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APPENDIX D
LASL RADIOACTIVE SOLID WASTE MANAGEMENT POLICY



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LOS ALAMOS SCIENTIFIC LABORATORY
UNIVERSITY OF CALIFORNIA
LOS ALAMOS, NEW MEXICO 87544

OFFICE MEMORANDUM

TO : Distribution

DATE: May 13, 1974

FROM : George L. Voelz, M.D., Health Division Leader

SUBJECT : LASL SOLID WASTE MANAGEMENT POLICY AND PRACTICES

SYMBOL : H8-74-104

Attached is initial information reflecting updated management of solid radioactive waste materials at the Los Alamos Scientific Laboratory. Additional guidance from Group H-8, the group responsible for the Laboratory Solid Waste Management Operations, will be forthcoming as the LASL waste handling policies and procedures are further developed. Your cooperation and assistance in adjusting practices to meet operational waste management requirements are solicited.

GLV:LJJ:mar

Attachment

Distribution: Master Division, Department and Group
Leaders

OFFICE MEMORANDUM

TO : Distribution

DATE: May 13, 1974

FROM : LaMar Johnson, H-8 Group Leader 

SUBJECT : INFORMATION ON SOLID RADIOACTIVE WASTE MANAGEMENT AT LASL

SYMBOL : H8-WM-57

The enclosed information on solid waste management at LASL is intended to implement Director's Office Memorandum No. 48 - Radioactive Solid Waste Management Policy issued September 27, 1973. The objective of the Policy is to improve the control of radioactive waste materials at LASL.

A revised AEC Manual Chapter 0511 - Radioactive Waste Management was issued September 19, 1973. This Manual Chapter states AEC policy and criteria with regard to the management of AEC-generated radioactive waste. The following is a summary of specific requirements of the Manual Chapter:

1. Technical and administrative efforts should be directed toward:
 - a. a marked reduction in the gross volume of radioactive solid waste generated
 - b. a marked reduction in the amount of radioactivity in such waste.
2. Volume reduction technology, such as compaction and incineration shall be adapted for use with radioactive solid waste and placed in operation wherever practical.
3. AEC-generated solid waste contaminated with transuranic isotopes at an activity concentration greater than ten nanocuries per gram (10 nCi/g) shall receive special handling. Transuranic isotopes include ^{233}U (with its daughter isotopes), plutonium and transplutonium isotopes except ^{238}Pu and ^{241}Pu . Plutonium 238 and ^{241}Pu contaminated wastes are to be included when so indicated by ^{239}Pu impurities (>10 nCi/g), or when required by local policy. (The LASL has established an interim local policy that ^{238}Pu waste at activity concentrations above 100 nCi/g must receive the special handling indicated.) Special handling requirements for this waste include the following:
 - a. it shall be segregated from other radioactively contaminated solid waste
 - b. combustible and noncombustible transuranic wastes shall be packaged separately

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- c. it shall be packaged and stored under conditions that it can be readily retrieved in an intact, contamination-free condition after 20 years in storage
 - d. the waste package shall be suitably labeled so that the waste contained can be identified by cross reference to permanent records.
4. Waste materials contaminated with transuranic isotopes at activity concentrations below 10 nCi/g (below 100 nCi/g for ^{238}Pu) will continue to be handled as in the past.

Individuals or groups wishing complete copies of AECM-0511 should contact the Waste Management Section of Group H-8.

In order for H-Division to meet these directives, it is necessary for the Waste Management Section to establish guidelines for their operations. Moreover, the Waste Management Section is prepared to assist operating units of the Laboratory in establishing necessary standard operating procedures for waste management.

Attached are the interim guidelines that the Waste Management Section of Group H-8 will be using. This introductory information is an initial effort in deriving methods of operation under the LASL Policy. As the LASL solid radioactive waste management policies and procedures are formulated and revised, additional information will be submitted by the Waste Management Section. Specific problems of Laboratory operating units in the area of solid radioactive waste management should be brought to the attention of the Waste Management Section. Comments and suggestions on the attached interim guidelines are requested and should be forwarded directly to LaMar Johnson, H-8 group leader.

LJJ:jb

Distribution: Master Division, Department and Group Leaders

GROUP H-8 SOLID RADIOACTIVE WASTE MANAGEMENT GUIDELINES

I. Responsibilities for solid radioactive waste management.

- A. Radioactive waste management operations including solid waste burial and retrievable storage are the responsibility of Group H-8.

Group Leader: LaMar Johnson
OHL Building, MS 490
Phone: 5021

- B. Questions concerning waste disposal practices and special waste disposal problems should be directed to the Waste Management Section of Group H-8.

Alternate Grp. Leader: Keith J. Schiager
CMR Building, MS 737
Phone: 5862

1. John L. Warren is in direct charge of the burial ground and storage area operations.

Location: CMR Building, MS 737
Phone 5862, Room 1217

2. Questions concerning routine disposal practices should, as in past practice, be directed to John Enders.

Location: CMR Building, MS 737
Phone: 6095, Room 1221

II. Establishment of standard operating procedures.

The Laboratory Policy calls for the establishment of Standard Operating Procedures (SOP) in the implementation of the Policy, such procedures to be established by the Laboratory unit having the operational responsibility. These procedures should include all steps from the initial generation of the waste, segregation procedures necessary, types of containers, methods of shipment, and procedures for special problems.

1. Group H-1 will serve as an immediate interface between the Waste Management Section and the Operating Groups. The H-1 Group Leader will have responsibility for the approval of such procedures from the standpoint of radiation safety.
2. Group H-8 will be the approving authority for waste management aspects of procedures relating to waste characteristics, packaging and subsequent waste handling within H-Division
3. H-1 will coordinate SOP review and approval.

III. Waste Categories

Four categories of LASL-generated solid waste have been identified and are segregated according to their actual or potential content of radioactive materials.

- A. Materials for which there is assurance that no radioactive materials are present are taken by the Zia Company to the sanitary landfill operated by Los Alamos County.
- B. Wastes which are, or are judged to be, contaminated with radioactive isotopes other than the transuranics, and/or with transuranic activity concentrations less than 10 nCi/g (100 nCi/g for ^{238}Pu) do not require storage for later retrieval. These wastes are buried in the LASL burial ground at Mesita del Buey (TA-54).
- C. Wastes which are contaminated, or judged to be contaminated with transuranic elements to levels greater than 10 nCi/g (100 nCi/g for ^{238}Pu) require retrievable storage.
 - 1. The volume of waste over which the 10 nCi/g can be averaged is taken to be the volume of waste package (container) in which a measurement or estimate is made.
 - 2. Procedures shall be estimated to accomplish segregations of small batches of waste material so that the retrievable portions can be handled separately.
 - 3. Highly contaminated wastes shall not be deliberately diluted to circumvent this criterion.
- D. Individual batches of wastes which contain unusual levels or types of radioactive and/or chemical contaminants are to be handled on an individual basis.

IV. Waste Packaging

A. Solid radioactive waste disposed of nonretrievably

All radioactive solid wastes which are to be disposed of nonretrievably shall be provided with appropriate packaging by the originator.

1. Room-type trash should be packaged in cardboard boxes and/or plastic bags.
2. Transuranic contaminated chemical treatment sludge that is <10 nCi/g (<100 nCi/g ^{238}Pu) should be packaged in a minimum .127 mm (5 mil) plastic bag, sealed in a 210-liter (55-gallon) drum.
3. Larger and/or heavier wastes require more substantial packaging such as wooden crates. The Waste Management Section can advise with regard to packaging this type of waste.
4. In those instances where all contamination is fully contained within the waste material, no additional packaging may be required. The Waste Management Section should be consulted in this matter.

B. Solid transuranic waste stored retrievably

1. Wastes which are to be sent to retrievable storage should be packaged, by the originator, in white painted 210-liter DOT 17C (55-gallon) drums containing a 2.29 mm (90 mil) high density polyethylene liner. Both the drums and liners are available from LASL Chemical Stock (SM-31).

DOT 17C 210-liter drum - Stock #LG 1103/West Dock
2.29 mm liner - Stock #LG 3738/West Dock

2. There are locations and situations at LASL where the 210-liter (55-gallon) drum cannot be used because of space limitations and/or waste form. The packaging other than with the 210-liter (55-gallon) drums should be made by agreement between the waste originator and the Waste Management Section of H-8

V. Radioactive Waste Package Labeling

All packages of radioactive solid waste destined for disposal or storage must be clearly labeled as containing radioactive material. Tape and signs appropriate for this purpose are obtainable through LASL Safety Stock (SM-30).

A. Package Labeling Requirements

1. "CAUTION RADIOACTIVE WASTE" tape (Stock Number CM-3263/8G-38) should be used to mark all boxes and bags of waste to be disposed of by burial.
2. All drums containing waste, whether designated for burial or retrievable storage should have attached a "RADIOACTIVE MATERIAL" tag (Form 743) properly filled out.
3. Crates that contain retrievable transuranic waste must have attached a 15.2 cm by 15.2 cm (6"x6") aluminum tag, properly filled out. These tags can be obtained through LASL Safety Stock.
4. All crates containing waste designated for nonretrievable disposal should have affixed the above stated aluminum tag.
5. All retrievable transuranic solid waste packages are to have a serially numbered identification tag permanently attached. These tags will be provided by the H-8 Waste Management Section. The tag number for each package is to be recorded as the reference to the permanent records for that package.
6. Other specific markings and package labeling requirements are required of different waste types. These package marking requirements are to be found in existing LASL Waste Management SOP's.

B. Responsibility for Labeling

1. The individual packaging the waste is responsible for obtaining the required labeling material and for labeling and marking the package properly.
2. The H-1 representative of the area where the package originates is responsible for checking waste packages for compliance with the labeling requirements.
3. The Waste Management facility operator assigned to the solid radioactive waste disposal area will check packages as they are off-loaded at the area to assure that proper labeling and other markings are present.

VI. Records Requirements for Radioactive Solid Waste

In order for the Waste Management Section to maintain the required records system for waste disposal, a LASL Solid Radioactive Waste Disposal Permit will be required with each waste item or shipment, as indicated.

1. For radioactive solid wastes to be disposed of nonretrievably, a properly completed Disposal Permit must accompany each consignment.
2. For transuranic solid waste to be stored retrievably, a properly completed Disposal Permit must accompany each package.

VII. Special Waste Lots

Special lots of materials such as were described under Section III. D. shall require special notification and handling. When such materials are encountered, the following information should be forwarded to the Waste Management Section of H-8 in the form of a memo which will serve as a part of the record.

- a. Number, size and nature of containers
- b. Waste matrix materials in each container
- c. Identify and give the quantity of each radioisotope in each container
- d. Condition of the container
- e. Copy of authorization, by responsible organization to dispose as waste by burial/storage.

The Waste Management Section will review the information, assure any special review and requirements for criticality safety and/or retrievable storage, assess the overall impact of the storage or disposal method to assure that safety will be maintained, and then, implement disposal.

VIII. Waste Volume Reduction

Efforts should be made by LASL Operating Groups in coordination with the Waste Management Section to reduce the volume of radioactive solid waste that is generated. To minimize the quantities of radioactive waste sent to burial, it is suggested that SOP's and physical separation should, wherever feasible, be used as means to delineate work areas which are noncontaminated. Wastes from such areas can be sent to a sanitary landfill rather than to the radioactive solid waste disposal area. Such procedures should specify the controls which are to be exerted by the operating supervision to assure that materials or objects contaminated with radioactivity are not inadvertently placed in the clean disposal containers or dumpsters. These controls should be enforced to assure that the risk of disposing of a contaminated object or material to a noncontaminated landfill is minimal.

OFFICE MEMORANDUM

TO : Streamline Division and Group Leader Listing DATE September 27, 1973

FROM : R. E. Schreiber

SUBJECT : DIRECTOR'S OFFICE MEMORANDUM NO. 48
RADIOACTIVE SOLID WASTE MANAGEMENT POLICY

SYMBOL :
DIR

MAIL STOP :

- A. It is the policy of the Los Alamos Scientific Laboratory to manage radioactive solid wastes in a manner to minimize adverse effects to man and his environment and to provide reasonable assurance that this objective is accomplished. The solid waste management programs and operations will be consistent with the directives and policies of the AEC. Specific items in the Laboratory policy include:
1. The quantities of radioactive materials buried shall be reduced to a minimum consistent with economics, technology, and safety.
 2. The problems associated with waste having unusual properties, configurations, or quantities of radioactive materials, shall be investigated before storage or disposal of the waste is accomplished. The rationale for the action and the safety of the proposed method of handling shall be documented.
 3. All technically and economically practical measures shall be taken to minimize the volumes of radioactive solid wastes placed in burial grounds or retrievable storage.
 4. The quantities of transuranic elements placed into retrievable storage or burial grounds shall be reduced to the technically and economically practical minimum.
- B. To implement this policy, the following administrative responsibilities are assigned:
1. H Division shall be responsible for operating the waste disposal and retrievable storage facilities and for the routine transportation operations for radioactive solid waste at LASL.
 2. H Division shall provide criteria for the packaging and subsequent handling of the waste.
 3. The Divisions and Departments of the Laboratory that generate solid waste shall be responsible for minimizing the quantities generated and for packaging.

4. Nonroutine packaging, handling, or transportation problems should be identified by operational units in sufficient time to permit advance planning. Proposed solutions, including funding considerations, for such unusual problems shall be the responsibility of the waste generating unit of the Laboratory and shall be reviewed and approved by H Division prior to implementation.
5. Standard Operating Procedures (SOP) for all routine operations and for all operations involved in nonroutine problems shall be established by the unit of the Laboratory with operational responsibility in accordance with existing requirements of the Laboratory.
6. H Division shall conduct an annual audit of the Laboratory's overall solid waste management operations to evaluate the Laboratory program against established criteria, standards, and policies.
7. The Laboratory Radioactive Waste Management Committee shall be responsible for maintaining cognizance of all Laboratory activities in waste management, serving as an advisory group in operational matters, and providing the Director's Office with recommendations as appropriate.

C. The membership of the Laboratory Radioactive Waste Management Committee is:

J. W. Healy, Chairman	C. J. Umbarger
H. S. Jordan, Secretary	D. R. Smith
W. J. Maranan	V. J. Stephens
R. J. Bard	



R. E. Schreiber
Acting Director