APPENDIX F

Current Waste Disposal Practices for Routine and Non-Routine Waste

All solid waste generated in all designated contaminated areas is disposed of in the radioactive disposal area of the Laboratory. Since August 1972 Laboratory generated wastes taken to Area G, TA-54, have been segregated according to their radioactive contaminants and radioactive level before being placed in disposal pits, disposal shafts or storage facilities. Waste contaminated with transuranic radionuclides at concentrations above 10 nCi/g for $^{239}$Pu, $^{241}$Am, and $^{233}$U or above 100 nCi/g for $^{238}$Pu are placed in 20 year retrievable storage per AECM 0511. These wastes constitute about 10% of the Laboratory total. Waste contaminated with transuranic radionuclides at concentrations less than 10 nCi/g for $^{239}$Pu, $^{241}$Am, and $^{233}$U or less than 100 nCi/g for $^{238}$Pu; with uranium; with fission products; with induced activities; and with tritium are not required to be stored retrievably, however, where possible they are segregated prior to disposal.

PACKAGING

In general, the LASL packaging policy for solid radioactive waste is that wastes must be packed so they will not contaminate transport containers or contaminate or irradiate personnel during transport. When necessary, special cases are checked to assure that Department of Transportation (DOT) regulations are met. After disposal, packaging is not expected to remain intact with the exception of that for retrievable transuranic wastes and tritium wastes. Packaging guidelines are listed in current waste disposal operating procedures.

Routine Non-Retrieval Transuranic Waste

Routine non-retrievable transuranic (TRU) waste consists mainly of laboratory generated trash such as cheesecloth, paper, gloves, metal, glassware, and other small laboratory items. Most of this waste is generated at the CMR Building, TA-3, and at DP-West, TA-21, and TA-55.

In the CMR building laboratories this waste is placed in plastic-lined, 0.06 m³ (2 ft³) cardboard boxes held in metal fireproof containers or in plastic-lined, metal, flip-top cans. The small plastic bags from the flip-top cans are removed when filled, sealed with masking tape, and deposited in the 0.06 m³ (2 ft³) cardboard boxes. Waste packages are marked with tape reading "Caution — Radioactive Waste". They are also marked combustible or noncombustible and with the room and wing number and the date. Before the packages are loaded into a Dempster Dumpster labeled "Radioactive Waste Only" they may be monitored by a Health Physics Surveyor.

At DP-West this waste is collected in plastic-lined, 0.06 m³ (2 ft³) cardboard boxes held in 115 l (30 gal) drums. When full, the boxes are taped shut and monitored with the Multienergy Gamma Assay System (MEGAS) (which permits monitoring of the x-ray and low energy gamma ray region for the sub-10 nCi/g activity levels) before being placed in marked Dempster Dumpsters (see Fig. APF-1).

The other major source of routine non-retrievable TRU waste is the product of liquid radioactive waste treatment. De-watered sludge from the Liquid Waste Treatment Plant at TA-50 is batch assayed to determine whether it is retrievable or non-retrievable. If non-retrievable, the material is packaged in 5 mil plastic-lined 210 l (55 gal) mild steel (weatherpack) fiber drums which are loaded onto a skip-type Dempster Dumpster for transport to Area G. At the TA-21 Liquid Waste Treatment Plant batch assay also segregates non-retrievable from retrievable waste. Non-retrievable waste, which is about 3-5% of the total Laboratory waste volume, is mixed with cement to form a paste which is pumped down shafts augered in the tuff at Area T.
Development of prototype of Multi Energy Gamma Assay System (MEGAS) used for assay for 2 ft\textsuperscript{a} cardboard boxes of low-density laboratory trash. MEGAS is capable of detecting TRU-contamination at <1 nCi/g of waste.

Routine Retrievable Transuranic Waste

Routine retrievable TRU waste is generated at a rate of 280-420 m\textsuperscript{3}/yr (10000-15 000 ft\textsuperscript{3}/yr) mostly at DP-West, TA-21; the CMR Building, TA-3; and the Liquid Waste Treatment Plants, TA-21 and TA-50. This waste consists of \(^{239}\text{Pu}\) (weapons grade) contaminated residues and trash, \(^{238}\text{Pu}\) (weapons grade) contaminated residues and trash, \(^{238}\text{Pu}\) contaminated residues and trash, some of which were once shipped to the Savannah River Plant as "scrap", and \(^{239}\text{Pu}/^{241}\text{Am}\) cement paste and de-watered sludge produced as a result of liquid waste treatment. Most of this waste (by volume and activity levels) comes from gloveboxes, hoods, and equipment in processing and research and development areas.

Much of this waste is packaged in Department of Transportation (DOT) 17C 210 l (55 gal) drums. Generally, the drums are lined with several layers of 5-10 mil plastic. In the case of drums used to hold de-watered sludge and absorbed oil, a 90 mil high-density crosslinked polyethylene liner is used. All drums are sprayed with Texaco Rust Proof CPD-L immediately prior to storage.
Items too bulky to be placed in drums are packaged in fiberglass-coated wooden crates. Size of crates used has varied from 1.2 m × 1.2 m × 2.4 m (4 ft × 4 ft × 8 ft) to 1.5 m × 2.4 m × 9.1 m (5 ft × 8 ft × 30 ft). The fire-retardant fiberglass coating on the crates is approximately 0.32 cm (1/8 in.) thick.

In the processing and recovery areas at [DP-West], retrievable TRU waste from the glovebox lines is placed in a 12 mil polyvinyl chloride (PVC) tubing and sealed at both ends by wire and tape before it is cut off. The PVC packages are put in 10 mil polyethylene (PE) bag-lined 210 l drums. All drums are then assayed on a boron trifluoride (BF₃) assay system which has a sensitivity of about 0.1 g/drum (see Fig. APF-2).

Retrievable TRU cement paste from the Liquid Waste Treatment Plant at TA-21 (TA-21-257), which is about 3-5% of the total Laboratory waste volume, is pumped into 76.2 cm (30 in.) diameter, 6.1 m (20 ft) long corrugated metal pipes. Each pipe has a 0.6 m (2 ft) "cold" concrete plug at both ends.

Routine Low-Level Beta-Gamma Waste

Routine low-level beta-gamma waste (in the CMR Building) is packaged similarly to routine non-retrievable TRU waste. The filled cardboard boxes are monitored by a Health Physics Surveyor to assure the radiation level on the outside of the packages does not exceed 500 mrem/hr for retrievable waste. At several sites, extra drum-type fumigators are used to receive non-compressible waste as well as waste packages having an external radiation of >200 mrem/hr and up to 500 mrem/hr.

Fig. APF-2.

BF₃ (boron trifluoride) coincidence neutron counter used for detection of TRU-contamination in process waste from Pu-recovery operations at TA-21, DP-West (CMB-11 operated).
Routine High-Level Beta-Gamma Waste

Routine high-level beta-gamma waste from the hot cells of Wing 9, CMR Building, is packaged in 3.8 l (1 gal) metal cans placed in a plastic cannister. The level of activity of each cannister is read at a distance of 1 meter and at contact. Two cannisters are then loaded into the plastic-bag-lined, lead transport container (see Fig. APF-3). The plastic bag is used only to insure that the cannisters do not hang when the transport container's trap-door is opened.

Routine Tritium Waste

Routine tritium waste, 5-30 m³/yr (175-1060 ft³/yr), is packaged in asphalt-lined 115 or 210 l drums. Where significantly large quantities of tritium are contained, the waste is packaged in a 115-l drum which then is sealed inside of an asphalt coated 210-l drum. For very high-tritium content wastes, the waste-containing 115-l drum is encased in asphalt in a 210-l drum.

Fig. APF-3.

Loading of a transport cask with an 8 l package of high beta-gamma active waste from the group CMB-14 hot cell in Wing 9, CMR building.
Other Routine Wastes

Other routine wastes are: (1) contaminated oil (several m³/yr) which is sorbed onto vermiculite and packaged in 115 or 210 ℓ drums, (2) contaminated chemicals which are neutralized and/or sorbed onto some neutral material and packaged in metal containers filled with sorbent material, (3) contaminated animal tissue, roughly 2.8 m³ (100 ft³)/yr, from the laboratories in the HRL Building, and (4) contaminated classified material which amounts to 4.2-5.6 m³/yr (150-200 ft³/yr).

Non-Routine Wastes

Non-routine wastes such as large pieces of laboratory equipment and machinery and wastes generated during facility renovation and decommissioning projects may or may not be packaged depending upon the level of contamination or whether the contamination is contained. The decision to package is made by Group H-1 and Group H-7. Materials which pose packaging problems are handled on an individual basis, e.g., filter plenums from the CMR Building which were not packaged but had all openings sealed with metal flanges.

TRANSPORTATION

Transportation of radioactive waste is carried out under guidelines set up in standard operating procedures. Dempster Dumpsters [3.1 or 7.7 m³ (4 or 10 yd³) capacity], dump trucks, flat-bed trucks, and pickup trucks are used as transport vehicles.

Dempster Dumpsters are used to transport approximately 50% of the routine laboratory waste. Dumpsters are emptied when full. Dumpster deliveries are accepted twice a week at Area G. Regular Dempster Dumpsters transport non-retrievable transuranic waste from the CMR Building (TA-3), DPF-West (TA-21), TA-35, TA-43, TA-48, and TA-50; and also low-level beta-gamma waste from the CMR Building. "Skip-Type" Dempster Dumpsters can carry nine 210 ℓ (55 gal) drums per trip. This type of dumpster may be used to carry: (1) sludge drums of non-retrievable or retrievable transuranic waste from the Liquid Waste Treatment Plant at TA-50, (2) drums of depleted uranium chips and turnings from the Shops Department area, (3) retrievable transuranic waste from the CMR Building and DPF-West, (4) tritium waste, (5) contaminated oil, and (6) contaminated chemicals.

High-level beta-gamma waste from the CMR Building is transported in a lead transport container chained to a specially designed flat-bed truck (see Fig. APF-4).

Routine escort of transport vehicles is provided for depleted uranium chips and turnings because of the possibility of fire and for classified contaminated material. Radio-equipped H-7 vehicles which have communication on the H-Division, Zia Company, fire department and police department networks provide the escort. Supply and Property (SP-2 Group) personnel also escort classified contaminated material since they must prepare the proper documentation for its disposal.

DISPOSAL

Pits, shafts and trenches are used for burial and storage of wastes. Pits are approximately 7.3 m (24 ft) deep and vary in length from 122-183 m (400-600 ft) and in width from 7.6-30 m (25-100 ft). Shafts vary in diameter from 0.6-2.4 m (2-8 ft) and in depth from 7.6-18 m (25-60 ft). Trenches are shallow, approximately 3.7 m (12 ft) wide and as long as 81 m (265 ft).
Pits

There are designated pits for non-retrievable TRU waste, non-retrievable uranium waste and lower level* beta-gamma (which contains no TRU) waste, and retrievable TRU waste. The pits used for the first two waste categories differ in construction, waste covering operations, and monitoring activities from the pit used for the last waste category.

The retrievable TRU waste is stacked in a 7.6 m (25 ft) deep pit 122 m (400 ft) long and 9 m (30 ft) wide. The bottom of the pit is graded and asphalt paved and curbed to promote drainage away from the wastes. Any moisture moving on the asphalt surface drains into sumps at one end of the pit where it is sampled for contamination and if necessary, is removed to the liquid waste treatment plant.

Waste materials are stacked within the curbing to a height of about 2 m (6 ft) below the ground surface for a pit length of about 17 m (55 ft). The waste stack is then covered with 20 mil nylon-reinforced vinyl sheeting. Plywood underlays the nylon-reinforced plastic on top of the waste stack. A 2 m (6 ft) layer of crushed tuff is the final covering for the waste stack. The 1 m of crushed tuff between waste stacks provides a firebreak.

Pits for non-retrievable TRU waste and non-retrievable uranium and lower-level beta-gamma waste have no special grading or paving. Dempster Dumpsters and other transport are unloaded by driving the

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*Less than 5 R/hr at contact.
truck* into the pits. **Combustible waste materials** are covered with approximately 15 cm (6 in.) of crushed tuff the day they are placed in a pit. Waste is layered in the pits with the last layer at least 1 m (3 ft) below the ground surface. Two m (6 ft) of crushed tuff is mounded over this last layer. Neutron moisture probe access holes in the pits allow monitoring of moisture movement in the pit fill and in the tuff.

"Sensitive material," e.g., tape from C-Division, is disposed of in the uranium and lower level beta-gamma pit. Any material in this category is considered unsuitable for disposal in the county sanitary landfill.

**Shafts**

Shafts are used for reduction of personnel exposure to external radiation, for better isolation, for better containment, and for more secure disposal of some waste materials. Shafts are filled to within 1.5 m (5 ft) of the ground surface. Then 0.6 m (2 ft) of crushed tuff is placed in them followed by a 1 m (3 ft) thick cement cap.

After waste is placed in a shaft a ground-level measurement with a beta-gamma survey meter is made. Crushed tuff is shoveled into the shaft until a reading of 100 mR/hr, at ground level, is reached. If the ground-level reading cannot be reduced to 100 mR/hr, the shaft is posted with a high-level radiation warning sign. A ground-level reading of 500 mR/hr is not tolerated. There is a limit of 500 g/shaft of fissile material.

Unlined shafts 0.6 m (2 ft) and 0.9 m (3 ft) in diameter and 7.6 m (25 ft) deep receive contaminated animal tissue, contaminated classified material, contaminated chemicals, and high-level beta-gamma waste. Animal tissue is placed in the shafts to isolate it from scavengers. Shaft disposal is preferred for contaminated classified material because if it were placed in a pit, immediate covering with 1 m (3 ft) of crushed tuff or physical surveillance until covering took place would be required. Contaminated chemicals are placed in shafts for better isolation from other waste materials. Shaft disposal for higher level (greater than 5 R/hr at contact) beta-gamma waste is for personnel safety. The lead transport container truck backs directly over a shaft. The trapdoor is opened remotely allowing the waste cannisters to fall through the truck bed into the shaft (see Fig. APF-5).

Extremely high-level fission product waste (which could also contain plutonium) is placed by means of the lead transport container truck in 0.3 m (1 ft) cement-lined shafts 0.3 m (1 ft) in diameter and 7.6 m (25 ft) deep. The 0.3 m (1 ft) cement lining is provided primarily for added containment of fission product activities. Cement-lined shafts of the same type have also been used for disposal of extremely large quantities of tritium contaminated waste which were sealed in the shafts with asphalt.

Shafts 1.8 m (6 ft) in diameter and 18 m (60 ft) deep have been used for disposal of contaminated oil and tritium waste. The shafts for tritium waste have, until May 1976, been asphalt coated; however, recent investigation has shown this not to be as beneficial as hoped for in the containment of the tritium. Waste drums are lowered, not dropped, into these shafts. They are also used for non-retrievable TRU waste (mixed with cement) from the TA-21 Liquid Waste Treatment Plant as are 2.4 m (8 ft) diameter, 18 m (60 ft) deep shafts.

**Trenches**

Trenches are used for retrievable storage of **238Pu** waste. A large quantity of high gamma-active **238Pu** waste is planned to be placed in this storage. Much of the **238Pu** waste prior to 1973 was sent to Savannah River Plant as scrap for storage. A separate retrievable storage facility was considered necessary for this waste because it has higher levels of penetrating radiation and significant nuclear heating and radiolytic gas formation from the **238Pu**.

*The truck is monitored by H-7 personnel after it has dumped its waste.*
Twenty casks in 2 rows are placed in the trenches so that the casks are 1 m (3 ft) below the ground surface and are separated from each other by approximately 0.3 m (1 ft) of crushed tuff. Each array of twenty casks is separated from the next array by 1.5 m (5 ft) of crushed tuff.

The casks, 0.6 m (2 ft) (inside) diameter and 2 m (6 ft) high, are reinforced concrete with 7.6 cm (3 in.) thick side walls and 15.2 cm (6 in.) thick bottoms. Each cask holds two 115 t (30 gal) steel drums with a maximum of 40 g 239Pu/drum or 200 g 233U/drum.

When an array has been filled, corrugated, galvanized, metal sheeting is placed over the cask lids to facilitate recovery by preventing crushed tuff from filling the spaces around the lids. Then a 1 m (3 ft) thick layer of crushed tuff is used to cover the array.

Monitoring of the retrievable storage trenches is by array. At each end of an array access tubes are inserted beneath the metal sheeting for air sampling. At one end of an array access tubes are inserted beneath the metal sheeting for air sampling. At one end of an array a neutron moisture probe access tube is placed. Casks adjacent to this access tube have temperature sensors placed on the outside wall near the base of the cask and inside a waste drum within the cask.

In Array 1 of Trench A four waste drums and the four casks in which they are implaced have had copper tubes connected to them (that extend above the surface) in order to determine the amounts and types of radiolytic gases formed and their diffusion rate out of the drums, and into the casks. It may be...
possible to determine the radiolytic gas diffusion rate out of the casks and into the airspace surrounding the cask lids. The same monitoring set-up has been done for two waste drums in two casks in Array 5 of Trench B.

RECORDS

All waste taken to Area G is recorded on a LASL Radioactive Solid Waste Disposal Record Form (see Fig. APF-6). This form requires the signatures of the waste generator, H-1 area representative, group leader (as necessary) and H-7 waste management representative. It records waste volume, waste radioactive content in either grams or curies, waste matrix, waste generator, and waste disposal location and date. This information is computer stored.

Prior to the disposal of capital equipment, a group fills out a Form (252-R), Condemnation and Disposal of Classified and/or Contaminated Government Property. The Form records the item description, its serial and government property number, the group to whom it is charged, and the monitoring results of the Health Physics Surveyor. The Health Physics area representative indicates on the Form how the item should be disposed. The Form is then sent to the Health Physics group office for certification. After certification the Form is mailed to the ERDA Fiscal Management and Property Office where it is counter-signed. Then the Form is sent to the H-7 Waste Management Group. Upon receipt of the Form, H-7 personnel call at the site where the item is located, verify the property number(s) on the Form, pick up the material and take it to the disposal area. The ERDA Fiscal Management and Property Office has the right to witness actual disposal and H-7 Waste Management always calls the ERDA office prior to pending disposals. After the disposal has been completed and the Form is signed by H-7 Waste Management, it is forwarded to SP-2 Group Office where the individual copies of this Form are returned to the people entitled to them. After completion of the Property disposal operation, the H-7 area representative will make an entry in an LA Notebook of this disposal operation which includes the item’s description, serial number, and property number, its disposal location, the serial number of the Form (252-R), and the serial number of the LASL Radioactive Solid Waste Disposal Form, and signs and dates the disposal. Frequently, H-7 Waste Management is asked to verify the disposal of a government property numbered item.

Every pit and shaft has an identification sign and pits also have numbered reference posts along a side so that location of waste materials can be recorded by pit number, layer number and reference post number.

The pit and trenches for retrievable storage also have identification signs. Waste packages placed in these facilities are serially numbered. In the case of the trenches each drum placed in a cask is numbered and the cask has a permanent plastic identification tag attached to its lid. The permanent plastic identification tag is attached to the waste package stored in the pit. Waste is located in the trench by trench designation and cask location number; waste is located in the pit by layer and reference post number.

All structures within Area G are recorded on engineering survey maps. Covered pits, shafts, and trenches, even when their outlines become obscured by re-vegetation, can be located by their identification signs and engineering survey maps.

ACCESS TO AREA G

Area G is a restricted area. Access is limited to those who are accompanied by an H-7 Waste Management representative. The access gate to the disposal area is kept locked except when that representative is present in the area. Security patrols Mesita del Buey and checks the access gate padlock twice during each of the three eight-hour shifts. H-7 Waste Management would be contacted if Security found the gate unlocked. Since issuance of access gate padlock keys has been severely restricted, there have been few incidences when the gate was left unlocked.
STANDARD OPERATING PROCEDURES

The following SOPs related to health physics and personnel safety can be obtained from H-7 Waste Management:

1. TA-54, Area G, Health Physics Procedures.

2. Use of Dempster Dumpster Containers for Hauling Solid Radioactive Waste to the Disposal Pits.

3. Use of Skip-Type Dempster Dumpster Containers for Hauling Drums Filled with Radioactive Material to Area G, TA-54.

4. Radiological Safety During Covering Operations at the Disposal Pits.


8. Truck Drivers in Case of Fire While Transporting Radioactive Waste to the Burial Ground.


LASL RADIOACTIVE SOLID WASTE DISPOSAL RECORD FORM

1. FORM NUMBER
   S.0

2. DATE
   M M D D Y Y

3. RETRIEVABLE SERIAL NO.

4. ORIGIN OF WASTE
   GROUP TA BLDG. WING ROOM

5. WASTE CODE

6. WASTE DESCRIPTION

7. NUMBERS OF WASTE PACKAGES
   PLASTIC SACKS CARDBOARD BOXES DRUMS WOODEN CRATES
   NO. GAL. NO. VOLUME $^3$

8. GROSS VOLUME

9. PACKAGE RADIATION AT:
   SURFACE MR/HR 1 METER MR/HR

10. GROSS WEIGHT
    UNITS

11. ADDITIONAL DESCRIPTION OF PACKAGING AND PACKAGING MATERIALS

12. RADIONUCLIDE CONTENT
   NUCLIDE AMOUNT ± ERROR ON AMOUNT ± C - CURIE M - GRAM
   AMOUNT DETERMINED BY:
   A = ANALYSIS M = MEASUREMENT E = ESTIMATE
   SS MATERIALS WRITEOFF
   ACCOUNT PROJECT CODE

WASTE GENERATOR H-1 AREA REPRESENTATIVE GROUP LEADER (AS NECESSARY)

13. DATE DISPOSED
    M M D D Y Y

14. DISPOSAL/STORAGE LOCATION
    AREA SHAFT PIT POST(L) LAYER DE PC

15. SHAFT SURFACE DOSE
    MR/HR

H-8 WASTE MANAGEMENT REPRESENTATIVE

Fig. AFP-6.
INSTRUCTIONS

Usage
A "LASL Radioactive Solid Waste Disposal Record Form" is required for all radioactive solid waste buried or retrievably stored at the Laboratory. A properly completed Form is needed for each shipment of waste for burial and for each package of retrievable transuranic waste.

General Instructions
(1) Do not use more than the allotted spaces on the form.
(2) Data recorded must be printed and legible. The letter "O" should be printed "O" to differentiate it from the number zero.
(3) Positions of decimal points should be noted and followed in all pertaining entries.
(4) Additional notations as hyphens, slashes, etc. should not be used in entries other than in the two requesting additional information, #6 and #11.
(5) Use of the zero (0) on the form should be limited only to these entries requiring that numeric designation. The 0 should not be used just to fill in blank spaces on the form.
(6) Special effort should be made to identify the AMOUNT and ERROR ON AMOUNT entries for each radionuclide identified as present in the waste.
(7) Where variations in waste package sizes do not allow recording all data on one form, additional forms should be used.
(8) Completed forms should where possible accompany the waste to the disposal/storage area where they are to be given to the Group H-8 Waste Management Representative. Otherwise, the completed forms should be mailed to H-8 Waste Management, M.S. 737.
(9) Each completed form must be signed by the Waste Generator.
(10) Each Form requires the signature of an Area H-1 Health Physics Monitor indicating the package or shipment is safe to handle and transport.
(11) All questions concerning the proper completion of this form should be made to the Waste Management Section of Group H-8, phone 6935 or 5862.

Specific Instructions

<table>
<thead>
<tr>
<th>Section</th>
<th>Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 - Waste Code</td>
<td>All waste needs identification by a three (3) digit description code. Useable codes and descriptions are given in &quot;Waste Disposal Record Form - Attachment I&quot;. Any non-routine characteristic or special properties of the waste and/or packaging should be described here. Spaces also may be used by the waste generator to provide other necessary data for his or others records. Examples of other information are PM numbers, C &amp; D Form numbers, etc.</td>
</tr>
<tr>
<td>6 - Waste Description and 11- Additional Description of Packaging and Packaging Materials</td>
<td>If radiation levels exceed that which can be listed, leave blank and record data in the Section 11 &quot;Additional Description ---&quot; entry. Signs indicating &quot;(greater than)&quot; or &quot;(less than)&quot; may not be used. Any fractional number should be rounded up to the nearest whole unit. Where the waste disposal involves a write-off of accountable materials, or disposal of accountable materials previously written off, the contaminant(s) should be listed by identifying first the element, followed by the &quot;SS Material Type Code,&quot; eg. Pu52; U12; U38, etc. Where the waste disposal does not involve an accountable amount of SS-Type Materials, all isotopes should be listed as illustrated: Pu239; U235; MFP (Mixed Fission Products); MFP (Mixed Fission Products); H3; etc. In all cases where more than one contaminant is identifiable, each should be listed (with all appropriate data) on a separate line in Section 11. Where more than four (4) entries are required to list contaminants, additional unnumbered forms should be used for the completion of the Section 11 data. Note that the Amount and Error values are in E-format, with + or - signs required where indicated. Appropriate units need to be identified.</td>
</tr>
<tr>
<td>9 - Package Radiation</td>
<td></td>
</tr>
<tr>
<td>12- Radionuclide Content</td>
<td>(a) Nuclide</td>
</tr>
<tr>
<td></td>
<td>(b) Amount/Error on Amount</td>
</tr>
</tbody>
</table>

Distribution:
Original - H-8 Waste Management, accompanies waste to disposal/storage area
Copy - Waste Generator

APF-12