paragraph one of the order applies only to zinc oxide material:

1. That is either to be processed through BRZ's electrolytic zinc refinery in Sauget, St. Clair County, Illinois or that is washed at BRZ's facility and will depart or has departed from BRZ's facility to undergo further processing and (1) is destined for or has arrived at another BRZ facility,[4] (2) is under a legally binding contract with the supplier of the EAF zinc oxide for return to the supplier, or (3) has been acquired by another entity under a legally binding contract for sale from BRZ."

[4] BRZ facilities may include facilities owned by BRZ's parent, ZincOx.

The remaining Conditions to AS-99-3 are unchanged. This amendment will allow BRZ needed flexibility to restart washing operations at its Sauget facility. BRZ's proposed language for a revised condition is identical in substance to the language in the approved adjusted standard this Board issued in *In re* Horsehead Resource and Development Company, Inc., (Feb. 17, 2000), AS 00-2, discussed in paragraph i below.

g) Description of Impact on the Environment of Complying with the Regulation vs. Complying with the Adjusted Standard.

BRZ's requested revision to a Condition of its existing adjusted standard does not change the processes that will take place to complete the reclamation of EAF zinc oxide, but will only change the location. As a result, there is no change in impact to the environment.

h) Justification of Proposed Adjusted Standard. The justification for the solid waste declassification, as described in detail by the Board in its Opinion and Order AS-99-3, is not affected by this request to amend a Condition. Amending the Condition will allow BRZ needed flexibility in its operations. The flexibility will allow BRZ to reopen the washing plant at its facility and work towards reopening the entire facility. As stated above, the process of reclamation will not change, only the location. See Affidavit of George Obeldobel at Att. B.

i) Reasons the Board may Grant the Proposed Adjusted Standard. The reasons for granting the adjusted standard are detailed in the Board's Opinion and Order at Att. A. Amending Condition 2.a (1) of the Board's Order will not change the Board's findings or analysis, and the EAF zinc oxide will continue to be fully reclaimed.

The Board faced a similar factual scenario in *In re* Horsehead Resource and Development Company, Inc., (Feb. 17, 2000), AS 00-2 ("Horsehead"). The Board's Opinion and Order is attached at Att. C. The Board held, citing to BRZ's adjusted

standard, that zinc oxide treated with HTMR is commodity-like and not a solid waste. In that case, Horsehead sought an adjusted standard to conduct the HTMR process itself, and then sell the HTMR-processed zinc oxide to third parties. The Board again analyzed the "initial reclamation" process of HTMR under the criteria set forth in 720.131(c) and found that the resultant crude zinc oxide ("CZO," which the Board found "virtually identical" to the EAF zinc oxide supplied to BRZ) was not a solid waste. Att. C, p. 13. Both Horsehead and BRZ were handling the same material – zinc oxide partially reclaimed by HTMR. The Board noted that the only difference between BRZ's petition for adjusted standard and Horsehead's petition was that BRZ petitioned to have EAF zinc oxide declassified as an *input* to its process; Horsehead sought to have it declassified as an *output* of its production process. Att. C, p. 14. The Board granted Horsehead's petition on the Condition that when the CZO departs Horsehead's Chicago facility it must (i) be destined for another Horsehead facility, (ii) be under a legally binding contract for sale from Horsehead to another entity, or (iii) have been acquired by another entity under a legally binding contract for sale from Horsehead. Att. C, pp. 16-17. The Condition would ensure that the initially reclaimed product be destined for further reclamation of an end product. Similarly, BRZ seeks the flexibility to have the washed EAF zinc oxide leave its facility. BRZ requests that the Board revise Condition 2.a (1) of its adjusted standard to allow for the output of EAF zinc oxide (after it is washed) from its facility. BRZ proposes that it be subject to the same limitations as the Board imposed on Horsehead to ensure that further reclamation occurs. BRZ proposes, in paragraph f above, language for a revised condition that is identical in substance to the language in Horsehead's approved adjusted standard.

j) Hearing on the Petition. BRZ waives a hearing on the petition because BRZ's amendment is limited to a change in a Condition and not a substantive finding of the adjusted standard.[5]

III. Conclusion

For the reasons stated, BRZ requests the Board enter an Order amending BRZ's existing adjusted standard by expanding the locations at which further processing of washed EAF zinc oxide may occur.

WHEREFORE, Big River Zinc requests that the Board grant this amendment to Condition 2.a (1) of its adjusted standard AS-99-3.

Respectfully submitted,

Big River Zinc Corporation

By: _____
One of its Attorneys

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[5] As required by 35 Ill. Adm. Code 104.406(k) and (l), BRZ cites here in to relevant supporting documents and legal authorities and has provided required information as applicable to a change in condition.

CERTIFICATE OF SERVICE

I, the undersigned, certify that I have served the attached Petition for Adjusted Standard, by electronically filing with the Clerk and by first class mail upon IEPA:

Pollution Control Board, Attn: Clerk
100 West Randolph Street
James R. Thompson Center, Suite 11-500
Chicago, IL 60601-3218

Division of Legal Counsel
Illinois Environmental Protection Agency
1021 N. Grand Avenue East
P.O. Box 19276
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Jennifer T. Nijman

Date: April 1, 2008

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312 251 5255

ATTACHMENT A

ILLINOIS POLLUTION CONTROL BOARD
April 15, 1999

IN THE MATTER OF:	)	
	)	
PETITION OF BIG RIVER ZINC CORPORATION FOR AN ADJUSTED STANDARD UNDER 35 ILL. ADM. CODE 720.131(c)	)	AS 99-3 (Adjusted Standard - RCRA)

LEE R. CUNNINGHAM AND RICHARD M. SAINES OF GARDNER, CARTON & DOUGLAS APPEARED ON BEHALF OF PETITIONER; and

CHRISTOPHER P. PERZAN APPEARED ON BEHALF OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY.

OPINION AND ORDER OF THE BOARD (by K.M. Hennessey):

Petitioner Big River Zinc Corporation (BRZ) operates an electrolytic zinc refinery in Sauget, St. Clair County, Illinois. BRZ uses various zinc-containing materials as feedstock for its refinery. One of the zinc-containing materials that BRZ would like to use is recovered from dust emitted from electric arc furnaces used to produce steel. This secondary zinc oxide material would ordinarily be considered a "solid waste" and a "hazardous waste" under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 *et seq.*, and corresponding Illinois hazardous waste laws and regulations. BRZ would like to use this secondary zinc oxide material without becoming subject to Illinois' hazardous waste requirements.

To that end, BRZ has filed a petition for an adjusted standard under 35 Ill. Adm. Code 720.131(c). Section 720.131(c) allows the Board to determine that certain materials are not solid wastes, and therefore not hazardous wastes, if they meet certain criteria. BRZ asserts that zinc oxide material recovered from electric arc furnace dust (EAF dust) by a high temperature metals recovery process meets these criteria. BRZ also proposes several conditions on the adjusted standard. The Illinois Environmental Protection Agency (IEPA) recommends that the Board grant the adjusted standard, subject to certain conditions.

The Board finds that BRZ has established that zinc oxide material recovered from EAF dust by a high temperature metals recovery process is not a solid waste. The Board therefore grants BRZ's petition for an adjusted standard, subject to the conditions set forth in the order that follows this opinion.

PROCEDURAL HISTORY

On September 24, 1998, BRZ filed a petition for an adjusted standard, subject to conditions. On October 15, 1998, the Board accepted this matter for hearing and on

October 16, 1998, IEPA filed a response to the petition. In that response, IEPA recommended that the Board grant BRZ's request for an adjusted standard with conditions, subject to certain additional conditions. On October 27, 1998, BRZ filed a reply in which it proposed new and modified conditions on the adjusted standard, including the conditions that IEPA requested.[1]

Hearing Officer John Knittle held a hearing on the adjusted standard petition on December 17, 1998. BRZ presented one witness, whom the hearing officer found to be credible. BRZ also introduced four exhibits, each of which the hearing officer admitted.[2] At hearing, BRZ proposed to amend one of the conditions it had proposed for the adjusted standard. Tr. at 5-6; Exh. 4. Counsel for IEPA stated at hearing that IEPA agreed to all of the conditions that BRZ had proposed both before and at hearing. Tr. at 24. IEPA offered no testimony or exhibits. The parties chose not to file posthearing briefs.

LEGAL FRAMEWORK

The status of materials as "solid wastes" is significant because under the laws and regulations that Congress and the United States Environmental Protection Agency (USEPA) have established, only those materials that are "solid wastes" can be regulated as "hazardous wastes" under RCRA and corresponding Illinois hazardous waste laws and regulations. Accordingly, materials that are not solid wastes are not subject to Illinois' hazardous waste regulations, which impose various requirements on persons who generate, treat, store, dispose, recycle, or transport hazardous waste. See 35 Ill. Adm. Code 722-726, 728.

Generally, a solid waste is any discarded material. See 35 Ill. Adm. Code 721.102. A solid waste is a hazardous waste if it exhibits a "characteristic" of hazardous waste (*i.e.*, it is toxic, corrosive, ignitable, or reactive) or if it is "listed" as hazardous waste (*e.g.*, it comes from a specific type of process, such as electroplating). See 35 Ill. Adm. Code 721.103, 721, Subparts C and D.

BRZ would like to reclaim zinc from zinc oxide material that has been recovered from EAF dust without becoming subject to Illinois' hazardous waste regulations. Exh. 3 at 2, 21. BRZ asks the Board to determine that zinc oxide material recovered from EAF dust with a high temperature metals recovery process, which the Board will refer to as "EAF zinc oxide," is not a solid waste. BRZ seeks this determination under 35 Ill. Adm. Code 720.131(c). That provision establishes standards and criteria for the Board to use in determining whether certain materials are not solid wastes. See 35 Ill. Adm. Code 720.130(c). Section 720.131(c) reads as follows:

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[1] BRZ's petition, which was entered into evidence at hearing as an exhibit, is cited as "Exh. 3 at _." The parties treat BRZ's reply as part of the petition and the Board will consider it as if it was entered into evidence at hearing with the petition. However, for clarity, the Board cites BRZ's reply as "Reply at _." IEPA's response is cited as "Resp. at _."

[2] The transcript of the hearing is cited as "Tr. at _." Hearing exhibits are cited as "Exh. _."

The Board will determine that those materials that have been reclaimed but must be reclaimed further before recovery is completed are not solid wastes if, after initial reclamation, the resulting material is commodity-like (even though it is not yet a commercial product, and has to be reclaimed further). This determination will be based on the following criteria:

1) The degree of processing the material has undergone and the degree of further processing that is required;

2) The value of the material after it has been reclaimed;

3) The degree to which the reclaimed material is like an analogous raw material;

4) The extent to which an end market for the reclaimed material is guaranteed;

5) The extent to which the reclaimed material is handled to minimize loss; and

6) Other relevant factors. 35 Ill. Adm. Code 720.131(c).

FINDINGS OF FACT

In this section of the opinion, the Board sets forth its findings of fact regarding (1) zinc, (2) BRZ's current operations, (3) EAF dust, (4) EAF zinc oxide, and (5) BRZ's proposed operations.

Zinc

In 1997, the total world production and consumption of zinc was approximately 8.5 million tons. Zinc can be used to galvanize products; to produce brass; to create alloys used to produce such items as door handles and carburetor parts; to create chemicals such as zinc powder for alkaline batteries and zinc oxide; to coat steel; and for various other uses. Exh. 3 at 3, Att. B at 5. The average annual growth in consumption of zinc in the western world was 2.4% from 1988 to 1997. Exh. 3, Att. B at 1. The price of zinc is established by supply and demand on the London Metals Exchange (LME). Exh. 3 at 3.

BRZ's Current Operations

BRZ's Products

BRZ operates an electrolytic zinc refinery in Sauget, St. Clair County, Illinois. Exh. 3 at 1, 7. BRZ currently produces approximately 105,000 tons of zinc per year. Exh. 3, Att. J at 2.

parts, and produce zinc oxide (*e.g.* Exh. 3, Att. J at 2. BRZ pound logs for large galvanizing lines. BRZ produces special high grade quality zinc (99.995% zinc), which is the most widely recognized standard for zinc. Depending on customer specifications, BRZ also debases its special high grade zinc to produce alloys that Exh. 3 at 19. BRZ has long-term end markets for all of its products. Att. N.

BRZ's Process

BRZ recovers zinc from two types of materials, the first of which is zinc sulfide concentrates that are mined. BRZ also recovers zinc from secondary zinc oxide material. Secondary zinc oxide material is a by-product of other industries that use zinc, including steel mills, brass mills, brass and bronze ingot factories, and galvanizers. The mined zinc sulfide concentrates arrive as wet filter cake; the secondary zinc oxide material arrives as wet filter cake or as dry material in "supersacks." Exh. 3 at 2, 4, 10-11, 14, 17, 20, Att. J at 2.

In the first step of BRZ's process, BRZ may use an acid solution to remove magnesium from the zinc sulfide concentrates to prepare them for further processing. Exh. 3 at 10-11. Secondary zinc oxide material does not require this initial step. Exh. 3 at 10-11, 17-18, Att. H, J at 2-3.

BRZ then processes zinc sulfide concentrates and secondary zinc oxide material in a fluid bed roaster. The roasting step removes sulfur from the feed material. Exh. 3 at 12, 19, Att. J at 2. BRZ then leaches the roasted material to separate zinc and various other metals. From the slurry that results, BRZ filters the solids, and puts the remaining solution through four purification stages. The purification process yields a purified zinc sulfate solution from which zinc is recovered through an electrolytic process. The electrolytic process yields zinc cathodes that are of special high grade quality (99.995% pure zinc). BRZ then melts the cathodes into one of six shapes for delivery to customers. Exh. 3 at 12-13, 19.

BRZ's refining process produces a number of by-products, including sulfuric acid, lead-silver concentrate, copper cement, copper-cobalt concentrate, cadmium oxide, and zinc sulfate monohydrate. BRZ has long-term end markets for these by-products. Exh. 3 at 12-13, 19-20.

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[3] In this opinion, when the Board refers to a percentage of a constituent in a material, it does so by weight.

EAF Dust

EAF dust is a source of secondary zinc oxide material. EAF dust is generated in electric arc furnaces, which produce steel by heating steel scrap. These furnaces emit gases that contain EAF dust. Air pollution control equipment in these furnaces removes EAF dust from the gases. These furnaces generated approximately 900,000 tons of EAF dust in the United States in 1997. Exh. 3 at 5, 13-14.

EAF dust is composed of approximately 20% to 30% iron and 15% to 30% zinc. It also includes other constituents such as lead, cadmium, chloride, fluoride, aluminum, calcium, potassium, magnesium, manganese, sodium, and silica. Because of its high iron content and other impurities, zinc cannot be recovered directly from EAF dust in most, if not all, zinc smelting and refining operations. Exh. 3 at 5, 13-14.

In 1996, nearly 40% of the EAF dust generated in the United States was disposed of in landfills. Exh. 3 at 6. It costs approximately $80 per ton to dispose of EAF dust. Exh. 3 at 16.

EAF Zinc Oxide

High Temperature Metals Recovery

While zinc cannot be recovered directly from EAF dust in most zinc smelters and refineries, zinc oxide material recovered from EAF dust can be processed in zinc smelters and refineries. Zinc oxide material can be recovered from EAF dust when the dust is put through a high temperature metals recovery (HTMR) process. HTMR units include rotary kilns, rotary hearth furnaces, plasma furnaces, and electric furnaces. Exh. 3 at 6-7, 10, Att. F, H.

HTMR processing increases the levels of zinc, lead, and cadmium in EAF dust. These changes are desirable in the zinc refining process. HTMR processing also lowers the levels of constituents that are considered contaminants in the zinc refining process (*e.g.*, iron, calcium, magnesium, alumina), except for sodium, chloride, fluoride, and potassium. Exh. 3 at 10, 18, Att. H.

In 1994, approximately 1.2 million tons of EAF dust per year was processed worldwide, mostly to produce zinc oxide material. Exh. 3 at 18, Att. L. EAF dust processing is done in a variety of HTMR units and the resulting zinc oxide material is sold primarily to produce zinc, but also to produce zinc chemicals. Exh. 3 at 18, Att. L. Several facilities in the United States produce or are capable of producing EAF zinc oxide. Exh. 3 at 6, 18, Att. L, M. Markets for EAF zinc oxide exist in North America, Asia, and Europe. Exh. 3 at 19. Once EAF dust has been through the HTMR process, the value of the resulting zinc oxide material approaches the value of mined zinc sulfide concentrates (currently $250 to $300 per ton). Exh. 3 at 8, 16-17, 21.

BRZ would like to purchase EAF zinc oxide. Tr. at 13; Exh. 3 at 1-2, 6. BRZ intends to use the material as feedstock for its zinc refinery. Exh. 3 at 1, 8. EAF zinc oxide can substitute for and supplement mined zinc sulfide concentrates. Exh. 3 at 2, 14. After washing EAF zinc oxide (described below), BRZ plans to use the material in the same manner it uses the mined zinc sulfate concentrates. The products and by-products from EAF zinc oxide would be essentially indistinguishable from those of the mined materials. Exh. 3 at 16, 19, 21.

Not all zinc oxide material recovered from the HTMR processing of EAF dust would be suitable feed for BRZ's refinery. Exh 3. at 7. To be economical for BRZ, EAF zinc oxide must meet the following specifications (on average):

> 50% zinc;

< 20% lead;

< 5% iron;

< 4% total gangue materials (silica plus calcium plus magnesium); and

< 2% chloride or capable of being water washed to achieve < 2% chloride. Exh. 3 at 7.

For BRZ to be able to wash EAF zinc oxide to < 2% chloride, the feed should arrive at BRZ's facility with < 13% chloride. Reply at 5-6, Att. O. In addition, BRZ could accept EAF zinc oxide produced during the three-month start-up period of an HTMR unit with up to 7% iron. Tr. at 5-6; Exh. 4.

AmeriSteel, Inc.'s HTMR Process

One of the companies that processes EAF dust with an HTMR unit is AmeriSteel, Inc. (AmeriSteel). AmeriSteel is a steel manufacturer located in Jackson, Tennessee. AmeriSteel's HTMR unit is a rotary hearth furnace. Exh. 3 at 8-9.

To process EAF dust, AmeriSteel first mixes the dust with a source of carbon (commercial grade coal or coke purchased on the open market) to form briquettes. The carbon acts as a reducing agent. AmeriSteel places the briquettes in the rotary hearth furnace to recover both zinc oxide material and an iron material. Materials that volatilize at lower temperatures vaporize and leave the furnace in a gas stream. These materials then oxidize, form a solid, and are collected in an air pollution control device called a baghouse. This material collected in the baghouse is EAF zinc oxide. Tr. at 18-19; Exh. 3 at 9-10; Reply at 3, Att. P. Once AmeriSteel achieves full capacity, it is expected to produce approximately 9,600 tons per year of EAF zinc oxide from the 24,000 tons of EAF dust that Ameristeel generates annually. Exh. 3 at 10.

AmeriSteel's EAF Zinc Oxide

AmeriSteel's HTMR process increases the zinc content of EAF dust from 20-25% to 59.5%, increases the lead content from 3% to 7.5%, increases the cadmium content from 0.05% to 0.1%, and decreases the iron content from 19-24% to 0.1%. AmeriSteel's HTMR process lowers the levels of constituents that are considered contaminants in BRZ's refining process, except for sodium, chloride, fluoride, and potassium. Exh. 3 at 10, 18, Att. H, K.

BRZ has determined that, except for the chloride level of the material, AmeriSteel's EAF zinc oxide is an ideal feed for its zinc refinery. Exh. 3 at 8. Ameristeel's EAF zinc oxide is chemically similar to mined zinc oxide and zinc sulfide concentrates:

Constituent	Mined Concentrates		AmeriSteel's EAF Zinc Oxide
	Zinc Oxide	Zinc Sulfide	
% zinc	54	59.1	59.5
% lead	4.9	1.2	7.5
% cadmium	0.38	0.5	0.1
% iron	2.5	1.5	0.1
% copper	0.02	0.3	0.1
% sulfur	< 1	31	< 1
% arsenic	.7	< 0.02	< 0.01
% calcium	2.4	1	0.05
% silica	14.8	0.8	0.02
% magnesium	0.6	0.4	0.01
% alumina	2.7	0.1	0.02
% sodium	N/A	< 0.02	3
% chloride	0.07	< 0.1	8
% fluoride	0.03	0.05	0.15

Exh. 3 at 14, 17, Att. D, H, K. With the exception of chloride and fluoride, AmeriSteel's EAF zinc oxide also meets typical zinc refiner specifications for zinc sulfide concentrate blends and falls within the range of secondary feed specifications that zinc refiners have established. Exh. 3, Att. F, H, K.

EAF zinc oxide produced by AmeriSteel and others has levels of zinc comparable to that of mined concentrates. Exh. 3 at 17, Att. D, H, K. If used in BRZ's refining process, EAF zinc oxide would have chemical advantages and disadvantages compared to mined concentrates. The primary advantages of EAF zinc oxide are that it is higher in lead than mined concentrates and lower in sulfur than mined zinc sulfide concentrates. AmeriSteel's EAF zinc oxide has the additional advantage of being lower in iron than mined concentrates. Exh. 3 at 14, 17-18, Att. D, H, J at 3, K.

EAF zinc oxide has two primary disadvantages when compared to mined concentrates. First, EAF zinc oxide has higher levels of sodium, chloride, fluoride, and potassium, which are present as inorganic salts. While EAF zinc oxide can be introduced directly to BRZ's roaster, inorganic salts in the material could corrode BRZ's refining equipment if their levels are not first reduced. However, as discussed below, BRZ plans to wash EAF zinc oxide to reduce its levels of inorganic salts. Tr. at 13-17; Exh. 3 at 11, 14, 17-18, Att. D, H, J at 3, K.

The second primary disadvantage of EAF zinc oxide is that it may be in the form of dry dust rather than wet filter cake. Exh. 3 at 14. The dry dust is more difficult to handle. Exh. 3 at 14, Att. J at 3. As discussed below, however, BRZ's washing process will turn this dry dust into wet filter cake that BRZ can then put through its refinery equipment.

BRZ's Proposed Operations

EAF zinc oxide is expected to arrive at BRZ's Sauget facility in the form of dry dust. BRZ plans to keep the dry EAF zinc oxide totally enclosed from unloading until washing. BRZ has designed a material handling/wash system to handle that material. Exh. 3 at 14, 20, Att. J at 3-4. On September 22, 1998, IEPA granted BRZ an air pollution control permit to construct the system. The construction permit limits emissions of particulate matter from the handling/wash facility to 1.68 tons per year. Exh. 2; Exh. 3, Att. J.

Dry secondary zinc oxide material is expected to arrive at BRZ's Sauget facility in bulk or in supersacks. Approximately 90% of this material is expected to arrive by rail. BRZ plans to unload railcars of the bulk material through ventilated air slides to silos equipped with High-Efficiency Particulate Air (HEPA) filters. Ultimately, BRZ plans to add four silos, each with a capacity of 1.5 railcars. BRZ proposes to locate the silos on concrete or asphalt pads that BRZ could wash into a sump. BRZ plans to pump the sump contents into the washing process. Exh. 3 at 15, Att. J at 4.

Supersacks of the material are expected to arrive by boxcar or truck. BRZ plans to leave supersacks in boxcars for intermediate storage. The boxcars would be unloaded at a covered loading dock that is to be attached to the washing plant. Supersacks that arrive by truck would be stored inside the washing plant. BRZ would be able to store approximately 150 tons of that material inside the washing plant. Exh. 3 at 15, Att. J at 4.

BRZ plans to use a truck to move the supersacks to a supersack discharge station to empty them. BRZ proposes to maintain the discharge station under negative pressure to avoid fugitive emissions. BRZ would vent the discharge station through a baghouse to collect any secondary zinc oxide material. Exh. 3 at 15, Att. J at 5.

BRZ proposes to convey the secondary zinc oxide material (from the silos and the supersack discharge station) in an enclosed, ventilated conveyor (or by pneumatic conveyor) to a tank where BRZ would mix the material with water. BRZ proposes to pump the resulting slurry into a washing tank. BRZ plans to add soda ash to the washing tank to raise the pH to a

level that would not dissolve zinc and other heavy metals but would dissolve the inorganic salts that could corrode BRZ's refining equipment. Exh. 3 at 11, 15-16, Att. J at 5.

After washing, BRZ proposes to create wet filter cake by removing water from the slurry with a pressure filter. BRZ plans to transport the filter cake by enclosed conveyor belts to the concentrate storage building. In the concentrate storage building, BRZ would blend the washed secondary zinc oxide material with zinc sulfide concentrates to create feed for the roaster, after which the material would go through the refining process outlined on page four of this opinion. Exh. 3 at 15-16, Att. J at 5.

Some producers of EAF zinc oxide may wash the material before delivering it to BRZ. In that case, the material would arrive at BRZ's Sauget facility as wet filter cake, which BRZ can handle in the same manner that it currently handles filter cake feed material. Tr. at 14-15; Exh. 3 at 14, 20. Typically, the largest suppliers of secondary zinc oxide material either wash the material at their facilities to produce wet filter cake or ship the material as dry dust in pneumatic trailers. Smaller suppliers typically package the secondary zinc oxide material in supersacks. Exh. 3, Att. J at 4.

BRZ's Proposed Contract With AmeriSteel

BRZ and AmeriSteel have reached agreement on contract terms under which BRZ plans to buy AmeriSteel's full production of EAF zinc oxide. Tr. at 17-18; Exh. 3 at 8, Att. G at 1. AmeriSteel's full monthly production is estimated to be approximately 800 tons. Exh. 3, Att. G. Under the contract, the price of EAF zinc oxide is based on a percentage of its zinc content and the LME price for zinc. Exh. 3, Att. G at 2. Because EAF zinc oxide can substitute for and supplement BRZ's mined zinc sulfide concentrates, BRZ would pay AmeriSteel a high percentage of what it would normally pay for mined zinc sulfide concentrates. Exh. 3 at 8, 17. BRZ is willing to pay a price for EAF zinc oxide that far exceeds its cost of freight. Tr. at 13; Exh. 3 at 17.

The AmeriSteel contract would be effective upon execution and continue until December 31 of the year following the year in which BRZ begins commercial operation of its washing plant. Thereafter, the contract would continue from year to year "with annual negotiation of the terms to reflect current market conditions." Exh. 3, Att. G at 1-2. As proposed, either party could cancel the contract by giving the other party 180 days notice of cancellation. Exh 3, Att. G at 2. AmeriSteel has indicated that it will not execute the contract "until all regulatory issues have been resolved, including this adjusted standard proceeding." Tr. at 17-18; Exh. 3 at 9.

DISCUSSION

In this section, the Board first discusses whether EAF zinc oxide is a solid waste. The Board then discusses whether the provision under which BRZ seeks this determination is available in this case. Next, the Board evaluates each of the factors upon which this

determination is based. Lastly, the Board discusses the conditions that apply to this determination.

Status of EAF Zinc Oxide

Section 720.131(c) allows the Board to determine that certain materials that would otherwise be solid wastes are not solid wastes if certain conditions are met. Therefore, the Board initially must determine that EAF zinc oxide is a solid waste; if it is not, BRZ has no need for an adjusted standard.

A "solid waste" is any discarded material not otherwise excluded in the regulations. See 35 Ill. Adm. Code 721.102(a)(1). One of the several ways that a material may be considered "discarded" is by being "recycled" in a manner specified in Section 721.102(c) of the regulations. See 35 Ill. Adm. Code 721.102(a)(2). Section 721.102(c)(3) specifies, in part, that if a "listed sludge" is recycled by being "reclaimed," it is a solid waste. See 35 Ill. Adm. Code 721.102(c)(3) and 721.Appendix Z.[4]

The Board finds that EAF zinc oxide fits within this category. First, EAF zinc oxide is considered a "listed sludge." A "sludge" includes a "solid . . . waste generated from [an] . . . air pollution control facility . . . ." 35 Ill. Adm. Code 721.101(c)(2); 35 Ill. Adm. Code 720.110. EAF dust, from which EAF zinc oxide is recovered, is generated from an air pollution control facility and is therefore a sludge. Furthermore, EAF dust is "listed" because it is listed as a hazardous waste from a specific source under 35 Ill. Adm. Code 721.132 (listing emission control dust/sludge from the primary production of steel in electric furnaces as hazardous waste K061).

While this listing applies to EAF dust rather than EAF zinc oxide, Sections 721.103(c)(2)(A) and (d)(2) further provide that a material derived from the treatment of a listed hazardous waste is itself the listed hazardous waste. See 35 Ill. Adm. Code 721.103(c)(2)(A) and (d)(2). USEPA, which promulgated the federal regulations upon which these regulations are based, explains that "all of the residues from treating the original listed wastes are likewise considered to be the listed waste . . . ." 54 Fed. Reg. 1056, 1063 (Jan. 11, 1989). Therefore, EAF zinc oxide is also considered a listed sludge.[5]

Second, the Board finds that EAF dust and the resulting EAF zinc oxide are being recycled by reclamation. A material is "reclaimed" if it is:

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[4] For a detailed discussion of how materials become solid wastes, please refer to Petition of Chemetco, Inc. for Adjusted Standard From 35 Ill. Adm. Code 720.131(a) and (c) (March 19, 1998), AS 97-2, slip op. at 11-12.

[5] Compare Petition of Recycle Technologies, Inc. for an Adjusted Standard Under 35 Ill. Adm. Code 720.131(c) (September 3, 1998), AS 97-9, slip op. at 7-8 (if used antifreeze (spent material that is not a listed hazardous waste) is a characteristic hazardous waste, the initially but yet to be completely reclaimed material derived from that used antifreeze is a hazardous waste only if it exhibits a characteristic of hazardous waste).

> processed to recover a usable product, or if it is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents. 35 Ill. Adm. Code 721.101(c)(4).

When USEPA promulgated the federal regulation upon which this regulation is based, it explained that materials are reclaimed if "material values . . . are recovered as an end-product of a process (as in metal recovery from secondary materials)" or if they are "processed to remove contaminants in a way that restores them to their usable original condition." 50 Fed. Reg. 614, 633 (Jan. 4, 1985). The Board finds that EAF dust that is processed by HTMR into zinc oxide material is being "reclaimed." The Board also finds that EAF zinc oxide that is washed to remove contaminants (inorganic salts) is being "reclaimed." See 35 Ill. Adm. Code 721.101(c)(4). Because EAF zinc oxide is a listed sludge that is recycled by being reclaimed, it is a solid waste.

Availability of Section 720.131(c)

Generally, a waste being reclaimed remains a waste until reclamation is completed. See 50 Fed. Reg. 614, 620, 633-634, 655 (Jan. 4, 1985). Section 720.131(c) provides an exception to this principle for material that is initially reclaimed, but that requires further reclaiming before recovery is completed.

In discussing the federal counterpart to Section 720.131(c), USEPA explains that the provision is designed to address those situations in which "the initial reclamation step is so substantial that the resulting material is more commodity-like than waste-like even though no end-product has been recovered." 50 Fed. Reg. 614, 655 (Jan. 4, 1985).

The Board finds that EAF dust that has been processed in an HTMR unit has been initially but not fully reclaimed. HTMR processing increases the eventual recovery of zinc, lead, and cadmium values from EAF dust. HTMR processing also decreases the levels of materials that are considered contaminants in BRZ's refining process, such as iron, calcium, magnesium, and alumina. However, EAF zinc oxide requires further processing to recover end products. First, BRZ must wash the EAF zinc oxide to remove inorganic salts before it can be roasted in BRZ's roaster. BRZ then must put the washed material through its refining process, during which BRZ would roast, leach, purify, and further recover the material. The refining process recovers various metals, including a special high grade quality zinc.

The Board finds that Section 720.131(c) is available in this case because once EAF dust has been processed in an HTMR unit to create EAF zinc oxide, it has been initially but not completely reclaimed.

Section 720.131(c) Factors

The Board must determine whether EAF zinc oxide is commodity-like based on the Section 720.131(c) factors set forth on page three of this opinion. The Board finds that EAF

zinc oxide is commodity-like based on these factors. The Board addresses these factors in turn.

The Degree of Processing the Material has Undergone and the Degree of Further Processing That is Required

When explaining the federal counterpart to Section 720.131(c), USEPA stated, "the more substantial the initial processing, the more likely the resulting material is to be commodity-like." 50 Fed. Reg. 614, 655 (Jan. 4, 1985). Here, the initial processing is HTMR. HTMR is a physical and chemical process that is performed in certain equipment, such as a rotary kiln, rotary hearth furnace, plasma furnace, or electric furnace.

HTMR processing of EAF dust can more than double the levels of zinc in EAF dust, and it can substantially increase its levels of lead and cadmium. The increased concentrations of these metals are desirable for BRZ's refining process. HTMR processing also reduces the levels of numerous undesirable constituents in EAF dust. Without HTMR processing, EAF dust is not suitable to directly produce zinc in most, if not all, zinc smelting and refining operations. HTMR processing increases the value of EAF dust from a negative $80 per ton (its cost of disposal) to a value that approaches the value of mined zinc sulfide concentrates (currently $250 to $300 per ton).

After undergoing HTMR processing, EAF dust can be refined directly. However, BRZ proposes to wash EAF zinc oxide to reduce the inorganic salts that could corrode BRZ's refining equipment. After washing the material, BRZ plans to roast, leach, purify, and further process the material. This refining process recovers various metals, including a special high grade quality zinc.

BRZ and IEPA maintain that EAF zinc oxide will be fully reclaimed after the wash, *i.e.*, that the wash alone constitutes all of the "further processing that is required." BRZ and IEPA view the washed EAF zinc oxide as a product, not a waste, and thus do not view the subsequent refining as relevant to this factor. Exh. 3 at 13-16; Resp. at 3-4. In support of its position, BRZ introduced a letter from the State of Tennessee Department of Environment and Conservation that indicates that secondary zinc oxide material recovered by HTMR processing is fully reclaimed without any washing. See Exh. 3, Att. A. The Board notes, however, that USEPA guidance indicates that putting secondary zinc oxide material derived from K061 through an electrolytic zinc refining process constitutes further reclamation under RCRA. See RCRA Permit Policy Compendium, 9444.1994 (09) (December 19, 1994 letter to Paul R. DiBella from David Bussard, Director, Characterization and Assessment Division, Office of Solid Waste and Emergency Response, USEPA). This USEPA guidance suggests that the subsequent refining is relevant to this factor.

The Board finds that even if the subsequent refining is relevant, the HTMR processing is substantial, both in terms of the process itself and its effect on EAF dust. The Board therefore finds that this factor supports BRZ's claim that EAF zinc oxide is commodity-like.

The Value of the Material After It Has Been Reclaimed

USEPA states that "the more valuable a material is after initial processing, the more likely it is to be commodity-like." 50 Fed. Reg. 614, 655 (Jan. 4, 1985). As noted above, once EAF dust has been through the HTMR process, the value of the resulting secondary zinc oxide material approaches the value of mined zinc sulfide concentrates. BRZ and AmeriSteel have reached agreement on contract terms and the price of EAF zinc oxide is to be based on a certain percentage of the zinc content of the material and the LME price for zinc. BRZ would pay AmeriSteel a high percentage of what BRZ would normally pay for mined zinc sulfide concentrates. BRZ is prepared to pay a price for EAF zinc oxide that far exceeds its cost of freight.

The Board finds that EAF zinc oxide has significant value.

The Degree To Which the Reclaimed Material is Like an Analogous Raw Material

According to USEPA, "[i]f the initially-reclaimed material can substitute for a virgin material, for instance as a feedstock to a primary process, it is more likely to be commodity-like." 50 Fed. Reg. 614, 655 (Jan. 4, 1985). EAF zinc oxide can substitute for zinc sulfide concentrates from mines. While not identical, the two materials are chemically similar. Both materials typically would require some form of contaminant removal before BRZ would introduce them to its roaster (*i.e.*, BRZ processes mined concentrates with an acid solution to remove magnesium; BRZ proposes to wash EAF zinc oxide with a mixture of water and soda ash to reduce levels of inorganic salts). After the wash, BRZ plans to use EAF zinc oxide filter cake in the same manner it uses the filter cake of mined concentrates. The products and by-products from EAF zinc oxide would be nearly identical to those of the mined materials. Aside from its chloride and fluoride levels, AmeriSteel's EAF zinc oxide meets the specifications of a typical zinc refiner for zinc sulfide concentrate blends.

The Board finds that EAF zinc oxide is very similar to mined zinc sulfide concentrates and can be substituted for the mined concentrates.

The Extent To Which an End Market for the Reclaimed Material is Guaranteed

In discussing this factor, USEPA states:

> If the [petitioner] can show that there is an existing and guaranteed end market for the initially-reclaimed material (for instance, value, traditional usage or contractual arrangements), the material is more likely to be commodity-like. 50 Fed. Reg. 614, 655 (Jan. 4, 1985).

In this case, the evidence established that EAF zinc oxide is sold primarily to produce zinc, but also to produce zinc chemicals. Several facilities in the United States produce or are capable of producing EAF zinc oxide. There are markets for EAF zinc oxide in North America, Asia, and Europe.

BRZ's contract with AmeriSteel would provide another end market for the EAF zinc oxide that AmeriSteel produces. AmeriSteel's EAF zinc oxide meets specifications necessary for BRZ to economically process the material. With the exception of chloride and fluoride, AmeriSteel's EAF zinc oxide also meets typical zinc refiner specifications for zinc sulfide concentrate blends and falls within the range of secondary feed specifications that zinc refiners have established. BRZ also established that there are end markets for its products and by-products. These factors corroborate that a market for feed material exists.

The Board finds that there is an end market for EAF zinc oxide.

The Extent To Which the Reclaimed Material is Handled to Minimize Loss

USEPA states that the "more carefully a material is handled, the more it is commodity-like." 50 Fed. Reg. 614, 655 (Jan. 4, 1985). Typically, the largest suppliers of secondary zinc oxide material either wash it themselves and deliver it as wet filter cake (which BRZ can handle as it currently handles filter cake feed material) or ship the material as dry dust in pneumatic railcars. Smaller suppliers typically package the secondary zinc oxide material in supersacks.

BRZ proposes to handle dry secondary zinc oxide material, which is expected to arrive in bulk or in supersacks, in a totally enclosed facility. Railcars of the bulk material are to be unloaded through ventilated air slides to silos with HEPA filters. The silos are to be on concrete or asphalt pads with sumps to transfer any spillage to the washing process. Supersacks of the material are to be stored in enclosed areas and emptied under negative pressure in a discharge station with air filters. IEPA issued an air pollution control construction permit that limits emissions of particulate matter from the handling/wash facility to 1.68 tons per year.

The Board also notes that producers of EAF zinc oxide and BRZ have financial incentives not to lose the material: if producers lose the material, they have less to sell to BRZ; if BRZ loses the material, it has less feedstock for its refinery.

The Board finds that EAF zinc oxide will be handled to minimize loss.

Other Relevant Factors

The Board will not consider any additional factors based on this record. When discussing Section 720.131(c)(6), BRZ states that the grant of an adjusted standard will encourage the recycling of EAF dust and decrease the amount of the material that is landfilled. Exh. 3 at 21; Reply at 3. While the Board encourages recycling, the Board may consider "other relevant factors" only to the extent that they are relevant to whether EAF zinc oxide is commodity-like. BRZ has not established that an increase in EAF dust recycling is relevant to that question.

Board Determination

The Board finds that BRZ has established that EAF zinc oxide is commodity-like. Accordingly, the Board determines that EAF zinc oxide is not a solid waste.

Conditions on the Adjusted Standard

The Board will first set forth the conditions that BRZ proposes on the adjusted standard, and then set forth the Board's findings on those conditions.

BRZ's Proposed Conditions

BRZ proposes the following conditions on the adjusted standard, which it amended to reflect the conditions that IEPA requested:

a. The material accepted shall consist of zinc oxide reclaimed from EAF dust (K061) using an HTMR process;

b. The material accepted shall meet the following specifications as monthly averages[:]

(1) > 50% zinc;

(2) < 20% lead;

(3) < 5% iron;

(4) < 4% total gangue materials (silica plus calcium plus magnesium); and

(5) < 13% chloride; provided, however, that the material accepted may contain up to 7% iron for a period of up to three months during the start-up of the process producing the materials;

c. BRZ shall maintain records which document the sources of the reclaimed zinc oxide and which are adequate to demonstrate that the materials accepted meet the specifications set forth in Condition b, above; and

d. BRZ shall maintain the records required under Condition c, above, for a period of three years and shall make such records available for inspection and copying at any reasonable time during normal business hours upon request by Illinois EPA.

Tr. at 5-6; Exh. 4; Reply at 6.

BRZ proposes to "take representative samples from the shipments of reclaimed zinc oxide . . . and composite them on a monthly basis." Reply at 5. BRZ would analyze the monthly composites for zinc, lead, iron, chloride, silica, calcium, and magnesium to determine compliance with its proposed specifications. *Id.* BRZ maintains that it should be able to "accept the infrequent individual shipment which exceeds these specifications if the normal production of the supplier meets specifications and those shipments can be blended with other shipments such that the blended materials meet the specifications." *Id.* at 4. IEPA has agreed to all of these proposed conditions. Tr. at 24.

Board Findings

BRZ's proposed conditions (b) and (c), and the manner in which BRZ proposes to comply with these conditions, raise a number of questions. Initially, it is unclear how BRZ would composite samples. For example, it is unclear whether a composite of samples from each shipment would be tested individually or whether samples from multiple shipments would be composited for testing. It is also unclear whether samples of shipments from different producers would be composited or whether separate composites would be tested for each producer.

In addition, it does not appear that BRZ would keep shipments of EAF zinc oxide segregated and unprocessed while it awaits test results. Accordingly, if a composite sample exceeds the proposed specifications, it is unclear how BRZ could identify the shipment in order to blend it "such that the blended materials meet the specifications." In addition, by the time BRZ receives test results on a composite sample, BRZ may already have blended the material with other feed material and, in fact, may already have refined the material.

It is also unclear how BRZ ever could violate these conditions of the adjusted standard as BRZ interprets them. If a test shows that material greatly exceeds the specifications, BRZ could comply by simply mixing portions of that material in piecemeal fashion with compliant materials until all of the noncompliant material is used. It is also unclear whether BRZ would have to test the blend to confirm compliance.

These proposed conditions also raise environmental and regulatory concerns. First, if an adjusted standard is granted, RCRA regulations would not apply to the materials during their shipment to BRZ, and during their storage and processing at BRZ. If BRZ could blend noncompliant material (*e.g.*, material that exceeds the lead limit) until the blend met the specifications, transporters would be able to transport in Illinois (and BRZ would be able to handle and store) material that exceeds the specifications without being subject to Illinois' hazardous waste regulations. Likewise, an Illinois producer of EAF zinc oxide with material intended to be shipped to BRZ that exceeds the specifications could handle and store that material without being subject to Illinois' hazardous waste regulations.

Second, the specifications on the contents of EAF zinc oxide relate directly to BRZ's ability to economically use the material. The failure of the material to meet the specifications calls into question the degree of processing that the HTMR unit provided, the value of the

material, the degree to which the material is like mined zinc sulfide concentrates, and the extent to which there is an end market for the material. Thus, to the extent that material fails to meet these specifications, the Board would be less likely to find that the material is commodity-like under Section 720.131(c).

In order to protect the environment and to ensure the commodity-like character of EAF zinc oxide that BRZ accepts for processing, the Board will limit the applicability of this adjusted standard to EAF zinc oxide that meets the specifications. Representative samples of each shipment of EAF zinc oxide must be collected, composited, and tested in accordance with generally accepted practices, such as those specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW-846 (Third Edition).

In addition, the Board's determination applies only to EAF zinc oxide to be processed through BRZ's electrolytic zinc refinery in Sauget, Illinois. BRZ cannot accept the material under the adjusted standard for a different use or for processing at a different facility.

Of course, the Board is not determining the status of EAF zinc oxide intended for BRZ when that material is outside of Illinois. The Board's determination applies only to EAF zinc oxide when it is in Illinois. If EAF zinc oxide is produced outside of Illinois, the composite sampling of each shipment must meet the specifications before the shipment to BRZ enters Illinois.

In addition, the Board's determination applies only to EAF zinc oxide that has arrived at BRZ's Sauget facility or that is under a legally binding contract for sale to BRZ. Without this requirement, an unscrupulous generator of EAF zinc oxide could accumulate the material at its facility and seek to evade Illinois' hazardous waste regulations by claiming that it plans to sell the material to BRZ.

BRZ has several options if it objects to the conditions that the Board has placed on this adjusted standard. First, under the Board's procedural rules, BRZ may move the Board to reconsider the conditions that the Board has placed on this adjusted standard. Second, BRZ may appeal the Board's adjusted standard to the Illinois Appellate Court. Third, BRZ may choose to consider EAF zinc oxide a solid waste in lieu of accepting the material under the conditions of the adjusted standard.

CONCLUSION

The Board finds that BRZ has established that zinc oxide material produced by subjecting EAF dust to an HTMR process is commodity-like. Accordingly, the Board finds that EAF zinc oxide is not a solid waste and grants BRZ's petition under Section 720.131(c) for an adjusted standard, subject to the conditions set forth in this order.

The Board emphasizes that this determination applies only to EAF zinc oxide to be processed through BRZ's electrolytic zinc refinery in Sauget, St. Clair County. That EAF zinc oxide also must meet certain specifications. In addition, this determination applies only to

EAF zinc oxide when it is in Illinois and either at the Sauget facility or under a legally binding contract for sale to BRZ.

This opinion constitutes the Board's findings of fact and conclusions of law in this matter.

ORDER

1. The Board finds that zinc oxide material produced by subjecting electric arc furnace (EAF) dust from the primary production of steel (K061 under 35 Ill. Adm. Code 721.132) to a high temperature metals recovery (HTMR) process is not a solid waste and grants Big River Zinc Corporation (BRZ) an adjusted standard under 35 Ill. Adm. Code 720.131(c).

2. The adjusted standard is subject to the following conditions:

   a. The determination described in paragraph one of this order applies only to zinc oxide material:

      (1) that is to be processed through BRZ's electrolytic zinc refinery in Sauget, St. Clair County, Illinois;

      (2) that is in Illinois;

      (3) that has arrived at BRZ's Sauget, St. Clair County, Illinois facility or that is under a legally binding contract for sale to BRZ; and

      (4) that meets the following specifications by weight:

         (a) > 50% zinc;

         (b) < 20% lead;

         (c) < 5% iron (or < 7% iron in material produced by an HTMR unit during the first three months that the HTMR unit produces zinc oxide material from EAF dust from the primary production of steel (K061 under 35 Ill. Adm. Code 721.132));

         (d) < 4% total gangue materials (silica plus calcium plus magnesium); and

         (e) < 13% chloride;

b. BRZ must maintain records that document the sources of all zinc oxide material that BRZ accepts under this adjusted standard;

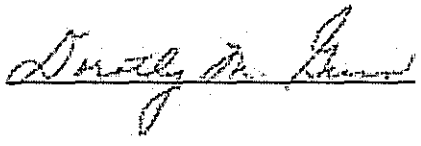
c. BRZ must maintain records that demonstrate that each shipment of zinc oxide material that BRZ accepts under this adjusted standard meets the specifications set forth in paragraph 2(a)(4) of this order; for this demonstration, representative samples of each shipment of zinc oxide material must be collected, composited, and tested in accordance with generally accepted practices, such as those specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW-846 (Third Edition); and

d. BRZ must maintain the records required under paragraphs 2(b) and 2(c) of this order for a period of three years and must make such records available for inspection and copying at any reasonable time during normal business hours upon the Illinois Environmental Protection Agency's request.

IT IS SO ORDERED.

Section 41 of the Environmental Protection Act (415 ILCS 5/41 (1996)) provides for the appeal of final Board orders to the Illinois Appellate Court within 35 days of service of this order. Illinois Supreme Court Rule 335 establishes such filing requirements. See 172 Ill. 2d R. 335; see also 35 Ill. Adm. Code 101.246, Motions for Reconsideration.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 15th day of April 1999 by a vote of 7-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board

ATTACHMENT B

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

PETITION OF BIG RIVER ZINC CORPORATION FOR AN ADJUSTED STANDARD UNDER 35 ILL. ADM. CODE 720.131(c)	AS 08 (Adjusted Standard – RCRA)

AFFIDAVIT OF GEORGE OBELDOBEL

I, George Obeldobel, being first duly sworn on oath, depose and state as follows:

1. I am over the age of 18 years and am a resident of Chesterfield, Missouri.
2. The information in this Affidavit is based on my personal knowledge or belief in my capacity as President and Chief Executive Officer of Big River Zinc Corporation ("BRZ" or the "Facility") in Sauget, Illinois, and I would testify to such matters if called as a witness.
3. BRZ is an electrolytic zinc refinery that has used the electrowinning process to recover zinc from ore concentrates for more than 65 years. BRZ accepted EAF zinc oxide as feedstock from suppliers/sources for washing and further refining at its Facility.
4. Due to the inability to locate sufficient amounts of feedstock at competitive prices, including EAF zinc oxide, BRZ ceased all process operations and laid-off or terminated all but about 19 employees at its Facility effective June 1, 2006.
5. BRZ has been exploring opportunities to reopen certain portions of its Facility with a goal towards reopening the entire Facility in the future as economically justified.
6. Specifically, BRZ seeks to reopen its existing washing plant in June 2008. It plans to wash the EAF zinc oxide material it receives from suppliers and then return the washed

product to the suppliers for sale and further refining. The washing facility will employ between 14-26 people, depending on the number of current employees moved to this area.

7. BRZ plans to later add a larger washing plant to wash the EAF oxide that is produced at other facilities, including those planned by BRZ's parent company, ZincOx Resources, plc. BRZ expects to employ between 29-44 employees when the washing facility is expanded. BRZ's future goal is to reopen the zinc refining facility.
8. BRZ has identified a specific need for washing EAF zinc oxide. Zinc refineries employing the electrowinning process must limit the amount of chloride, fluoride, sodium, and potassium entering the solution circuit because there is no practical method to remove them after they enter the circuit. These materials must be limited in the feed to the plant to prevent equipment corrosion and to aid in the efficient recovery of zinc. This applies to all zinc electrowinning plants.
9. The need for washing EAF zinc oxide to reduce chloride, fluoride, sodium and potassium is as follows:

    a. During the zinc electrowinning process, an electric current passes through an aluminum cathode, a zinc sulfate solution, and then a lead anode. Zinc metal is deposited onto the aluminum cathode while oxygen forms on the lead anode. More details on the process are found in AS 99-3, page 4, (Att. A) and in the petition for AS 99-3 pages 10 through 13.

    b. Chloride in solution accelerates corrosion of all process equipment in the plant, especially the electrodes (anodes and cathodes) in the cell house. The more chloride in solution, the faster the equipment corrodes. The relatively small anodes used at BRZ cost at least $300 each and there are approximately 15,000 of them in use. Other zinc plants have far more electrodes in use than BRZ in proportion to their production relative to BRZ. No zinc plant can risk destruction of the anodes and cathodes in inventory. High concentrations of chloride in solution also produce chlorine gas at the anode, which is a safety concern.

c. Fluoride attacks the boundary layer between the aluminum cathode and the zinc deposited from solution. This effect makes it difficult to separate the two. High fluoride concentrations can make it impossible to harvest the zinc metal, and production essentially stops until clean cathodes can replace those rendered useless by fluoride. To clean the cathodes, the majority of the zinc must be pried off the cathodes and then the remainder must be removed by chemical dissolution with acid or by efficient physical brushing.

d. Sodium and potassium salts are more soluble than the salt of zinc in a zinc electrowinning process. Therefore the presence of these cations reduces the solubility of zinc because of the common ion effect. The presence of the sodium and potassium limits the overall production rate of the plant.

10. Washing the EAF zinc oxide effectively reduces chloride, fluoride, sodium and potassium and creates a more marketable product for further refining. Zinc plants using electrowinning technology, including BRZ, can use more washed EAF zinc oxide than unwashed EAF zinc oxide. As an example, a plant limited to using 1,000 tons of unwashed EAF zinc oxide because of the chloride content could use at least 10,000 tons of washed EAF zinc oxide since the washing efficiency for chloride removal is 90% or better. Therefore, washing expands the market for the EAF zinc oxide.

11. The following tables show the levels of chloride, fluoride, sodium and potassium in EAF zinc oxide supplied to the BRZ Facility, the reduction of chloride, fluoride, sodium and potassium due to washing, and the average removal estimates over a period of seven years. The data is actual plant data from the BRZ washing plant.

Average Composite assays by year of operation for Zinc Oxide Fed to Wash Operation					
Year	% Zinc	% Chloride	% Fluoride	% Sodium	% Potassium
1999	63.7	5.63	0.20	2.35	2.26
2000	62.7	6.18	0.21	2.39	2.28
2001	62.4	5.88	0.23	2.22	2.07
2002	63.1	4.63	0.11	1.97	1.48
2003	58.1	6.88	0.17	2.65	2.44

2004	60.5	6.59	0.16	2.69	2.4
2005	59.8	6.81	0.16	2.49	2.18
Average	**61.5**	**6.09**	**0.18**	**2.39**	**2.16**

Average Composite assays by year of operation for Washed Zinc Oxide produced					
Year	% Zinc	% Chloride	% Fluoride	% Sodium	% Potassium
1999	70.32	0.31	0.11	0.23	0.1
2000	70.1	0.37	0.09	0.25	0.13
2001	66.6	0.27	0.06	0.17	0.09
2002	66.9	0.33	0.06	0.28	0.13
2003	64.4	0.67	0.16	0.24	0.13
2004	66.3	0.94	0.13	0.44	0.29
2005	64.8		0.03	0.75	0.42
Average	**67.1**	**0.48**	**0.09**	**0.34**	**0.18**

Average removal estimates for the seven year period (% in - % out) x 100 / % in			
Chloride	Fluoride	Sodium	Potassium
92.1%	**48.3%**	**85.9%**	**91.4%**

FURTHER AFFIANT SAYETH NOT.

George M. Obeldobel
President & CEO- BRZ

Subscribed and Sworn to before me
on March 12, 2008.

Sandra K. Anderson
Notary Public

OFFICIAL SEAL
SANDRA K ANDERSON
Notary Public - State of Illinois
My Commission Expires Nov 1, 2010

My Commission Expires: 11/01/2010

2004	60.5	6.59	0.16	2.69	2.4
2005	59.8	6.81	0.16	2.49	2.18
Average	**61.5**	**6.09**	**0.18**	**2.39**	**2.16**

Average Composite assays by year of operation for Washed Zinc Oxide produced					
Year	% Zinc	% Chloride	% Fluoride	% Sodium	% Potassium
1999	70.32	0.31	0.11	0.23	0.1
2000	70.1	0.37	0.09	0.25	0.13
2001	66.6	0.27	0.06	0.17	0.09
2002	66.9	0.33	0.06	0.28	0.13
2003	64.4	0.67	0.16	0.24	0.13
2004	66.3	0.94	0.13	0.44	0.29
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George M. Obeldobel
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Subscribed and Sworn to before me
on March 12, 2008.

OFFICIAL SEAL
SANDRA K ANDERSON
Notary Public - State of Illinois
My Commission Expires Nov 1, 2010

Sandra K. Anderson
Notary Public

My Commission Expires: 11/01/2010

ATTACHMENT C

ILLINOIS POLLUTION CONTROL BOARD
February 17, 2000

IN THE MATTER OF:	)	
	)	
PETITION OF HORSEHEAD RESOURCE	)	AS 00-2
AND DEVELOPMENT COMPANY, INC.	)	(Adjusted Standard - RCRA)
FOR AN ADJUSTED STANDARD UNDER)		
35 ILL. ADM. CODE 720.131(c)	)	

JOHN N. MOORE OF THE LAW OFFICES OF JOHN N. MOORE, P.C. AND PAUL E. GUTERMANN OF AKIN, GUMP, STRAUSS, HAUER & FELD, L.L.P. APPEARED ON BEHALF OF PETITIONER; and

PETER E. ORLINSKY APPEARED ON BEHALF OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY.

OPINION AND ORDER OF THE BOARD (by N.J. Melas):

Petitioner Horsehead Resource and Development Company, Inc. (Horsehead) operates a permitted solid waste management facility at 2701 E. 114th St. in Chicago, Cook County, Illinois. Horsehead recycles a hazardous waste, which is a byproduct of steel production, to make zinc-bearing materials. Horsehead has petitioned the Board to determine that its crude zinc oxide (CZO) product from the Chicago facility be classified as a commodity-like material rather than a "solid waste" or "hazardous waste" under the Resource Conservation and Recovery Act (RCRA) and corresponding Illinois hazardous waste rules and regulations[1]. Horsehead wants to sell CZO without being subject to Illinois hazardous waste requirements.

Horsehead has filed a petition for an adjusted standard pursuant to 35 Ill. Adm. Code 720.131(c). Section 720.131(c) allows the Board to determine that certain materials are excepted from the definition of solid wastes (and therefore not hazardous wastes) if the materials meet certain criteria. Horsehead claims that its CZO recovered from electric arc furnace dust (EAF dust) by a high temperature metals recovery (HTMR) process meets the criteria. The Illinois Environmental Protection Agency (Agency) has recommended that the Board grant Horsehead's petition for an adjusted standard.

The Board finds that CZO is excepted from the definition of solid waste. The Board therefore grants Horsehead's petition for an adjusted standard subject to the conditions set forth in this order.

PROCEDURAL HISTORY

[1] RCRA is the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended, 42 U.S.C. 6901 *et seq.* Board regulations at issue in the instant opinion and order are nearly identical to US Environmental Protection Agency (USEPA) regulations promulgated pursuant to RCRA.

On July 20, 1999, Horsehead filed a petition for an adjusted standard (petition) with the Board under 35 Ill. Adm. Code 720.131(c). However, Horsehead failed to timely cause publication of the required notice. As a result, the Board dismissed the petition, but allowed Horsehead leave to refile the petition. See *In re* Horsehead Resource and Development Company, Inc. (August 5, 1999), AS 00-1.

On August 6, 1999, Horsehead refiled the petition for the adjusted standard with the Board. On that same date, Horsehead filed a motion requesting that the Board incorporate the record from docket AS 00-1 into a new docket which the Board numbered docket AS 00-2. Pursuant to Board regulations, Horsehead caused timely publication of the required notice on August 7, 1999, and filed a certificate of publication with the Board on August 11, 1999. See 35 Ill. Adm. Code 106.711 and 106.712.

On July 20, 1999, the Board received a motion to appear *pro hac vice* from attorney John N. Moore, and on September 7, 1999, the Board received a motion to appear *pro hac vice* from attorney Paul E. Gutermann.

Also on July 20, 1999, Horsehead filed an application for non-disclosure of confidential data (non-disclosure application). Horsehead sought to protect certain confidential financial data in the petition pursuant to Section 101.161 of the Board's procedural rules. See 35 Ill. Adm. Code 101.161. Horsehead asked for non-disclosure of certain financial data in its petition pursuant to 35 Ill. Adm. Code 101.161(a)(3) which provides that confidential data may be protected in a Board non-disclosure order. Specifically, Horsehead sought to prevent disclosing the prices that it charges for CZO to two of its customers, Zinc Nacional and Zinc Corporation of America (ZCA). Horsehead also sought to protect certain information on CZO's economic value. App. at 2. Horsehead claimed that disclosure of the information would inhibit its ability to competitively market CZO. App. at 3.

On September 9, 1999, the Board accepted Horsehead's refiled petition for the adjusted standard, granted Horsehead's request to incorporate the record from docket AS 00-1 into docket AS 00-2, granted motions from attorneys John N. Moore and Paul E. Gutermann to appear *pro hac vice*, and granted Horsehead's non-disclosure application. See *In re* Horsehead Resource and Development Company, Inc. (September 9, 1999), AS 00-2.

On August 27, 1999, the Illinois Environmental Protection Agency timely filed its response to Horsehead's petition. In the response, the Agency recommended that the Board grant the petition assuming that Horsehead provided more information on chlorine content in CZO and Horsehead's response in the event of an accidental release of raw material or CZO.

On September 10, 1999, Horsehead filed its reply to the Agency's response. In the reply, Horsehead addressed the Agency's concerns regarding chlorine and procedures in the event of an accidental release.

On October 28, 1999, Board Hearing Officer John Knittle held the required hearing in this matter. See 35 Ill. Adm. Code 106.415(a). Horsehead presented one witness, James M.

Hanrahan, one of its corporate vice presidents. Tr. at 8-10.[2] Knittle found Hanrahan to be credible. Tr. at 34. Horsehead also introduced three exhibits, and Knittle admitted all of them. Tr. at 6-7. At hearing, Hanrahan further addressed the Agency's concerns regarding accidental releases. He also answered Agency questions on the value of CZO and Horsehead's internal manufacturing processes. Tr. at 27-32. At hearing, counsel for the Agency stated that the questions raised in the response had been answered and recommended that the Board grant the requested adjusted standard to Horsehead. Tr. at 34. The Agency offered no exhibits, and the parties chose not to file posthearing briefs.

LEGAL FRAMEWORK

Under Subtitle C of RCRA and corresponding Illinois laws and regulations, hazardous wastes are a subset of solid wastes. A material that is not a solid waste cannot be regulated as a hazardous waste. Illinois hazardous waste regulations govern those who generate, treat, store, dispose, recycle, or transport hazardous waste. See 35 Ill. Adm. Code 722-726, 728.

A solid waste is generally "any discarded material". See 35 Ill. Adm. Code 721.102. A solid waste can become a hazardous waste in two ways. A solid waste can exhibit a "characteristic" of hazardous waste (i.e., toxic, corrosive, ignitable, or reactive). Secondly, the solid waste can be a "listed" hazardous waste if, for example, it comes from a certain type of process such as electroplating. 35 Ill. Adm. Code 721.103; also see generally 35 Ill. Adm. Code 721 Subparts C and D.

Board regulations at 35 Ill. Adm. Code 720.131(c)[3] establish criteria that allow the Board to make exceptions for certain partially-reclaimed materials that would otherwise be considered solid or hazardous wastes. If the partially-reclaimed material in question meets these criteria, then it is not considered a solid or hazardous waste. Section 720.131(c) provides that:

> The Board will determine that those materials that have been reclaimed but must be reclaimed further before recovery is completed are not solid wastes if, after initial reclamation, the resulting material is commodity-like (even though it is not yet a commercial product, and has to be reclaimed further). This determination will be based on the following criteria:
>
> 1) The degree of processing the material has undergone and the degree of further processing that is required;
>
> 2) The value of the material after it has been reclaimed;
>
> 3) The degree to which the reclaimed material is like an analogous raw material;

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[2] The transcript of the hearing is cited as "Tr. at __."

[3] The corresponding federal rule is 40 CFR § 260.31(c) (1998).

4) The extent to which an end market for the reclaimed material is guaranteed;

5) The extent to which the reclaimed material is handled to minimize loss; and

6) Other relevant factors. 35 Ill. Adm. Code 720.131(c).

Horsehead claims that its CZO product is not a solid nor hazardous waste. It claims that CZO, which is partially reclaimed from EAF dust, is commodity-like pursuant to the criteria in 35 Ill. Adm. Code 720.131(c). Exh. 1 at 5.[4]

FINDINGS OF FACT

Horsehead is the largest operator of HTMR facilities and the primary recycler of EAF dust in the United States. Tr. at 7, 11; Exh. 1 at 6. Horsehead has traditionally used Waelz rotary kilns to produce zinc products from zinc ores and other materials containing zinc. In the 1970s, operators of Waelz kilns discovered that EAF dust was an effective alternative feedstock to zinc ores. Exh. 1 at 6. Horsehead operates two Waelz rotary kiln HTMR units at its Chicago facility. Tr. at 14; Exh. 1 at 7.

EAF Dust

Most EAF dust is an airborne byproduct of a process in which scrap steel (usually coated with zinc) is melted in an electric arc furnace or mini mill and recycled to form new steel products. The EAF dust is collected in baghouses at the steel plants. Tr. at 11; Exh. 1 at 6, Att. 13; 35 Ill. Adm. Code 721.132. EAF dust contains zinc, in addition to recoverable quantities of cadmium and lead. Tr. at 11; Exh. 1 at 6. In the past, most EAF dust was disposed. Exh. 2 at 3.

Horsehead's Production Process

Horsehead produces CZO by recycling a mixture which is about 90% EAF dust and about 10% hazardous and non-hazardous zinc-bearing feedstocks. Tr. at 12; Exh. 1 at 1, 7. The EAF dust and other feedstocks arrive at Horsehead via enclosed railcar or truck. Upon arrival, Horsehead tests the feedstocks including generator-specific tests for metal content. Tr. at 13; Exh. 1 at 7, Att. 1.

Feedstocks are then introduced directly into the curing and blending (C&B) building without being stored. Tr. at 13, 28-29; Exh. 1 at 7-8, Att. 1. Water is added to the feedstocks before they are cured, blended, and then sent by conveyor belt to a feed hopper. The feedstocks now have a uniform feed composition which allows for optimal efficiency once the feedstocks are introduced into the Waelz kiln HTMR units. Tr. at 13, 28; Exh. 1 at 8. From the feed bins, another conveyor belt supplies the

[4] Horsehead's petition, which was entered into evidence at hearing as an exhibit, is cited as "Exh. 1 at _." Likewise, the Agency's response is cited as "Exh. 2 at _.", and Horsehead's reply is cited as "Exh. 3 at _."

Waelz kilns. Just before the feedstocks enter the Waelz kilns, a carbon source (such as coke) is added. Tr. at 13-14, 28; Exh. 1 at 8, Att. 1.

During the HTMR process, the feedstocks are heated to 1200 degrees Celsius in order to chemically reduce nonferrous metals. Waelz kilns are essentially long rotating tubes with one end higher than the other. As the feedstock flows down the length of the tube, the zinc material is reduced. As it volatizes, it rises up from the feedstocks into a countercurrent airstream. This airstream carries the zinc material out of the upper end of the Waelz kiln. Tr. at 14; Exh. 1 at 8-9, Att. 1.

The HTMR process results in no waste nor water discharges. Exh. 1 at 8; Exh. 2 at 4; Exh. 3 at 3.

CZO and IRM

The resulting zinc material from the upper end of the Waelz kiln is CZO. It is cooled and collected in Agency-permitted product collectors. An enclosed screw conveyor then transfers the CZO to fully-enclosed pressure differential railcars for shipment. Tr. at 14; Exh. 1 at 8-9, Att. 1; Exh. 3 at 5.

CZO has a much higher zinc content and much lower in iron content than the EAF dust. CZO is approximately 60% zinc as opposed to the HTMR feedstocks which are only about 15% zinc. Tr. at 16; Exh. 1 at 11. The chart below details the change in the constituency from the Waelz kiln HTMR feedstock to CZO.

Major Constituents	HTMR Feedstock (% weight)	CZO (% weight)
Zinc	14.9	58.8
Iron	26.5	5.3
Calcium	5.0	1.0
Manganese	2.2	0.5
Magnesium	2.0	0.4

Silicon	1.5	0.4
Sulfur	1.1	0.9
Chlorine	0.9	4.5
Lead	0.8	3.6
Sodium	0.7	1.7
Potassium	0.6	2.1
Aluminum	0.5	0.1
Fluorine	0.3	0.3

Exh. 1 at 12.

At the lower end of the Waelz kiln, Iron-Rich Material (IRM) is collected. The IRM is about 50% iron, which is double the percentage of iron in the feedstock. IRM is sold for use in asphalt aggregate, cement production, or construction aggregate. Tr. at 11-12, 14-15, 16; Exh. 1 at 8, Att. 1.

Value of CZO

Horsehead changes EAF dust, a product with negative value, into CZO and IRM, products with substantial positive values. EAF dust has a negative value because generators of EAF dust pay for it to be either disposed or recycled. Tr. at 11, 22, 27-28; Exh. 1 at 18, 22. CZO is valuable because it is high in zinc and low in constituents such as iron that cannot be processed at zinc production plants. Exh. 1 at 18, 22-23. Demand for Horsehead's CZO is strong, and, as a result, Horsehead has never stored or stockpiled CZO. Tr. at 20, 24; Exh. 1 at 25.

Worldwide zinc prices are set on the London Metals Exchange (LME). The value of CZO is based on its zinc percentage and the fluctuating price of zinc set by the LME. Zinc purchasers, such as ZCA and Zinc Nacional, may revise this equation and deduct a processing charge from CZO. The value of non-zinc constituents in CZO also affect its price. Exh. 1 at 18-19, 25.

Although the Board determined that Horsehead was not required to disclose the prices that it charges its customers for CZO (See *In re* Horsehead Resource and Development Company, Inc. (September 9, 1999), AS 00-2), Horsehead's adjusted standard petition included prices that other CZO manufacturers have charged to their customers. Although Horsehead did not disclose its CZO prices in its petition, at hearing Hanrahan admitted that Horsehead's prices for its CZO are "in the same range" as the price that AmeriSteel charged to Big River Zinc (BRZ) for a zinc product virtually identical CZO. Hanrahan also admitted that the value of CZO is comparable to roasted zinc concentrates produced from mined ore. Tr. at 20-21, 25; Exh. 1 at 21, 22; Exh. 2 at 3; *In re* Big River Zinc Corporation (April 15, 1999), AS 99-3, slip op. at 13.

CZO Compared to Roasted Zinc Concentrates

Sulfide zinc ores extracted from the ground are typically 3% to 5% zinc. Before zinc ores can reach the quality of CZO, they must be mined, crushed, and milled. The ores are then

subject to sequential floatation/separation, dewatering, and drying which results in a zinc concentrate. Although CZO contains more salts, iron, and lead than zinc concentrates, zinc concentrates contain more sulfur than CZO. Exh. 1 at 24. Zinc concentrates must be roasted to produce roasted zinc concentrates and recover sulfur in the form of sulfur dioxide gas. Exh. 1 at 14, 24, Att. 4. Roasted zinc concentrates are similar enough to CZO that both are suitable as a feedstock in zinc production. Exh. 1 at 23-24.

Markets for CZO

Zinc refineries are not able to process EAF dust, but they are able to process CZO. Exh. 1 at 11, 18. Plants in Japan, Germany, Italy, Spain, France, Mexico, and the United States produce hundreds of thousands of tons of CZO annually. If the plant is an integrated zinc manufacturing complex, the CZO is used on site. If not, the CZO is sold to other companies that manufacture zinc. The Commodities Research Unit, a London-based research firm, issued a report predicting that demand for CZO will continue to grow. In fact, CZO is increasingly replacing the need for zinc ores in European smelters. Exh. 1 at 19-21, 25, Att. 7.

Zinc and Zinc Calcine Production

Horsehead sells CZO to ZCA for use as a feedstock in zinc production at ZCA's plant in Monaca, Pennsylvania.[5] Exh. 1 at 13.

Horsehead also sends CZO to its facility in Palmerton, Pennsylvania to be used as a feedstock for calcining. Tr. at 17; Exh. 1 at 6, 13, 15; Exh. 3 at 3. Calcining further purifies the CZO by washing out salts and removing lead. This washing results in a product called zinc calcine. Compared to CZO which is a little less than 60% zinc, zinc calcine is about 60% to 65% zinc. Horsehead then sells zinc calcine to ZCA. Tr. at 17-18; Exh. 1 at 15, Att. 6; Exh. 3 at 3.

To ensure efficiency in the zinc manufacturing process, ZCA blends CZO, zinc calcine, roasted zinc concentrates, and other zinc-bearing materials into a uniform feedstock. Exh. 1 at 15; Exh. 3 at 3. This uniform feedstock requires some additional processing at a zinc refinery - namely sintering and thermal reduction. Exh. 1 at 13, 14, Att. 4.

Sintering densifies and hardens the zinc oxides and reduces some of the other constituents in the zinc feed. The zinc oxides are mixed with a carbon source (for fuel) and a silica (to bind the materials together). The sintering machine heats the materials to 900 - 1,200 degrees Celsius. Sintering produces zinc sinter and lead concentrate. The lead concentrate is a feedstock for another process. The zinc sinter is feedstock for an electrothermic furnace. Tr. at 19; Exh. 1 at 13, 14, Att. 4; Exh. 3 at 2.

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[5] Horsehead and ZCA are separate companies both owned by Horsehead Industries, Inc. Tr. at 32; Exh. 1 at 13.

The electrothermic furnace removes oxygen and minor constituents of the zinc sinter. The furnace vaporizes and condenses the zinc sinter which produces zinc metal and non- hazardous slag. Exh. 1 at 14, Att. 4. ZCA makes zinc metal slabs and ingots from the zinc metal. Exh. 1 at 13, Att. 4.

Removing Salts. The Agency asked Horsehead to comment on the higher chlorine content in CZO compared to mined concentrates and also asked if the chlorine posed any pollution control problems. Exh. 2 at 3. Horsehead responded that although CZO requires additional processing because it has more salts (the source of the chlorine) than zinc concentrates, zinc concentrates require additional processing because they have far more sulfur than CZO. CZO is a more predictable and uniform feedstock than zinc concentrates because the percentage of zinc in CZO is less variable than in zinc concentrates. Tr. at 22-24; Exh. 1 at 13, 24, Att. 10.

Salts in CZO are removed after CZO has left Horsehead's Chicago facility - both during the calcining process and during the zinc production process. Calcining is essentially a purifying step that increases zinc concentration and reduces the salt content in CZO. As a result, calcining also leads to a reduction in the amount of salts charged to ZCA's sinter machine. Exh. 1 at 16. The salts removed during the calcining process attach to a lead concentrate material which is shipped to another facility in Oklahoma. Tr. at 18. That facility processes the lead concentrate to recover metals. The salts are removed from the lead concentrate into a non-hazardous water stream. This stream is injected into a permitted non-hazardous deep well in Oklahoma for disposal. Tr. at 18-19; Exh. 3 at 3.

Even though most salts are removed from zinc calcine, there are salts in the other zinc-bearing feedstocks (including CZO) prior to sintering. During sintering, much like during calcining, the salts primarily attach to a lead concentrate. Incidental salts in water from this part of the process are sent to an NPDES permitted outfall at the ZCA facility. Tr. at 19; Exh. 3 at 2-3.

Micronutrient Production

CZO is also suitable as an ingredient in the production of micronutrients. Tr. at 17; Exh. 1 at 13. Horsehead sells CZO to Zinc Nacional, a pyrometallurgical facility in Monterey, Mexico. Horsehead transports CZO to the Mexican border where Zinc Nacional takes title to it. Zinc Nacional pelletizes the CZO. The pellets are then subject to a two step calcining process which volatizes certain metal compounds, washes out salts, and produces zinc oxide. Zinc Nacional sells the zinc oxide to agricultural firms which use it as a micronutrient in animal feed. Tr. at 17; Exh. 1 at 17-18.

Loss Minimization and Emergency Procedures

Horsehead claims to have equipment which eliminates, wherever possible, loss of the product into the environment during the manufacturing and shipping processes. Exh. 1 at 26 -28. Horsehead manages its feedstocks in an enclosed negative pressure environment. All transfer points have collection equipment and Agency-permitted baghouses to prevent loss of the material and to recycle any material that is collected. Exh. 1 at 7, 8, 26; Exh. 2 at 4; Exh. 3 at 3. CZO is pneumatically conveyed from permitted product collectors through pipes that extend into enclosed pressure differential rail cars. The rail car loading tank is in an enclosed building. These cars leave Horsehead immediately after CZO is

produced. Off-site transport of CZO must comply with U.S. Department of Transportation regulations. Exh. 1 at 25, 26; Exh. 2 at 4; Exh. 3 at 3, 5.

Horsehead has two Agency-permitted product collectors. Each collector has several compartments, and each compartment has several bags. A compartment or bag can be repaired without interrupting the work of the other compartments. Exh. 3 at 5. Horsehead also has a 24 hour opacity monitors to measure gases exiting from the product collectors. An alarm connected to the opacity monitor alters the Waelz kiln operator if opacity levels increase. Exh. 3 at 4.

To quote Hanrahan, CZO "never sees the light of day". Tr. at 25.

The Agency asked that Horsehead explain its procedures for loss minimization and explain its plans to address an accidental spill, ruptured baghouse, or other loss of CZO. Exh. 2 at 4. Horsehead has implemented several programs that aim to prevent the accidental release of CZO or its constituents. These include: employee training, inspection and monitoring, preventative maintenance, and comprehensive housekeeping. Tr. at 29-30; Exh. 3 at 4. One of the preventative maintenance programs involves constant temperature monitoring of the Waelz kilns. Tr. at 29-30.

Horsehead is also prepared to handle an accidental release. If a release were to occur, trained Horsehead personnel would respond. The area where CZO is managed is completely paved with either asphalt or concrete which would contain a CZO spill. The paved surface also allows for easier cleanup of the spilled material with vacuum trucks, road sweepers, or other equipment. Horsehead has also made arrangements with the proper regulatory agencies, fire departments, hospitals, and third party vacuum companies. The recovered CZO would be returned to the recycling process. Tr. at 30-31; Exh. 3 at 4.

DISCUSSION

In this section, the Board will first address whether CZO is a solid waste. Next, the Board discusses if the provision at 35 Ill. Adm. Code 720.131(c) is available to Horsehead. Lastly, the Board evaluates the factors at 35 Ill. Adm. Code 720.131(c).

Is CZO a Solid Waste?

Section 720.131(c) of the Board's rules allows the Board to except materials that would otherwise be defined as solid wastes[6]. The Board must first determine if CZO is a solid waste. If CZO is not a solid waste, Horsehead does not need an adjusted standard.

A "solid waste" is any "discarded material" which the regulations do not otherwise exclude. See 35 Ill. Adm. Code 721.102(a)(1). One way that a material may be deemed "discarded" is by being "recycled" in a manner described at Section 721.102(c) of the Board's rules. See 35 Ill. Adm.

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[6] As previously noted, hazardous wastes are a subset of solid wastes pursuant to RCRA Subpart C.

Code 721.102(a)(2). Section 721.102(c)(3) and Appendix Z to Part 721 of the Board's rules provide that if a "listed sludge" is "recycled" by being "reclaimed", it is a solid waste.[7]

Employing the definition set forth above, the Board finds that CZO is a solid waste. CZO is considered a "listed sludge." A "sludge" is defined as a "solid . . . waste generated from [an] . . . air pollution control facility . . ." 35 Ill. Adm. Code 721.101(c)(2); 35 Ill. Adm. Code 720.110. Horsehead recovers CZO from EAF dust. EAF dust is collected in air pollution control facilities at steel plants and is therefore a sludge. EAF dust is "listed" because it is listed as a hazardous waste from a specific source. EAF dust is listed as code K061, "emission control dust/sludge from the primary production of steel in electric furnaces". 35 Ill. Adm. Code 721.132.

While this listing applies to EAF dust rather than CZO, a material derived from the treatment of a listed hazardous waste is itself also a listed hazardous waste. 35 Ill. Adm. Code 721.103(c)(2)(A), (d)(2). In promulgating the federal RCRA regulations which are the basis for these State regulations, USEPA emphasized that "all of the residues from treating the original listed wastes are likewise considered to be the listed waste . . . ." 54 Fed. Reg. 1,056, 1,063 (Jan. 11, 1989). Thus, CZO is also considered a listed sludge.

Next, the Board finds that EAF dust and the resulting CZO are being recycled by reclamation. USEPA stated that materials are considered reclaimed if "material values . . . are recovered as an end-product of a process (as in metal recovery from secondary materials)" or if they are "processed to remove contaminants in a way that restores them to their original usable condition." 50 Fed. Reg. 614, 633 (Jan. 4, 1985). Horsehead processes EAF dust via HTMR to remove contaminants and recover CZO. After further treatment of CZO including further removal of contaminants, the resulting zinc materials can be processed into zinc metal or used in animal feed.

CZO is a listed sludge that is recycled by being reclaimed. Therefore, CZO is a solid waste.

Applicability of Section 720.131(c)

USEPA stated that, generally, a waste which is being reclaimed remains a waste until the entire reclamation process is completed. 50 Fed. Reg. 614, 620, 633, 634, 655 (Jan. 4, 1985). Section 720.131(c) of the Board's rules is an exception to this principle. USEPA explains that the federal counterpart to Section 720.131(c) is for those situations in which "the initial reclamation step is so substantial that the resulting material is more commodity-like than waste-like even though no end-product has been recovered." 50 Fed. Reg. 614, 655 (Jan. 4, 1985).

The Board finds that EAF dust that has been processed in the Waelz kiln HTMR units has been initially reclaimed but not fully reclaimed. After treatment in the Waelz kilns, CZO contains much more

[7] A detailed discussion of how materials becomes solid waste can be found at Petition of Chemetco, Inc. for an Adjusted Standard From 35 Ill. Adm. Code. 720.131(a) and (c) (March 19, 1998), AS 97-2, slip op. at 11-12.

zinc that EAF dust contains. In addition, the Waelz kilns decrease the amount of IRM and contaminants such as calcium and manganese. Exh. 1 at 12.

However, CZO requires further processing in order to recover end products. Salts are removed from the CZO that is sent to Horsehead's Pennsylvania facility to make zinc calcine. ZCA blends CZO, zinc calcine, and other materials; sinters these blended materials; and then send them to an electrothermic furnace. The finished products are zinc slabs and zinc ingots. The CZO that Horsehead sends to Zinc Nacional is pelletized and calcined before it suitable as a micronutrient in animal feed.

The Board finds that Section 720.131(c) of the Board's rules is applicable in this case. Once EAF dust has been initially processed in a Waelz kiln HTMR unit, it has only been initially reclaimed, not fully reclaimed.

Section 720.131(c) Factors

The Board must determine whether CZO is commodity-like based on the factors at Section 720.131(c) of the Board's rules. Based on the analysis of the factors below, the Board finds that CZO is commodity-like. The Board addresses each of the factors herein.

The Degree of Processing the Material has Undergone and the Degree of Further Processing that is Required

USEPA has explained the federal counterpart to each of the Section 720.131(c) factors. In explaining this factor, USEPA stated "the more substantial the initial processing, the more likely the resulting material is to be commodity-like." 50 Fed. Reg. 614, 655 (Jan. 4, 1985). In the instant case, the initial processing of the EAF dust begins in the C&B building at Horsehead's Chicago facility where EAF dust is blended with small amounts of other zinc bearing materials and treated in order to provide a uniform composition for the Waelz kiln HTMR units. Tr. at 13, 28-29; Exh. 1 at 7-8, Att. 1. The primary initial processing occurs in the Waelz kilns, where the HTMR process separates out IRM and contaminants from the EAF dust to form CZO. HTMR increases the percentage of zinc from about 15% in EAF dust to nearly 60% in CZO. Tr. at 14; Exh. 1 at 8-9, 12, Att. 1. The primary input into the Waelz HTMR kiln unit is EAF dust, a material that generally cannot be used as a feedstock in zinc production. After treatment in the Waelz kiln HTMR units, two of the resulting products are IRM and CZO. CZO can be used a feedstock in zinc production.

As discussed above, despite the initial processing at the Horsehead Chicago facility, CZO must undergo further processing before it becomes either zinc ingots, zinc slabs, or a micronutrient in animal feed.

The Board need not determine whether all of the subsequent processing constitutes reclamation under RCRA. The Board finds that the processing at Horsehead's Chicago facility which turns EAF dust into CZO is substantial. The Board therefore finds that this factor supports Horsehead's claim that CZO is commodity-like.

The Value of the Material After it has been Reclaimed

USEPA stated that "the more valuable a material is after initial processing, the more likely it is to be commodity-like." 50 Fed. Reg. 614, 655 (Jan. 4, 1985). EAF dust has a negative value because generators typically pay others to take it away. Tr. at 11, 22, 27-28; Exh. 1 at 18-22. Although Horsehead's contract terms for CZO are protected by non-disclosure, at hearing and in its petition Horsehead indicated that CZO is valuable. Tr. at 20-21, 25; Exh. 1 at 2, 21. Horsehead claimed and the Agency agreed that the sales price for CZO is similar to the sales price for roasted zinc concentrates. Tr. at 20-21, 25; Exh. 1 at 21; Exh. 2 at 3.

The Board finds that CZO has significant value.

The Degree to which the Reclaimed Material is Like an Analogous Raw Material

USEPA stated "[i]f the initially-reclaimed material can substitute for a virgin material, for instance as a feedstock to a primary process, it is more likely to be commodity-like." 50 Fed. Reg. 614, 655 (Jan. 4, 1985).

A good deal of processing, notably HTMR, is required before EAF dust becomes CZO. Likewise, a good deal of processing is required before mined sulfide zinc ores become roasted zinc concentrates, which have a constituency similar to CZO. Such processing includes crushing, milling, sequential flotation/separation, dewatering, drying, and roasting. Exh. 1 at 14, Att. 4.

Although they are not identical, both CZO and roasted zinc concentrates are suitable as feedstock for zinc production processes such as the ones described above at ZCA and Zinc Nacional. CZO has the advantage of containing a narrower range of zinc (56% to 61%) than zinc concentrates (48% to 61%) which makes CZO a more predictable and uniform feedstock. CZO contains more salts than zinc concentrates, and, as a result, much CZO is calcined before the sintering step at a zinc refinery. However, zinc concentrates contain more sulfur than CZO, and, as a result, zinc concentrates must be roasted before sintering. Exh. 1 at 16, 24.

The Board finds that CZO is similar to mined zinc concentrates and can be substituted for roasted zinc concentrates in zinc production processes.

The Extent to which an End Market for the Reclaimed Material is Guaranteed

USEPA stated "[i]f the [petitioner] can show that there is an existing and guaranteed end market for the initially reclaimed material (for instance, value, traditional usage or contractual arrangements), the material is more likely to be commodity-like." 50 Fed. Reg. 614, 655 (Jan. 4, 1985).

Horsehead currently has contracts with ZCA and Zinc Nacional for the sale of its CZO. Exh. 1 at 22, Att. 8, Att. 9. Horsehead's CZO is sent either to its facility in Palmerton, Pennsylvania, ZCA, or Zinc Nacional. Horsehead has never stored or stockpiled CZO. Tr. at 20, 24; Exh. 1 at 25. Horsehead either transfers or sells all of the CZO that it produces.

At least a dozen plants all over the world produce hundreds of thousands of pounds of CZO every year. Exh. 1 at 20. Obviously, such large scale production indicates that markets exist for CZO.

In its response to Horsehead's petition, the Agency stated that end markets for CZO appear to be guaranteed. Exh. 2 at 3. The Board agrees and finds that there is an end market for Horsehead's CZO and an end market for CZO in general.

The Extent to which the Reclaimed Material is Handled to Minimize Loss

USEPA stated that "the more carefully a material is handled, the more it is commodity-like." 50 Fed. Reg. 614, 655 (Jan. 4, 1985). When a material is handled to minimize loss, it indicates that the material has value. Loss minimization methods also reduce environmental hazards because they aim to prevent releases of material. Exh. 2 at 3.

All transfer points in Horsehead's Chicago facility have collection equipment and baghouses which allow Horsehead to collect released material and return it to the CZO manufacturing process. Exh. 1 at 7, 8, 26; Exh. 2 at 4; Exh. 3 at 3. Immediately after CZO is produced, Horsehead conveys it from product collectors via a pipe that extends into closed pressure differential rail cars for off-site shipment. These railcars are in an enclosed building. Tr. at 25; Exh. 1 at 18, 26. Horsehead has 24-hour opacity monitors to measure if any gases escape from the product collectors. Alarms alert plant personnel if there is a release, and the affected part of the product collector can be shut down for repairs to minimize further losses. Exh. 3 at 4.

In the event of an accidental release, Horsehead is prepared to clean up any spilled CZO and return it to the recycling process. In the event of a spill, trained personnel would use vacuum trucks, road sweepers, and other equipment to gather the CZO. Any area in which a CZO spill could occur is paved. Paved surfaces allow for an easier and much more complete cleanup of spilled CZO than non-paved surfaces. Tr. at 30-31; Exh. 3 at 4.

The Board finds that Horsehead handles CZO in order to minimize loss.

Other Relevant Factors

BRZ's Adjusted Standard. Horsehead claims that the Board's recently-granted adjusted standard for the Big River Zinc Corporation (BRZ) supports its petition for an adjusted standard. See *In re* Big River Zinc Corporation (April 15, 1999), AS 99-3; *In re* Big River Zinc Corporation (May 6, 1999), AS 99-3. In that adjusted standard, the Board held that the EAF zinc oxide to be received by BRZ for further processing was commodity-like instead of a solid waste. Horsehead claims that the EAF zinc oxide received and processed by BRZ is virtually identical to the CZO produced by Horsehead. Both EAF zinc oxide and CZO are produced from EAF dust in an HTMR process, contain very similar concentrations of zinc, and are used as a primary feedstock in the production of zinc products. Tr. at 8, 26; Exh. 1 at 2, 10, 28, 33, Att. 11; Exh. 3 at 1-2. Furthermore, in the BRZ opinion, the Board examined EAF zinc oxide and engaged in a nearly identical analysis - including

consideration of the factors at Section 720.131(c) of the Board rules - to determine that the EAF zinc oxide that BRZ was to receive and process was excepted from the definition of solid waste. *In re* Big River Zinc Corporation (April 15, 1999), AS 99-3, slip op. at 9-15.

There is one difference between BRZ's petition for an adjusted standard and Horsehead's petition. BRZ is a zinc refinery. It petitioned to have EAF zinc oxide declassified as an input to its production process. Horsehead, on the other hand, is seeking to have CZO declassified as an output of its production process. According to USEPA

> "[a]pplicable regulatory requirements for the waste before initial reclamation are unaffected. The initial reclaimer will thus be a RCRA storage facility, and have to obtain a permit to store the wastes before reclaiming them. If a variance should be granted, however, the recovered material is not a waste and the subsequent reclaimer is not a RCRA facility." 50 Fed. Reg. 614, 655 (Jan. 4, 1985).

In other words, Horsehead is an initial reclaimer and BRZ is a subsequent reclaimer. The Board finds it irrelevant whether the initial reclaimer or the subsequent reclaimer is asking for the adjusted standard. The adjusted standard does not relieve the initial reclaimer from complying with RCRA. Thus, the Board's adjusted standard for BRZ's EAF zinc oxide is a relevant factor supporting Horsehead's contention that CZO is commodity-like.

AmeriSteel Variance. Horsehead points out that in 1998 the Tennessee Department of Environmental Conservation (TDEC) provided AmeriSteel a variance from the definition of solid waste for its EAF zinc oxide product. AmeriSteel supplies this product to BRZ. Tr. at 26-27; Exh. 1 at 30-31, Att. 12. In its petition Horsehead cites a letter signed by the Director of TDEC's Division of Solid Waste Management attesting that AmeriSteel's EAF zinc oxide is granted a variance from classification of a solid and hazardous waste for five years, beginning September 11, 1998. Exh. 1 at Att. 12. TDEC determined that the EAF zinc oxide satisfied the Tennessee regulations for a variance from the classification of hazardous waste. The Tennessee regulations are nearly identical to federal and Illinois regulations. Exh. 1 at Att. 12; Tenn. Comp. R. & Regs. tit. 1200, ch. 1-11-.01(4)(a)(3), ch. 1-11-.01(4)(b) (1999). However, Horsehead does not provide any evidence of TDEC's analysis of Tennessee's regulations. There is no discussion of the factors that Tennessee should have applied in making the variance determination. As a result, the Board will not cite to TDEC's variance for AmeriSteel as a relevant factor.

SCDR Exclusion. Horsehead also states that USEPA excluded a material called splash condenser dross residue (SCDR) from the definition of solid waste. Horsehead claims that this should also be a relevant factor. Exh. 1 at 31; 56 Fed. Reg. 41164, 41173-41174 (Aug. 19, 1991). SCDR is the partially reclaimed small-volume byproduct of certain HTMR processes which use K061 hazardous waste as an input. SCDR is collected from a splash condenser and stored for up to two weeks before being sold to either zinc refiners or reused on-site in the HTMR process. SCDR also contains a significant amount of zinc (50% to 60%). USEPA did not grant a variance for SCDR, but

instead excluded it by rule from the definition of solid waste. In doing so, USEPA applied the federal equivalent of the Section 720.131(c) factors. 40 C.F.R. § 260.31(c); 56 Fed. Reg. 41164, 41174 (Aug. 19, 1991). The analysis, however, is cursory at best. The Board finds that the SCDR exclusion is not a relevant factor.

Conserving Natural Resources. Horsehead correctly points out that recycling EAF dust conserves natural resources by decreasing the need to mine non-renewable zinc ores. In addition, Horsehead's recycling process means that less EAF dust is sent to landfills. Tr. at 27; Exh. 1 at 1, 2, 28, 32, Att. 13; Exh. 2 at 4. Although the Board encourages increased recycling, it cannot be classified as a "relevant factor" because it is not relevant to the determination that CZO is commodity-like.

The Board finds that the only "other relevant factor" which supports the commodity-like nature of CZO is the Board's 1999 adjusted standard for BRZ's EAF dust zinc oxide.

Conditions on the Adjusted Standard

The Board is setting conditions on Horsehead's adjusted standard. The conditions are similar to those placed on BRZ for its adjusted standard. See *In re* Big River Zinc Corporation (May 6, 1999), AS 99-3.

The adjusted standard only applies to CZO produced from EAF dust via HTMR at Horsehead's Chicago facility and only applies to the CZO while it remains in Illinois.

As noted above, Horsehead claims that the EAF zinc oxide that BRZ receives and processes is virtually identical to the CZO that Horsehead produces. As the Board did with BRZ, the Board will require Horsehead to sample and test the material as a condition of the adjusted standard. Horsehead must test the CZO it produces for its percentage by weight of zinc, lead, iron, total gangue materials (silica plus calcium plus magnesium), and chloride. These are the same constituents for which BRZ must test its EAF zinc oxide under its adjusted standard. See *In re* Big River Zinc Corporation (May 6, 1999), AS 99-3, slip op. at 6. As a result, the Board mandates that Horsehead regularly test samples of its CZO for content according to generally accepted practices such as procedures outlined by USEPA. The Board also mandates that Horsehead maintain records of the sampling and test results. This will allow the Agency to assess whether Horsehead is indeed processing EAF dust via HTMR.

The Board wants to ensure that the adjusted standard only applies to CZO that is destined to undergo processing for recovery of an end product at either another Horsehead facility or another entity's facility. In addition, the Board also wants to ensure that Horsehead will not accumulate CZO at its Chicago facility. Section 720.131(c) of the Board's rules only applies to situations in which initial reclamation has taken place and further reclamation must take place in order to recover an end product. Thus, the adjusted standard only applies to CZO that (1) is destined for or has arrived at another Horsehead facility, (2) is under a legally binding contract for sale from Horsehead to another entity, or (3) has been acquired by another entity under a legally binding contract for sale from Horsehead. The Board also mandates that Horsehead maintain records regarding the destination of all CZO that it

produces under this adjusted standard. These conditions are similar to conditions that the Board placed on BRZ's adjusted standard, but have been tailored to the facts of this case.

Horsehead has several options if it objects to the conditions that the Board has placed on its adjusted standard. First, under the Board's procedural rules, Horsehead may file a motion to reconsider with the Board. Second, Horsehead may appeal the adjusted standard to the Illinois Appellate Court. Third, Horsehead may consider CZO a solid waste instead of handling the material under the conditions of the adjusted standard.

CONCLUSION

The Board finds that Horsehead has established that CZO, which is produced by subjecting EAF dust to an HTMR process, is commodity-like. Thus, the Board finds that CZO is excepted from the definition of solid waste. The Board grants Horsehead's petition for an adjusted standard pursuant to Section 720.131(c) of the Board's regulations subject to the conditions set forth in this order.

This opinion constitutes the Board's findings of fact and conclusions of law in thins matter.

ORDER

1. The Board finds that crude zinc oxide (CZO), which is produced by subjecting electric arc furnace (EAF) dust from the primary production of steel (K061 under 35 Ill. Adm. Code 721.132) to a high temperature metals recovery (HTMR) process, is excepted from the definition of solid waste and grants Horsehead Resource Development Company (Horsehead) an adjusted standard pursuant to 35 Ill Adm. Code 720.131(c).

2. The adjusted standard is subject to the following conditions:

    a. The determination described in paragraph one of the order applies only to CZO:

        (1) that has been subject to Horsehead's HTMR process at its facility in Chicago, Illinois and that will undergo further processing for the eventual recovery of an end product;

        (2) that is in Illinois; and

        (3) that will depart or has departed from Horsehead's Chicago facility and that:

            (a) is destined for or has arrived at another Horsehead facility;

            (b) is under a legally binding contract for sale from Horsehead to another entity; or

(c) has been acquired by another entity under a legally binding contract for sale from Horsehead ;

b. Horsehead must maintain records identifying the destinations, including purchasers, of all CZO that Horsehead produces under this adjusted standard;

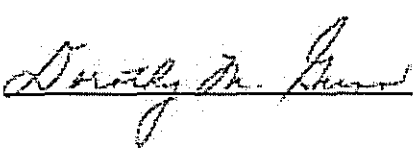
c. Each month, Horsehead must take representative samples of the CZO that it produces. Horsehead may composite the samples. Horsehead must test each sample on a monthly basis to determine the percentage by weight of zinc, lead, iron, total gangue materials (silica plus calcium plus magnesium), and chloride in the sample. Each sample must be collected and tested in accordance with generally accepted practices, such as those specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA Publication No. SW-846 (Third Edition, Updates I, II, IIA, IIB, and III); and

d. Horsehead must maintain records of the information required in paragraphs 2(b) and 2(c) of this order for a period of three years and must make them available for the Illinois Environmental Protection Agency (Agency) to inspect and copy at any reasonable time during normal business hours upon the Agency's request.

IT IS SO ORDERED.

Section 41 of the Environmental Protection Act (415 ILCS 5/41 (1998)) provides for the appeal of final Board orders to the Illinois Appellate Court within 35 days of service of this order. Illinois Supreme Court Rule 335 establishes such filing requirements. See 172 Ill. 2d R. 335; see also 35 Ill. Adm. Code 101.246, Motions for Reconsideration.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 17th day of February 2000 by a vote of 6-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board