

Level I – Guidance Documentation

Environmental: Hazardous Waste: Satellite Accumulation Areas (SAA)

1. **Is all hazardous waste stored in the satellite accumulation area (SAA)?**
2. **Are the satellite accumulation areas (SAAs) clearly labeled?**

Guidance: MIT requires that the pale green sticker be used at each SAA. It is approximately 4” by 6” and should be applied to the secondary containment(s) or in the immediate area where they are kept. Others signs are not acceptable. EPA requires that areas be posted to designate the area, but does not specify the exact signage. MIT has chosen to standardize the signs wherever possible by use of the green sticker. (Green and white barber pole tape is used for Main Accumulation or <90-day areas only.)

Reference: 40 CFR 260

3. **Are the SAAs located at or near the point of hazardous waste generation and under the control of a responsible person (PI and/or the person generating the waste)?**

Guidance: Satellite accumulation areas must be located near the point of waste generation and under control of the person generating the waste. If you have to go through a hallway or other public access area to get to the hazardous waste accumulation area it cannot be considered a satellite accumulation area.

Reference: 310 CMR 30.340

4. **Are the hazardous waste containers in the SAAs in good condition?**

Guidance: Waste containers should be of seamless construction and not cracked or damaged. Incompatible wastes cannot be stored in the same secondary containment so that in the event of commingling (from breakage or other localized spill or release) there will be no reactivity issue. Typically, glass or plastic bottles of various sizes are used, with original labels fully obscured of their labeling and wording.

Containers must be compatible with hazardous waste stored in them, e.g. Hydrofluoric acid not stored in glass container, corrosives not in metal containers. Container materials must be compatible with the hazardous waste stored so as to avoid reactions.

Reference: 310 CMR 30.340 and 30.253

5. Are all hazardous waste containers in the SAA provided with secondary containment?

Guidance: EMP provides secondary containment for all hazardous waste storage areas. Incompatible wastes should be stored in different secondary containers.

Reference: 40 CFR 264.175

6. Is each secondary containment in the SAA intact?

Guidance: Containers should be free of cracks or other damage.

Reference: 40 CFR 264.175

7. Are the hazardous waste containers in the SAA properly labeled?

Guidance: Containers used for hazardous waste must be properly and clearly labeled. Labels must include: (1) the words “Hazardous Waste”, (2) the container’s contents written out (e.g. “WASTE OIL, no formulas, no abbreviations”); (3) the hazard classification associated with the waste (e.g. “TOXIC”). EMP provides red HW tags, however, other labels must be used as well if permitted by EMP. Original container labels must be defaced and obscured or removed.

Reference: 40 CFR 262.34

8. Are all full hazardous waste containers in the SAA dated?

Guidance: Once a container in a SAA is or nearly full, the date must be written on the label and the 3-day period begins for movement to a main/<90 day area.

Reference: 310 CMR 30.340

9. Are all dated hazardous waste containers in the SAA less than 4 days?

Guidance: Full containers of hazardous waste can be stored at the satellite accumulation area for a maximum of 3 days, then must be transferred to a main storage area.

Reference: 310 CMR 30.340

10. Is there only one hazardous waste container per waste stream in the SAA?

Guidance: Hazardous waste regulations permit only one container of hazardous waste per waste stream be stored at Satellite Accumulation Area (SAA). A maximum of 55 gallons of hazardous waste or 1 qt of acutely hazardous waste is permitted to be stored under these regulations.

Reference: 40 CFR 262.34

- 11. Are hazardous waste containers in the SAA firmly CLOSED except when waste is being added?**

Guidance: Satellite Accumulation containers must be firmly closed except when waste is being added to the container.

Reference: 40 CFR 265.173

Safety

- 12. Are aisles and exit doors clear and accessible?**

Guidance: The MA Building Code and the National Fire Protection Life Safety Code 101 emphasize the importance of keeping the evacuation routes clear and useable at all times, i.e., “free of all obstruction to full instant use.” In emergencies, a few seconds delay can make a big difference in whether people are able to safely evacuate. When an emergency occurs, there is no time to clear equipment out of the way. Smoke, fumes, or carbon monoxide can overcome people attempting to evacuate. Corridors should also be kept clear and accessible.

Reference: MA building code; NFP Life Safety Code 101

- 13. Are emergency showers, fire extinguishers, spill kits and other emergency equipment accessible?**

Guidance: No equipment should be blocking access to showers, fire extinguishers, spill kits, fire blankets, etc. No equipment should be placed on the floor under an emergency shower. Commonly, refrigerators or other equipment are inappropriately placed underneath showers making it difficult if not impossible to use when there is no time to waste. The showers are checked annually by Facilities: They will be unable to conduct the test if the area underneath is blocked. Facilities also annually check fire extinguishers.

Reference: NFPA 10; 29 CFR 1910.157

- 14. Are eyewashes checked routinely (weekly) or are eyewash bottles within expiration date?**

Guidance: If an eyewash is connected to running water, a person in the lab should be assigned to run water through it once a week for one minute. This will flush out bacteria that may grow in stagnant water. This is based on the ANSI standard. Use a tag or a list to record when the eyewash is flushed. Labs that use Select Agents are required by the CDC to test eyewashes weekly. There is no requirement for Radiation labs. For eyewash solutions in bottle: lab personnel should replace the solutions before the expiration date.

Reference: 29 CFR 1910.151; ANSI Z358.1

15. Are occupants wearing safety glasses, lab coats, or appropriate gloves/PPE while working with potentially hazardous materials?

Guidance: MIT policy requires wearing eye protection in all labs and shops when and where potential eye hazards exist whether you are working or visiting and observing. Many DLCs require eye protection at all times and post eye protection required signs on the doors in the hazardous areas. OSHA requires employers to provide employees with the appropriate eye protection.

General requirements.

- Each affected employee shall use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
- Each affected employee shall use eye protection that provides side protection when there is a hazard from flying objects. Refer to the EHS website for more information on selecting the appropriate type of eye protection and ordering prescription safety glasses.

Lab Coats. Lab coats are required by MIT's radioactive materials license while an employee is working with unsealed radioactive materials. For work with biological materials, lab coats are required for Biosafety Level 2 (BL2) laboratories and highly recommended for Biosafety Level 1 (BL1) laboratories. They are highly recommended for work with most chemicals. It may also be necessary to wear chemically resistant aprons with sleeves for work with certain types of acids.

Gloves. Gloves (latex or vinyl) are required for all work with unsealed radioactive materials and biological work. For chemical work, the glove must be chosen for good resistance to the chemical being used. Latex and vinyl gloves have only splash resistance to many lab chemicals. They should not be used for most chemical work. Disposable nitrile gloves have good resistance to a variety of chemicals.

Reference: PPE standard 1910.133 Eye and Face Protection; MIT Radiation Protection Office Required Procedures for Radiation Protection; OSHA Lab Standard

16. Is there any evidence of eating or drinking in the laboratory?

Guidance: Eating, drinking, and cosmetic application is not allowed in laboratories by the MIT radioactive materials license condition, the Occupational Safety and Health Administration, and MIT policy to prevent ingestion of hazardous materials. Surface contamination may also be present on desks, computer keyboards, and phones. Gloves must be removed before leaving the lab. Hands need to be washed after leaving the lab or shop.

Reference: MIT Radiation Protection Office Required Procedures for Radiation Protection

Industrial Hygiene

17. Is the bottom slot of the chemical fume hood unobstructed?

Guidance: If the bottom slot of the fume hood is blocked more than 30% (by bottles or equipment within 6 inches of the back bottom slot), it is obstructed. There are 2 or 3 slots in the back of the fume hood which distribute the air flow evenly to the back of the hood and prevent turbulence which leads to poor containment. All large pieces of equipment can be mounted on small blocks, which allow the air to flow under it into the bottom slot. If the bottom slot is blocked more than 30%, there will not be good airflow and containment of chemicals at the front of the hood along the hood surface where the chemical work is usually performed.

Reference: 29 CFR 1910.1450

18. Is work within the chemical fume hood done at least 6 inches from the front of the hood?

Guidance: All work with chemicals should be conducted 6 inches back from the front of the fume hood.

Reference: 29 CFR 1910.1450

Biosafety

19. Are bags of solid biological waste (petri dishes, gloves, Falcon tubes, etc.) in appropriate biohazardous waste collection containers?

Guidance: Solid biohazardous waste should be collected in unmarked (preferably clear) autoclave bags. Because these bags are unmarked, they lack good warning properties and must be kept in containers that are marked with the universal biohazard symbol until the bag is autoclaved.

Reference: 29 CFR 1910.1030

20. Are full clear bags of solid biological waste properly identified as biological waste?

Guidance: Once bags are full, they should remain in biohazard marked containers until they are autoclaved. Alternatively, if they are removed from the containers and stored for any length of time prior to autoclaving, they should be marked or identified with the biohazard symbol or placed in a storage bag or container which is either red or orange or

bears the biohazard symbol. There should be no unmarked bags left in the open lab, hallways, or kitchen areas.

Reference: 29 CFR 1910.1030

21. Have full bags of solid biological waste been autoclaved and have autoclave tags been attached to the bags?

Guidance: Bags of biohazardous waste must be autoclaved prior to being placed into the regular waste stream. Waste that has been treated must be labeled with an autoclave tag. The tags are distributed by the MIT Biosafety Program (some DLCs, such as Biology, must obtain their tags from the EHS Coordinator for the department). Tags should be placed in the autoclave with their associated bag. There is a bar at the top of the tag that changes color to indicate that it has been exposed to steam. Tag numbers, date, time and temperature of the autoclave run, and the processors name must be recorded in an autoclave log book maintained by the lab. Bags should not be left in the open lab, hallways, or kitchen areas unless they have been autoclaved and tagged.

Reference: 29 CFR 1910.1030

Radiation Protection

22. Are radioactive materials properly secured (locked refrigerator, locked freezer, locked box, etc.)?

Guidance: All stock radioactive material must be stored in a locked container, which cannot be easily removed from the lab (i.e. a refrigerator). The stocks must be locked away at all times, except when in use, and at those times there must be a constant surveillance over the material. When a radiation worker's surveillance over the radioactive material is the means for security, they must challenge all unknown persons entering the lab.

Unsecured stock radioactive material can be placed back into the locked container. If there is no locked container available contact RPP at 2-3477 and we will advise you on what action to take. We may have a lockable container available.

Reference: 105 CMR 120.235

23. Are radiation laboratories locked when unoccupied?

Guidance: All radiation laboratories will be locked when unattended for extended periods. Also, at the stock radioactive material storage location there must be an up to date inventory of the stock radioactive material.

As for unattended radioactive materials, an "experiment in progress" sign should be placed near the experiment. If the lab does not have any "experiment in progress" signs RPP can

drop one off, but in the mean time use tape with the radiation symbol on it as a posting for the experiment. If you come across an unattended lab with doors open or unlocked wait a short while (5-6 minutes) and if no one returns investigate the situation and then lock the door. Before any corrective action a member of the lab should be informed. If there are no lab personnel available report the incident to RPP immediately.

Reference: 105 CMR 120.235

Hazardous Materials Storage

24. Are gas cylinders secured (chained)?

Guidance: All gas cylinders must be secured above their center of gravity (~2/3 up the cylinder). If a cylinder falls, it may shear off its valve and the escaping high pressure gas has been known to propel the cylinder like a rocket that can smash through masonry walls. Use a chain or belt to secure cylinder to a bench or wall. Whenever the cylinder does not have a regulator on it, the cap must be kept on to protect the valve. Do not drop or strike cylinders against each other. Segregate flammable gas cylinders from oxygen cylinders when stored together. Usually highly corrosive, toxic and pyrophoric gases are in gas cabinets. Segregate empty and full cylinders and label empty cylinders.

Reference: 29 CFR 1910.101

25. If chemicals are stored on the floor, are they within secondary containers?

Guidance: It is recommended that liquid chemicals not be stored on the floor. If necessary, however, chemicals may be stored on the floor only in secondary containers and segregated by hazard class.

26. Are containers for holding or dispensing hazardous chemicals or materials adequately labeled?

Guidance: OSHA Hazard Communication and Laboratory Standards generally require that containers be labeled with at least the contents of the container, written in plain English [not formulas, abbreviations etc.]. Vessels and associated piping also require basic labeling when they carry or process hazardous materials.

This is an important basic means of preventing mishaps resulting from “mistaken identity” when using or managing chemicals. It is also important to support first aid/first response efforts in the event of an exposure or incident. In addition, citations for inadequate labeling violations are very common in OSHA inspections and enforcement actions under 29 CFR 1910.1200 (Hazard Communication Standard.)

Reference: 29 CFR 1910.1200