Hazardous Materials and Waste Management Plan and Risk Assessment

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First Things First

Do you have a Hazardous Materials and Waste Management Plan that:

- Describes the process by which you will provide and maintain a safe and supportive environment for patients, staff and visitors
- Is consistent with your facilities mission to provide excellence in patient care
- Is designed to prevent and reduce risk to patients, staff and visitors, and the community by ensuring proper handling and disposal of hazardous materials and waste
- Is designed to comply with all applicable federal, state and local laws, regulations and standards relevant to the healthcare environment
What are Hazardous Materials?

• Materials regulated by outside agencies:
  • OSHA
  • EPA
  • NIOSH
  • DOT etc. relating to handling, use, storage and disposal

• These organizations have standards, rules and regulations relative to the handling, storing and disposing of these materials

• Hazardous materials include chemical, radioactive, medical wastes, biological, waste gases and **hazardous energy sources:**
  • Lasers
  • Radioactive pharmaceuticals
  • ESU's (electrosurgical units)
What are Hazardous Materials?

"Chemical (or substance) that, if released into the environment, could be potentially harmful to the public’s health or welfare."

"Chemicals (or substances) that would be a risk to employees if they are exposed to the substances in the workplace."

What are Hazardous Materials?

• DOT (Dept. of Transportation):
  • “Any substance or material in any form or quantity that poses an unreasonable risk to the safety and health and to property when transported in commerce.”
**Classes of Hazardous Materials per DOT**

DOT classifications include the following:

- **Class 1**: Explosives
- **Class 2**: Gases
- **Class 3**: Flammable liquids
- **Class 4**: Flammable solids
- **Class 5**: Oxidizer
- **Class 6**: Poison
- **Class 7**: Radioactive
- **Class 8**: Corrosive
- **Class 9**: Miscellaneous

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**Hazardous Materials**

What are hospitals required to do relative to “hazardous materials”

- The hospital is required to maintain an inventory of all hazardous materials and wastes (H.M&W) that identifies the what, where and how of their:
  - Uses
  - Storage areas
  - Generates
  - Disposes

- This documented inventory must be current and updated at a minimum, annually or when new materials are introduced, via new products, procedures or equipment
The Big Four

- **Hazardous chemicals**
  - Laboratory solutions
  - Sterilizing solutions
  - Cleaning solutions
  - Medical gases

- **Infectious materials**
  - Bloodborne Pathogens
  - Specimens

- **Chemotherapeutic drugs**
  - To include syringes and tubing use to administer the medications

- **Radioactive materials**
  - To include syringes and tubing use to administer the medications

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**Hazardous Energy Sources**

- *When suspended during a Lock Out/Tag Out process, i.e. can release an abundance of energy when re-engaged*
  - Electrical
  - Mechanical
  - Hydraulic
  - Pneumatic
  - Chemical
  - Thermal
Scope and Responsibilities

- Managing Hazardous Materials and Waste requires procedures for:
  
  - Safe:
    - Handling
    - Storing
    - Labeling
    - Use
    - Disposal

OSHA Requirements

- Written program and chemical inventory
- Safety data sheets (aka MSDS) for:
  - Employees
  - Contractors
  - Consultants
- Labeling system
  - Products labeled by:
    - Manufacturer
    - Distributor
    - Importer
    - Hospital
**OSHA Requirements**

- SDS or fact sheets for every hazardous substance
- Documentation of annual employee training
  - All staff must attend Bloodborne Pathogen training annually
  - Annual Radiation Safety Training for nursing staff, x-ray technicians, EVS and nuclear medicine staff
- Employees have access to their medical and exposure records

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**HAZWOPER (OSHA)**

Hazardous waste operations and emergency response (HAZWOPER)

- HAZWOPER adopted NFPA emergency responder categories for responders:
  - Awareness
  - Operations
  - Technician
  - Specialist
  - Incident Commander (IC)
AWARENESS

General employees and responders at the awareness level are trained to:

• Recognize the presence of hazardous materials

• Notify proper authorities to respond:
  ▪ In-house spill team
  ▪ Off-site emergency services
  ▪ Contracted clean-up personnel

The Great Philosopher

Ludwig Benner, Jr. defines hazardous materials as:

“Something that jumps out of its container when something goes wrong and hurts the things it touches”
**Globally Harmonized System (GHS)**

- United Nations sponsored
- Upon adoption, has changed:
  - Classification of chemicals
  - Labeling
  - MSDSs to SDSs
  - (safety data sheets)
- Final standard was published in the *Federal Register* March 26, 2012, and will become effective, in part, on June 26, 2012, with a built-in transition period and a fully effective date of June 1, 2016.

**Globally Harmonized System (GHS) Labeling Requirements**

- Information required on a GHS label:
  1. Product identifier
  2. Pictograms
  3. Signal word, “Danger!”
  4. Hazard statement
  5. Precautionary statement
  6. Supplier information

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1. Sulfuric Acid

2. Danger! May be harmful if swallowed. Causes severe skin burns and eye damage. Fatal if inhaled. Harmful to aquatic life.


4. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

5. In case of fire use water spray, alcohol-resistant form, dry chemical or carbon dioxide.

6. See Material Safety Data Sheet for further details regarding safe use of this product.

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**Legal Requirements**

Hospitals are required to have and maintain in compliance with laws and regulations:

- Permits
- Licenses
- Manifests
- MSDS (aka SDS and PSDS)

**Hazardous Materials**

- The inventory must include:
  - Where the materials are stored (department)
    - To include how they are stored (i.e. fire proof cabinets, metal containers, cool dry place, away from heat or other potential sources of fire or corrosion)
  - The quantity available in each location
  - Who have access and are using/handling the materials
  - All hazardous materials must be **appropriately labeled**
  - Proof that you are compliant with city, state and federal laws and regulations
**Hazardous Materials**

- Waste Anesthetic Gases
- Halogenated Agents
- Glutaraldehyde/OPA
- Formaldehyde, Toluene, Xylene
- Acetic Acid
- Methyl Methacrylate
- Lead & Cadmium

**Minimizing Risk**

- It is the responsibility of the hospital to minimize risk to patients, staff and John Q public when:
  - Selecting what hazardous materials will be brought in and used at the facility, as well as the:
    - Labeling
    - Handling
    - Storage
    - Transporting
    - Use of
    - Disposing
    - Reclamation
Minimizing Risk

Education, Education, Education

• Annual staff education and training on:
  • The types of hazardous materials used and stored in the facility
  • Which materials must be stored in a fire proof cabinet
  • Location and use of “spill kits”
  • Location and use of “eye wash” stations
  • Use of PPE when handling hazardous materials and/or hazardous waste
  • What requires labels and where can the labels be found

Safety

• Eye wash stations:
  • Must be in areas where staff work with hazardous chemicals and/or pharmaceuticals
  • Prefer fixed stations as the requirement is a 15 minute flush minimum
  • Prefer the eye wash station has a mixer to ensure appropriate water temperature
  • Require documented weekly checks (ANSI standard) to ensure the water flows freely and there is no debris (caps intact)
  • Drench showers (usually located in Laboratory) require documented monthly checks
Safety

- Radiopharmaceuticals;
  - Used in Nuclear Medicine
  - Delivered daily by courier directly to the Nuclear Medicine Department (the product is transported in a leadlined case)
  - The product is taken directly to the “hot lab” and stored behind a lead shield
  - The product is clearly labeled “Caution Radioactive Materials”
  - Any remaining material is placed in a lead lined container and allowed to “decay” prior to disposal

Biohazardous Waste
What is Hospital / Medical Waste

- Hospital waste: all waste, biological or non-biological, that is discarded and not intended for further use.
- Medical waste: biohazard waste and/or sharps generate as a result of patient diagnoses, treatment or immunization of human beings or animals. To include removal of regulated waste from a trauma scene.

Who Regulates Medical Waste?

- Federal
  - EPA (40 CFR part 60.51c)
  - DOT (49 CFR part 173.134)
  - OSHA (29 CFR part 1920.1030b)
  - USPS (39 CFR 111.1)
  - State Health and Safety Codes
  - Local Code of Regulatory Ordinance
A Little History

1976
Congress passed the Resource Conservation and Recovery Act (RCRA) (see Act Subtitle C)
Enforced by the EPA or state laws, it established a system for controlling hazardous waste from the time it is generated until its ultimate disposal — in effect, from “cradle to grave.”

1998
Used syringes, laboratory test tubes, disposable gloves and other bio-hazard materials were found washed up on a Florida beach.
This event lead to the first healthcare legislation
“Medical Waste Tracking Act”
(MWTA)

Classification of Hospital Waste

General Waste
(85% of waste is in this category)
• Bio-Degradable
• Non-Bio-Degradable

Bio-Medical Waste
• Pathological Waste
• Infectious Waste
• Sharps
• Pharmaceutical Waste
• Chemical Waste (to include gaseous chemicals)
• Radioactive Waste
A Drill Down of Medical Waste

**Solid Medical Waste**
- Labware (flasks, tubes, plates, bottles and vials)
- Pipettes (could also be sharps)
- Lab waste (stocks, specimens, cultures, swabs, vaccines)
- Gloves, apparel, wipes

**Liquid Medical Waste**
- Aspirates, culture fluids, rinses, washes
- Sera, body fluids

**Sharps Medical Waste**
- Anything with a point or edge capable of piercing or cutting
- Needles with and without syringes, blades

What Medical Waste ISN’T

- Waste generated during food processing
- Urine, feces, saliva, sputum, nasal secretions, sweat, tears or vomitus, unless it contains blood
- Paper towels or empty specimen containers that are not biohazardous, bandages/dressings unless that are *saturated* with blood or dried blood
- Household waste
- Hazardous waste, radioactive waste
A Drill Down of Biohazardous Waste

- Laboratory waste
  - Specimens and cultures
  - Stocks of infectious agents
  - Wastes from production of biologicals, live and attenuated vaccines, culture dishes and devices
- Pharmaceuticals
- Surgery specimens including tissues and specimens in fixatives
- Wastes containing recognizable fluid blood or blood products
- Wastes contaminated or containing chemotherapeutic agents

Words to Live By

Infectious waste, (i.e. any hospital waste) is capable of producing infectious diseases!
Safe Disposable of Biohazardous Waste

- Biohazardous Waste
  - Must be segregated from other types of wastes
  - Must be contained in “biohazard bags”
    - Bags must be red
    - Bags must be labeled either with the word “Biohazardous” or with the biohazard symbol and the word “Biohazard”
    - Bags must be labeled with the generator’s name, address and telephone number
    - Bags must be securely tied to prevent leakage or expulsion of contents
    - Bags must be placed in a rigid container for storage, handling and transport

Safe Disposable of Biohazardous Waste

- Containers:
  - Shall be leak resistant, have tight-fitting covers, kept clean and in good repair
  - Can be any color, but be labeled with the word “Biohazardous” or have the biohazard symbol and the word “Biohazard” on the lid and sides so it is visible at any lateral direction
  - If reusable, the containers will be washed and decontaminated unless protected from contamination by disposable liners or bags.
Safe Disposable of Biohazardous Waste

• Labels
  ▪ Appropriate to the “type” of biohazardous waste
  ▪ Must be affixed on all four sides of any container

• Sharps Waste Containers
  ▪ With the exception of Surgery should not be on the floor
  ▪ Preferably not setting on counter tops, but attached to the wall
  ▪ When possible the “well” type of lid versus an “open” lid

Containment and Storage

• Sharps Waste
  ▪ Must be segregated from other types of wastes
  ▪ Must be contained in “sharps containers”
  ▪ Tightly close or tape closed the lid of a full sharps container (replace when the container is ¾ full) when ready for disposal
  ▪ Store sharps containers ready for disposal for no longer than 7 days
  ▪ Label the containers “Sharps Waste” or the biohazard symbol and “Biohazard”
  ▪ Label the containers with the generator’s name, address, and phone number
Disposal

- Take biohazard bags (red bags) and sharp containers to a designated site:
  - **Locked** area off the loading dock (usual site)
  - Soiled utility rooms serving as temporary storage of biohazard waste MUST be locked at all times
  - The biowaste vendor will collect the biohazard waste a scheduled (weekly, every other week, monthly) depending on hospital volume
  - Biohazard and sharps waste will be autoclaved or incinerated according to the facility’s state laws

Solid Medical Waste Collection
Sharps Waste Collection

What’s Wrong with these Pictures?
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Proprietary & Confidential
What’s Wrong with these Pictures?

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What’s Wrong with these Pictures?
In a Nut Shell

• Plant Operations is responsible for:
• Maintaining a detailed inventory of ALL:
  • Biohazardous products and chemicals
  • Material safety data sheets
  • Hazardous substances fact sheets
  • Container labeling
  • Handling and storage
  • Training and education
  • Monitoring and evaluation of your Hazardous Materials and Waste Management Plan

In Conclusion

• Develop and enforce a policy that requires all departments notify you when bringing new or additions substances into the facility
• Ensure appropriate PPE and “Spill Kits” are readily available to staff
• Consider an annual biohazard drill
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THANK YOU

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