

US EPA ARCHIVE DOCUMENT

**Non Commercial Metal Recovery Systems and Capacities
(Basis: 1993 BRS- Form PS)**

| | | | | |
|---|---|------|------------------|------------------|
| COD082657420 | SCHLAGE LOCK COMPANY | M014 | - | - |
| CTD018695999 | AEROSPACE METALS | M014 | - | - |
| DED002337806 | NVF COMPANY | M014 | - | 34 |
| KSD116030909 | COLT TECHNOLOGY CORPORATION | M014 | - | - |
| MAD001032358 | GLOBE NEWSPAPER CO. | M014 | - | 14 |
| MID047153077 | PRODUCTION PLATED PLASTICS INCORPORATED | M014 | - | - |
| MND006159149 | THE JOHN ROBERTS COMPANY | M014 | - | 6 |
| MND006258115 | JAPS-OLSON CO. | M014 | - | 5 |
| MND985667807 | ADVANCED FLEX, INC. - PLANT 2 | M014 | - | - |
| NED007281728 | LINCOLN PLATING COMPANY | M014 | - | - |
| NED986387041 | SUPRA COLOR LABS INCORPORATED | M014 | - | - |
| NYD986875326 | HERAEUS PMR | M014 | - | 39 |
| PAD005031497 | AMERICAN TINNING & GALVANIZING CO | M014 | - | - |
| PAD014299523 | WEINSTOCK CONESTOGA INC | M014 | - | 1 |
| PAD987377504 | INTERNATIONAL ENVELOPE CO | M014 | - | - |
| VTD001075886 | MERIDEN STINEHOUR PRESS | M014 | - | - |
| ALD000826958 | AUBURN UNIVERSITY | M019 | - | 0 |
| CAD009584210 | CALIF INSTITUTE OF TECHNOLOGY | M019 | - | - |
| CAD982324154 | COMPOSITE STRUCTURES | M019 | - | - |
| CTD002592020 | BEAVER BROOK CIRCUITS INC. | M019 | - | - |
| CTD023869423 | COMPONENTS TECHNOLOGIES, INC | M019 | - | - |
| CTD099762015 | INTERMAGNETICS GENERAL CORP | M019 | - | - |
| CT0572826873 | CT ARMY NATIONAL GUARD BRADLEY BASE | M019 | - | - |
| DED003930799 | E.I. DUPONT CHESTNUT RUN | M019 | - | 1 |
| MIT270012198 | GRAND HAVEN BRASS FOUNDRY | M019 | - | - |
| MND985668227 | PRECISION DIVERSIFIED IND. INC. | M019 | - | - |
| GU9170090022 | USNAVY NAVAL HOSPITAL COMPLEX | M014 | - | - |
| KSD007237241 | BOEING COMPANY, THE | M014 | - | - |
| TOTAL QUANTITY FOR NON-COMMERCIAL FACILITIES | | | 2,361,290 | 1,150,491 |

Chemical fixation increases options for hazardous waste treatment

THE HAZARDOUS AND SOLID WASTE AMENDMENTS (HSWA) to the Resource Conservation and Recovery Act (RCRA) govern the manner in which hazardous materials are managed. Disposing RCRA hazardous wastes on or in the land is no longer an accepted remedial option. This land disposal restriction requires that all listed and characteristic hazardous wastes (as defined by RCRA) must be treated according to specified standards before they are disposed [40 CFR 268.40]. These treatment standards define technologies and concentration limits. Hazardous wastes that do not meet the standards are prohibited from being disposed on land, such as in landfills, surface impoundments, land treatment units, injection wells, and mines or caves.

BY GREGORY J.
INDELICATO
AND GARY A.
TIPTON

The Environmental Protection Agency (EPA) permits land disposal of some hazardous waste streams provided the toxicity or mobility of the specific hazardous constituents has been reduced to required treatment standard concentrations. Such is the case with hazardous wastes exhibiting toxicity characteristics (TCs) as identified in 40 CFR 261.24. Specifically, wastes contaminated with arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver — known as the RCRA metals — fall under the standard.

Given these TC concentration limits, EPA gives generators the ability to choose from several treatment technologies. The standard to which the effectiveness of other treatment technologies for a specific waste is compared is called the best demonstrated available technology.

Remedial options. Treatment generally is the only option for metal-containing listed wastes and wastes that include any RCRA metals in concentrations exceeding the TC treatment standard. There are several non-treatment methods; however, their applicability is limited. These include:

- *Reclassification of the material, followed by disposal.* This involves obtaining a variance to classify the waste as hazardous and dispose it as non-hazardous. Although reclassification is an inexpensive alternative, it is being phased out as variances expire and are not renewed.

- *Disposal in a permitted hazardous waste facility.* The waste is transported as hazardous waste to a hazardous-waste disposal facility, where it is treated and disposed. The advantage of this method is that the waste can be removed from the site quickly. However, the waste still must be treated to meet pre-disposal treatment standards; in addition, transportation, and offsite treatment and disposal of hazardous waste can be costly and increase the generator's risk of exposure to liability.

- *Reclamation and recycling.* As long as the waste contains specific metals in concentrations high enough for recovery, recycling is an attractive option, eliminating long-term liability and reducing the volume of waste generated. However, this method may not be viable if concentrations are not at threshold levels.

Thus, generators usually are forced to treat metal-contaminated waste using an accepted treatment technology, such as solidification and stabilization processes, thermal decomposition, sorbents, osmotic and ion-exchange methods, and flocculation and precipitation.

Solidification/stabilization. This common process treats waste by physically or chemically immobilizing the constituents, diminishing their effective mobility and toxicity. Many solidification and stabilization processes use cementing or encapsulation to immobilize contaminants. A variety of materials — such as portland cement and other calcium-based cements, silicates and other siliceous materials, and even asphaltics and waxes — are used as binders to stabilize the metals, or surround or incorporate the metals in a matrix.

In cement-based approaches, wastes are mixed directly with cement or similar setting materials; the metals then are incorporated and bound in the cement. The pH increases as the cement cures, and most multivalent cations are converted into insoluble hydroxides or carbonates. However, metal hydroxides and carbonates are insoluble only over a narrow pH range; as the curing process continues and pH increases, the solubility of these metal compounds will increase as well.

Another approach is to add a siliceous material with lime, cement, gypsum and other suitable setting agents. Siliceous material includes fly ash, blast furnace slag, and calcium, sodium or potassium silicates. Portland cement and lime are the most commonly used setting agents. Under proper conditions, a reaction will take place between the silica-rich material and the polyvalent metal ions, yielding a weakly bonded metal-silica material.

Various materials generally present in typical waste streams can inhibit the effectiveness of solidification/stabilization; these materials include sulfates, organics (oil and solvents, for example) and many of the metals being treated. The materials prevent or retard the curing process, reducing the strength and durability of the treated waste and increasing the susceptibility for leaching of the contaminants.

Treated wastes also are highly susceptible to changing chemical conditions, such as lower pH. Simple cemented wastes are subject to leaching in the presence of even mildly acidic solutions such as rainwater, thereby rendering the process ineffective for immobilizing the metals. As the matrix breaks down, the encapsulated material will begin to leach. Similarly, the matrix, if not

| C A S E S T U D Y | | | |
|--|-------------------------|----------------------------|----------------------------------|
| Chemical fixation of dewatered sludge from an electronics/specialty parts manufacturer | | | |
| Parameter | Untreated waste (mg/kg) | Treated waste (TCLP: mg/l) | Treatment standards (TCLP: mg/l) |
| Aluminum | 2,610.00 | 0.70 | — |
| Arsenic | 2.93 | <0.01 | 5.00 |
| Barium | 12.00 | <1.00 | 100.00 |
| Cadmium | <0.40 | <0.01 | 1.00 |
| Chromium | 51,800.00 | 1.90 | 5.00 |
| Copper | 20,300.00 | <0.01 | — |
| Lead | 20,300.00 | <0.01 | 5.00 |
| Magnesium | 292.00 | 0.15 | — |
| Mercury | <0.03 | 0.003 | 0.20 |
| Nickel | 1,510.00 | 0.12 | — |
| Selenium | 1.70 | <0.01 | — |
| Silver | 206.00 | <0.01 | — |
| Tin | 643,000.00 | 3.20 | — |
| Zinc | 116.00 | 0.07 | — |

Note: Volume increase was less than 20%.

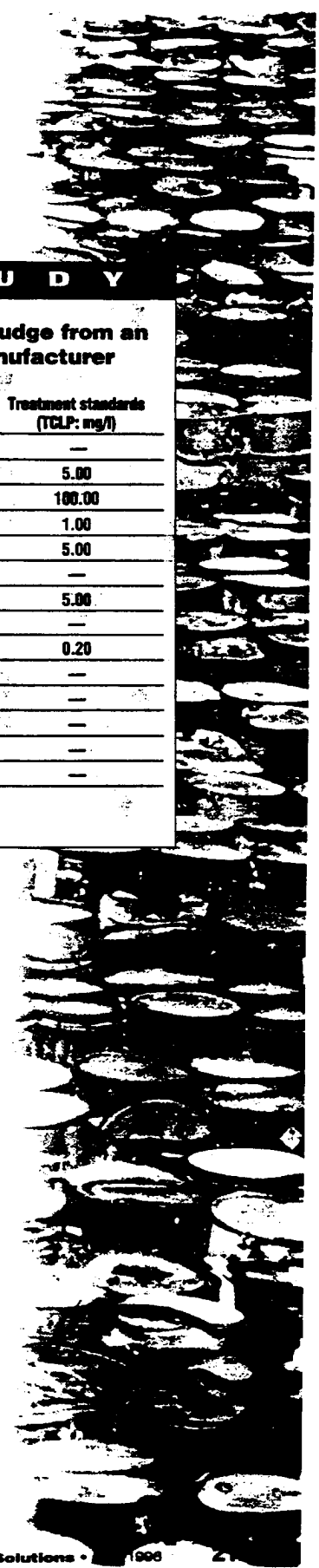
processed properly, can retain a large amount of water that is not chemically bound. This can structurally weaken the final product, making it susceptible to leaching. Over time, the water will migrate out of the treated waste material and, in the process, leach out the metals.

Other solidification processes vary in applicability and effectiveness. Many of the thermoplastic processes — such as asphaltic, bitumen and paraffin-based methods — are costly and have limited compatibility with many waste streams.

These methodologies are enhanced if the contaminants can be chemically stabilized or “fixed” in the molecular structure of the solidified product. The applicability and effectiveness of the various chemical fixation protocols available depend on the nature of the contaminants, their concentrations, the matrix, other metal interactions and interferences, and physical and chemical parameters. These factors must be understood fully to maximize treatment effectiveness.

Chemical fixation. Chemical fixation is a treatment process that employs reagents

CONTINUED



Fixation

designed for the specific contaminant or contaminants in the waste stream. Using the pozzolanic material as a silica source, the metal-affected waste is remineralized as non-leachable metal silicates. The physicochemical reaction process, which involves hydration, sorption, molecular cross-linking and other reactions, ultimately produces a monolithic, calcium-metal silicate material with potentially high structural strength.

Chemical fixation uses predetermined

ical activity of such specific metals as cadmium, mercury and arsenic may need to be stabilized or modified: this is especially true for metals that complex with organics.

Reaction kinetics must be optimized to ensure effective fixation of the contaminants in the waste stream. Several types of reagents can be added to induce and facilitate the chemical fixation process. These include:

- Mixing agents, which facilitate the dispersion of organics and help incorporate the metal(s) into the mixture;
- Inhibitors, which are used to slow hydration reactions so the slower silicate complexing reactions can occur;

added to the waste stream, increasing the viscosity of the mixture. This acts as an effective interparticle lubricant, which accelerates the homogenization of the mixture and simultaneously decelerates the diffusivity of other components in the cementation reaction.

At this point, the calcium oxide and calcium silicates hydrate while other chemicals dehydrate, generating cross-linkage among particles and dehydrated molecules. This helps prevent volume expansion in the solidified mixture. In this stage, the cementation reaction begins to accelerate.

Next, the hydrated calcium silica gel and crystals physically and chemically entrap the contaminants within the solidified matrix. Many of the metal components are incorporated into the crystalline structure through ion exchange, substitution, solid solution and complexing processes. Some fine inorganic particles are encapsulated physically within the macropores and micropores of the silicate matrix, while some metals are absorbed on the surface of the crystals and the particles of the fixing agent. Contaminant entrapment and encapsulation are enhanced naturally by the cage-like structure associated with the previously formed cross-linked molecules.

Finally, the dissolved or dispersed organic components are physically trapped and encapsulated in the macropores and micropores of the solidified mixture matrix, or are absorbed or chemisorbed on the surfaces of these pores through dipole-dipole interaction, London-force attraction or hydrogen bonding. Remaining components are incorporated chemically into the matrix through a variety of processes, which can include complex formation, chemical (covalent) bonding and cross-linkage formation. The process overcomes the tendency of organic waste components to inhibit the cementation reaction.

The solidified mixture produced by this process has much greater density and mechanical strength, which results in substantially lower leaching rates of the final waste product; 28-day, unconfined compressive strengths of more than 4,000 pounds per square inch (psi) have been achieved in some treated organic sludges, with as much as 12,000 psi in non-organic

CONTINUED

| CASE STUDY | | | | | | |
|--|-----------------|---------------------------------|---|-------|--|------|
| Chemical fixation of municipal incinerator ash | | | | | | |
| Metals | Ash mean* (ppm) | Treatment standard (TCLP: mg/l) | Field trial results 24-hour cure (mg/l) | | Field trial results 28-day cure (mg/l) | |
| | | | SW-A1 | SW-A2 | SW-1 | SW-2 |
| Cadmium | 19.65 | 1.00 | ND | ND | ND | ND |
| Chromium | 95.30 | 5.00 | ND | ND | ND | ND |
| Lead | 1,028.00 | 5.00 | 2.30 | 2.00 | ND | ND |
| Nickel | 105.00 | 20.00 | ND | ND | ND | ND |
| Zinc | 1,453.00 | 250.00 | 0.22 | 0.17 | 0.05 | ND |

ND = non-detectable
 *The mean was calculated from samples taken on six different days.
 SW-A1 and SW-1: mixture of 10% fly ash, 90% bottom ash, pozzolans, reagents
 SW-A2 and SW-2: mixture of fly ash, pozzolans, reagents

treatment protocols based on the contaminants in the waste stream. The protocols specify the volumes, concentrations and proper sequencing of proprietary reagents, and emphasize appropriate mixing and reaction times for each step. Special attention is given to matrix interferences and interactions involving metal solubility, such as ionic strength, valence state, redox potential, pH and competing ions. It may be necessary to reduce the toxicity of specific contaminants (for example, hexavalent chromium or cyanide) before chemical fixation takes place. In other cases, the chem-

ical activity of such specific metals as cadmium, mercury and arsenic may need to be stabilized or modified: this is especially true for metals that complex with organics.

Reaction kinetics must be optimized to ensure effective fixation of the contaminants in the waste stream. Several types of reagents can be added to induce and facilitate the chemical fixation process. These include:

- Mixing agents, which facilitate the dispersion of organics and help incorporate the metal(s) into the mixture;
- Inhibitors, which are used to slow hydration reactions so the slower silicate complexing reactions can occur;
- Complexing agents, which facilitate reactions between amorphous silica and the metal contaminants; and
- Accelerators, which increase the rate of the silicate reactions as the inhibitors are consumed.

Next, proprietary chemicals (selected based on the contaminants present) are

Fixation

materials. Characteristically, an increase in the density of a solid indicates diminished permeability, eliminating any substantial mobility of hazardous components within the solidified waste. The increased mechan-

transport of soluble metals constituents are, therefore, minimized.

Chemical fixation advantages.

There are distinct advantages in using this proprietary chemical fixation process:

- It can be used to treat a wide range of waste streams;
- There is minimal increase in the volume of the treated waste; and
- The process is relatively inexpensive.

Unlike many conventional solidification processes, chemical fixation can treat a wide range of waste streams, including complex, multicontaminant inorganic wastes and the typically hard-to-treat, organically contaminated wastes. Waste streams treated successfully by this process include soils contaminated by heavy metals, organically contaminated soils, electroplating sludges, paint-sludge wastes, sandblasting grit contaminated by heavy metals, API separator oils and sludges, petroleum tank bottoms, wastes containing polychlorinated biphenyls (PCBs), asbestos wastes, and incineration ash.

CASE STUDY

Chemical fixation of lead oxide catalyst waste

| Parameter | Untreated waste | Bench scale results | Field test results | Treatment standards |
|-----------------|-----------------|---------------------|--------------------|---------------------|
| Lead (total) | 2,000 mg/l | 0.50 mg/l | 0.79 mg/l | 5.00 mg/l |
| Lead (Pb) | 10.00 mg/l | 0.50 mg/l | 0.79 mg/l | 5.00 mg/l |
| Volume increase | not applicable | -20%* | -15%* | not applicable |

*Negative volume increase reflects decrease in volume because of densification of material through processing and solidification.

Note: Treated waste subsequently was disposed as non-hazardous waste.

ical strength also minimizes the generation of additional surfaces from micro- and macro-fissures resulting from structural failure. Water penetration and the subsequent

Con•fi•dence *n*: faith or belief that one will act in a right, proper, or effective way . . .

(Webster's Ninth New Collegiate Dictionary)

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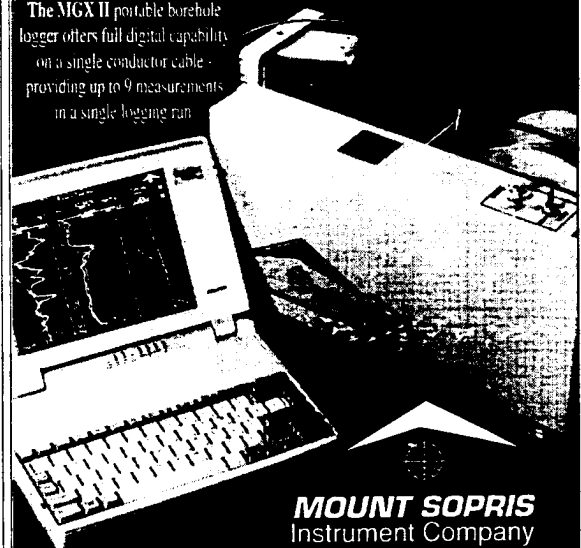
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Mix formulations can be modified to accommodate specific waste streams so that the waste takes an active role in the cementation phase of stabilization. Some wastes even function as chemical reagents, assisting in their own stabilization by contributing to physical hardening, thereby reducing or eliminating permeation and leaching

Chemical fixation can treat a wide range of waste streams, including multicontaminant inorganic and hard-to-treat organic wastes, at relatively low cost and with minimal volume increase.

concerns. Also, by altering the design of the mix, processed waste can be poured as a plastic solid similar to concrete and cast into blocks, super sacks, rolloff boxes and other forms suitable for disposal. The processed waste also can be stabilized into a final state

with a soil-type texture. In either form, low solubility reduces the potential for leaching to a negligible degree. The resulting treated waste yields analytical results below EPA's TC leaching procedures.


Typical solidification/stabilization processes add cement to the mixture, increasing the volume of the waste. Chemical fixation limits volume expansion of the resultant waste material. Because disposal charges at most landfills are based on volume, this translates into significant savings. In one test, a 65-percent organic oily waste sludge that was solidified showed an increase in volume of less than 50 percent. In another test, soil containing PCBs at 30 parts per million was treated with chemical fixation, with a resulting 15-percent volume reduction and a 28-day compressive strength of 3,250 psi. When compared to the costs for treat-

ment and disposal of hazardous waste, treatment processes and subsequent disposal of non-hazardous waste is significantly less expensive.

Chemical fixation can be customized for a facility's specific hazardous waste treatment and disposal program. Years of development and application has resulted in an extensive data base of treatment reactions for metal-contaminated wastes. More than 700 waste streams have been evaluated and successfully treated. More than 400 waste streams have been treated successfully in bench-scale testing, and more than 100 waste streams have been treated in field applications. □

Gregory J. Indelicato is manager of emergency and remediation services for CURA Inc. (Dallas). Gary A. Tipton is an environmental consultant in Houston. Readers wishing to obtain further information on the chemical fixation process can contact Indelicato at 800/486-7117, ext. 220.

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... Jean Moore, Suzanne Wade

FROM: Stephen Schwartz

SUBJECT: Phone Calls to TSDs Who Stabilize D008 and Other
TC-metal Hazardous Wastes

DATE: 13 May 96

At your request I contacted commercial Treatment, Storage, Disposal (TSD) facilities in EPA Regions 5 and 6 in order to determine if they perceived that there would be any problem to stabilize brass/bronze foundry TC-metal hazardous wastes to Universal Treatment Standard (UTS) levels. More specifically, I asked if they could use conventional stabilization technology to treat foundry sand-type D008 (TC for Lead), including the lead and all Underlying Hazardous Constituents (UHCs), to the UTS levels. Further, I requested any treatability data that the TSDs might have to support their contention that they could perform the required treatment. Attached is a list of the TSDs contacted. Also attached are the records of the telephone contacts, including the details of their telephone responses.

Nine TSDs were contacted, seven of which actually performed stabilization of TC-metal wastes, either on-site, or shipped to one of their facilities elsewhere in the country.

Of the two facilities that did not stabilize wastes, one is primarily a Deepwell disposer, and if they received such waste they would subcontract its treatment. The second of the two did not manage foundry-type wastes, or any other bulk solids, but mostly managed drummed waste.

In general, each of the seven facilities that performed the requested stabilization said that they manage foundry sand D008 wastes, or wastes that they believed were similar. Each said that they didn't believe that there were any significant problems in producing the necessary pozzolonic recipe to stabilize the waste in question to all applicable UTS levels, including the lead component. (Most seemed familiar with the UTS requirement for lead of 0.37 ppm TCLP, rather than the current D008 lead requirement of 5.0 ppm.) One facility said they do this type of stabilization to UTS levels routinely, and find no difficulty 90% of the time. (Initially they were only able to hit all UTS levels about 70% of the time, but have since improved.)

ADDRESS/PHONE OF FIRM: Chem. Waste Mgmt 318/582-2169
7170 JOHN BRANNON RD.
CUNYSS, LA 70663
CONTACT PERSON: RENEE DEWITT DATE: 10 MAY

- 1 - Do you receive non-wastewater wastes from brass/bronze foundries? Do you receive similar wastes? If similar, why are they similar?

Typical foundry waste contains fine sand particles contaminated with a few percent lead, zinc, copper.

Yes, they receive brass/bronze foundry wastes & similar wastes

- 2 - If so, do you stabilize these wastes with pozzolonic-type stabilizing agents?

Yes they stabilize w/ cement/H₂O mixtures
each tailored to the client.

- 3 - If so, what typical mix of water/stabilizer/waste do you use?

See above (2)

- 4 - To what TCLP levels are you able to stabilize the BDAT/TC metals? CAN WE HAVE DATA FOR UNTREATED/TREATED METAL CONSTITUENTS? They reach TC & UTS levels ✓

she believes they can meet VHC levels for all metals, even the primary T.C. metals. Won't release data

- 5 - Would you foresee problems in treating these wastes to TC/UTS levels?

See (4) above

--- MULLEN'S ENVIRONMENTAL SERVICES (LA), Inc.
P.O. Box 73877
Baton Rouge, LA 70817 302/426-3164

CONTACT PERSON: FRED GURDESS

DATE: 10 MAY '96

Remed. Ground Colorado 970/386-2293

- 1 - Do you receive non-wastewater wastes from brass/bronze foundries? Do you receive similar wastes? If similar, why are they similar?

Typical foundry waste contains fine sand particles contaminated with a few percent lead, zinc, copper.

STATE/LANDFILL FOUNDRY WASTE IN COLORADO.

TALKED TO COLORADO — THEY DO STAB. BRASS/BRONZE FOUNDRY WASTES & OTHER DOORS

- 2 - If so, do you stabilize these wastes with pozzolonic-type stabilizing agents?

YES USE CONVENTIONAL POZZOL. MIXTURES

- 3 - If so, what typical mix of water/stabilizer/waste do you use?

VARIOUS RECIPES — NOT PROPRIETARY

- 4 - To what TCLP levels are you able to stabilize the BDAT/TC metals? CAN WE HAVE DATA FOR UNTREATED/TREATED METAL CONSTITUENTS?

CAN MEET ALL METAL UTS LEVELS, EVEN LEAD, TYPICALLY LEAD IS NO PROBLEM. WON'T RELEASE DATA

- 5 - Would you foresee problems in treating these wastes to TC/UTS levels?

NO PROBLEMS HE'LL PROVE IT IF WE SEND SAMPLE

NAME/ADDRESS/PHONE OF FIRM: ~~ENVELOPE CORP~~
16435 S. Centre Ave.
Haverly, DE 19126

CONTACT PERSON: ~~DATED~~ REYES

703/576-7040
DATE: 10 MAY 96

↳ He'll have someone call from York, PA

- 1 - Do you receive non-wastewater wastes from brass/bronze foundries? Do you receive similar wastes? If similar, why are they similar?

Typical foundry waste contains fine sand particles contaminated with a few percent lead, zinc, copper.

YES - GET BRASS FOUNDRY WASTES.

- 2 - If so, do you stabilize those wastes with pozzolonic-type stabilizing agents? YES, BUT SOMEWHAT PROPRIETARY

- 3 - If so, what typical mix of water/stabilizer/waste do you use?

See (3) above

- 4 - To what TCLP levels are you able to stabilize the BDAT/TC metals? CAN WE HAVE DATA FOR UNTREATED/TREATED METAL CONSTITUENTS? NO PROBLEM - GET TO SELECTED LEVELS -

NO DATA AVAILABLE.

- 5 - Would you foresee problems in treating these wastes to TC/UTS levels?

See (4) above

NAME OF FIRM: AETS/Chem. Waste Mgmt
1724 69451 Boulevard Rd.
Menomonee Falls, WI 53051

414/255-665

CONTACT PERSON: Alan Kountz

DATE: 10 Mar/96

1 - Do you receive non-wastewater wastes from brass/bronze foundries? Do you receive similar wastes? If similar, why are they similar?

Typical foundry waste contains fine sand particles contaminated with a few percent lead, zinc, copper.

YES THEY GET BRASS FOUNDRY WASTES

2 - If so, do you stabilize those wastes with pozzolonic-type stabilizing agents? ~~STABILIZE~~ / CONVENTIONAL RES. REGR

3 - If so, what typical mix of water/stabilizer/waste do you use?
(see (2) above)

4 - To what TCLP levels are you able to stabilize the BDAT/TC metals? CAN WE HAVE DATA FOR UNTREATED/TREATED METAL CONSTITUENTS? CURRENTLY TREAT DOUG - LEAD TO < 5 ppm TCL. NO DATA AVAILABLE

5 - Would you foresee problems in treating these wastes to TC/UTS levels?
DOESN'T THINK THAT TREATING TO UTS IS A PROBLEM.

ADDRESS/PHONE OF FIRM: HERITAGE ENVIRON. SVCS.
7901 W. MORRIS ST.
INDIANAPOLIS, IN 46231

317/243-0811 x

CONTACT PERSON: DARYL RAY

DATE: 10/11/96

- 1 - Do you receive non-wastewater wastes from brass/bronze foundries? Do you receive similar wastes? If similar, why are they similar?
Typical foundry waste contains fine sand particles contaminated with a few percent lead, zinc, copper.

BECAUSE THEY CAN HANDLE THIS — DON'T KNOW IF THEY ACTUALLY DO HANDLE FOUNDRIES.

- 2 - If so, do you stabilize those wastes with pozzolonic-type stabilizing agents? Use CEMENT TYPE STUFF — USE PUG-MILL

- 3 - If so, what typical mix of water/stabilizer/waste do you use?
CONVENTIONAL — SEPARATE TESTING

- 4 - To what TCLP levels are you able to stabilize the BDAT/TC metals? CAN WE HAVE DATA FOR UNTREATED/TREATED METAL CONSTITUENTS?

TREAT TO F00G CODE LDR VALUES — BECAUSE THEY CAN TREAT — THEY HAVE A MONITOR — NO DATA AVAILABLE

- 5 - Would you foresee problems in treating these wastes to TC/UTS levels?

BECAUSE THEY CAN MEET STANDARDS FOR UTS

NAME, ADDRESS, PHONE OF FIRM: GNE Group (Disposal Systems)
P.O. Box 1914
Dallas, TX 7536

713/930-2588

CONTACT PERSON: BOB GREEN

DATE: 10 MAY 96

WALTER NORRIS

- 1 - Do you receive non-wastewater wastes from brass/bronze foundries? Do you receive similar wastes? If similar, why are they similar?

Typical foundry waste contains fine sand particles contaminated with a few percent lead, zinc, copper.

NOT MUCH FOUNDRY WASTE, BUT DO HAVE SAND BLAST
Pb DEPARTMENT WASTE.

THEY'RE A LOCAL OFFSET. SUPER STABILIZED
STAFF TO CHEM. WASTE MGMT.

- 2 - If so, do you stabilize these wastes with pozzolonic-type stabilizing agents? YES

- 3 - If so, what typical mix of water/stabilizer/waste do you use?

CONVENTIONAL POZZOLINES (FLY ASH, LIGNITE
DUST, CEMENT DUST Fe₂O₃, Fe₃O₄, POLYMER)

- 4 - To what TCLP levels are you able to stabilize the BDAT/TC metals? CAN WE HAVE DATA FOR UNTREATED/TREATED METAL CONSTITUENTS? CAN TREAT - BUT DON'T HAVE DATA TO GIVE.

- 5 - Would you foresee problems in treating these wastes to TC/UTS levels?

BELIEVE THEY CAN TREAT ALL STUFF TO UTS LEVELS
PASS 90% OF TIME.

NAME/ADDRESS/PHONE OF FIRM: Clean Hazards of Chicago
11800 South Elston Ave.
Chicago, IL 60617

312/646-6202

CONTACT PERSON: CNE Doran

DATE: 10 MAY 96

(Sales)
TIM GETCLOFF

- 1 - Do you receive non-wastewater wastes from brass/bronze foundries? Do you receive similar wastes? If similar, why are they similar?

Typical foundry waste contains fine sand particles contaminated with a few percent lead, zinc, copper.

Would stabilize in circumstances - still have someone call me. ←

YES, THEY STABILIZE BRASS/BRONZE FOUNDRY WASTE
(ALTHOUGH SOME ARE NOT TC CONTAMINATED)

- 2 - If so, do you stabilize those wastes with pozzolonic-type stabilizing agents? YES

- 3 - If so, what typical mix of water/stabilizer/waste do you use?

WHATEVER RECIPE WORKS.

- 4 - To what TCLP levels are you able to stabilize the BDAT/TC metals? CAN WE HAVE DATA FOR UNTREATED/TREATED METAL CONSTITUENTS?

WHATEVER CLIENT NEEDS, THEY CAN MEET - BUT
NO DATA AVAILABLE

- 5 - Would you foresee problems in treating these wastes to TC/UTS levels?

NO

**STORAGE, AND DISPOSAL
FACILITIES CONTACTED**

- 1 - GNI Group (Disposal Systems)
P.O. Box 1914
Deer Park, TX 77536

Mr. Warren Norris - 713/930-2588
- 2 - Clean Harbors of Chicago
11800 Stony Island Avenue
Chicago, IL 60617

Mr. Tim Getzloff - 312/646-6202
- 3 - AETS/Chemical Waste Management
W124 N9451 Boundary Road
Menomonee Falls, WI 53051

Mr. Alan Koumtz - 414/255-6655
- 4 - Heritage Environmental Services
7901 W. Morris Street
Indianapolis, IN 46231

Ms. Darcy Ray - 317/243-0811 ext.1483
- 5 - Envirite Corp.
16435 S. Center Avenue
Harvey, IL 60426

Mr. David Reyes - 708/596-7040
- 6 - Rollins Environmental Services (LA), Inc.
P.O. Box 73877
Baton Rouge, LA 74137

Fred Gurdess - 302/426-3168 &
Richard Grondan - 970/386-2293 (Colorado facility)
- 7 - Chemical Waste Management
7170 John Brannon Road
Carlyss, LA 70663

Ms. Renee Dillion - 318/583-2169
- 8 - Treatment One
5743 Cheswood
Houston, TX 77087

Ms. Shiela Armstrong - 502/327-8860 (Louisville, KY facility)

**THEY DO NOT HANDLE BULK SOLIDS, INCL. FOUNDRY SAND
WASTES.**

Waste Service Company
P.O. Box 709
Texas City, TX 77592

Ms. Tracy Holister - 409/945-3301

DEEPWELL FACILITY. THEY WOULD SUBCONTP
NONWASTEWATERS.

MEMORANDUM

TO: The RCRA Docket
SUBJECT: Capacity-Related Information
DATE: May 23, 1996

DRAFT

Participants:

Anita Cummings, EPA/OSW
Mike Petruska, EPA/OSW
Kevin Igli, CWM
Mitch Hahn, CWM
Paul Borst, EPA/OSW
Mary Cunningham, EPA/OSW
Jim Buchert, Versar
C. Pan Lee, EPA/OSW
Jose Labiosa, EPA/OSW
Steve Silverman, EPA/OGC
Sue Slotnick, EPA/OSW
Jim Thompson (Phone), EPA/OECA

This meeting note mainly summarized the capacity-related information. (For treatment issues, please refer to meeting notes prepared by Versar for Waste Treatment Branch.) CWM provided treatment data (CBI) to EPA. They stated that industries are generally lack of data for UHC in the wastes streams. They will provide volume data for the 20 to 30% of total waste streams received which are subject to additional treatment if they have to meet the proposed UTS for some of TC metals. Another 5 to 10% (in addition to 20 to 30%) of currently approved waste streams will not be able to meet the proposed UTS even with the development of new recipes.

CWM's current stabilization capacity of 500,000 tons per year is provided by their facilities in (1) Emelle, AL; (2) Kettleman City, CA; (3) Arlington, Or; (4) Model City, NY; (5) Fort Wayne, IN and (6) Menomonee Falls, WI. They are not currently using stabilization capacity maximally.

Attached please find a copy of meeting notes prepared by Versar for OSW/WTB.

**DRAFT SUMMARY OF MEETING WITH REPRESENTATIVES OF CHEMICAL
WASTE MANAGEMENT (CWM) TO DISCUSS COMMENTS AND DATA RELATED
TO PHASE IV**

May 23, 1996, 10:00 - 12:00
2800 Crystal Station
Arlington, VA
2nd Floor, Costale Room

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ATTENDEES: See Attachment 1

The following summarizes the issues that were discussed at the May 23, 1996 meeting between EPA and CWM representatives. This narrative does not provide a verbatim account of the meeting, and for the purposes of clarity and continuity, items are sometimes not presented in the order in which they were discussed.

The purpose of this meeting was for EPA and CWM representatives to discuss comments and additional data regarding the Proposed Phase IV rule (proposed treatment standards for characteristic metal wastes). The primary concerns expressed by CWM were treatment of wastes that (1) have problems meeting current LDRs; (2) have more than one metal contaminant; (3) contain arsenic, lead, or selenium; and (4) have low levels of contamination. CWM also expressed concerns about the perceived inconsistencies between RCRA and TSCA and the HWIR and Phase IV rules.

After copies of the meeting agenda (attachment 2) were distributed, CWM began with a few opening comments: The comments submitted by CWM were based on a survey of their technical managers. Additional data were provided by CWM that backs up their comments with real waste stream data. In general, CWM lacks data for UHCs, because there have been no previous regulatory drivers requiring generators to test for these constituents in their wastes.

CWM asserted that from a policy standpoint, the Phase IV proposal does not make sense. For example, concerns were raised regarding scenarios such as the following: if a waste is characterized as D008, it will need to be treated for UHCs, but if a similar waste had the same UHCs at higher concentrations, but did not contain lead, it may not be hazardous, and therefore, could be sent to a Subtitle D facility without treatment. Because it fails TCLP for lead, the first waste pulls the organics into Subtitle C. CWM also mentioned the current EPA policy which states that a hazardous waste with metals cannot be burned unless it contains organic UHCs above the UTS levels. If the UHC levels are barely exceeded, incineration may not be appropriate, but it is allowed.

CWM stated that the current system is working fine, and wondered what value was added by the proposal. The UHC requirement complicates the waste characterization process when generators use their knowledge of the characteristics of the waste stream; at low UHC levels,

the generators would just be guessing. Currently, no one can certify that the UHCs are not in the waste.

Sometimes decharacterized waste is sent to a Subtitle C landfill. (The changes to 40 CFR 258 have resulted in better construction of Subtitle D landfills, and the design standards are much closer to Subtitle C than before.)

Agenda items 1 and 2: Applying UTS and UHCs to Characteristic Metal Wastes

CWM stated that their technical managers provided their data quickly, and more may be available. They also stated that when, for example, D008 is treated, treatment is halted when the concentration of the lead in the waste is below the characteristic level of 5.0. Sometimes the TCLP result may be lower than 5.0, but CWM has not tried to reach 0.37, and although they have achieved this level on some occasions, they do not know if it can be reached on a regular basis. Typically, the waste will carry multiple waste codes, and interaction of the metals will interfere with the test results (e.g., low lead leachate, but high chromium leachate levels). CWM indicated that they need to examine the waste streams individually, and determine what new (and possibly cheaper) reagents they need to add to meet the UTS. CWM referred to their original comments where they stated an estimated cost of about \$1,000 per waste profile to do this. They mentioned that one of their facilities recently examined different profiles and determined that the cost of changing their stabilization recipes increases the treatment cost by about 32 percent. CWM estimates that about 70 to 80% of the waste that they currently treat can meet UTS without additional cost.

The current CWM treatment capacity is 500,000 TPY, but "20 to 30 percent" of this will require a new treatment recipe to meet the UTS for D004 through D011 wastes. The recipe for a batch stabilization is specific for that batch and is determined on a case-by-case basis. CWM tries different recipes in the lab, and then scales up the process. Treatment is verified at each step in case the original sample was not representative of the waste.

CWM disagrees with EPA's positions that (1) treating to meet the characteristic level does not exempt a waste from RCRA, and (2) even though there is good treatment now, it should be modified if there is better treatment. When treating for metals to UTS, there can be other changes to the wastes characteristics (e.g., solubility) that may effect its treatment. Problems can occur when treating at low ppm levels. For example, when the standard is 0.5 ppm and a waste has been treated to 0.75 ppm, re-treatment with bulk reagents can lead to incidental dilution. (Multiple facilities use a back hoe and a pit to do stabilization.)

CWM believes that pre-treatment is too costly, and competition is already difficult. EPA believes that pre-treatment to homogenize wastes should not be cost prohibitive, because, based on the reaction kinetics, treatment would be ineffective without it. Sometimes pre-treatment (e.g., crushing) is done to facilitate the process. Sometimes problems such as different particle sizes, or a "sticky" clay matrix can require pre-treatment.

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Problem wastes include those that contain arsenic, lead, and selenium. Treatment of wastes containing selenium is a consistent problem, especially as an UHC. Sometimes lead is a problem, but CWM can normally treat to meet UTS most of the time. Treating for more than one metal at a time is a problem. Results depend on the interaction of the metals in the waste.

In addition to the "20 to 30 percent" of wastes that are difficult to treat, CWM indicated that 5 to 10 percent are "untreatable." CWM was unsure of the characteristics of these wastes (data and information was not presented at the meeting). EPA is interested in a breakdown (i.e., soil, debris, process) of these wastes. CWM uses the alternative standards for debris, and generally segregates "problem" wastes such as those that contain arsenic and selenium.

When asked about the co-mingling of wastewaters that generate a sludge, and whether the stricter standards will lead to source segregation, CWM stated that they did not believe so. Rather than installing a second tank, CWM believes an electroplater will send the waste to a treater to get rid of the problem before 90 days. They believe that generators will keep looking for a TSDF to solve their problem, such as sending wastes to Stabilex and Laidlaw in Canada, and that generators will treat the waste themselves only in an exception. In general, generators call a TSDF for large one-time wastes, and focus on minimization of continuous process waste.

The CWM waste treatment database (comprised of 6 years of data from all of their sites) may not contain information on trying to treat selenium to lower levels, because CWM only tries to meet the current BDAT levels. CWM stated that the TCLP for selenium in a waste may not change, even when the treatment process recipe for that same waste is modified. Treatment of wastes containing beryllium was not included as part of CWM's data submission, but they could look into it if necessary.

Agenda item 3: May 10, 1996 NODA

- **Organic UHCs**

CWM does not have much data on organic UHCs except for PCBs treated in conjunction with metals. TOC data is also not available because the generators do not provide it, and CWM does not ask for it. For example, additional TOC information may be requested if organics are identified on a waste profile as present at significant concentrations (e.g., one percent). In general, there is no analytical data to back this value up. CWM does not request halogen analysis for wastes to be stabilized. When their database was queried, only a few examples were found. Previous CWM comments to EPA regarding organic UHCs were guesses, based on their PCB data. CWM conducted stabilization tests in 1985 on low level (1%, 2%) organics, and may have some data (CWM did not have the data at the meeting, and would need to retrieve it from their database).

CWM asserted that treating foundry sands is not a problem if the levels of organics are known. Treating foundry sands with TC level metals can be a problem. CWM asserted that when treating a waste, they need to consider how the level of organics will effect the treatment. They

also examine the level of interference of the constituents, and the effect that these constituents (especially organics) have on liners.

Regarding treatment with organically modified clay, CWM has not reviewed this process yet, but has tried organic oxidation and stabilization (same principle), and submitted their data to EPA. The data show that the treatment does not work well. When the waste is stirred, organics are volatilized. When cement is added, heat is generated, and more organics are volatilized. Even low levels of organics will be volatilized, and these organics are not easily captured.

EPA is examining the following scenario: if a waste meets the UHC standard, then it automatically meets the Subtitle CC standard (i.e., Air Emission Standards for TSDFs). EPA is looking for data that correlates UHC concentrations to the 40 CFR Part 264 Subtitle CC (i.e., Air Emission Standards for TSDFs) action levels, and if the above scenario works in both directions. CWM commented that it would primarily depend on the efficient operation of the stabilization technology. Subtitle CC air emission controls could cover the VOCs that were driven off during treatment, but adequate capture may be a problem. Particulates are captured, but VOCs are a problem because of the huge air volume.

When asked which organic UHCs are most likely to be found in wastewater treatment sludges, CWM stated that they do not have data for plating sludges with low levels of organics because their waste profiles do not always have this information. This may be asked of their customers if the new rule is promulgated. Treated F006 and F009 wastes have not been tested for phthalates, etc., and CWM does not know if they are present. EPA suggested that a generator would know what was in a solvent used in cleaning operations, or the plant engineers should have a feel for this data. CWM suggested that the electroplaters trade association might know this information.

To determine the volume of UHCs and the levels of UHCs in wastewater treatment plant sludges, CWM could only give an educated guess, from the information in their database. This would tell them where to look in the future. Surveying their managers and doing a database query would take a couple of weeks.

CWM data for D012 through D043 wastes has some metals information, but not much on UHCs. EPA wants to get an idea of what is in the waste (e.g, phthalates, solvents, etc.). To accomplish this, the CWM database can be queried by company name, process name, waste code, etc., and after input from their technical managers, CWM could extrapolate a response.

The "order of magnitude" test for organics was recommended by CWM technical managers as an approach to alleviate the problem of wastes with low levels of organics (but CWM has no data to support this).

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- PCBs

Last year CWM stabilized 46,000 tons of D004 through D011 wastes with TSCA levels of PCBs. TSCA allows land disposal of "solid" PCBs in a TSCA cell without incineration. There is substantial data to support that "solid" PCBs stay in place once stabilized. RCRA requirement to incinerate may be counterproductive. CWM indicated that the levels of PCBs in the waste they treat are so high that even the order of magnitude solution could not solve this problem. CWM expressed concerns over inconsistencies; TSCA allows land disposal, and treating the UHCs of metal wastes will require incineration. TSCA landfill standards are only slightly different than RCRA standards. CWM suggested that the TSCA standards are sufficient for the PCBs and the metals would be treated.

- Petroleum contaminated media

CWM requested clarification of the 261.4 exclusion for UST corrective action wastes:

Q: If a waste is characterized as D008, the proposal requires treatment for UHCs (e.g., benzene) that seem to be excluded under 40 CFR 261.4. What is the purpose of the exclusion?

A: The exclusion is for hazardous waste identification purposes only. If a waste is hazardous for any other reason, the exclusion is void, and the waste is subject to all RCRA provisions, including LDRs.

- Costs associated with change

Paul Borst/EPA asked if UHC standards would lead to exports or waste minimization, rather than incineration. The answer will depend on economics (currently, incineration can cost from \$1,300 to \$1,400 per ton). Paul will follow-up with CWM to discuss the nature and types of wastes where the proposal has more than a moderate cost impact.

- Environmental reasons for change in light of HWIR

CWM expressed concerns about how the HWIR rule may be in conflict with the Phase IV rule; that the Agency seemed to be going in opposite directions in terms of stringency.

EPA is constrained because of the consent decree. Also, HWIR is based on total concentrations, and Phase IV is based on TCLP concentrations. CWM was asked if they knew of any obvious wastes that would be covered under the Phase IV rule, and be exempted by HWIR. CWM data is TCLP-based. They do not have much information on the relation of totals to TCLP results. Generally CWM does not run a total analysis on untreated waste.

CWM discussed the issue of contingent management and risk. LDRs are not required to be met if placed in a low risk area. A risk model on a properly designed Subtitle C landfill in a dry climate might indicate that not much treatment is required for waste disposal. This changes if

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the area is subject to high precipitation. Similarly, CWM is intrigued because wastes can be delisted at higher than BDAT levels, because delisting is based on risk.

- **Lead-bearing Smelter Wastes (Slag from lead-acid batteries)**

CWM requested clarification of an issue in the May 10, 1996 NODA.

Q: If a battery is smelted to meet the LDRs, does the slag require further treatment?

A: If the slag is characteristic, all other non-LDR requirements must be met. The slag must be sent to a Subtitle C unit or treated to non-characteristic levels, and then sent to a Subtitle D unit. The waste has met the LDR treatment standard, and the residue does not need to be treated further for Subtitle C disposal.

At the end of the meeting the following Action Items for CWM were discussed:

- **Provide break-out (media, process, etc.) of the 20 to 30% of wastes that need to be re-tested.**
- **Provide break-out (media, process, quantities, etc.) of the 5 to 10% of wastes that need are "untreatable."**
- **Provide list of industry wastes that CWM expects will have UHCs and organics. Include corresponding SIC codes if possible.**
- **Provide data on testing of organics and interference problems.**
- **Provide information on foundry sands. Include data for organics and metals, and provide treatment costs and volumes.**
- **Provide data on treatment of Selenium wastes (treatment recipe is CBI)**

CWM expects to have all information to EPA by June 17. CWM will call Anita Cummings with a tentative schedule for individual items.

Attachment 1: List of Attendees

Anita Cummings, EPA/OSW/WTB
Mike Petruska, EPA/OSW/HWMMD
Kevin Igli, CWM
Mitch Hahn, CWM
Paul Borst, EPA/OSW
Mary Cunningham, EPA/OSW/WTB
Jim Buchert, Versar
C. Pan Lee, EPA/OSW/HWMMD
José E. Labiosa, EPA/OSW
Steve Silverman, OGC/EPA
Sue Slotnick, EPA/OSW
Rhonda Craig, EPA/OSW
Jim Thompson, EPA/OECA (via Phone)

Attachment 2: Meeting Agenda

EPA/Chemical Waste Management

May 23, 1996

Agenda

- 1. Applying UTS to Characteristic Metal Wastes**
- 2. Applying UHCs to Characteristic Metal Wastes**
- 3. May 10, 1996 NODA**
 - Metal UHCs**
 - Organic UHCs**
 - Inorganic Combustion Policy**
 - PCBs**
 - Petroleum contaminated media**
 - Costs associated with change**
 - Environmental reasons for change in Light of HWIR**
 - Lead-bearing Smelter Wastes (Slag from lead-acid batteries)**

Appendix A-5

DRAFT SUMMARY OF MINUTES OF APRIL 30, 1996 MEETING OF EPA AND
REPRESENTATIVES OF LEAD RECOVERY FROM BATTERIES

April 30, 1996, 1:00 - 2:00 p.m.
2800 Crystal Station
Arlington, VA
2nd Floor, Conference Room B

ATTENDEES

Mary Cunningham, EPA/OSW/WTB
Michael Petruska, EPA/OSW/HWMMD
C. Pan Lee, EPA/OSW/HWMMD
Anita Cummings, EPA/OSW/WTB
Suzanne Wade, Versar
Robert Steinwurz, Swidler & Berlin/ABR
Susan Panzik, S&B
Jean Beaudoin, JCBGI/BCI
Jack Waggener, RCI
Charles M. West, RCI
Katie Champon, WBN

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Introduction

The purpose of this meeting was for EPA and representatives of lead recovery from batteries (Association of Battery Recyclers, Resource Consultants Inc., and Battery Council International) to discuss proposed treatment standards for lead characteristic wastes. Mary Cunningham opened the meeting by explaining the historical background for setting treatment standards under the Land Disposal Restrictions (LDR) Program. For listed waste codes, residuals carry the waste code forever, unless the waste is delisted. After treatment to the LDR levels, listed wastes may be placed in a Subtitle C landfill. For characteristic wastes, residuals are considered characteristic until they no longer exhibit the characteristic of hazardousness. For wastes treated by recovery of lead, residuals may be placed in a Subtitle D landfill if the lead concentration in the leachate is less than the TCLP limit. If this standard is not met, the characteristic waste could be disposed of in a Subtitle C landfill or undergo further treatment until it no longer exhibits the characteristic of hazardousness, at which time it could be placed in a Subtitle D landfill.

Discussion

The following questions, concerns, and issues were discussed:

1. Universe of wastes treated by recovery of lead

EPA: What other types of wastes are treated with battery wastes? (Cunningham) What are the underlying hazardous constituents? Do the characteristics of the slag

remain the same (no substantial differences) when other wastes are added to the treatment process? (Petruska)

Ind.: Believes the main issue is slag (residuals). If other wastes are going into the blast furnace, are they also "treated" by "recovery of lead"? Feedstock includes Appendix 11 list constituents (lead materials from various industries). (Steinwurzlel)

Conclusions: Based on limited information, EPA could state that the primary waste treated is lead and that other wastes do not appear to significantly change the characteristics of the slag. EPA could ask for public comment on this issue in the Notice of Data Availability (NODA).

2. Lead-contaminated soil and other non-smelter D008 wastes

Ind.: How is lead-contaminated soil to be managed? (Steinwurzlel) How are other D008 wastes to be managed that don't go through smelters, such as remedial wastes, building debris, soil and debris. Industry has data on 7 sites for mobile, commercial excavation plus stabilization (pug mill or phosphate stabilization). It was stated that these wastes usually go to Subtitle D landfills after treatment or are capped in place. (Beaudoin)

EPA: In the Phase II Rule, all available data was evaluated when UTS was promulgated. Limited data and comments were received, so the Agency went forward with UTS based on the available data. It was the Agency's belief that existing stabilization processes (as evidenced by the data) are not optimized for the lower UTS levels, so these stabilization data may not be reflective of actual capabilities. (Cunningham) EPA believes stabilization can achieve lower levels, but there is little supporting data. When the Phase II Notice was published, little feedback was received to suggest that characteristic lead wastes are substantially different from metal wastes in EPA's database and couldn't meet UTS. EPA's position with respect to characteristic soil is that it is substantially different from the metal wastes in EPA's database, so it is assigned case-by-case standards. (Cunningham)

Conclusion: EPA: If there is limited capacity, implementation of the rule for these metal-bearing waste streams could be deferred. Otherwise case-by-case standards could be allowed until the HWIR Media Rule is in place. Alternatively, a generic variance could be used. (Petruska)

Ind.: ABR would prefer to defer implementation and maintain the characteristic level of 5 ppm as the standard until HWIR goes into effect. Cleanup limits for Superfund sites include characteristic levels and site-specific standards (ARARs). It was noted that cleanup is usually under state supervision, so more stringent limits may be imposed. (Steinwurzlel)

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3. Additional treatment of secondary lead

EPA: What types of treatments are used for secondary lead (after recovery of lead)? East Penn. runs their lead waste through a reverberator repeatedly until it is non-hazardous (i.e., passes TCLP test for characteristic metals). (Petruska)

Ind.: Usually stabilization or further HTMR is used for secondary lead treatment.

Conclusion: See ABR response above.

4. Capacity issues

EPA: Pan Lee is working on capacity issues. Large quantity remediation sites sometimes treat onsite for economic reasons. Mobile, commercial stabilization units are more commonly used. Regions 4 and 10 rejected soil washing as a viable option for most lead-contaminated soil because it only works reliably on sandy soil. Pan Lee noted that LDRs are not in effect if the treatment is in-situ, for example, if surface contamination is present, then chemicals can be plowed into the soil for treatment. It is believed that less than 10 percent of stabilization sites use insitu treatment. (Pan) For abandoned sites it is more economical to do ^{treatment} (stabilization) than ~~(run the waste through furnace again)~~ ^{sent to incinerator}. It may be feasible to run the waste through the furnace at RCRA corrective action sites, if there is an operational furnace present. (Petruska)

Ind.: Industry has data on 7 sites for mobile, commercial excavation plus stabilization (pug mill or phosphate stabilization). It was stated that these wastes usually go to Subtitle D landfills after treatment or are capped in place. (Beaudoin) Dozens of Superfund sites involved. Can get lower numbers than characteristic, but not to UTS. Smelters with RCRA Part B permits doing Corrective Action. LDR still applies to corrective action. (Steinwurz)

Conclusion: Analysis needs to be completed to determine capacity. Not a problem for existing standard, but may be for UTS (see next issue).

5. Capacity of processes to treat below 5 ppm for lead

EPA: ~~What~~ is the capacity of stabilizers treating to below 5 ppm? Some can do it but not all. This could be capacity problem for treatment levels below 5 ppm for lead.

Ind.: Stabilization process is limited by chemical reactions. Not necessarily better to add more of everything. Must be tailored for each site. Some variability must always be expected. Approximately 3 ppm is probably the best consistent target. (West) Feedstock is variable also. (Beaudoin)

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Conclusion: There are probably no capacity problems unless the lead standard is changed to 0.37 ppm, then there could be some problems. The issue of whether to use a variance or an alternate plan is still under consideration.

6. Proposal for contingent management options

Ind.: The idea was introduced for an alternative LDR for generated lead if it can be proven that the lead does not leach. The industry would like to get away from the treatment emphasis on secondary lead and instead try a contingent management scenario like monofills instead of Subtitle C. (Steinwurtzel)

EPA: HWIR may be an appropriate rule to incorporate this type of idea. (Petruska)

Conclusion: See EPA response above.

7. Underlying hazardous constituents

Ind.: Would underlying hazardous constituents (UHC) have to meet BDAT levels? (Champon)

EPA: Flexibility is decreased by specifying treatment method, but then limits are not needed for other constituents. Treaters would only have to meet characteristic level.

Conclusion: See EPA response above.

Closing/Summary

The Notice of Data Availability is scheduled to go out next week. June 30 is the deadline for the rule. Industry does not plan to submit additional data. A videotape of the lead recovery process was provided to EPA.

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