

3.1.17

EMS Aspects: Radioactive Wastes, Research

Aspect Ranking: 7

The use of radioactive isotopes is essential to research activities conducted at The University of Texas Health Science Center at Houston (UTHSC-H). The Environmental Health and Safety's (EHS), Environmental Protection Program (EPP) performs the duties of radioactive waste disposal and license condition activities associated with radioactive wastes for the immediate UTHSC-H campus and its satellite campuses.

Radioactive Waste Management

Task/Activity Description:

Radioactive wastes are regulated by the Texas Department of State Health Services in [25 TAC 289](#). These regulations detail isotope activity disposal limits and specific exemptions utilized by the EPP to manage radioactive wastes in a cost effective manner.

In general, radioactive solid and liquid wastes are segregated according to half-life at the point of generation by the researcher, then managed and disposed by the Environmental Protection Program. A summary report is provide to the Institutional Radiation Safety Committee on a monthly basis outlining the type and amount of radioactive waste generated and disposed, as well as disposal costs and program savings accomplished by the Environmental Protection Program.

Solid radioactive wastes with short half lives are allowed to decay to background level in alcoves maintained by the EPP prior to processing for disposal. Radioactive waste with half lives less than 300 days that have not reached background level in the alcoves are compacted and disposed according to 25 TAC § 289.202(ggg)(7). Waste which contains ^3H , ^{14}C , ^{125}I is disposed according to 25 TAC § 289.202(fff)(1)(a) which provides an exemption for wastes which contain less than 0.05 microcuries per gram. Long lived wastes such as ^{36}Cl and ^{22}Na are stored in the Cyclotron Vault, until a cost effective method for disposal is available.

Liquid scintillation vial wastes are collected from the radioactive waste alcoves by EPP staff and are processed by shredding in the Cyclotron Facility (CYF) waste room. The liquid scintillation cocktail is recycled, and the solid portion washed prior to disposal.

Liquid wastes are disposed as a sanitary sewer release according to 25 TAC § 289.202(ggg)(3) by EPP staff in the radioactive waste rooms located at the Dental Branch, CYF, and Institute of Molecular Medicine. .

EPP personnel stock alcoves with thick mil bags, cable tie wraps, and labels and insure alcoves at each building are emptied on an as needed basis. The EPP picks up radioactive liquids Monday, Wednesday, and Friday from individual labs.

Records of all radioactive wastes disposed of are kept by the EPP at the CYF for a period of at least two years. These procedures are detailed in Guidance Documents 4.1, 4.3, 4.4, 4.8. Isotope inventory for primary investigators is managed by the Radiation Safety Program utilizing Environmental Health & Safety Assistant and Inventory Disposal Forms.

Key Control Points:

- Radioactive liquid, solid, and vial waste areas are secured, liquid waste pickups are scheduled by lab personnel by calling the automated waste collection line at 713-500-5837, waste is collected, quantified, and disposed by EPP

Related Forms, Records, SOPs:

- [Guidance Document 4.1 - Disposal of 300 d Waste.doc](#)
- [Guidance Document 4.3 - Disposal of Biomedical Exempted Waste.doc](#)
- [Guidance Document 4.4 - Disposal by Decay in Storage.doc](#)
- [Guidance Document 4.5 - Operation of Solid Waste Compacter.doc](#)
- [Guidance Document 4.7 - Operation of vial shredder.doc](#)
- [Guidance Document 4.8 - Disposal of liquid RAM by Release to Sanitary Sewer.doc](#)

Personnel Responsible:

Primary Investigator and Lab Personnel

- Ensure waste disposal guidelines are followed, wastes are labeled and stored properly
- Call EPP and request liquid waste pickups
- Attend Basic Radiation Safety Training

Safety Specialists, EPP

- Provide containers, bags and labels when needed
- Perform liquid waste pick-up from individual labs, transport to central storage area, discharge to sanitary sewer after recording activities

- Pick-up solid and vial waste from alcoves which has decayed to <2x background, segregate according to waste rules, record activities from labels
- Retain waste disposal manifest and records in Radioactive Waste Binders, located at the CYF

Safety Manager, EPP

- Review waste volumes collected and generate committee report
- Report waste management activities to Radiation Safety Committee and Executive Safety Council

Director, EHS

- Provide management review
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Environmental Compliance (Radioactive) Program

Task/Activity Description:

Monthly & Quarterly Surveys

To comply with rules set forth by the Texas Administrative Code and the UTHSC-H radioactive license conditions, routine surveys are conducted by the EPP. Alcoves are surveyed quarterly and waste processing rooms are surveyed monthly. Wastes contained in alcoves are LSC vials, solid wastes, and lead pigs. Liquid wastes are kept in the laboratories until removed by EPP personnel.

Radioactive wastes with half lives less than 300 days is “spot checked” using a Geiger Mueller detector and compared against an “activity vs. meter response” graph on a quarterly basis.

Key Control Points:

- Identify potential mismanagement of radioactive wastes, improper storage, or impacts to public and personnel health from radioactive material contamination

Related Forms, Records, SOPs:

- [Guidance Document 4.2 - Spot Checking of 300 day half life RAM Waste.doc](#)

Personnel Responsible:

Safety Specialists, EPP

- Maintain waste records at CYF
- Perform monthly and quarterly surveys of alcoves and waste processing rooms, respectively
- Perform quarterly quality assurance surveys
- Monitor schedule through the EPP compliance calendar

Safety Manager, EPP

- Review documents from waste disposals
- Complete monthly Committee Reports

Director, EHS

- Provides oversight and appropriate actions on the compliance process
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Initial Training-Basic Radiation Safety Training – Communication

Task/Activity Description:

For the communication of radioactive programs and environmental management systems, the EPP provides waste training on a routine basis for all university faculty, students, and staff working with radioactive material. This training introduces and reinforces environmental management system principles and waste management specific to the EPP's waste disposal practices and compliance with Texas Administrative Code. The waste training is lead by the EPP staff and is provided in conjunction with training provided by Radiation Safety.

Key Control Points:

- Communicate environmental and waste disposal compliance requirements and environmental management concepts to personnel who generate radioactive wastes

Related Forms, Records, SOPs:

- EPP Waste Disposal Procedures

Personnel Responsible:

Primary Investigator

- Insure lab workers attend proper training and follow waste management procedures

Safety Manager/Safety Specialists, EPP

- Develop training materials and submit updates to for web page
- Present training materials to faculty, staff, and students
- Document training by obtaining a sign in sheet with all participants listed, deliver sign in sheet to EH&S administrative assistant who will enter names of personnel trained into a training data base

EH&S Director

- Provide management review