

ITEM 180
WASTE DISPOSAL

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HEALTH PHYSICS
WALTER REED ARMY MEDICAL CENTER
Washington, D.C. 20012

HSWP-QHP
MEMO #3

12 July 1979

RADIOACTIVE WASTE MANAGEMENT AND CONTROL

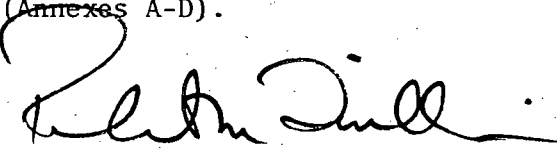
1. GENERAL Radioactive waste from Walter Reed Army Medical Center (WRAMC) and tenant activities will be controlled, packaged and disposed of in accordance with AR 755-15, "Disposal of Supplies and Equipment-Disposal of Unwanted Radioactive Material"; Title 10, Code of Federal Regulations; Title 49, Code of Federal Regulations; the WRAMC Nuclear Regulatory Commission License; and the applicable provisions of State Government Nuclear Regulation Licenses which delineate the criteria for the receipt and disposal of radioactive wastes within those states.

2. HEALTH PHYSICS OFFICE RESPONSIBILITIES The Health Physics Office is responsible for assuring that all radioactive waste is disposed of in accordance with the above directives.

3. PRINCIPAL USER'S RESPONSIBILITIES Principal Users of radioactive materials at WRAMC are responsible for the collection and handling of radioactive waste in accordance with the enclosed instructions (Annexes A-D).

4 Incls

1. Annex A-Radioactive Waste Control in Laboratory/Clinic
2. Annex B-Release of Radioactivity Into The Sanitary Sewage System
3. Annex C-Collection, Local Transportation & Storage of Radioactive Waste
4. Annex D-Radioactive Waste Disposal Supplies


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This Memo supersedes Memo #3, dated 31 May 1974.

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Annex A

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RADIOACTIVE WASTE CONTROL IN THE LABORATORY/CLINIC

ANNEX A

1. Principal Users are responsible for assuring that radioactive waste resulting from the conduct of authorized procedures is controlled in a manner that meets the safety/security measures prescribed by US Army, Federal, and applicable State Regulations. All Users of radioactive materials are responsible for:

a. Segregating their radioactive waste into the categories listed below:

- (1) Solid, combustible
- (2) Solid, non-combustible
- (3) Liquid, combustible
- (4) Liquid, non-combustible
- (5) Gas, combustible
- (6) Gas, non-combustible
- (7) Animal carcasses and/or animal waste
- (8) Short half-life materials (8 days half-life or less)
- (9) Special materials (e.g. Bactec vials, liquid scintillation vials)

b. Limiting the non-radioactive waste which is intermixed with radioactive waste to an absolute minimum.

c. Removing or obliterating all labels on non-radioactive vendor shipping packages and on radioactive waste that has been held for decay to background level before such waste is placed in the normal trash. The determination that radioactive waste has reached background level will be made using a thin-window beta-gamma meter.

d. Storing used Mo-99/Tc-99m generators and other items of equipment containing radioactive materials in designated areas only. The radiation labels will be removed on such items only when they reach background levels. When they reach background levels, they can be disposed of as normal trash; otherwise they must be disposed of as radioactive waste.

e. Maintaining their inventory of radioactive waste to a practical minimum.

f. Controlling radioactive waste in their work areas to prevent unauthorized disposal by the custodial service. Magenta plastic bags will be used to hold radioactive waste. Magenta bags will not be used for other purposes.

g. Insuring that radioactive waste is not disposed of by incineration or burial.

h. Marking all radioactive waste containers with the radiation caution symbol and the words "Caution-Radioactive Waste" and/or "Caution-Radioactive Material".

i. Insuring that radioactive material is not released into the sanitary sewage system from holding tanks or other storage containers without the specific approval of the Health Physics Officer.

j. Disposing of radioactive waste via laboratory sinks into the sanitary sewage system only when it is determined by the Health Physics Office that it is feasible to establish the controls delineated in Annex C of this memorandum.

2. All users of radioactive materials will package their materials for disposal as follows:

a. Solid radioactive wastes shall be placed in double magenta plastic bags or a receptacle lined with double magenta plastic bags. When full, the bags will be

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taped closed. The bags will be tagged with the user's identification and information concerning the contents, isotope(s) and activity. If plastic bags are used for radioactive waste containing Tritium, they will be placed inside of a Kraft paper bag.

b. Liquid waste that is retained for disposal shall be collected in plastic bottles or sealed in cans to diminish the breakage hazard. However, liquid waste that will chemically react with plastic and liquid waste containing Tritium should be placed in glass bottles. All bottle caps should be taped prior to placing them in an appropriate radioactive material container for transfer to the Health Physics Office. The bottle or can will be marked with the user's identification and information concerning the contents.

c. Scintillation vials shall be packaged separately from other materials. They will be placed unopened in double magenta plastic bags. Care must be taken to prevent breakage of the vials while in the plastic bags. The bags will be tagged as previously indicated.

d. Bactec vials shall be packaged separately from other materials. They will be autoclaved prior to transfer to radioactive waste. Bactec vials will be placed in double magenta plastic bags. These vials will not be opened as part of the waste disposal process. Care must be taken to prevent breakage of the plastic bags. The bags will be tagged as previously indicated.

e. All broken glassware, vials, bottles, tubes and similar items must be packaged in double magenta plastic bags and then placed in small cardboard boxes with tops. The bags and the box will be tagged as previously indicated.

f. Radioactive gases for disposal will not be transferred to the Health Physics Office without the prior coordination with the Radioactive Materials Control Branch.

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g. Short half-life materials and items contaminated with short half-life materials shall be separated from other materials, providing there is no chemical or biological hazard involved. All radioactive warning labels must be defaced on all vials and materials prior to placing the items in the double magenta plastic bags. The bags will be tagged as previously indicated.

h. Biological wastes (e.g. carcasses) shall be prepared and packaged in accordance with the requirements of the waste disposal facility. Specific instructions will be furnished depending upon the facility to which the waste shall be shipped.

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RELEASE OF RADIOACTIVITY INTO THE SANITARY SEWAGE SYSTEM

ANNEX B

1. Liquid waste will be disposed of in the sanitary sewage system in accordance with 20.303 of 10 CFR 20 and paragraph 2 of this Annex.
2. The following policy and procedures apply to all individuals desiring to release radioactive material into the sanitary sewage system via laboratory sinks:
 - a. Such release approval must be specifically included in the Principal Users WRAMC Authorization.
 - b. The sink through which the material is discharged must be conspicuously posted with a sign bearing the Radiation Caution Symbol and the words, "Caution-Radioactive Material Disposal Sink".
 - c. The sink must be posted with a notice to the user that the radioactive material discharged through the sink must be readily soluble or dispersible in water and does not contain any substance which is hazardous to health or will result in substantial harm to domestic animals, fish, shellfish or wildlife.
 - d. A record of the identity and activity of material discharged through the sink must be maintained by the user. All releases must be documented by date, time, location, isotope and total activity. This data will be reviewed for compliance and the total gross activity released recorded.
 - e. The material must be essentially neutral, i.e., pH of 6.0-8.0.
 - f. The quantity of any material released by the user in any one day will not exceed the limits established by the Health Physics Officer.

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3. Daily release by Walter Reed Army Medical Center is limited by the average daily sewage flow of 5×10^9 ml. Release at Ft. Meade, Ft. Myer and/or Ft. Detrick would be limited by the sewage flow for those posts. Total yearly release will not exceed 3 curies at Walter Reed Army Medical Center.

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COLLECTION, LOCAL TRANSPORTATION AND STORAGE OF RADIOACTIVE WASTE

ANNEX C

1. Properly packaged radioactive waste will be brought to a centralized location in Building 40, Walter Reed Army Institute of Research; Building 2, Walter Reed Army Medical Center; Building T-2, Walter Reed Army Medical Center; Building 2490, Ft. Meade or Building 525, Ft. Myer as appropriate. Under the supervision of the Health Physics Office, wastes will be placed in barrels or other required containers. Wastes for disposal must be categorized as listed in Annex A. Waste that has not been properly separated and tagged will not be accepted. Such waste must be repackaged by the user.
2. Radioactive wastes from the U.S. Army Medical Research Institutes of Infectious Diseases (USAMRIID), Ft. Detrick, will be transferred to the Radiation Protection Officer, Ft. Detrick (USNRC License Number 19-01151-02). USAMRIID will comply with the requirements of Ft. Detrick for transfer of waste to Ft. Detrick.
3. Principal Users will assure that packaged radioactive waste delivered to the above noted collection points is kept under constant surveillance until removed by Health Physics personnel to preclude the possibility of loss or theft.
4. Except for USAMRIID, all radioactive waste will be transported from the above noted collection points to the Radioactive Material Storage Areas located in Buildings 149-A, 509, and 516, Forest Glen Section, WRAMC, in accordance with the

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procedures outlined in Health Physics SOP #1-4, AR 55-55 and Title 49 CFR.

5. Building 149-A, Forest Glen Section, WRAMC will be used for storage of radioactive liquid scintillation vial waste and radioactive biological waste. Buildings 509 and 516, Forest Glen Section, WRAMC will be used to store all other radioactive waste.

6. Storage areas are considered "Restricted Areas" and will remain locked to preclude the possibility of loss or theft and protect individuals from exposure to radiation or radioactive materials.

7. Radioactive Material Storage Areas will be posted by Health Physics personnel with the appropriate warning signs prescribed by Title 10, CFR, Part 20.203.

8. Wastes will be packaged for ultimate shipment and disposal in accordance with the instructions furnished by the waste disposal contractor. The waste disposal contractor is determined by US Army Armaments Command in accordance with AR 755-15.

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RADIOACTIVE WASTE DISPOSAL SUPPLIES

ANNEX D

1. Items of supply for the containment and packaging of radioactive waste are stocked by the Supply and Administration Branch, Materiel Division, Directorate of Industrial Operations, WRAMC. The stockage items meet US Army and Federal radioactive material packaging requirements for most of the radioactive waste resulting from laboratory and/or clinic procedures at WRAMC, WRAIR and AFIP. However, it should be noted that packaging requirements vary with the particular type, form and curie amount of the radioactive waste. Consequently all personnel involved with the packaging of radioactive waste should consult the Health Physics Office in order to assure that the available stockage items meet packaging specification requirements for each particular radioactive waste disposal operation.

2. Following are the currently stocked items:

- (a) DRUM, Steel, DOT Specification 17-H, 30 gallon with gasket & sealing bolt. (Used as shipping container for the transport of radioactive liquids)
- (b) DRUM, Steel, DOT Specification 17-H, 55 gallon with gasket and sealing bolt. (Used as a shipping container for the transport of low-level radioactive materials).
- (c) VERMICULITE, 4 cu ft bags (Used as an absorbent material for the packaging of biological radioactive waste).
- (d) SODIUM CHLORIDE, Rock (Used to retard spoilage of biological radioactive waste).
- (e) BAG, Plastic, Yellow, 34" x 60", 4 mil thickness (Used as a liner for 55 gallon drum)

(f) BAG, Plastic, Magenta, 13" x 124", 2 mil thickness (Used as a liner for small laboratory radioactive waste receptacle).

(g) DIATOMACEOUS EARTH, Dicalite 4200, 2.5 cu ft bag (Used as an absorbent material for packaging of liquid radioactive waste)

3. Additional items will be stocked or procured as required to meet the provisions of Federal/State regulatory agencies.

4. Principal Users are responsible for funding the costs of materials and supplies used to dispose of radioactive wastes.