


<i>HEALTH AND SAFETY MANUAL</i>		
Title: Flammable and Combustible Liquids		
Approved by: Greg Savoy		Rev. 1/1/08

1 Purpose/Scope:

This program establishes requirements for the safe handling, storage, and use of flammable and combustible liquids with a flashpoint below 200 degree F (93.33 degree C).

This program applies to all Company employees. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Company employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

2 Definitions/Responsibilities:

2.1 Definitions:

2.1.1 Closed container – A container as herein defined, sealed by means of a lid or other device that neither liquid nor vapor will escape from it at ordinary temperatures.

2.1.1 Combustible liquid - any liquid having a flashpoint at or above 100 degree F. (37.8 degrees C.) Combustible liquids shall be divided into two classes as follows:

“Class II liquids” shall include those with flashpoints at or above 100 degrees F. (37.8 degrees C.) and below 140 degrees F. (60 degrees C.), except any mixture having components with flashpoints of 200 degrees F. (93.3 degrees C.) or higher, the volume of which make up 99 percent or more of the total volume of the mixture.

“Class III liquids” shall include those with flashpoints at or above 140 degree F. (60 degree C.) Class III liquids are subdivided into two subclasses:

✓ “Class IIIA liquids” shall include those with flashpoints at or above 140 degree F. (60 degrees C.) and below 200 degree F. (93.3 degrees C.), except any mixture having components with flashpoints of 200 degrees F. (93.3 degrees C.), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

✓ “Class IIIB liquids” shall include those with flashpoints at or above 200 degrees F. (93.3 degrees C.). This section does not cover Class IIIB liquids. Where the term "Class III liquids" is used in this section, it shall mean only Class IIIA liquids.

☐ When a combustible liquid is heated for use to within 30 degrees F. (16.7 degrees C.) of its flashpoint, it shall be handled in accordance with the requirements for the next lower class of liquids.

2.1.3 Container - Any can, barrel, or drum.

2.1.2 Flammable liquid - any liquid having a flashpoint below 100 degrees F. (37.8 degrees C.), except any mixture having components with flashpoints of 100 degrees F. (37.8 degrees C.) or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids shall be known as Class I liquids. Class I liquids are divided into three classes as follows:

☐ Class IA shall include liquids having flashpoints below 73 degrees F. (22.8 degrees C.) and having a boiling point below 100 degrees F. (37.8 degrees C.).

☐ Class IB shall include liquids having flashpoints below 73 degrees F. (22.8 degrees C.) and having a boiling point at or above 100 degrees F. (37.8 degrees C.).

☐ Class IC shall include liquids having flashpoints at or above 73 degrees F. (22.8 degrees C.) and below 100 degrees F. (37.8 degrees C.).

Refer to the MSDS’s “flash point” to determine the flammable class rating.

2.1.5 Flashpoint - The minimum temperature at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid.

2.1.6 Portable tank - A closed container having a liquid capacity over 60 U.S. gallons and not intended for fixed installation.

2.1.7 Safety can - An approved container, of not more than 5 gallons capacity, having a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.

2.1.3 Ventilation as specified in this section is for the prevention of fire and explosion. It is considered adequate if it is sufficient to prevent accumulation of significant quantities of vapor-air mixtures in concentration over one-fourth of the lower flammable limit.

2.2 Responsibilities:

2.2.1 Managers/Supervisors:

- Ensure that all employees are trained to work with and handle flammable and combustible liquids properly and safely.
- Ensure that proper storage, labeling, and personal protective equipment are provided to the employee required to work with flammable and combustible liquids.

2.2.1 Employee:

- Ensure that flammable and combustible liquids are stored in approved containers, labeled, and put in proper storage after each use or at the end of every shift.
- Wear any additional PPE that may be needed for their protection, and to clean up any spills, and report spills to his/her supervisor.

3 Requirements:

3.1 General:

- 3.1.1 Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids.
- 3.1.2 Flammable or combustible liquids shall not be stored in areas used for exits, stairways, or normally used for the safe passage of people.
- 3.1.3 All containers shall be labeled identifying content and hazards.
- 3.1.4 All indoor storage rooms, cabinets and buildings shall have adequate ventilation to the outside.
- 3.1.5 All connections and lids used in handling flammable and combustible material shall be tight to prevent any release of vapors or liquids.
- 3.1.6 Fire extinguishers shall be provided as required in Section 3.5.
 - Fire extinguishers shall be free from obstructions and being blocked.
- 3.1.7 The quantity of flammable or combustible liquids removed from storage for use shall not exceed the needed supply for that shift.
- 3.1.8 The flammables and combustibles checklist (Exhibit F-6.1) shall be completed on an annual basis for each facility.

3.2 Indoor storage of flammable and combustible liquids.

- 3.2.1 No more than 25 gallons of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet.

3.2.2 Quantities of flammable and combustible liquid in excess of 25 gallons shall be stored in acceptable or approved fire resistant cabinets.

- Cabinets shall be labeled in conspicuous lettering, "Flammable-Keep Fire Away."
- Not more than 60 gallons of flammable or 120 gallons of combustible liquids shall be stored in any one storage cabinet. No more than three such cabinets may be located in a single storage area.
- All approved storage cabinets shall be vented upwards and to the outside of the buildings. Vent pipes shall be supported and not allowed to be wedged down in size coming out of the cabinets.
- Conspicuous and legible signs prohibiting smoking shall be posted.
- Storage cabinets must be locked when unattended and are not permitted in hallways and walkways.

3.2.3 The inside of storage rooms or self contained storage buildings shall be constructed to meet the required fire-resistive rating for their use.

- Where an automatic extinguishing system is provided, the system shall be designed and installed in an approved manner.
- Openings to other rooms or buildings shall be provided with noncombustible liquid-tight raised sills or ramps at least 4 inches in height or the floor in the storage area shall be at least 4 inches below the surrounding floor.
- Openings shall be provided with approved self-closing fire doors.
- The room shall be liquid-tight where the walls join the floor. A permissible alternate to the sill or ramp is an open-grated trench, inside of the room, which drains to a safe location.
- Wood of at least 1-inch nominal thickness may be used for shelving, racks, dunnage, scuff boards, floor overlay, and similar installations.
- Storage in inside storage rooms shall comply with following table.

Fire Protection Provided	Fire Resistance	Maximum size	Total Allowable Quantities Gals/sq ft of floor area
Yes	2 hrs	500 sq ft	10
No	2 hrs	500 sq ft	4
Yes	1 hr	150 sq ft	5
No	1 hr	150 sq ft	2

NOTE: *Fire protection system shall be sprinkler, water spray, carbon dioxide or other system approved by a nationally recognized testing laboratory for this purpose.*

3.2.4 Electrical wiring and equipment located in inside storage rooms shall be approved for Class I, Division 1, hazardous locations.

3.2.5 Every inside storage room shall be provided with either a gravity or a mechanical exhausting system.

Such system shall commence not more than 12 inches above the floor and be designed to provide for a complete change of air within the room at least 6 times per hour

If a mechanical exhausting system is used, it shall be controlled by a switch located outside of the door.

The ventilating equipment and any lighting fixtures shall be operated by the same switch.

Where gravity ventilation is provided, the fresh air intake, as well as the exhausting outlet from the room, shall be on the exterior of the building in which the room is located.

3.2.6 In every inside storage room one clear aisle at least 3 feet wide must be maintained.

Containers over 30 gallons capacity shall not be stacked one upon the other.

3.2.7 Flammable and combustible liquids in excess of that permitted in inside storage rooms shall be stored outside of buildings.

3.3 Outdoor storage of flammable and combustible liquids.

3.3.1 Storage of containers (not more than 60 gallons each) shall not exceed 1,100 gallons in any one pile or area.

Piles or groups of containers shall be separated by a 5-foot clearance.

Piles or groups of containers shall not be nearer than 20 feet to a building.

3.3.2 There shall be a 12 foot wide access area leading to all outside storage areas to permit room for fire control apparatus.

3.3.2 The storage area shall be graded in a manner to divert possible spills away from buildings or other exposures, or shall be surrounded by a curb or earth dike at least 12 inches high.

When curbs or dikes are used, provisions shall be made for draining off accumulations of ground or rain water, or spills of flammable or combustible liquids.

- Drains shall terminate at a safe location and shall be accessible to operation under fire conditions.
- 3.4 Outdoor portable tank storage:
- 3.4.1 Portable tanks shall not be nearer than 20 feet from any building.
- Two or more portable tanks, grouped together, having a combined capacity in excess of 2,200 gallons, shall be separated by a 5-foot-clear area.
 - A 5-foot-clear area shall separate individual portable tanks exceeding 1,100 gallons.
- 3.4.2 Storage areas shall be kept free of weeds, debris, and other combustible material not necessary to the storage.
- 3.4.3 Portable tanks, not exceeding 660 gallons, shall be provided with emergency venting devices.
- 3.4.4 Conspicuous and legible signs prohibiting smoking shall be posted.
- 3.4.5 Fuel gas cylinders:
- Shall be stored upright and in a secured manner.
 - Shall be stored at least twenty feet from oxygen storage or be separated by a five-foot barrier with a fire rating of one-half hour
 - Conspicuous and legible signs prohibiting smoking shall be posted.
 - Valves shall be closed tight on all empty or full cylinders.
- 3.5 Fire control for flammable or combustible liquid storage:
- 3.5.1 At least one portable fire extinguisher, having a rating of not less than 20-B units, shall be located outside of, but not more than 10 feet from, the door opening into any room used for storage of more than 60 gallons of flammable or combustible liquids.
- 3.5.2 At least one portable fire extinguisher having a rating of not less than 20-B units shall be located not less than 25 feet, nor more than 75 feet, from any flammable liquid storage area located outside.
- 3.5.3 At least one portable fire extinguisher having a rating of not less than 20-B C units shall be provided on all vehicles used for transporting and/or dispensing flammable or combustible liquids.
- 3.6 Dispensing flammable and combustible liquids:
- 3.6.1 Transfer of flammable liquids from one container to another shall be done only when containers are electrically interconnected (bonded) and grounded.

- 3.6.2 Transferring by means of air pressure on the container or portable tanks is prohibited.
- 3.6.3 Dispensing devices, hoses, and nozzles for flammable liquids shall be of an approved type for the material that is being dispensed.
- 3.6.4 Conspicuous and legible signs prohibiting smoking shall be posted.
- 3.7 Handling liquids at point of final use:
 - 3.7.1 Flammable liquids shall be kept in closed containers when not immediately in use.
 - 3.7.2 Leakage or spillage of flammable or combustible liquids shall be cleaned up and disposed of promptly and safely.
 - 3.7.3 Flammable liquids may be used only where there are no open flames or other sources of ignition within 50 feet of the operation, unless conditions warrant greater clearance.
- 3.8 Service and refueling areas:
 - 3.8.1 Flammable or combustible liquids shall be stored in approved closed containers, in tanks located underground, or in aboveground portable tanks.
 - 3.8.2 The dispensing nozzle shall be an approved automatic-closing type without a latch-open device.
 - 3.8.3 There shall be no smoking or open flames in the areas used for fueling, receiving or dispensing of flammable or combustible liquids; or servicing fuel systems for internal combustion engines.
 - Conspicuous and legible signs prohibiting smoking shall be posted.
 - 3.8.4 The engines of all equipment being fueled shall be shut off during the fueling operation.
 - 3.8.5 Each service or fueling area shall be provided with at least one fire extinguisher having a rating of not less than 20-B C located so that an extinguisher will be within 75 feet.
- 3.9 Personal Protective Equipment:
 - 3.9.1 Additional PPE may be required in addition to Company minimum requirements. Refer to the Material Safety Data Sheet for further guidance and requirements.
 - Examples:
 - ✓ Face shield.
 - ✓ Apron and long sleeves.
 - ✓ Approved style and type of gloves.

3.10 Control of Ignition Sources:

3.10.1 Precautions shall be taken to prevent the ignition of flammable vapors.

- Examples of ignition sources are as follows:
 - ✓ Open Flames
 - ✓ Lightning
 - ✓ Hot Surfaces
 - ✓ Radiant Heat
 - ✓ Smoking
 - ✓ Cutting and Welding
 - ✓ Spontaneous Ignition
 - ✓ Frictional Sparks
 - ✓ Static Electricity
 - ✓ Electrical Sparks
 - ✓ Stray Currents
 - ✓ Ovens, Furnaces, and Heating Equipment

3.10.2 Static electricity:

- All equipment such as tanks, machinery, and piping shall be designed and operated to prevent electrostatic ignitions.
- All metallic equipment where an ignitable mixture could be present shall be bonded and grounded.
- The bond, ground or both shall be physically applied or shall be inherently present by the nature of the installation.
- Any electrically isolated section of metallic piping or equipment shall be grounded to prevent hazardous accumulation of static electricity.

3.11 Training:

3.11.1 All employees that may be exposed to flammable and combustible liquids shall receive awareness training of this topic.

3.11.2 In addition, employees shall receive the following training and information regarding flammable and combustible liquids:

- Hazard Communication Training
- Fire Safety
- Emergency Action Plan
- Fire prevention Plan

4 References:

4.1 29 CFR 1910.106, Flammable and Combustible Liquids

4.2 29 CFR 1926.152, Flammable and Combustible Liquids

4.3 NFPA 30 Flammable and Combustible Liquids Code

5 Exhibit:

F-6.1 Flammable and Combustible Liquid Checklist

Exhibit F-6.1

Flammable and Combustible Material Checklist

Use this checklist to evaluate safe handling of flammable and combustible materials.

Yes	No	Are combustible scrap, debris, and waste materials such as oily rags stored in covered metal receptacles and removed from the worksite promptly?
Yes	No	Are approved containers and tanks used for the storage and handling of flammable and combustible liquids?
Yes	No	Are all connections on drums and combustible liquid piping vapor and liquid tight?
Yes	No	Are all flammable liquids kept in closed containers when not in use?
Yes	No	Are metal drums of flammable liquids electrically grounded during dispensing?
Yes	No	Do storage rooms for flammable and combustible liquids have appropriate ventilation systems?
Yes	No	Are NO SMOKING signs posted on liquefied petroleum gas tanks?
Yes	No	Are all solvent wastes and flammable liquids kept in fire-resistant covered containers until they are removed from the worksite?
Yes	No	Is vacuuming used whenever possible rather than blowing or sweeping combustible dust?
Yes	No	Are fuel gas cylinders and oxygen cylinders separated by distances or fire resistant barriers while in storage?
Yes	No	Are fire extinguishers appropriate for the materials in the areas where they are mounted?*
Yes	No	Are appropriate fire extinguishers mounted within 75 feet of outside areas containing flammable liquids and within 10 feet of any inside storage area for such materials?*
Yes	No	Are extinguishers free from obstruction or blockage?*
Yes	No	Are all extinguishers serviced, maintained, and tagged at least once a year?*
Yes	No	Are all extinguishers fully charged and in their designated places?*
Yes	No	Where sprinkler systems are permanently installed, are the nozzle heads directed or arranged so that water will not be sprayed into operating electrical switchboards and equipment?
Yes	No	Are NO SMOKING signs posted in areas where flammable or combustible materials are used or stored?
Yes	No	Are safety cans utilized for dispensing flammable or combustible liquids at the point of use?
Yes	No	Are all spills of flammable or combustible liquids cleaned up promptly?
Yes	No	Are storage tanks adequately vented to prevent the development of an excessive vacuum or pressure that could result from filling, emptying, or temperature changes?

*(NOTE: Use of fire extinguishers is based on company policy regarding employee fire fighting in your Emergency Action Plan and local fire code.)

Completed by: _____

Date: _____