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## **EC 02.02.01 HAZARDOUS MATERIALS AND WASTE MANAGEMENT**

*The Hospital manages risks related to hazardous materials and waste.*

***The Hospital and its offsites develop and maintain written management plans describing the processes it implements to effectively manage hazardous materials and waste.***

The Hospital's Hazardous Materials and Waste Management Plan is developed and implemented by the Department of Environmental Health & Safety (EH&S) and monitored by the EC Committee through Hazardous Materials and Waste Management working groups, as required, and Stony Brook University Hospital (SBUH) Radiation Safety Committee. Environmental Health and Safety developed this document to identify and educate staff on the processes utilized to provide a safe, secure, and environmentally friendly work area. The Hazardous Materials and Waste Management Plan describes how the Hospital establishes and maintains a program to safely control hazardous materials and wastes. The Plan is a comprehensive plan that meets or exceeds all Federal, State and local regulations and accrediting agency requirements. The plan is designed, communicated, implemented, measured, assessed and changed when improvements are needed and as regulations require. The Hospital Safety Officer reviews the Hazardous Materials and Waste Management Plan at least annually and it is updated as needed.

The Hospital off sites policy and procedures are included in the EH&S Policy and Procedures. Staff in these facilities receives training in hazardous materials and wastes in Recertification and Orientation training. Regulated medical waste is collected from hospital off sites by an authorized regulated medical waste contractor. Site-specific handling and disposal procedures, and emergency procedures are identified in these EH&S policies. Radiation Protection Services, provides oversight and monitoring for all off site facilities using radioactive materials (i.e. Non-invasive Cardiology clinics at Stony Brook Tech Park and Islandia).

- 1. The Hospital maintains a written, current inventory of hazardous materials and waste that it uses, stores, or generates. The only materials that need to be included on the inventory are those whose handling, use, and storage are addressed by law and regulation.***

The Hospital creates and maintains chemical inventories of hazardous materials by department and enters these inventories online in our MSDSPro database. These inventories are linked to Material Safety Data Sheet (MSDS). Hospital staff has access to MSDSPro through the Hospital's intranet. Once the department's inventory is entered online, the department can manage their inventory and MSDSs. Environmental Health & Safety uses an internal manifest system to track hazardous waste collected from the Hospital.

The Stony Brook University Radiation Safety Officer (RSO) keeps records of the receipt, storage, use, transfer, and ultimate disposal of all ionizing radiation producing equipment, nonionizing radiation producing equipment and radioactive material. The RSO oversees the Low Level Radioactive Waste Decay in Storage program that allows SBUH to decay radioactive material with a T ½ life under 90 days (i.e. Tc-99m, I-131, TI-201, Ga-68, I-125, P-32). This program contributes to the Hospital's waste minimization program.

- 3. The Hospital has written procedures, including the use of precautions and personal protective equipment, to follow in response to hazardous material and waste spills or exposures. (see response for #4)***
- 4. The Hospital implements its procedures in response to hazardous material and waste spills or exposures.***

EH&S Policy 2-6 (Hazardous Materials Spill Plan), EH&S Policy 4-2 (EH&S Laboratory Safety Manual), EH&S Policy 4-9 (Selecting, Using, Handling, Storing, Transporting and Disposing of Hazardous Materials) and EH&S 7-1, Personal Protective Equipment detail procedures to follow in the event of a hazardous material spill or exposure.

**5. *The Hospital minimizes risks associated with selecting, handling, storing, transporting, using, and disposing of hazardous chemicals.***

The Hospital trains its staff in the proper handling, storage, transporting, using and disposing of hazardous chemicals through orientation and annual recertification trainings, departmental trainings, policies and procedures, reference cards, newsletters and email updates. Following are hazardous materials that may be encountered in the Hospital:

***Chemicals (including laboratory chemicals, solvents, pesticides, and cleaning products)***

- a. **Selecting.** The Laboratory Product Evaluation Committee evaluates all new requests for laboratory chemicals and makes recommendations to the Product Management Committee (PMC). Healthcare Epidemiology evaluates Hospital Custodial Services (HCS) new cleaning products prior to them being submitted to the PMC for approval. Proposed chemical based products used in patient care areas are also reviewed by PMC. A representative from EH&S now sits on the PMC committee and assists with reviewing the proposed product's toxicity.
- b. **Use and Handling.** Employees are trained on proper chemical use and handling at Right to Know training presented at Orientation and at annual recertification training, and through departmental training. Hospital Receiving trains their staff on proper handling, inspecting, transporting and the proper procedure to follow in the event of a hazardous chemical spill. Site specific training is provided for specific uses such as formaldehyde.
- c. **Storing.** Chemicals are stored according to manufacturer's specifications and compatibility requirements. Labs are being trained to store chemicals based on the Department of Transportation hazard codes or the Fisher Scientific codes.
- d. **Transporting.** Chemical containers are inspected upon delivery to receiving areas and/or to the user department. Chemical products or their containers that are damaged or leaking are not accepted. Chemicals including compressed gas cylinders which are not properly labeled will not be accepted. The Receiving and Courier department receives and distributes chemicals throughout the Hospital. If a chemical is damaged, it is noted on the tracking slip and the ordering department is notified. For an infectious substance package, the ordering department must report damaged or missing packages to the shipper and the CDC. If there is a spill of a chemical during transport, spill response is initiated by contacting University Police at 911.
- e. **Disposing.** Waste determinations are conducted by generating departments on hazardous materials to determine proper waste disposal, as per Administrative policy EC:0045. EH&S assists staff in waste determinations throughout the Hospital. Hazardous wastes are collected in waste satellite accumulation areas, less than 90 day hazardous waste storage areas and universal waste storage areas. Hazardous waste is collected by the Hospital's hazardous waste contractor weekly, monthly and by EH&S on an as-needed basis.
- f. **Other Hazardous Chemicals or Materials:**
  - i. **Asbestos**
    - 1 **Identifying.** Confirmed, presumed and suspect asbestos containing materials are present in the Hospital as outlined in the EH&S Asbestos Management Policy 8-3. Prior to any construction or demolition activity, Federal and State regulations require an inspection and bulk sampling of all suspect materials to be performed

by a certified asbestos inspector. This inspection may be performed by EH&S or an outside consultant. Samples are analyzed by a laboratory certified by the NYS DOH Environmental Laboratory Approval Program to determine asbestos content.

2. Abatement and Disposal. Abatement projects are coordinated through Environmental Health and Safety using one of the University's contract abatement contractors and an environmental testing consultant. For minor projects which are less than 10 sq. ft. or 25 linear feet and are associated with operations and maintenance, EH&S holds a NYSDOL Asbestos Handling License and has certified asbestos workers to conduct these projects, and any asbestos waste generated is removed by a licensed waste hauler to an Environmental Protection Agency (EPA) and State approved disposal site.

**ii. Tanks**

1. Use. There are nine #2 fuel oil tanks, three diesel tanks, two oil/water separator, one used oil tank and five chemical storage tanks located on East campus.
2. Monitoring and Inspection. Hospital Plant Operations inspects the LINAC underground storage tank weekly, LINAC aboveground storage tanks and the heliport's oil/water separator monthly. Any deficiencies are recorded and corrected. Monthly inspection records are maintained by the Plant Operations. EH&S performs quarterly inspections of the inspection reports. East Campus Power Plant associated tanks are inspected the University's Power Plant staff. The high level alarms for the University Hospital generator day tanks and LINAC day tanks are tested monthly for operability by Hospital Plant Operations personnel. New York State Department of Environmental Conservation performs annual tank inspections. Records are maintained for 10 years according to 6 NYCRR Part 613.6.

**iii. Pesticides**

1. Selection and Use: The Hospital uses an Integrated Pest Management (IPM) technique to perform pest management services. This service identifies, monitors and designates the appropriate treatment remove pests and / or possible infestations. The Hospital uses a commercial vendor who may apply pesticide based on select New York State registered pesticides for use.
2. Tracking: The vendor identifies pesticide use and provides weekly reports to Hospital Custodial Services for any service provided.

**iv. Infectious and Regulated Medical Waste, including sharps**

1. Handling, Storing and Transporting of Infectious and regulated medical. RMW is collected, stored and prepared for disposal by Hospital Custodial Service prior to its removal from the facility. Sharps containers are placed throughout the facility, in all patient rooms, med rooms and care giving units, Sharps containers are removed and serviced per a schedule overseen by HCS.
2. Disposal of all RMW including Sharps is performed by a licensed certified vendor is responsible for the transport to a disposal following the appropriate State and Federal Guidelines.

**6. The Hospital minimizes risks associated with selecting, handling, storing, transporting, using, and disposing of radioactive materials.**

- a. **Selecting.** The RSO, according to license requirements, approves all radioactive material purchases in advance with authorization from the University Radiological Protection Committee (URPC). Radiation Protection Services (RPS) maintains a database that screens all Authorized User purchases and ensures that all inventories and isotopes match Authorized User Permit limits.
- b. **Use, Handling and Storing.** The SBUH Radiation Safety Committee oversees the use, handling and storage of radioactive materials. RPS provides all users with radiation safety training in order to ensure that all SBUH employees properly handle and work around sources of ionizing radiation. RPS monitors exposure to staff (i.e., personnel dosimetry, ionization chambers, GM monitors) and performs quarterly radiation control area inspections. All items of noncompliance are properly identified and the authorized user is provided with 10 days in order to resolve all issues and respond with a corrective action plan. RPS performs annual quality assurance tests on all lead apron shields in use at the Hospital. Lead aprons that fail the X-ray QA test are removed from service and properly disposed of through our hazardous waste contractor.
- c. **Transporting.** Only properly DOT trained personnel transport radioactive material in the Hospital.
- d. **Disposing.** Radioactive waste is disposed in radioactive waste containers. Short lived radioactive waste is allowed to decay in the RPS controlled Low Level Radioactive Waste (LLRW) Decay in Storage facility in the Health Science Center and at the RPS Hazardous Materials Management Facility prior to proper disposal as municipal solid waste. The RSO does oversee a LLRW Decay in Storage program that allows the Hospital to decay radioactive material with a T  $\frac{1}{2}$  life under 90 days, contributing to the waste minimization program.
- e. RPS has a strong enforcement policy that is applied to all authorized users who have repeat items of non-compliance throughout the year. All enforcement action is carried out through the URPC and may include suspension of authorized user's ordering privileges or based upon severity a complete cease and desist order regarding the handling of all RAM.
- f. The radiation protection program establishes uniform policies and procedures (EH&S 6-1) for the safe use of all sources of ionizing radiation within the Hospital. The purpose of the program is to ensure that all sources of ionizing radiation are stored, used and disposed of in accordance with Federal, State and University regulations. To accomplish this, the program provides for monitoring of personnel and facilities and offers other services to assist users in ensuring that radiation exposure is maintained As Low As Reasonably Achievable (ALARA) within the established dose limits. Applicable policies are Procurement EH&S 6-1 section 6, Contamination Limits and Decontamination Procedures EH&S 6-1 section 8, Disposal EH&S 6-1 section 9, and Emergencies EH&S 6-1 section 10.

**7. *The hospital minimizes risks associated with selecting and using hazardous energy sources (radiation, x-ray equipment, Lasers and MRIs).***

The Radiation Protection Services (RPS) approves all ionizing /non-ionizing devices along with radioactive material orders and inspects all authorized radiation control areas on a quarterly basis. All items of noncompliance have to be corrected within ten days of the reported finding along with the submission of a corrective action plan that will prevent recurrence. The RSO reports to the UH Radiation Safety Committee Chair on a weekly basis regarding all key Stony Brook University Medical Center programmatic area indicators and meets with the SBUH Radiation Safety Committee on a quarterly basis. The RSO also reports bimonthly to the Presidential University Radiological Protection Committee on both the academic and the medical side activities associated with our Broad Scope Academic and Medical Radioactive Materials License. The RSO is a new member of the Presidents Safety Advisory and the MRI Safety Committees. These new assignments enables the RSO to act as the liaison contact to the UH Radiation Safety Committee on both personal safety and MRI safety issues. The RSO will be forming a Laser Safety Committee that will oversee the training of personnel, the safe use and proper applications of all lasers at the SBUMC.

**8. The Hospital minimizes risks associated with disposing of hazardous medications.**

Trace quantities of chemotherapy drugs are placed in yellow bags and sent to a regulated medical waste (RMW) incinerator for disposal. Gross quantities of chemotherapy drugs are placed in black containers for disposal. These containers are picked up by a permitted hazardous waste contractor and disposed of as hazardous waste.

Partially used pharmaceuticals identified as hazardous waste are placed in 2-gallon black containers in clinical areas. Unused and expired medications are sent back to Pharmacy and are either sent to Guaranteed Returns or processed through the EcoStation disposal system. The EcoStation uses the PharmEcology waste inventory to determine the proper disposal of the pharmaceuticals. Any pharmaceuticals that are identified as hazardous by regulation or by best management practice are collected and incinerated.

**9. The Hospital minimizes risks associated with selecting, handling, storing, transporting, using and disposing of hazardous gases and vapors (such as glutaraldehyde, ethylene oxide, cauterizing equipment, lasers and nitrous oxide).**

- a. Selecting. The Product Management Committee (PMC) reviews and approves all new supplies including laboratory items utilized at the Hospital. Laboratories order all hazardous gases through the Hospital's Lawson system. Respiratory Care and Pulmonary Function Department purchase gas cylinders as shown in table below:

Type of Gas	Vendor
Nitric Oxide (800 ppm)	Ikaria (Formerly InoTherapeutics)
Helium-Oxygen Mixtures (Helium 70%, Oxygen 30%)	General Welding
Lung Diffusion Mixture (21% Oxygen, 0.3% Carbon Dioxide, 0.3% Methane, 78.4% Nitrogen)	General Welding

- b. Storage, Use and Handling. All cylinders are labeled according to DOT regulations and marked with a tag or label of its contents. All cylinders are stored and used upright and securely fastened. Employees are trained on proper storage, use and handling at Right to Know training presented at Orientation and at annual recertification training. Additional information for specific gases and vapors is below:
- **Ethylene oxide (EtO)** – EtO is used in Central Sterile Supply, within closed-system sterilizer/aerator units. Virtually leak proof EtO containers are stored in a vented flammable storage cabinet. The sterilizer/abator rooms have an EtO alarm system and exhaust fan failure alarm. The EtO alarm system undergoes quarterly calibration by a contracted vendor and Plant Operations tests the exhaust fan alarm.
  - **Nitrous oxide and waste anesthetic gases** – anesthesia units have waste scavenger gas systems. These units are serviced semi-annually by a contracted vendor or BioMedical Engineering (BME). Rooms where anesthetic gases are administered should have required air changes.
  - **Glutaraldehyde/Ortho-phthalaldehyde (OPA)** – OPA is used throughout patient care areas, except in the OR and L&D where a glutaraldehyde-based disinfectant is used. Staff handling both disinfectants wears gloves and gowns, and eyewear if there is splash risk. In Endoscopy, OPA is used in a closed disinfection system and in a Glutaraldehyde User Station (GUS) that has internal vapor collection filters. Other patient care areas also use GUS units. BME performs semi-annual preventative maintenance on the GUS units, with an annual filter replacement.

- **Cauterizing equipment and lasers** – Cauterizing equipment such as electrosurgical units (ESU), and lasers have smoke evacuators. The ESU and lasers are serviced semi-annually by BME.
  - **Formaldehyde** – 10% formalin (3.7% formaldehyde) is used throughout the hospital and offsites as a specimen preservative. In high volume areas such as the OR and ASC OR, formalin dispensing stations with internal collection filters are used. Preventative maintenance and filter changes are performed, as per BME schedule. Laboratory work involving formalin is performed within chemical fume hoods or suitable biosafety cabinet, when feasible. Staff wears gown or lab coats and gloves, and eye protection when there is splash potential.
- c. Internal Cylinder Transport. When transporting cylinders throughout the Hospital, the protective cap is kept in place, and a suitable hand truck is used with cylinders firmly secured.
- d. Disposing. Tanks are marked empty in the laboratories. Receiving removes empty tanks from the Laboratories and are returned to the contracted vendor, General Welding.

**10. The Hospital monitors levels of hazardous gases and vapors to determine that they are in safe range.**

As per EH&S policy 4-8, EH&S performs occupational exposure monitoring for airborne chemicals including glutaraldehyde/OPA, ethylene oxide, formaldehyde, nitrous oxide and other waste anesthetic gases. Monitoring reports are sent to appropriate administrators for any necessary corrective action. Monitoring indicating overexposure to OSHA standards are presented to the EC Committee for review and action.

**11. For managing hazardous materials and waste, the Hospital has permits, licenses, manifests and material safety data sheets required by law and regulation.**

Permits and licenses for the use and handling of regulated materials are maintained by the department that oversees or manages the program. Permits that are maintained by the Hospital are listed below. Waste disposal for asbestos, chemicals, pesticides, radioactive material, RMW and sharps are handled by contracted services, see Appendix A.

Permit Type	Permit #	Primary Documentation Held By:	Affected Areas/ Department
Air State Facility Permit	1-4722-00243/00027	EH&S (West)	Central Sterile Supply
Air Facility Registration Certificate	1-4734-02007/00001	EH&S (East)	University/Hospital
Suffolk County Discharge Certification	021-001-0001	EH&S (West)	University/Hospital
SPDES Permit	NY 010 9291	EH&S (West)	University/Hospital
EPA Hazardous Waste ID #	NYR000161471	EH&S (East)	University/Hospital
New York State Board of Pharmacy Registration	016402	Pharmacy	Pharmacy
Radioactive Material License	455	EH&S (West)	University/Hospital
Major Oil Storage Facility License	1-3080	EH&S (West)	University/Hospital

The Hospital maintains Material Safety Data Sheets as discussed previously. The Hospital maintains required manifest for handling hazardous materials and waste. The table below identifies the documentation maintained for the Hospital's hazardous materials and waste.

<b>Material or Waste Type</b>	<b>Documentation</b>	<b>Primary Documentation Held By:</b>
Chemical	Waste Manifest	Laboratory, EH&S
Radiation / Low Level Radioactive Waste (LLRW)	Waste Manifest	Radiation Protection Services, EH&S
Hazardous Medications	Waste Manifest	Pharmacy, Operating Room, EH&S
Infectious Material	Medical Waste Tracking Form	Hospital Custodial Services
Hazardous Materials	Material Safety Data Sheet (MSDS)	Departments, EH&S, and Online

**12. *The Hospital labels hazardous materials and waste. Labels identify the contents and hazard warnings.***

Hazardous material and waste are labeled as required by State and Federal regulations. Secondary containers are labeled with identity of the hazardous chemical, National Fire Protection Association (NFPA) safety diamond hazards, and the name of the manufacturer. Hazardous waste is labeled with the Hospital's orange hazardous waste label.

**APPENDIX A  
 Hospital Waste Contractors**

<b>WASTE</b>	<b>CONTRACTOR</b>
Asbestos	Boyle Services, Pinnacle, Fiber Control – Asbestos Abatement Contractors Enviroscience – Consultant ATC -Waste Hauler
Chemical	Triumvirate Environmental
Pest Control	Eliminex Pest Control
Radioactive	Radiac Research Corporation
Regulated Medical Waste	Stericycle
Sharps	Stericycle