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

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

NOVEMBER 28, 1988

Mr. Lee Norman
Industrial Safety and Health Consultants, Inc.
201 North Central Avenue
Humboldt, TN 38343

Dear Mr. Norman:

This is in response to your letter dated July 28, 1988, in which you requested that the U.S. Environmental Protection Agency evaluate a new method/process for recycling spent lead-acid batteries. In particular, you requested a determination as to whether a RCRA permit would be required, given the operational parameters specified in the General Information Booklet you provided.

The Agency has completed its review of the information provided on your recycling process for spent lead-acid batteries. Based on our analysis and the provisions discussed herein, it appears that your process would be operated without requiring a RCRA permit. It is important that you realize, however, that this conclusion is based on the general information you provided, and is not sufficient, in and of itself, to make a site-specific determination on whether you would need to obtain a RCRA permit. For each individual facility, the appropriate Region or authorized State will have to make that determination after evaluating the actual processes and facilities employed. This is particularly true since State programs may be more stringent or broader-in-scope than the Federal program.

In the following paragraphs some general information about regulations governing recycling is provided, followed by a discussion of the wastes or products likely to be generated from the proposed spent lead-acid battery reclamation process. The letter then concludes with a summary of our analysis as to whether a permit would be required based on the hypothetical design and operational information provided.

General Recycling Standards

Under the Resource Conservation and Recovery Act (RCRA), as amended, recycled materials that are defined as solid wastes under 40 CFR 261.2 and hazardous wastes under 40 CFR 261.3 are subject to the standards in 40 CFR 261.6. These recycled hazardous wastes are called recyclable materials and are subject to the hazardous waste generator, transporter, and specific facility standards in 40 CFR 261.6 (b) and (c). Generators, transporters, and facility owners/operators must obtain EPA

ID numbers. Facilities that recycle recyclable material are only subject to the Part 264 and 265 facility standards with respect to storage of the recyclable material prior to recycling. The actual recycling process (i.e., recycling unit) is not regulated unless that process is analogous to land disposal or incineration (50 FR 643, January 4, 1985).

Special Recycling Standards

Some recycling activities are subject to the special recycling standards of 40 CFR Part 266 (see Section 261.6(a)(2)). These recycling activities include using recyclable materials in a manner constituting disposal (i.e., applying the waste to the land or making hazardous waste derived product that is applied to the land), spent lead-acid battery reclamation, burning hazardous waste or characteristically hazardous used oil for energy recovery in certain boilers and furnaces, and precious metal reclamation.

Recyclable materials used in a manner constituting disposal are subject to Part 266, Subpart C, which requires compliance with all generator and transporter requirements, and specific facility standards for storage and reuse. Any accumulation of the recyclable material (i.e., hazardous waste) prior to recycling is subject to 90-day generator accumulation standards for containers or tanks, or facility standards for other storage units. Commercial products used in a manner constituting disposal are not currently regulated if the recyclable materials have undergone a chemical reaction in the course of producing the waste derived product to make the components inseparable and if the hazardous waste derived product meets any applicable treatment standards for hazardous waste constituents as outlined under the land disposal restrictions of 40 CFR 268. Although no chemical bonding occurs in producing fertilizers, they are also exempt provided they meet the Part 268 standards as well. The products must also be produced for the general public's use to be exempt from regulation per 40 CFR 266.20(b).

Spent lead-acid battery reclamation regulations are found in Part 266, Subpart G. Generators, transporters and storers are not subject to regulation under 40 CFR Parts 262 through 266 or Parts 270 or 124 or Section 3010 of RCRA per 40 CFR 266.80(a). However, reclaimers who store batteries prior to reclamation are subject to most facility standards and permit requirements with regard to storage per 40 CFR 261.6(a) and 40 CFR 266.80(b). Generally, the reclamation process itself is exempt from regulation.

Proposed Reclamation Process

Industrial Safety and Health Consultants submitted information to EPA on a proposed lead-acid battery reclamation process. The reclamation process will produce a variety of materials which need to be evaluated under RCRA to determine the applicability of the hazardous waste regulations. All of the materials resulting from this reclamation facility will be either reused/recycled on-site or sold to other users and reclaimers. The applicability of RCRA to these materials is dependent upon how they are classified and managed (i.e., treated, stored, recycled). If any of the materials are not reused or resold for further use or reclamation, a treatment permit will likely be required in addition to the analysis described below. The materials that need to be evaluated include:

(1) Spent Battery Acid
(2) Metal Battery Pieces
(3) Lead Sulfates
(4) Sulfates
(5) Lead Carbonates
(6) Plastic Chips
(7) Furnace Flue Dust
(8) Iron Furnace Slag
(9) Furnace Dross
(10) Molten Lead
(11) Refining Kettle Dust
(12) Refining Kettle Dross
(13) Lead Ingots
(14) Wastewater and Wastewater Treatment Sludge
(15) Dust From Vacuum System
(16) Ammonium Sulfate and Associated Wastes

Based on the description of the reclamation process, it appears that intermediate storage will be needed for metal battery pieces, lead oxides, emission control dust (i.e., K069), and other materials prior to reclamation. It is likely that the 90-day accumulator regulations of 40 CFR 262.34 apply to recycling facilities storing batteries and intermediates. To avoid any requirement for a permit, the owner/operator must accumulate these wastes in tanks or containers no more than 90 days after generation or first subjection to regulation in accordance with the Part 262 generator standards. Some waste materials, however, may not be subject to any standards. If defined as scrap metal or as characteristically hazardous by-products or sludges, these materials are exempt from regulation when reclaimed per 40 CFR 261.6 or are not solid wastes when reclaimed per 40 CFR 261.2(c)(3). With regard to the wastes chemically reacted to produce fertilizer, they must also be accumulated in tanks or containers for no more than 90 days, in accordance with Part 262 standards, to avoid any requirement for a permit.

The key to determining what regulations apply is proper classification of waste materials and processes in accordance with the definitions in 40 CFR 260.10, 261.1 and 261.2. The wastes or products generated from the proposed lead-acid reclamation process and the applicable regulations are discussed below.

Spent Battery Acid

The acid component of the spent lead-acid batteries will be collected, filtered, and accumulated in a tank prior to further treatment and conversion to ammonium sulfate, which will be sold commercially as a fertilizer. Since this acid is a spent corrosive material, is possibly EP toxic, and will be reused in making a fertilizer, it is likely to be subject to the hazardous waste standards of 40 CFR 266, Subpart C. Part 266, Subpart C addresses use constituting disposal and requires notification to obtain an EPA

ID number, compliance with all generator and transporter standards in 40 CFR 262 (which includes a 90 day limit for accumulating the acid in a tank) and Part 263.

If the 90 day accumulation is exceeded before manufacturing the fertilizer, a storage permit would be needed under 40 CFR 264. If the acid is not accumulated prior to fertilizer production, but instead piped directly into the treatment/recycling tank, no generator standards would apply. Only accumulation or storage prior to recycling is regulated, not the actual recycling process or recycling units per 40 CFR 261.6(c)(1). Once the fertilizer is produced, it is not regulated provided it is produced for the general public's use and meets the treatment standards under the land disposal restrictions in 40 CFR 268 for each hazardous waste constituent per 40 CFR 266.20(b) (53 FR 31212, August 17, 1989).

Metal Battery Pieces

The battery reclamation unit referred to as the MA-41 will clean and generate bits and pieces of lead metal from batteries. This metal will be accumulated in containers until it can be used in the refining kettles to produce lead ingots. These bits and pieces of metal would be classified as spent materials since they are derived from spent batteries which are classified as spent materials. The bits and pieces of metal could also meet the scrap metal definition in 40 CFR 261.1(c)(6). In the January 4, 1985 Federal Register (50 FR 624), EPA stated that all scrap metal should be classified the same for regulatory purposes rather than classify some metal as spent materials and some as by-products. Thus, the scrap metal classification should take precedence and its storage prior to reclamation would be exempt under 40 CFR 261.6(a)(3)(iv). If, however, these metal battery pieces are mixed with other wastes that are regulated, the exemption would no longer apply.

Lead Sulfates

The MA-41 reclamation process will generate lead sulfates from the spent batteries. The lead sulfates will be desulfurized and chemically converted to lead carbonate which is dewatered, pelletized, accumulated in a silo, and charged to the smelting furnace to produce molten lead. The lead sulfates are derived from spent materials (i.e., batteries) and therefore are themselves classified as spent materials which, if they are a characteristic hazardous waste, are subject to the generator and transporter requirements of Section 261.6(b), including 3010 notification. Thus, the lead sulfates may be accumulated for 90 days in a tank or container in accordance with Section 262.34. Accumulation for greater than 90 days will trigger the requirement for a storage permit per Section 261.6(c)(1).

Sulfates

Sulfates are produced from the desulfurization of lead sulfates and are classified as spent materials since they are derived from spent materials. These sulfates will be added to the battery acid tank(s) to produce ammonium sulfate, which will be sold as fertilizer. If these sulfates are characteristically hazardous, they are recyclable materials used in a manner constituting disposal and should be treated as previously described for battery acid.

Lead Carbonates

Lead carbonates will be produced as a result of chemical treatment of lead sulfates as mentioned above. These materials are derived from spent materials and so they are classified as spent materials. If hazardous by characteristic, the lead carbonates should be treated as previously described for lead sulfates.

Plastic Chips

The plastic battery casings are spent materials since they are derived from spent batteries. They will be ground and washed in the MA-41 battery reclamation process. If the plastic pieces exhibit a hazardous characteristic, they should be treated as previously described for lead sulfates.

Furnace Flue Dust

The lead dust captured by the air pollution control equipment for the smelting furnace is classified as the listed waste K069, emission control dust/sludge from secondary lead smelting. It will be accumulated in a silo prior to reclamation in the smelting furnace or sold to another reclaimer. Provided the silo meets the definition of "tank" or "container", its accumulation is subject to 40 CFR 262.34 generator accumulation standards. Once the K069 is reintroduced into the furnace, it would no longer be viewed as a solid or hazardous waste because it is considered indigenous to the secondary smelting process and contains no toxic constituents not already present in the normal feed material to the secondary lead smelter (53 FR 31198, August 17, 1988). Notwithstanding, the facility will be considered a generator of K069, and subject to applicable regulations under 40 CFR 261.6(b). If secondary smelting does not occur quickly, so that K069 accumulates for greater than 90 days, the facility will be subject to applicable requirements of Section 261.6(c).

Since K069 is not a solid waste when it is reintroduced into the smelting furnace, any smelting waste (e.g. furnace dross, iron slag) would not be classified as K069 through the "derived-from rule" (id). Such wastes would only be hazardous if they exhibit a characteristic. Even if characteristic, no regulation applies to their accumulation or storage prior to reclamation, because characteristic by-products are not solid wastes when reclaimed per 40 CFR 261.2(c)(3). If these wastes are not reclaimed, they would be subject to all relevant generator, transporter, storage, treatment and/or disposal standards.

Iron Furnace Slag and Furnace Dross

The smelting furnace produces a slag (i.e., by-product) and a lead dross by-product which will be either reused or reclaimed in the furnace or sold to a reclaimer. As discussed above, smelting wastes would not be classified as K069, but may be hazardous by characteristic. Even if characteristic, the slag or dross would not be regulated because characteristic by-products that are reclaimed are not solid wastes per 40 CFR 261.2(c)(3), provided they are not speculatively accumulated.

Molten Lead

The molten lead produced from smelting in the furnace is further refined in the refining kettles. The lead would be classified as a reclaimed product. Reclaimed metals that only have to be refined to be usable are considered products, not solid wastes (50 FR 634, January 4, 1985). Thus, no RCRA regulation applies.

Refining Kettle Dust

The dust captured by the air pollution control equipment associated with the refining kettles would be classified as a sludge per 40 CFR 260.10. If it is collected in the same pollution control equipment as K069, it would be classified as K069 per the mixture rule (40 CFR 261.3(b)(2)). If the kettle dust is segregated from K069, it would be hazardous only if characteristic (e.g. EP toxic for lead). The dust will be stored in a silo prior to charging to the smelting furnace for lead reclamation. Characteristic sludges being reclaimed are not defined as solid wastes under 40 CFR 261.2(c)(3) and are not regulated, unless they are speculatively accumulated. If the dust is comingled with the K069 wastes, however, it is subject to generator standards (i.e., may only be accumulated for 90 days prior to reclamation without a permit). If the 90 day limit is exceeded, a storage permit would be needed.

Refining Kettle Dross

The refining kettles will produce a lead dross or by-product which will either be reused in the smelting furnace or sold to another reclaimer. Since the dross is not derived from K069 and doesn't meet a listing, it would be hazardous only if it exhibits a characteristic. Characteristic by-products are not solid wastes and are not regulated when reclaimed per 40 CFR 261.2(c)(3), unless speculatively accumulated.

Lead Ingots

The products of the refining kettles will be lead ingots which will be sold. The ingots are reclaimed products which are not regulated per 40 CFR 261.3(c)(2)(i).

Wastewater and Wastewater Treatment Sludge

Wastewater from the MA-41 battery component separation and rinsing process may be characteristically hazardous. The wastewater will be filtered and reused along with fresh make-up water. Wastewater treatment units as defined in 40 CFR 260.10, are not regulated per 40 CFR 264.1(g)(6) and 265.1(c)(10). If hazardous, any sludge removed from filtration may be subject to generator, transporter, storage, treatment and/or disposal standards. However, if the wastewater treatment sludge exhibits a characteristic and is reclaimed for metals, it is not regulated because characteristic sludges are not solid wastes when reclaimed (see 40 CFR 261.2(c)(3)).

Dust from Vacuum System

Metal containing dust in the work areas of the facility will be collected by a central vacuum system and air pollution control devices. This dust is a sludge which will be reclaimed in the furnace. If the system collects K069 dust from the lead smelter, the dust would be classified as K069 by virtue of the "mixture rule" under 40 CFR 261.3(b)(2). If, however, this dust is kept segregated from the K069, it would only be hazardous if it exhibits a characteristic. In the latter case, it would not be a solid waste if reclaimed under 40 CFR 261.2(c)(3).

Ammonium Sulfate and Associated Wastes

The battery acid and sulfates from desulfurization of lead sulfates will be chemically treated to produce ammonium sulfate. The ammonium sulfate will be sold commercially as a fertilizer. The ammonium sulfate is a hazardous waste-derived product used in a manner constituting disposal. However, waste-derived commercial fertilizers produced for the general public's use are not presently regulated per 40 CFR 266.23(a) provided they meet the conditions of section 266.20(b) (i.e., any applicable treatment standards under 40 CFR Part 268). If any waste is produced from this fertilizer manufacturing process, it must be evaluated to determine whether it exhibits a characteristic and, if so, may be subject to regulation.

Summary

Based on the information provided by Industrial Safety and Health Consultants on the proposed lead-acid battery reclamation process and associated fertilizer manufacturing activity, if the proposed facility can avoid storing the batteries and avoid accumulation of waste materials in tanks or containers for more than 90 days, only the generator standards in 40 CFR 262 and the 3010 notification might apply. For some wastes exhibiting hazardous characteristics, such as scrap battery pieces, smelter dross and slag, and refining kettle dust/sludge and drosses, no generator standards would apply if these materials are reclaimed on site or even shipped off-site for beneficial reclamation. These characteristic by-products, scrap metals, and sludges are not solid wastes subject to regulation when reclaimed per 40 CFR 261.2(c) (3).

It is important to reiterate that the final determination to whether a RCRA permit is required is both facility specific and the responsibility of either the EPA Regional Office or the authorized State.

If you need additional information or have any questions about any of the above information, please contact me at (202) 475-9715.

Sincerely,

Stephan L. Cochran
Acting Chief, Review Section

FaxBack # 11383