3.1.12

EMS Aspect: Regulated Waste Management, EPP

Aspect Ranking: 9

Conducive to the University of Texas Health Science Center at Houston (UTHSCH) mission, research is conducted at numerous locations throughout our campus. The use of radioactive isotopes, solid and liquid chemicals, and the use of infectious agents is essential to research activities conducted at The University of Texas Health Science Center at Houston (UTHSC-H). The Safety, Health, Environment & Risk Management's (SHERM), Environmental Protection Program (EPP) assists with the management of all three waste streams that are produced from the research activities conducted at the university.

Biological Waste Management

Task/Activity Description:

Biological wastes are a specific type of hazardous waste that is subject to 25 TAC 1.132 which states the definition, and treatment and disposition requirements for special waste from health care-related facilities (SWFHCRF).

Solid biological waste from research laboratories should be autoclaved near the point of generation. Minimum autoclave waste treatment parameters are 30 minutes, at 15 PSI, at least 121 degrees Celsius. As part of the treatment process, the researcher or waste autoclave room attendant must also fill out the use log and perform routine sterility or parameter monitoring as detailed in Guidance Document 2.2 - Onsite treatment of SWFHCF.

The Environmental Protection Program records monthly amounts of biological waste treated at each waste autoclave. The amount in pounds is reported to the Institutional Biological Safety Committee on a monthly basis. The amount treated each month is also used to determine efficacy testing frequency for autoclaves utilized for biological treatment.

If a waste autoclave is inaccessible to the department, or if the biological waste contains materials such as fecal samples, nanoparticle waste, or exempt quantities of radioactive material, the solid waste is shipped offsite for treatment and disposal.

Sharps are placed into rigid plastic containers provided at no cost by the EPP. The Environmental Protection program collects full, closed sharps containers directly from the research laboratories or clinics.

Researchers and clinicians at the Medical School and Mental Science Institute can request biological waste boxes and liners by calling the hazardous waste line at 713-500-5837. Researchers and clinicians at other locations can obtain boxes and liners at a regional biological waste storage rooms.

Biological wastes for offsite shipment are stored in dedicated biological waste storage areas and are removed and treated offsite on a routine basis.

Biological waste treatment records are kept for all sites at OCB 1.330.

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 ^{3}H, ^{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 non hazardous 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 Sarofim Research Building.

The Environmental Protection Program 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 three 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.

Chemical Waste Management

To comply with the hazardous waste regulations set forth in 40 CFR 261, specifically generation and storage requirements, the EPP manages the disposal of all hazardous wastes generated in UHTHSC-H laboratories. EPP provides guidance to UT faculty, staff and students for the collection and storage of hazardous wastes.

Task/Activity Description:

Satellite Accumulation Areas (SAA's)

Laboratories generating and storing chemical wastes resulting from research procedures are called Satellite Accumulation Area's. The Environmental Protection Program provides compatible containers for the collection of the chemical wastes. Laboratory personnel are instructed to place a label on waste containers indicating its contents, date full, and lab room number. If the contents of the container are hazardous the label must include the words "Hazardous Waste".

Central Accumulation Area's (CAA'S)

After chemical wastes are collected from SAA's they are moved to a Central Accumulation Area by EPP personnel, where waste is managed for offsite disposal. The solid waste will either be stored in cabinets according hazardous characteristics. Non-regulated solid wastes are packed into drums for direct disposal by EPP at a type I municipal landfill. liquid waste will be bulked if it has a flammable or toxic code into drums. Liquid hazardous waste incompatible with flammable or toxic bulk wastes are stored in cabinets.

Key Control Points:

- Biological wastes are stored in a secured area, or waste pick-ups are scheduled by supervisor or staff by calling automated waste collection line at 713-500-5837 Option #3, waste is collected/disposed by EPP or approved contractor

- Waste volumes treated onsite by autoclaving is tracked and reported to the Institutional Biological Safety Committee

- Radioactive liquid, solid, and vial waste areas are secured, liquid waste pick-ups are scheduled by lab personnel by calling the automated waste collection line at 713-500-5837 Option #1, waste is collected, quantified, and disposed by EPP, records of disposal are kept at the CYF

- Chemical waste are stored in a secured are, all chemical waste pick ups are scheduled by lab personnel by calling the automated waste collection line at 713-500-5837 Option #2, waste is collected then disposed of by EPP or approved contractor

- The Environmental Protection Program manages hazardous waste and determines generator status and completes annual waste summary

Related Forms, Records, SOPs:

Biological Waste

- Institutional Biosafety Manual
- Guidance Document 2.2 - Onsite treatment of SWFHCF
- Texas Administrative Code (25 TAC 1.132)
- Texas Administrative Code (30 TAC 330.1201)

Radioactive Waste

- 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

Chemical Waste

- Guidance Document- Disposal of ETBR waste
- Guidance Document- Collection of Chemical Waste
- Guidance Document- Hazardous Waste Determination
- Environmental Health & Safety Web Page
- Chemical Waste Manifests

Personnel Responsible:

Biological Waste

Laboratory Personnel

- Autoclave applicable biological wastes
- Ensure biological waste containers ready for pickup are closed
- Transport wastes to secure regional biological waste storage rooms
- MSB and MSI laboratories, call EPP and request waste pickups
- Utilize sharps containers for sharps such as needles, broken glass, and razor blades

Safety Specialists, EPP

- Provide containers, red liners, and sharps containers
- Perform biological waste pick-ups and transport to secure storage area
- Document number of biological waste pick-ups on a monthly basis, record number of pickup request on the EPP compliance calendar
- Maintain regional biological waste storage rooms and arrange for offsite shipments

Safety Manager, EPP

- Review waste volumes collected
- Report waste management activities to the Institutional Biological Safety Committee and Executive Safety Council

Director, EHS

Provide program oversight and review

Radioactive Waste

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 < 2 times 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 program oversight and review

Chemical Waste

Primary Investigator and Lab Personnel

- At the point of generation, these individual are responsible for proper containment, labeling, storage and initiating the collection of research waste.

Safety Specialists, EPP

- Conduct RCRA hazardous waste management procedures
- Collect chemical research waste and assist researchers determine hazardous wastes
- Supply lab personnel with appropriate waste containers and labels
- Prepare hazardous waste in CAA for transportation and disposal, per DOT

Safety Manager, EPP

- Review waste volumes collected and generate committee report
- Report waste management activities to the Institutional Chemical Safety Committee and Executive Safety Council
- Review hazardous waste program for compliance with environmental regulations

Director, EHS

- Provide program oversight and review

Routine Management of Hazardous Waste to meet regulations:

Hazardous Waste Characterization (30 TAC 335.511)

Existing knowledge about the research processes and materials are utilized to classify hazardous, universal, and recyclable wastes. Material safety data sheets, manufacturers' literature, and other documentation generated in conjunction with a particular process or item are used to demonstrate process knowledge.

Universal Waste (40 CFR 273, 30 TAC §335.261)

"Small Quantity Handler of Universal Waste" means a universal waste handler who does not accumulate at any time 5,000 kilograms or more total of universal waste calculated collectively. "Universal Waste" means any of the following hazardous wastes that are subject to the universal waste requirements to include batteries, pesticides, mercury containing articles and thermostats, paint and paint-related waste, and spent lamps.

Emergency Response for Hazardous Materials (40 CFR 262.34(d)(5))

Incidents reported to EHS are entered into an incident database. The database is built into the EMS to enter in incidents as they occur and allowing for tracking, documentation, follow-up, and corrective action. Employees handling hazardous waste are trained annually at an appropriate level on emergency response procedures.