ADVANCED MEDICAL SYSTEMS
OPERATING PROCEDURE

PACKAGING OF SOLID RADIOACTIVE WASTE

ISP-25 Rev. 1/95

1.0 PURPOSE: To ensure that solid radioactive waste is safely and properly packaged in preparation for shipment.

2.0 PRECAUTIONS AND LIMITATIONS:

2.1 This procedure applies to all contaminated solid material that must be disposed of at an authorized radioactive waste disposal site.

2.2 All waste is to be compacted in order to reduce the volume unless a significant airborne hazard will result.

2.3 No liquid material is to be packaged. The waste disposal site will not accept liquids. Liquids must be solidified using approved methods prior to transportation.

2.4 Full face respirators should be worn when handling and compacting material which has been in the Hot Cell.

2.5 To reduce airborne contamination, material which has been in the Hot Cell should be bagged before extensive handling or compaction.

2.6 Waste is to be packaged on an ongoing basis. It should not accumulate.

2.7 This procedure requires that protective clothing and personal dosimetry equipment be worn.

2.8 A breathing zone air sample shall be taken during compactor operation to verify adequate respiratory protection.

2.9 Minimize stay time near high level waste materials.

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SRP

3.0 INSTRUCTIONS:

3.1 Compaction

3.1.1 Waste should be surveyed prior to compaction. Any material reading over 800mR/hr should be segregated and brought to the attention of the RSO.

3.1.2 After meeting all precautions and limitations, load the material into the compactor and compact it.

3.1.3 Once the compactor bag is filled, remove bag from compactor and tape down top flaps.

3.1.4 Survey the surfaces of the bag to insure that no part reads greater than 800mR/hr. If a reading is greater than 800mR/hr, mark the bag with the maximum radiation level found.

3.2 Packaging

3.2.1 Prepare a steel drum for loading by removing the lid, inserting a poly bag liner and placing the drum on kraft paper on the step off line in the air lock.

CAUTION: Be careful not to contaminate the drum.

3.2.2 A second individual, situated on the clean side of the airlock, is required for packaging.

3.2.3 Move the compacted waste bags out from the lab and place them inside the lined drum. Four bags will easily fit into one drum.

3.2.4 Survey the drum surfaces to insure that no reading is greater than 800mR/hr.

3.2.5 Fold the excess poly liner onto the top of the bags and replace the drum lid.

3.3 Contamination Control

3.3.1 Wipe down the drum exterior prior to surveying.

3.3.2 Smears of the drum exterior shall be taken and recorded on Form ISP-25A. Smears should be taken on the drum top and ring area, on the side of the drum and along the bottom of the drum.

3.3.3 No drum shall be removed from the airlock if any smears shows contamination in excess of 1,000 dpm/100cm^2.

3.3.4 If any smear indicates contamination greater than 1,000 dpm/100cm^2, then the drum must be decontaminated and resurveyed until the contamination levels are below the above limits.

3.3.5 If the drum surface contamination is below the limit, then it should be marked with an ID number and removed from the airlock to a low background area for surveying.

3.4 Survey

3.4.1 Survey the package surfaces and record on Form ISP-34A the highest readings found on the top, side and bottom surfaces. If the survey meter readings are in the upper 90% of the scale, the next higher scale should be used.

CAUTION: Readings that fall within 20% of the maximum (800mR/hr) will be verified with at least one other instrument.

3.4.2 Mark the package hot spot with spray paint.

3.4.3 Survey the package at a distance of one (1) foot from all surfaces. For purposes of documentation, divide the package into quadrants and record the highest reading in each quadrant on Form ISP-25A.

3.4.4 Compute the average of the four (4) quadrant readings and record on Form ISP-25A.

3.4.5 Survey the package at a distance of one (1) meter and record under Transport Index on Form ISP-34A.

NOTE: Not needed for LSA exclusive use.

3.5 Package Description

3.5.1 Apply a permanent ID number sticker to the package and record it on Form ISP-34A.

3.5.2 Weigh the package and record the weight.

3.5.3 Describe the contents of the drum (i.e. compacted trash, cell waste, cardboard, wood, used protective clothing, etc.).

3.5.4 Apply a "Class A Waste" label to the top of the package.

3.6 Storage

3.6.1 Transfer the package to the designated waste storage area and place it so that the ID number is readily visible.

3.6.2 High activity packages (greater than 200mR/hr contact) should be segregated from lower activity packages.

3.7 Documentation

3.7.1 Calculate the Curie content of the package using the 6CE formula following:

$$\text{mR/hr@1foot} = 6 \times \text{Curie content} \times \text{Gamma Energy}$$

$$\text{or Curies} = \frac{\text{mR/hr @ one foot}}{6 \times \text{Gamma Energy}}$$

EXAMPLE: For Cobalt-60

$$\text{Curies} = \frac{\text{mR/hr @ one foot}}{6 \times (1.33 + 1.17)} \quad \text{or} \quad \frac{\text{mR/hr @ one foot}}{15}$$

SOLID RADWASTE DATA SHEET

ISP-25A

Drum ID#:_____ Weight:_____

Contents:_____

_____

_____

SURVEY RESULTS

Meter used:_____ Ser.#:_____ Cal due:_____

Surface Readings

Top_____mR/hr Bottom_____mR/hr Sides_____mR/hr

Readings @ 1 foot (by quadrants)

_____mR/hr _____mR/hr _____mR/hr _____mR/hr

Average 1 foot reading _____mR/hr

Transport Index:_____ Curie content:_____Ci

SURFACE CONTAMINATION

Top_____dpm/100cm^2 Bottom_____dpm/100cm^2 Sides_____dpm/100cm^2

Highest smear _____dpm/100cm^2

Performed by:_____ Date:_____

Reviewed by RSO:_____ Date:_____