DRAFT RECLAMATION SAFETY AND HEALTH STANDARDS RELEASE
Comments on this draft release must be submitted to ssummerhays@usbr.gov by 1/20/2020.

Background and Purpose of the Following Draft Reclamation Safety and Health Standards (RSHS)

The RSHS are being updated by the Bureau of Reclamation Safety and Occupational Health Office to reflect new guidance from Reclamation, the Department of the Interior, and the Occupational Safety and Health Administration. This public release is intended to provide the public an opportunity to comment on each updated section in draft form. This process will enhance transparency and eliminate potential confusion about Reclamation’s safety standards.

The RSHS are incorporated into the Reclamation Manual through SAF 01-01, *Occupational Safety and Health Directive – General*. The Reclamation Manual is used to clarify program responsibility and authority and to document Reclamation-wide methods of doing business. All requirements in the Reclamation Manual are mandatory for Reclamation employees.

See the following pages for the draft RSHS.
Section 11

Material Handling, Storage, and Disposal

11.1 Scope

This section sets forth the requirements for safe manual material handling as well as for the storage and disposal of hazardous and construction materials. This section applies to all Reclamation employees and contractors.

11.2 General Requirements

11.2.1 Storage

Store materials in a planned and orderly manner that does not endanger employee safety. Ensure stacks, tiers, and piles are stable to aid safe handling and loading. Store hazardous materials in accordance with the individual requirements for the material. Store all materials on pallets to discourage rodent infestation, and immediately clean up spills and leaks that create rodent habitat. When using slings to hoist bagged materials, lumber, bricks, masonry blocks, and similar loosely stacked materials, ensure the slings are fully secured against falling by straps, sideboards, nets, or other suitable devices.

11.2.2 Worker Safety

Workers shall be periodically observed during manual material handling tasks to identify and eliminate or control the following risk factors that contribute to musculoskeletal disorders (MSDs):

- Exerting excessive force while lifting heavy objects, pushing or pulling heavy loads, manually pouring materials, or maintaining control of equipment or tools
- Performing the same motion(s) continually and/or frequently for an extended period
- Working in awkward postures or holding a specific posture for long periods of time, such as repeatedly lifting above shoulder level, kneeling/squatting, or twisting while lifting
- Absorbing vibration in the whole body or hand/arm from power tools such as portable grinders, sanders, and chainsaws

11.2.3 Lifting

Mechanical handling aids should be used when feasible when lifting material heavier than 50 pounds or awkwardly shaped items that are impractical for one person to lift themselves. If mechanical handling aids cannot be used, get help from one or more additional workers before lifting such heavy or awkward items.
11.2.4 **Equipment**
Ensure that equipment is working properly and has been modified as needed to make it easier to use. Workers should not suffer bodily discomfort from performing job tasks or using equipment. Such discomfort may be observed in workers via bodily signs such as shaking of the arms or hands or rolling of the shoulders or via personal mitigation efforts such as bringing wrist braces or back belts into work.

11.3 **Responsibilities**

11.3.1 **Designated Agency Safety and Health Official (DASHO)**
   11.3.1.1 Shall provide guidance and technical assistance, conduct reviews, and evaluate programs, polices, and procedures as necessary.

11.3.2 **Area Office Manager**
   11.3.2.1 Shall ensure all affected employees and contractors are trained on and comply with this program.
   11.3.2.2 Shall provide necessary resources to implement and maintain the procedures in this program.
   11.3.2.3 Shall select the Program Coordinator.

11.3.3 **Program Coordinators**
   11.3.3.1 Shall identify hazards at the workplace and periodically inspect workers to ensure these standards for material handling, storage, and disposal are met.

11.3.4 **First-Line Supervisors**
   11.3.4.1 Shall periodically observe their employees to ensure the standards of this section are met.
   11.3.4.2 Shall coordinate training for their employees before they are exposed to job hazards and ensure all relevant training is provided for materials present in the work place.
   11.3.4.3 Shall update the job hazard analysis (JHA) when hazardous materials are introduced to the workplace.

11.3.5 **People Doing the Work**
   11.3.5.1 Shall participate in required training programs, including but not limited to training on hazard communication and mobile equipment used to handle materials.
   11.3.5.2 Shall apply general safety principles, such as proper work practice and inspection and controls, in their work.
11.3.5.3 Shall maintain general housekeeping.

11.3.5.4 Shall use personal protective equipment (PPE) as outlined in the JHA.

11.3.5.5 Shall perform material handling operations and operate materials handling equipment safely to prevent injury or damage.

11.3.5.6 Shall immediately report any unsafe material handling, storage, or disposal to their supervisor.

11.3.6 Regional Safety Manager

11.3.6.1 Shall provide regional oversight and assistance to implement material handling, storage, and disposal compliance within their region.

11.3.7 Contractors

11.3.7.1 Shall follow Reclamation safety requirements, which includes the requirements of this section, as specified in the contract.

11.4 Training Requirements

11.4.1 Initial

A hazard communication course is required for employees handling, storing, and disposing of hazardous materials. Relevant training for the materials an employee will handle, store, or dispose of is also required.

11.4.2 Injury Prevention Training

Employees shall receive injury prevention training that covers

- the risks of improper lifting,
- the physical warning signals when the body is manually lifting or carrying materials improperly,
- the use of mechanical moving equipment to avoid unnecessary physical stress or strains,
- the use of lifting aids, and
- PPE.

11.4.3 Recordkeeping

Training records shall be maintained in the agency system of tracking.

11.5 Hazard Identification, Assessment, and Safety Measures

11.5.1 Flammable and Combustible Liquids Handling and Storage

Unless otherwise defined, terms used throughout this section relating to flammable and combustible liquids have the same meaning as in the flammable and combustible liquids code.
established in NFPA 30, *Flammable and Combustible Liquids Code*, and 29 CFR 1910.106. Flammable and combustible liquids are classified as shown in Table 11-1.

**TABLE 11-1. Classifications of Flammable and Combustible Liquids**

<table>
<thead>
<tr>
<th>Class</th>
<th>Flashpoint</th>
<th>Boiling Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>Below 100°F (38°C)</td>
<td>—</td>
</tr>
<tr>
<td>Class IA</td>
<td>Below 73°F (23°C)</td>
<td>Below 100°F (38°C)</td>
</tr>
<tr>
<td>Class IB</td>
<td>Below 73°F (23°C)</td>
<td>Below 100°F (38°C)</td>
</tr>
<tr>
<td>Class IC</td>
<td>Above 100°F (38°C)</td>
<td>—</td>
</tr>
<tr>
<td>Class II</td>
<td>At or above 100°F (38°C) and below 140°F (60°C)</td>
<td>—</td>
</tr>
<tr>
<td>Class III</td>
<td>At or above 140°F (60°C)</td>
<td>—</td>
</tr>
</tbody>
</table>

11.5.1.1 Toxicity of Flammable and Combustible Liquids. Most flammable and combustible liquids are highly toxic. Use them only after determining the toxic characteristics to ensure that the appropriate safety and health requirements in RSHS Section 7, *Occupational Health*, are followed.

11.5.1.2 Class IA Flammable Liquids

11.5.1.2.1 Restricted Use. Because of the extreme explosion hazards posed by Class IA liquids, safety data sheets (SDS) must be reviewed for imperative storage, dispensing, and use procedures prior to purchasing Class IA liquids. The following shall be reviewed: the name of the Class IA flammable liquid, a description of the liquid and its characteristics, a detailed description of its intended uses, the SDS, and an explanation of the safety and health precautions that must be taken to ensure safe handling and store. This requirement does not apply to small quantities of aerosol starter fluid used for engines.

11.5.1.2.2 Substitute Product. Whenever possible, use a less hazardous product.

11.5.1.2.3 Controlled Use. A competent person must supervise storing, dispensing, and using Class IA liquids, including design of the storage and dispensing system.

11.5.1.3 Approved Tanks and Containers. Use only approved and labeled closed tanks and containers to store, handle, and dispense flammable and combustible liquids. Approved tanks and containers include original containers, safety cans, drums/barrels, and portable tanks that meet the Department of Transportation (DOT) specifications in Table 11-2.
11.5.1.3.1 Original Containers. Store and use flammable and combustible liquids in the original shipping containers provided they meet the specifications shown in Table 11-2. Store only enough for one day’s use in the work area, up to a maximum of 25 gallons for a Class IA liquid or 120 gallons for of any other class of liquid.

11.5.1.3.2 Safety Cans. When dispensing flammable or combustible liquids from storage containers, dispense them into approved, properly labeled safety containers. An approved container holds no more than 5 gallons, has a spring closing lid and spout cover, and is designed to safely relieve internal pressure when subject to fire or heat.

11.5.1.3.3 Exceptions. Highly viscous (i.e., extremely hard to pour) liquids may be stored and handled in the original container regardless of size. Liquids that are transferred from labeled containers to portable containers for immediate use are exempt from labeling.

11.5.1.3.4 Tanks. Any vessel holding more than 60 gallons and intended for fixed installation shall not be used for processing flammable or combustible liquids.

### Table 11-2. Maximum Allowable Size of Containers and Portable Tanks for Combustible Liquids

<table>
<thead>
<tr>
<th>Container Type</th>
<th>Flammable Liquids</th>
<th>Liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Class IA</td>
<td>Class IB</td>
</tr>
<tr>
<td>Glass</td>
<td>1 pint</td>
<td>1 quart</td>
</tr>
<tr>
<td>Metal (other than approved DOT drums or approved plastic)</td>
<td>1 gallon</td>
<td>5 gallons</td>
</tr>
<tr>
<td>Safety cans</td>
<td>2 gallons</td>
<td>5 gallons</td>
</tr>
<tr>
<td>Metal drums (DOT approved)</td>
<td>60 gallons</td>
<td>60 gallons</td>
</tr>
<tr>
<td>Portable tanks (DOT approved)</td>
<td>660 gallons</td>
<td>660 gallons</td>
</tr>
<tr>
<td>Polyethylene (DOT Specification 34, or as authorized by DOT exemption)</td>
<td>1 gallon</td>
<td>5 gallons</td>
</tr>
</tbody>
</table>

11.5.1.4 Approved Storage Cabinets. The design, construction, and approval of storage cabinets must comply with NFPA 30.
11.5.2 Storing Flammable or Combustible Liquids

11.5.2.1 Indoor Storage. Do not store flammable and combustible liquids indoors, except under the following conditions.

11.5.2.1.1 SINGLE ROOM. Store no more than 25 gallons of any flammable or combustible liquid in a room or single fire area.

11.5.2.1.2 STORAGE CABINETS. Store no more than 60 gallons of Class I, II, or III liquids and 120 gallons of Class IV liquids in an approved cabinet. Locate no more than three such cabinets in a single fire area.

11.5.2.1.3 STORAGE OF LARGER QUANTITIES. Larger quantities of flammable and combustible liquids may be stored in separated indoor storage areas when such storage meets the requirements of NFPA 30, paragraph 9.18, “Dispensing, Handling, and Use of Liquids in Storage Area.”

11.5.2.1.4 REQUIRED FIRE EXTINGUISHERS. Place at least one 2-A:40-B:C fire extinguisher inside the room between 10 and 30 feet away from the stored material or cabinet. Also place at least one 2-A:40-B:C fire extinguisher outside of but not more than 10 feet from the door opening into an inside liquid storage area.

11.5.2.2 Outdoor Storage. Do not store flammable and combustible liquids outdoors, except under the following conditions.

11.5.2.2.1 APPROVED CONTAINERS. Store flammable and combustible liquids above ground in approved containers with a capacity no more than 60 gallons. Such containers are subject to the following restrictions:

- The total capacity of any one group of containers stored together must not exceed 1,100 gallons.
- Each group of containers must be at least 5 feet apart, and each group must be at least 20 feet away from any building or other combustible item.
- Each group of containers must be adjacent to an access way at least 12 feet wide to facilitate the use of firefighting equipment.

11.5.2.2.2 APPROVED PORTABLE TANKS. Store flammable and combustible liquids above ground in approved portable tanks with a capacity no more than 660 gallons. Such portable tanks are subject to the following requirements:

- Groups of two or more tanks with a combined capacity of more than 2,200 gallons must be surrounded by a clearance area of at least 5 feet.
- Portable tanks must be at least 20 feet away from any building or other combustible items.

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• Portable storage tanks must be equipped with emergency venting and other
devices, as required by NFPA 30.
• Each portable tank must be adjacent to an access way at least 12 feet wide to
facilitate the use of firefighting equipment.
• Place at least one portable fire extinguisher rated no less than 2-A:40-B:C
between 25 and 75 feet away from each portable tank or group of tanks.

11.5.2.2.3 APPROVED PERMANENT TANKS. Store flammable and combustible
liquids above ground in approved permanent tanks installed in accordance with
NFPA 30, Section 15, “Outside Storage.”

11.5.2.2.4 DIKE STORAGE. Dike storage areas must be at least 12 inches high.
They must be graded, sloped, and sealed with 50-mil plastic compatible sheeting
or equivalent liner able to contain any leaks and/or spills equal to the capacity of
all tanks or containers in each area. Vegetation and combustible materials must
be kept clear of the storage area by at least 10 feet in all directions.

11.5.3 Handling and Dispensing Flammable or Combustible Liquids

11.5.3.1 Dispensing Areas. Dispensing areas must be separate from storage areas if more than
5 gallons of flammable or combustible liquids will be transferred. Dispensing areas must be
separated from other operations by at least 25 feet or by a partition with a minimum one-
hour fire rating and must use drainage or an equally effective method to contain spills.

11.5.3.2 Ventilation. Dispensing areas must provide adequate natural or mechanical ventilation
to keep the concentrations of flammable vapor below 10 percent of the lower explosive limit
(LEL).

11.5.3.3 Grounding. When transferring flammable liquids from one container to another,
electrically ground and bond all containers and transfer systems. All dispensing systems
must be electrically grounded and bonded.

11.5.3.4 Dispensing. Flammable and combustible liquids must be withdrawn from or transferred
into vessels, containers, or tanks according to the following requirements:
• Always transfer through a closed piping system.
• Always transfer from a safety can by means of a device drawing through the top.
• Always transfer from containers or tanks by gravity or self-closing valve pump.
• Never transfer by injecting pressurized air into a tank or container.
• Always use approved dispensing devices and nozzles.
• Always protect the dispensing unit against collision damage.

11.5.3.5 Lighting and Electrical Equipment. Use only electrical lighting to illuminate areas
where Class I flammable liquids are handled or dispensed or where flammable vapor may
be present. Wiring and all electrical equipment must meet the requirements of NFPA
designation Class I, Division 2 of NFPA 70, National Electrical Code.
11.5.3.6 Flame and Ignition. Do not permit open flames, smoking, or other sources of ignition within at least 50 feet of areas where Class I flammable liquids are dispensed or used. No Smoking signs must be posted in such areas.

11.5.3.7 Leakage or Spillage. Leaking and spilled flammable or combustible liquid must be cleaned up promptly and disposed of safely.

11.5.3.8 Refuse Containers. Self-closing metal refuse containers shall be provided in all areas where employees use or dispense flammable or combustible liquids.

11.5.4 Requirements for Handling Liquefied Petroleum Gas (LPG)


11.5.4.1 Hazardous Locations. Do not use LPG containers and equipment in unventilated spaces, below grade in pits or trenches, below deck on watercraft, or in confined areas.

11.5.4.2 Tubing. Use only tubing or piping approved for use in LPG systems. Do not use aluminum or polyvinyl piping or tubing.

11.5.4.3 Hoses. Use only hoses labeled “LP-gas” or “LPG.” Hoses must have a minimum working pressure of 250 pounds per square inch.

11.5.4.4 Valves and Accessories. Valves (including shutoff valves), fittings, and accessories connected directly to an LPG container must have a minimum working gauge pressure of 250 pounds per square inch and be designed for LPG.

11.5.4.5 Shutoff Valves. Connections to an LPG container (except safety relief connections, liquid level gauging devices, and unplugged openings) must have a shutoff valve located as close to the container as practicable. Shutoff valves must not be located between the safety relief device and the container.

11.5.4.6 Safety Relief Valves. Equip each LPG container with one or more approved safety relief valves. Valves must allow free venting to the outside air, and the discharge must be at least 5 feet away from any building opening. The regulator safety relief valve (vent opening) shall be located not less than 5 feet from any potential source of ignition, opening into any sealed combustion chamber appliance, and be less than 5 feet from any mechanical ventilation air intake. Regulators are mechanical devices and are subject to wear and tear.

11.5.4.6.1 Portable Containers. Fill portable containers from storage containers outside and at least 50 feet away from the nearest building.
11.5.4.6.2 **MOTOR VEHICLES.** Fill fuel containers on motor vehicles from storage containers at least 10 feet away from masonry-walled buildings and at least 25 feet away from any other type of building or structure.

11.5.4.6.3 **REFUELING.** Shut down equipment using LPG during refueling.

11.5.4.7 **Storage of Cylinders and Containers.** Store LPG containers and cylinders that are not in use outside of buildings or structures and away from the nearest building or combustible material storage. Minimum safe distances are listed in Table 11-3.

**TABLE 11-3. Minimum Safe Distance from Buildings or Combustible Material Storage for LPG Storage**

<table>
<thead>
<tr>
<th>Quantity of Stored LPG</th>
<th>Nearest Building or Storage and Adjacent Property</th>
<th>Thoroughfares or Sidewalks and Line of Adjacent Property Used for Public Gathering</th>
<th>Dispensing Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>720 gallons or less</td>
<td>0 feet</td>
<td>0 feet</td>
<td>5 feet</td>
</tr>
<tr>
<td>721 to 2,500 gallons</td>
<td>0 feet</td>
<td>10 feet</td>
<td>10 feet</td>
</tr>
<tr>
<td>2,501 to 6,000 gallons</td>
<td>10 feet</td>
<td>10 feet</td>
<td>10 feet</td>
</tr>
<tr>
<td>6,001 to 10,000 gallons</td>
<td>20 feet</td>
<td>20 feet</td>
<td>20 feet</td>
</tr>
<tr>
<td>Over 10,000 gallons</td>
<td>25 feet</td>
<td>25 feet</td>
<td>25 feet</td>
</tr>
</tbody>
</table>

11.5.4.8 **Fire Protection.** Place at least one portable fire extinguisher rated not less than 2-A:40-B:C between 25 feet and 75 feet away from the container in all LPG storage locations.

11.5.4.9 **Requirements for Refueling**

11.5.4.9.1 **VEHICLES AND EQUIPMENT.** Ensure that the design and installation of tanks and equipment used to refuel vehicles or equipment comply with provisions of one of the following: nationally recognized testing laboratories or approval of the government authority having jurisdiction.

11.5.4.9.2 **DISPENSING STATIONS.** Mount dispensing devices (except those attached to containers) on a concrete platform elevated at least 5 inches above grade. Use guardrails or posts to protect the dispensing device from collision with motor vehicles.

11.5.4.9.3 **DISPENSING HOSE.** Dispense flammable and combustible liquids using only an approved hose. The hose must include an automatic self-closing valve or nozzle system to protect the hose from damage.
11.5.4.9.4 **ELECTRICAL REQUIREMENTS FOR EQUIPMENT.** Ensure that electrical wiring, pumps, and other equipment meet the requirements of NFPA designation Class I of NFPA 70, *National Electrical Code*.

11.5.4.9.5 **SHUTOFF DURING REFUELING.** During refueling, shut down vehicles or equipment that use gasoline, LPG, or any other flammable or combustible liquid fuels.

11.5.4.9.6 **SMOKING.** Post No Smoking signs within 50 feet on all mobile refueling equipment and within established refueling areas.

11.5.4.9.7 **EMERGENCY SHUTOFF SWITCH.** Ensure that an emergency shutoff switch is located within 50 feet of the fuel dispensing equipment. Conspicuous signs must be posted to identify the switch location.

11.5.4.9.8 **FIRE PROTECTION.** Place one or more listed fire extinguishers with a minimum classification of 40-B:C in each refueling area. Fire extinguishers must be within 100 feet of each pump, dispenser, underground fill pipe opening, and lubrication or service room.

11.5.5 **Requirements for Handling Asphalt and Tar Products**

Employees who handle or work with asphalt and tar products must complete a job hazard analysis (JHA) that includes exposure determinations. A Safety Data Sheet (SDS) must be available, and all instructions to store, handle, and apply materials must be followed.

11.5.5.1 **Confined Space.** Enclosed or confined areas where tar, asphalt, enamel, or similar materials are heated or applied must follow the requirements of RSHS Section 14, *Confined Spaces*.

11.5.5.2 **Heating Kettles.** Kettles for heating asphalt or tar must meet and be used in accordance with the following requirements:

- Asphalt or tar kettles must not be left unattended when in use.
- Kettles must be used on a firm, level base and must be protected from overturning.
- Kettles must have effective lids or hoods.
- Kettles must have an operable temperature indicator and limiting device to ensure that asphalt or tar remains at no less than 50°F below the flashpoint.
- Kettles must not be used in confined or unventilated spaces.

11.5.5.3 **Fire Protection.** Place a fire extinguisher rated no less than 2-A:40-B:C wherever heating devices or heating kettles are in use.
11.5.5.4 Handling. Provide adequate unobstructed runways or access ways for employees handling hot materials. Hot materials should not be carried up or down ladders. Suitable hoisting devices must be provided.

11.5.5.5 Thinners. Do not use gasoline or similar volatile liquids as thinners.

11.5.5.6 Hand Spraying. Persons applying hot tar or asphalt must not work under the hose supplying the material to the spray nozzle. Use flexible metallic hoses fitted with insulated handles for hand spraying operations.

11.5.5.7 Housekeeping. Keep distributors, hoses, and related equipment reasonably free of asphalt and tar accumulations.

11.5.6 Requirements for Storing and Handling Paints, Varnishes, and Thinners

Storing and handling paints, varnishes, or thinners requires attention to flammability characteristics.

11.5.6.1 Storage. Store and dispense paints, varnishes, lacquers, thinners, and other volatile paints or coatings according to their flammability characteristics as stated within SDS. Containers shall be tightly closed when not in use. Store no more than a one-day supply in buildings under construction.

11.5.6.2 Ventilation. Adequate natural or mechanical ventilation shall be provided to maintain the concentration of flammable vapor at or below 10 percent of the lower flammable limit where paints or coatings are dispensed and/or applied.

11.5.6.3 Spray Painting. Do not allow smoking, open flames, exposed heating elements, or other sources of ignition where flammable sprays or combustible paints and/or coatings are used. Spray painting booths and equipment must comply with NFPA 30.

11.5.6.4 Electrostatic Paint Spraying

11.5.6.4.1 ELECTRICAL SAFETY. Locate transformers, power packs, control apparatus, other electrical portions of the equipment, and the equipment’s connection to the power supply outside the spray area.

11.5.6.4.2 GROUNDING. Ground the handle of the spray gun with a conductive device to ensure the gun and the operator are at the same ground potential.

11.5.7 Requirements for Storing Materials in an Open Yard

Storing materials in an open yard requires attention to combustible material, access, power lines, and fire protection.
11.5.7.1 Combustible Materials. Stack combustible materials securely. Stacks or piles must be no more than 16 feet high. Store combustible material at least 10 feet away from a building or structure. Do not store materials where they may block egress or emergency equipment.

11.5.7.2 Access. Driveways between and around combustible storage piles must be at least 15 feet wide. Keep them free from accumulations of materials or rubbish. Use a map grid system of 50 by 150 feet when planning driveways in open-yard storage areas for combustible materials. Power Lines. Do not store materials under power lines.

11.5.7.3 Fire Protection. Place portable fire extinguishers rated 2-A:40-B:C at accessible marked locations in the yard so that the nearest extinguisher is no more than 50 feet away from a Class B hazard or 75 feet away from a Class A hazard.

11.5.8 Requirements for Storing Materials Indoors

Storing materials indoors requires attention to access, fire prevention and protection, floor loading, and overhead hazards. Buildings under construction require special precautions.

11.5.8.1 Access. Place or store materials so they do not interfere with access ways, doorways, electrical panels, fire extinguishers, or hoist ways. Do not obstruct access ways or exits with accumulations of scrap or materials. Aisles must be wide enough to accommodate forklifts or firefighting equipment.

11.5.8.2 Fire Prevention. When storing, handling, and piling materials, consider the materials’ fire characteristics. Store noncompatible materials that may create a fire hazard at least 25 feet apart or separate them with a barrier with a fire rating of at least one hour. Pile material to minimize internal spread of fire and to provide convenient access for firefighting.

11.5.8.3 Fire Doors. Maintain at least a 24-inch clearance around the travel path of fire doors.

11.5.8.4 Sprinklers. Maintain at least an 18-inch clearance between stored materials and sprinkler heads.

11.5.8.5 Heating Appliances. Maintain the clearance shown on approved labels or a 3-foot clearance, whichever is larger, between stored materials and unit heaters, radiant space heaters, duct furnaces, and flues.

11.5.8.6 Fire Protection. Emergency fire equipment must be readily accessible and in good working order as reference in RSHS section 10.

11.5.8.7 Floor Loading. Clearly post load limits in all storage areas. Floors and slabs on grades should never bear a storage load.
11.5.8.8 Buildings under Construction. Materials stored inside buildings under construction must be at least 6 feet away from any hoist way or inside floor openings and at least 10 feet away from any exterior wall that does not extend above the top of the stored material.

11.5.9 Requirements for Stacking Bagged Materials
Stack bagged materials by stepping back the layers and cross-keying the bags at least every 10 bags high unless restrained by walls or partitions of adequate strength.

11.5.10 Requirements for Storing Materials in Bulk
Ensure entry to bulk storage locations, such as silos, hoppers, tanks, or bins (which are also classified as confined spaces), complies with OSHA requirements, RSHS section 14 and local operating procedures.

11.5.11 Requirements for Lumber Storage
Stack lumber on level and solid supported sills so that stacks are stable. Do not pile lumber more than 16 feet high.

11.5.12 Requirements for Storing Bricks and Masonry Blocks
Stack bricks and masonry blocks on level and solid surfaces.
- 11.5.12.1 Bricks. Stack bricks no more than 7 feet high. Offset loose brick stacks at least 2 inches for every foot of height above 4 feet. Stack packaged bricks no more than three units high.
- 11.5.12.2 Masonry Blocks. Offset masonry blocks one-half block per tier above 6 feet.

11.5.13 Requirements for Cement and Lime
Because of fire hazard, unslaked lime shall be stored in a dry area separated from other materials.

11.5.14 Requirements for Handling and Storing Reinforcing, Sheet, and Structural Steel
Stack steel to prevent sliding, rolling, spreading, or falling. Use sleeves when handling steel by a crane or forklift to aid in safe rigging.

11.5.15 Requirements for Handling and Storing Pipe, Conduit, and Cylindrical Materials
- 11.5.15.1 Stacking. Place pipe, conduit bar stock, and other cylindrical materials in racks or stack and block them on a firm, level surface to prevent spreading, rolling, or falling. Use either a pyramidal or battened stack. Offset battened stacks at least one unit per tier and securely wedge them on both sides of the stack.
- 11.5.15.2 Removal. Remove round stock (e.g., wood poles, pipes, and conduit) from a stack by their ends.
11.5.15.3 **Unloading.** Unload carriers in such a way that employees are not exposed to the unsecured load.

11.5.15.4 **Taglines.** Use taglines when working with round stocks.

11.5.16 **Requirements for Storing Sand, Gravel, and Crushed Stone**
Locate stockpiles in a way that provides safe access for withdrawing material. Material or vertical faces must not overhang. Store materials against walls or partitions only in an amount that will not endanger the stability of the wall or partition.

11.5.17 **Housekeeping**
Keep work and storage areas clean, orderly, and in sanitary condition. Keep all stairways, access ways, and exits free from scrap, supplies, materials, or equipment.

11.5.17.1 **Waste Disposal.** Collect, store, and remove combustible waste products at the end of each workday or work shift. Use noncombustible containers to dispose of waste and rubbish. Equip noncombustible containers with fitted or self-closing covers. Immediately remove and dispose of flammable or combustible liquid spills. Place scrap lumber in containers and do not accumulate such lumber in work areas. Remove or bend protruding nails that are not placed directly in containers for removal.

11.5.17.2 **Separation of Materials and Waste.** Use the SDS to determine appropriate storage and separation of all materials and identify and label material containers. The following materials must be separated:

- Combustible materials such as paper, wood, and natural-fiber fabrics
- Oily flammable materials, such as saturated or solvent rags
- Corrosive and caustic materials, such as batteries
- Reactive materials that may self-decompose or self-ignite because of heat or a chemical friction reaction
- Radioactive materials
- Toxic materials that may be fatal if inhaled or absorbed through the skin

11.5.17.3 **Outdoor Housekeeping.** Keep areas adjacent to facilities free from rubbish, waste, and dry, overgrown vegetation. Place combustible waste materials that are stored outdoors while awaiting disposal at least 20 feet away from facilities.

11.5.17.4 **Storage at Height.** Store loose or light materials on roofs or unenclosed heights only if they are safely tied down or secured.

11.5.17.5 **Sacks and Bags.** Remove empty bags that contained cement, lime, or other dust-producing materials from the work area at least daily.
11.5.17.6 Excavated Material. When possible, keep roads and walkways clear of excavated materials. When circumstance do not allow this, adequately mark or barricade these areas and provide other access.

11.5.17.7 Dropping Material. Do not drop or throw material and debris more than 6 feet unless the following conditions are met:

- The area through which material is dropped must be completely enclosed, with barricades at least 6 feet back from the projected edge of the opening or level above. Signs warning of the hazards must be posted at each level.
- Chutes must be installed to provide protection for persons below. Chutes for debris and scrap must be enclosed for their entire length. Openings for inserting and releasing materials must be equipped with covers and enclosures.

11.6 Personal Protective Equipment (PPE)

Workers who handle, store, or dispose of materials must follow instructions for protective clothing, respiratory protection, and skin protection as specified in the relevant RSHS section(s) and SDSs.

11.6.1 Job Hazard Analysis Requirements

JHAs shall include exposure determinations for employees who are exposed to paints or coatings potentially hazardous to their health. Employees must wear appropriate PPE identified in the JHA.

11.6.2 Supervisors’ Responsibilities

Supervisors shall document employee exposure and provide appropriate protective equipment and hazard training as applicable.

11.6.3 Skin Protection

Washing facilities, hand cream, chemical barrier cream, or similar preparation shall be provided for skin protection.

11.7 Safe Practices

Workers who handle, store, or dispose of materials must observe the following safe practices:

- Inspect materials for slivers, nails, or other protruding objects; jagged or sharp edges; burrs; and rough or slippery surfaces.
- Maintain firm grip on objects.
- Keep fingers away from pinch points.
- When handling lumber, pipe, or other long objects, keep hands away from the ends to prevent pinching.
- Wipe off greasy, wet, slippery, or dirty objects before trying to handle or store them.
- Keep hands free of oil and grease.
11.8 Definitions

**Competent person**  
One who can identify health and safety hazards in the workplace and has the authority to correct them.

**Container**  
Any can, barrel, or drum.

**Flammable liquid**  
Any liquid with a flashpoint at or below 199.4°F (93°C).

**Portable tank**  
A closed container with a capacity over 60 gallons and that is not intended for fixed installation.

**Program coordinator**  
A person that has the appropriate training and/or experience to manage, coordinate, implement, and evaluate specific program elements and/or materials handling, storage, and disposal requirements.

**Safety can**  
An approved container with a capacity of not more than 5 gallons and a spring-closing lid and spout cover and that is designed to safely relieve internal pressure when exposed to fire.

11.9 References


Department of Transportation. 49 CFR 178, *Specifications for Packaging*.


Occupational Safety and Health Administration. 29 CFR 1926.153, *Liquefied Petroleum Gas (LP-Gas)*.  