

Chapter 2

Setting Up Storage Areas for Hazardous Materials

Unit personnel must properly check in new HM stock and maintain current stock to minimize personnel and property safety hazards. This chapter provides guidance for storing HM in storage lockers, rooms, buildings, or on storage racks. Guidelines for storing compressed gas also are provided in this chapter. Refer to Table 3-1, “Storage Segregation Matrix,” when setting up storage lockers.

WARNING!	DO NOT store tools or personal items in any HM storage location.
	DO NOT store combustible materials, such as cardboard, paper, or rags with flammable HM.
	DO NOT store flammable or reactive HM within 50 feet of the property boundary.
	DO NOT store HM in trailers, vehicles, personal wall lockers, near floor drains, or in areas with high foot or vehicle traffic.
	DO NOT use wood or other combustible materials to construct additional or replacement shelving.
	DO NOT store compressed flammable gases with other flammable materials.

Section	Page
2.1 Storage Lockers	2-1
2.2 Storage Rooms and Buildings	2-3
2.3 Storage Racks	2-4
2.4 Storage for Compressed Gases	2-6

2.1 Storage Lockers

Store daily amounts of commonly used HMs, such as grease tubes, oil cans, aerosol cans, etc. in work-area National Fire Protection Association (NFPA) approved storage lockers.

The locker color depends on the material being stored.

HM Type	Locker Color
Flammables	Yellow
Corrosives	Blue
Oxidizers	Red

Keep lockers grounded, clean, and orderly. Maintain the lockers in proper working order, including the structural integrity, doors, hinges, and shelves. Do not remove the door or ventilation bungs, modify ventilation, or otherwise modify the locker. Keep locker doors closed when materials are not being transferred.

To set up a locker, complete the following steps:

- Step 1. Use the following guidelines to select a location for the locker:
- Locate the locker indoors in a well-ventilated area near where the HM will be used, or outdoors under cover
 - Maintain easy access to the locker
 - Do not block the doors
 - Do not place the locker near break rooms, bathrooms, offices, or other occupied non-shop areas
 - Do not place the locker near floor drains, drainage channels, or areas with high foot or vehicle traffic
 - Ensure the locker is properly grounded
- Step 2. Assign a four-character identifier to the locker and mark it on the front top right corner. This identifier will consist of one of the three abbreviations used to differentiate locker contents and a two digit sequential number (for example, FL 12, See Figure 2-1). The following abbreviations identify the three types of lockers by locker contents:
- FL – Flammable Lockers
 - CL – Corrosive Lockers
 - OL – Oxidizer Lockers

Note	Each locker must have a unique number identifier. Do not use identifiers more than once. If sharing an area with another activity, coordinate numbers to avoid using the same identifiers.
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Figure 2-1. Flammable Storage Locker



- Step 3. Post any warning signs required by the Unit Hazardous Materials and Waste Coordinator. Do not place unauthorized signs, labels, stickers, or markings on the locker.
- Step 4. Ensure that an appropriately rated fire extinguisher and spill response equipment are located nearby.

Note Before stocking the storage locker with HM, reference Chapter 3 for information on assigning designators to each HM, assembling Material Safety Data Sheet (MSDS) notebooks, and preparing HM inventory sheets.

2.2 Storage Rooms and Buildings

Keep rooms and buildings clean and orderly. Maintain the rooms and buildings in proper working order, including the structural integrity, doors, hinges, and shelves. Do not remove doors, penetrate walls, modify ventilation, or otherwise modify the room or building.

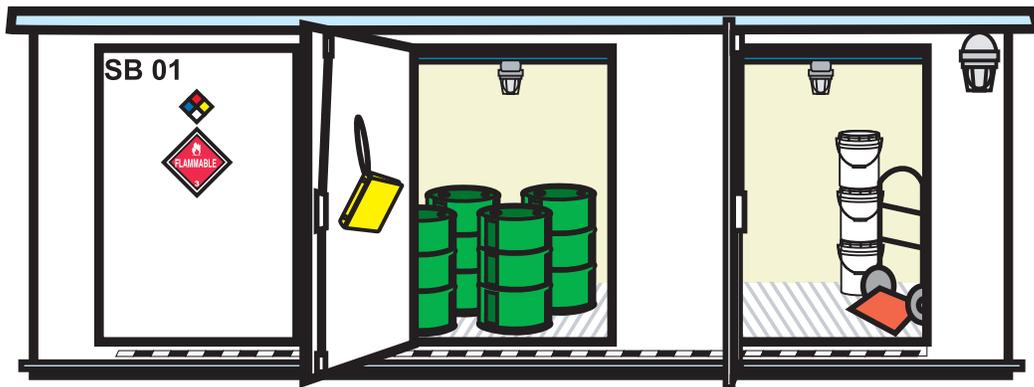
To set up a storage room or building, complete the following steps:

- Step 1. Have the Unit Hazardous Materials and Waste Coordinator inspect and approve the location before use.
- Step 2. Provide primary and secondary containment. Secondary containment must be 10 percent of the total volume of containers or the volume of the largest container, whichever is greater.
- Step 3. Ensure that an appropriately rated fire extinguisher and spill response equipment are located nearby.

Step 4. Assign a four-character identifier to the room or building and mark it on all doors. This identifier will consist of one of the two abbreviations used to identify a storage room or storage building and a two-digit sequential number (e.g., SB01, See Figure 2-2).

- SR – Storage Room
- SB – Storage Building

Figure 2-2. Storage Building



Note Each room or building must have a unique number identifier. Do not use identifiers more than once. If sharing a building with another activity, coordinate numbers to avoid using the same identifier.

Step 5. Post any warning signs required by the Unit Hazardous Materials and Waste Coordinator. Do not place unauthorized signs, labels, stickers, or markings on the room or building.

Note Before stocking the storage room or storage building, reference Chapter 3 for information on assigning designators to each HM, assembling MSDS notebooks, and preparing HM inventory sheets.

2.3 Storage Racks

Obtain written approval from the Unit Hazardous Materials and Waste Coordinator to establish a storage rack or to modify an existing location.

To set up a storage rack, complete the following steps:

- Step 1. Have the Unit Hazardous Materials and Waste Coordinator inspect and approve the location before use.
- Step 2. Provide primary and secondary containment. Secondary containment must be 10 percent of the total volume of containers or the volume of the largest container, whichever is greater. Place drip pans under dispensing faucets or valves.

Step 3. Ensure that an appropriately rated fire extinguisher and spill response equipment are located nearby.

Step 4. Assign a four-character identifier to the rack and mark it on the rack or on a sign posted at the rack. This identifier will consist of the abbreviation SK and a two-digit sequential number (e.g., SK01, See Figure 2-3).

Note Each rack must have a unique number identifier. Do not use identifiers more than once. If sharing an area with another activity, coordinate numbers to avoid using the same identifier.

Step 5. Post any warning signs required by the Unit Hazardous Materials and Waste Coordinator. Do not place unauthorized signs, labels, stickers, or markings on the rack.

Note Before stocking the storage rack with HM, reference Chapter 3 for information on assigning designators to each HM, assembling MSDS notebooks, and preparing HM inventory sheets.

Figure 2-3. Storage Rack



2.4 Storage for Compressed Gases

When storing compressed gases, excluding fire extinguishers and aerosol cans, additional guidelines must be followed. A compressed gas is a gas that is packaged under charged pressure. Because compressed gases are under pressure, handle such gases with extreme care, particularly the flammable and explosive gases. Keep the following four steps in mind when storing compressed gases:

CAUTION DO NOT use cylinders as rollers or supports, or for any other unintended purpose.
DO NOT accept, issue, or use a cylinder unless the content is identified.

- Step 1. When selecting or constructing a safe area, adhere to the following guidelines:
- Ensure that all electrical installations are IAW Class I, Division 2 locations as defined in Article 500 of the National Electric Code; use skylights if possible
 - Construct storage area shelves, racks, and floors so they support the weight of the cylinders
 - Ensure a complete change of air occurs at least six times each hour
 - Use chains or other devices to anchor the cylinders to a stable structure so they do not fall over

When storing gas cylinders outdoors, adhere to the following construction guidelines:

- If the climate is favorable and security is adequate, store gas cylinders in a roofed, open-sided shed with an above-grade concrete slab
- Construct the sheds of light, non-combustible materials
- Do not heat sheds
- Separate storage facilities from other buildings by at least 50 feet
- Store gases that support combustion in separate sheds separated by 50 feet
- If the shed has one or more walls, ensure a complete change of air occurs at least six times each hour
- Keep storage areas clear of dry vegetation and combustible materials by at least 15 feet
- Keep cylinders out of the sun, off the ground (earth), and away from surfaces where water can accumulate
- Protect storage areas from vehicle traffic

Note Contact the Unit Hazardous Materials and Waste Coordinator for specific guidance when selecting an area to store compressed gases.

Step 2. Use locks and signs to secure the area.

- Lock storage areas to prevent unauthorized entry
- Post "NO SMOKING" signs. Do not allow open flames within 50 feet
- Place hazard identification signs such as "Flammable" at all entrances

Step 3. Label cylinders according to Military Standard (MIL STD)-101. Tag or label filled cylinders with the proper name and two stock numbers—one for the gas and one for the cylinder.

CAUTION DO NOT alter or remove labels applied by the gas manufacturer or mark on cylinders.

Step 4. Place cylinders carefully

- Secure cylinders being used or stored so they do not fall over
- Store liquefied flammable gas cylinders upright, or so the pressure relief valve directly communicates with the vapor space of the cylinder
- DO NOT place cylinders where they could become part of an electrical circuit
- DO NOT drop cylinders or permit them to strike against each other violently
- Utilize protective caps when available
- Separate all cylinders by compatibility and away from combustible materials
- Segregate incompatible or combustible materials by at least 50 feet, or isolate incompatible or combustible materials with a barrier of non-combustible material at least five feet high and with a minimum fire resistance rating of 1 hour
- DO NOT store flammable compressed gases with other flammable materials

Note See the "Determining Hazardous Material Compatibility" section in Chapter 3 for more information.

Compressed gas cylinders must be included in the HM inspection program (see Chapter 3). When inspecting cylinders, check for the following items:

- Ensure that the valve outlet connectors of both full and empty cylinders have an authorized dust cap
- Ensure that oxygen cylinders are free from grease and oil
- Tag empty cylinders as "empty" and store them with the valves closed and away from full cylinders

Note Hydrostatic pressure testing is also required, but the provider of the cylinders performs testing.

When moving cylinders, note the following precautions:

- Close cylinder valves before moving cylinders
- DO NOT lift cylinders by the valve protection cap
- DO NOT lift cylinders by cranes or mechanical lifts unless fastened in proper containers, racks, and/or cradles. Do not use rope and chain slings or electromagnets to lift cylinders
- Only handle, ship, or store cylinders if they have valve protection caps. Exceptions to this precaution include:
 - Small cylinders with less than a 40-pound capacity
 - "Ram-bottom" type cylinders
 - Cylinders with less than 625 cubic inches of volumetric capacity, such as medical gases