

Tempe Fire Department Policies and Procedures

Flammable Liquid Incidents

208.01E

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Flammable liquids present particular problems for fire protection, health, safety, and environmental protection. The frequency of encounters with flammable liquids makes them a particular concern for the Fire Department.

IDENTIFICATION

Pre-planning is the most important step in preparing for potential flammable liquid incidents. Identifying storage areas, shipping routes, and businesses that handle large quantities of flammables and establishing procedures for handling spills and fires will greatly enhance our ability to deal with any emergency.

Further on-the-scene information such as occupancy type and location, container shapes and sizes, colors and markings on containers, placards and labels, shipping papers, and your senses will also help detect presence of flammables.

EXTINGUISHMENT

The principle agent for flammable liquid firefighting is AFFF/ATC (Aqueous Film Forming Foam/Alcohol Type Concentrate). This agent is available from all engine companies, HM-72, Phoenix Foam-34, and all airport units. (Only extreme circumstances would warrant calling airport units.) Initial attack on any flammable liquid fire should be made with AFFF/ATC.

The extinguishing action of AFFF/ATC is based on its ability to rapidly cover the flammable liquid surface with a "foam blanket" which helps prevent the escape of flammable vapors. Care must be taken to apply AFFF/ATC in a way to avoid agitating the liquid and breaking the "seal."

AFFF/ATC does not adhere well to vertical surfaces, such as walls and tanks, so continuous application of foam may be necessary to suppress vapors.

Continuous monitoring with combustible gas meters is necessary to verify that vapors are being suppressed.

A coordinated attack and substantial quantities of foam are necessary to suppress large fires. Be sure that before the attack is made that adequate quantities of AFFF/ATC are available on scene.

SPILLS

Flammable liquid spills include spills without fire and any remaining fuel after a fire has been extinguished. In both of these cases, the liquid must be protected to prevent ignition until it can be picked up or removed.

Keep the number of personnel that are working in the spill area to a minimum.

All personnel working around spills must wear full protective clothing (turnouts, SCBA) to afford protection in cases of ignition.

Vapor areas can only be detected by the use of combustible gas indicators carried by HM-72 and Phoenix HIRT units. HIRT units should be dispatched if there is a question about flammability.

- A. Cover spills immediately with AFFF/ATC to "seal" vapors. The application may need to be repeated regularly, as the seal will break down in 10 to 15 minutes. Check for escaping vapors with a

combustible gas indicator to judge when the seal is breaking down.

- B. Control ignition sources in the area of the spill. Extinguish pilot lights, flares, open flames, etc. Prohibit smoking. Position vehicles to prevent contact of vapor with running engines or exhaust. Disconnect electrical power from a remote location to prevent arc-caused ignition.
- C. Do not permit the flammable liquid to run-off into storm drains, sewers, or drainage systems. Dike the run-off and cover the spill with AFFF/ATC pending disposal. Consider the use of plastic dike, charged hose lines, black plastic, or dirt to prevent the further spread of spilled material if it can be done safely.
- D. Sand, sand spreaders, front loaders, and other support equipment are available by contacting Tempe Field Services.

Note: Many flammable liquids offer multiple hazards (toxic, asphyxiant, corrosive), but may only be placarded for flammability. Take precautions to avoid entry into unknown vapors and have HIRT units dispatched if there are questions about toxicity.

DISPOSAL

- A. Large quantity spills should be picked up with a tanker truck whenever possible. This requires a fuel transfer pump or vacuum truck and personnel familiar with fuel transfer precautions.
- B. Smaller spills, which cannot be picked up with a tanker, must be absorbed or emulsified.
 - 1. Absorbent materials, such as sand, safe step, roll, and pads may be used to absorb small spills.
 - 2. Emulsifying agents may be mixed with hydrocarbon fuels, rendering them safe to the environment allowing them to be flushed into storm drains or sewers.
 - 3. When a spilled flammable liquid falls into one of the following categories, it may be flushed with "Bio-Solve" or similar product.
 - (a) Less than ten gallons of diesel fuel.
 - (b) Less than ten gallons of leaded fuel.
 - (c) Less than 30 gallons of unleaded fuel.

Bio-solve when mixed in pressurized pump cans, should be mixed three parts water to one part Bio-solve. Pour the contents of a predetermined amount of Bio-solve into an empty 2-1/2 gallon pressurized pump can. Then fill the can to within 4" of the neck with water, be sure Bio-solve and water are mixed.

Application of Bio-solve.

Avoid walking or standing in spill. Cover the entire spill, moving the nozzle in a circular motion (the contents of a 2-1/2 gallon extinguisher will neutralize five to ten gallons of petroleum product). After well saturating the area, agitate the spill and Bio-solve with 500 gallons of water, using a solid stream. This will cause the petroleum neutralizing agent to emulsify with the water. The emulsified mixture may now be flushed to the sewer system or storm drains.

Always wear proper protective clothing when working around flammable materials.

Warning Bio-solve does have a dye added to it. Don't squirt anyone with product. Any exposure requires immediate flushing with water.

- C. The spiller must be given the opportunity to clean up his spill, if he can do so, while adhering to appropriate regulations. Otherwise, call a specialized hazardous materials clean-up contractor.
 - 1. To avoid possible confusion, the spiller should be given a choice of clean-up contractors and make the call himself.
- D. Outside agencies, such as Chemtrec, Department of Environmental Quality, ASU, or railroad specialist, or the shipper should be contacted if conditions warrant.

Note: A complete list of resources: sand trucks, loaders, pump trucks, clean-up contractors, and outside agencies is available on BC-7, HM-72.

SAFETY

As early as possible, a Hot Zone should be established and marked through the use of Hazard tape (red and white) this zone should include: the area of the spill and any area where immediate danger from flammable vapor exist.

A Warm Zone is a larger area that surrounds the Hot Zone in which a lesser degree of risk exists. This zone is marked with Fire Line tape and includes working area for emergency personnel and the downwind path where flammable vapors may be carried. All civilians should be removed from this area.

All personnel working around flammable liquid spills must wear full protective clothing. This includes SCBA when working in and around areas where flammable vapors are present. Keep number of personnel to a minimum.

Unless absolutely necessary, personnel shall not work in a spill area. When this is necessary, the spill must be covered with AFFF/ATC, a back-up line will be in place, and all possible precautions against ignition must be taken. The area shall be monitored with a combustible gas indicator.

FIRE CODE VIOLATIONS

When fire code violations occur, contact Fire Prevention through the Alarm Room.