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U. S. Department of Energy
Los Alamos Area Office, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
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Date: September 5, 1996
Refer to: EM/ER:96-466

Mr. Benito Garcia
NMED-HRMB
P.O. Box 26110
Santa Fe, NM 87502

SUBJECT: GENERATOR TREATMENT NOTIFICATION AND REQUEST FOR A 30-DAY EXTENSION FOR STORAGE AT TA-33

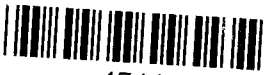
Dear Mr. Garcia:

The Los Alamos National Laboratory and the Department of Energy (DOE) are submitting a Waste Analysis Plan (WAP) as required by the New Mexico Hazardous Waste Management Regulations [20 NMAC 4.1, Subpart VIII, Part 268.7(a)(4)]. The Laboratory intends to conduct generator treatment in a <90-day container storage area. The Laboratory will stabilize contaminated media-mixed waste soil that was unexpectedly generated during a corrective action being conducted by the Environmental Restoration Project at Technical Area (TA) -33.

Upon your concurrence of this WAP, the Laboratory is prepared to immediately implement these activities. Additionally, the Laboratolry is requesting a 30-day extension for storage of the mixed waste at a <90-day storage area located in TA-33. The Laboratory intends to complete all treatment completed within the 90-day time frame; however, the Laboratory believes it is prudent to request an extension in case unforeseen events arise, such as delayed receipt of analytical data. The regulatory citation for this request is found in the New Mexico Hazardous Waste Management Regulations [20 NMAC 4.1, Subpart III, Part 262.34(b)].

The Laboratory is required to investigate and remediate areas of contamination under the Resource Conservation and Recovery Act (RCRA) Corrective Action portion of our RCRA Hazardous Facility Permit. A pile comprised predominately of metal and soil was removed this summer as part of a DOE-approved voluntary corrective action (VCA) plan at Potential Release Site (PRS) 33-010(b). The VCA was anticipated to generate scrap metal and soil contaminated with low levels of metals, as sampling data from the PRS indicated. The contaminated soil was removed from the PRS and placed into containers, which are stored at a <90-day storage area at TA-33. Analytical data of the containerized soil indicates that the soil exhibits the characteristic of toxicity for lead and cadmium.

A RCRA <90-day storage area was established on August 21, 1996, when it was discovered the remediation waste was RCRA hazardous waste. However, the actual waste generation date was July 26, 1996, when more than 55 gallons of waste was generated. The 90-day storage clock ends on October 24, 1996. If NMED grants the extension requested, the waste may be continued to be stored at TA-33 until November 23, 1996. All containers are properly labeled and managed and present no threat to human health or the environment. The containers will stay at their current location until they are treated via stabilization.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Thank you for your cooperation on obtaining a 30-day extension for the 90-day storage limit for the waste at TA-33. If you have any questions or concerns regarding the generator treatment or storage, please contact Michelle Cash with the Hazardous and Solid Waste Group at 665-0223.

Sincerely,

Jorg Jansen, Program Manager
LANL/ER Project

Sincerely,

Theodore J. Taylor, Program Manager
DOE/LAAO

JJ/TT/el

Enclosure: Waste Analysis Plan for Metal-Contaminated Soil

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Waste Analysis Plan

for

Metal-Contaminated Soil

Treated in <90 Day Storage Area 1488

Generator:

Los Alamos National Laboratory

Environmental Restoration Project

Field Unit 3

August 28, 1996

Introduction

This waste analysis plan (WAP) presents information on the chemical and physical nature of mixed waste to be treated in the <90-day storage area at Los Alamos National Laboratory's (LANL) Technical Area (TA 33), East Site. This plan fulfills the requirements listed in Title 20 of the New Mexico Administrative Code, Chapter 4, Part I (20 NMAC 4.1), sSbpart VIII and 40 CFR 268.7(a)(4) that a generator treating prohibited wastes (regulated under 20 NMAC 4.1, Subpart III and 40 CFR 262.34) in tanks or containers must develop and follow a written plan.

The waste to be treated is composed primarily of soil but also contains metal fragments. It was generated during the Voluntary Corrective Action (VCA) clean up of a canyon-side disposal area at Potential Release Site (PRS) 33-010(b). The metal fragments are residues from a mass of scrap metal that was removed from the PRS. Soil containing metal fragments around the former location of the scrap metal was removed from the disposal area, containerized, and sampled for toxicity characteristic (TC) metals. The analysis indicated that the waste contained concentrations of cadmium (2.8 mg/kg) and lead (7.6 mg/kg) slightly above the toxicity characteristic levels listed in 20 NMAC 4.1, Subpart II and 40 CFR 261.24(b). Uranium is also present in the soil in excess of background levels.

LANL's Environmental Restoration Project will treat this soil to remove the toxicity characteristic of the waste. This will be accomplished using the best demonstrated available technology (BDAT) for lead and cadmium (stabilization) listed in *Contaminants and Remedial Options at Selected Metal-Contaminated Sites*, EPA/540/R-95/512. The waste analysis information contained within this WAP are specific to the RCRA hazardous waste storage and treatment requirements for the mixed waste soil generated at PRS 33-010(b). Specific waste analysis requirements include the following:

- Identification of hazardous or mixed waste managed
- Pre- and post-treatment waste characterization
- Verification of land disposal restrictions (LDR) compliance

Description of Waste Generating Activity

The waste to be treated was generated from the cleanup of PRS 33-010(b). This PRS contained an estimated 25 cubic yards of scrap metal (mostly metal turnings) entangled with miscellaneous rubbish. It was located on a narrow ledge below a 30-ft cliff at TA-33, East Site. The metal turnings include depleted uranium metal. Included in the miscellaneous rubbish are foam pieces, municipal trash, and asbestos (transite) pieces. Depleted uranium, cadmium, and chromium were detected in samples taken from the soil underlying the scrap metal pile. Lead buttons on sealing wire have also been observed at the site.

The remediation goals for PRS 33-010(b) were:

1. Remove all refuse
2. Remove sufficient soil underlying the refuse such that contaminant concentrations in the remaining soil are below cleanup levels.

Soil from the former location of the scrap metal that met the following criteria for removal was removed and containerized. The removal was based on screening with a sodium

iodide scintillation detector system for uranium and an x-ray fluorescence analyzer for cadmium, lead, and chromium. Soil was screened starting from the area that was under the scrap metal pile and continued out in a radial pattern on the ledge until the lateral extent of soil removal was defined. The area immediately below the ledge that received drainage from the location of the scrap metal pile was also screened. Initial soil removal was to a depth of four inches or the soil/tuff interface, whichever was shallower. The area of the removal was then screened again to see if additional removal was needed to meet the screening criteria for soil removal. This process was repeated as necessary to meet the following criteria.

Contaminant	Removal Criteria	Units
Depleted Uranium	2 x background	pCi/g
Cadmium	any detection	mg/kg
Chromium	any detection	mg/kg
Lead	200	mg/kg

Verification samples were collected following soil removal to determine if the remedial action met the established cleanup goals. Samples 0595 and 0596 were collected on the ledge in the area of the soil removal. Samples 0597 and 9012 were collected in the drainage immediately below the ledge. Reported concentrations of each contaminant were below cleanup levels.

Contaminant	Cleanup Levels	Verification Sample #				Units
		0595	0596	0597	9012	
DU	29	23.8	7.1	5.96	5.29	mg/kg
Cadmium	38	8.7	1.5	0.97	0.89	mg/kg
Chromium	210	57.8	14.2	2.9	2.2	mg/kg
Lead	400	205	29.2	18.6	8.5	mg/kg

All waste is being managed and stored in accordance with hazardous waste regulations and LANL policy. All hazardous waste generated from PRS 33-010(b) is stored in <90 day storage area number 1488.

Description of Waste

The waste to be treated is approximately 6 cubic yards of soil contaminated with lead, cadmium, and uranium. The approximate composition of the soil waste is:

- soil -- 80%
- small fragments of metal -- 20%

Two composite samples of the soil waste were analyzed for TC metals. The samples were collected and analyzed in conformance with procedures described in EPA's "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846). Analytical results indicated that the soil waste exhibits the toxicity characteristics for cadmium (EPA hazardous waste number D006) and lead (EPA hazardous waste number D008)

specified in 20 NMAC 4.1, Subpart II and 40 CFR 261.24(b).

Contaminant	Regulatory Level	Waste Sample #		Units
		0593	0594	
Cadmium	1.0	1.45	2.81	mg/l
Chromium	5.0	0.005	0.005	mg/l
Lead	5.0	7.59	5.67	mg/l

Treatment Process

The selected treatment process for the soil waste is stabilization. Solidification/Stabilization (S/S) was shown to be the best demonstrated available technology (BDAT) for nonwastewater cadmium (D006) and lead (D008) wastes. As stated in the EPA guidance manual *Contaminants and Remedial Options at Selected Metal-Contaminated Sites*, EPA/540/R-95/512:

"Mobility of inorganic compounds can be reduced by formation of insoluble hydroxides, carbonates, or silicates; substitution of the metal into a mineral structure; sorption;...If a single metal is the predominant contaminant in soil, sediment, or sludge, then cadmium and lead are the most amenable to cement-based S/S. The predominant mechanism for immobilization of metals in Portland and similar cements is precipitation of hydroxides. Both lead and cadmium tend to form insoluble hydroxides in the pH ranges commonly found in cement."

This guidance further states *"Stabilization was selected as BDAT for all cadmium nonwastewaters other than cadmium-containing batteries."* and *"The BDAT standards for D008 (lead characteristic) nonwastewaters, except explosive compounds and wastes from the recycling of lead-acid batteries, are based on stabilization or vitrification."*

The stabilization treatment process requires that the optimal ratio of Portland cement to soil waste be determined with the specific waste material. Samples from the soil waste mixed with Portland cement at three ratios (1%, 5%, and 10% cement) will be submitted for TC metals analysis. Based on the results of these analyses, the proper ratio will be determined for treatment of the remaining soil waste. The Portland cement will be thoroughly mixed with the soil using an appropriate mixing device. Mixing will be accomplished in containers that meet the definition listed in 20 NMAC 4.1, Subpart I and 40 CFR 260.10. The soil will be pre-moistened to avoid dust emissions and monitored carefully for dust during the mixing process.

A site-specific health and safety plan (SSHASP) will be prepared and approved before the treatment activity. The SSHASP will evaluate all potential hazards to human health and the environment and describe mitigating measures to minimize or eliminate these hazards. All personnel involved in the treatment activity will be trained to the SSHASP and a site safety officer will be present at all times during the activity to enforce the SSHASP.

Waste Sampling and Analysis

In accordance with LDR requirements, the waste will be analyzed to determine whether it meets the applicable LDR treatment standards in 20 NMAC 4.1, Subpart VIII, and 40 CFR

268, Subpart D. The treatment standards will be satisfied when the concentration of cadmium is <1 mg/l and the concentration of lead is <5 mg/l in TCLP leachate from the treated waste samples.

Three grab samples will be collected from the treated soil waste. One sample will be collected from each of three randomly selected drums. For purposes of collecting a representative sample of the treated waste, the samples will be collected and handled in a manner that preserves its physical form and composition and prevents contamination. The grab samples will be taken from the center of each drum using a bucket hand auger or tube sampler.

To ensure that proper procedures and considerations for sample collection; preservation techniques; shipping; holding times associated with sample collection; quality assurance/quality control; and occupational safety and health are followed, personnel involved in sampling and analysis of the treated waste will comply with LANL-specific protocols. Sampling is conducted according to LANL sampling procedures to ensure that a representative sample is collected. Adherence to these requirements will ensure that sampling and analysis meet quality objectives for data.

Qualified analytical laboratories at LANL or approved subcontractor laboratories will analyze post-treatment waste samples for metals according to SW-846, or documented equivalent methods.

Waste Certification

All analytical results completed in support of LDR requirements will be retained in LANL's operating record. When the treated waste can be demonstrated to meet the applicable treatment standards, it will no longer exhibit a characteristic of hazardous waste and will no longer be subject to RCRA hazardous waste regulations. The waste can then be disposed at TA-54 as radioactive waste without further treatment. LANL will prepare a notice and certification with information required under 20 NMAC 4.1, Subpart VIII, and 40 CFR 268.7 (a)(2) for every shipment of waste sent for land disposal. LANL will also send a one-time notification and certification to the New Mexico Environmental Department by the end of the calendar year that includes information specified in 20 NMAC 4.1, Subpart VIII, and 40 CFR 268.9(d).