



PHOENIX FIRE DEPARTMENT

Special Hazards Unit

Storage and Display of Swimming Pool Chemicals

The Phoenix Fire Department wants to inform business owners, operators, and customers that pool chemicals can cause injury or harm to others if they are improperly stored or handled. The Phoenix Fire Department has prepared this brochure to assist business owners, operators, and customers so that pool chemicals can be stored in compliance with the Phoenix Fire Code. It should be kept in mind that swimming pool chemicals are hazardous materials. A fire involving swimming pool chemicals liberates toxic and corrosive smoke that may contaminate food, pharmaceutical products, and other nearby commodities, potentially increasing the loss because of the cost for removal and replacement of fire-damaged products. Please distribute this brochure and discuss the information with your store managers, staff, and loss prevention staff.

Permits:

- A Phoenix Fire Department Hazardous Materials Permit is required for businesses that store or display more than 10 pounds of Class III Oxidizers, 100 pounds of Class I Oxidizers, or more than 55 gallons of Corrosive Liquids.

Pool Products:

- The most prominent swimming pool chemicals stored and displayed are trichloro-s-triazirone (aka, Trichlor), sodium dichloroisocyanurate (aka, Iso's), calcium hypochlorite (aka, Cal Hypo), and hydrochloric acid (aka, muriatic acid). These chemicals are oxidizers and corrosive. Oxidizers will not burn but they will rapidly accelerate burning if heated, mixed with water, or become contaminated. Of all the pool chemicals calcium hypochlorite is the most reactive. It is incompatible with other oxidizing pool chemicals, muratic acid, and most other hazardous materials such as flammable and combustible liquids, antifreeze, motor oil, and pesticides.

Storage Arrangement:

- Storage and display of solids and liquids shall not exceed 200 pounds and 20 gallons per square foot respectively of floor area actually occupied by solid merchandise (PFC 2703.11.3.1).
- Display height shall not exceed 6 feet in height above the finished floor (PFC 2703.11.3.2).
- Individual containers less than 5 gallons or less than 25 pounds shall be stored or displayed on pallets, racks, or shelves (PFC 2703.11.3.3).
- A minimum 20-foot separation is required between *incompatible materials* when stored in containers having a capacity of *greater* than 5 pounds or 0.5 gallons (i.e.: calcium hypochlorite and muriatic acid). Phoenix Fire Department does permit non-hazardous products and goods to be displayed within the 20-foot separation. Another option is to install noncombustible vertical barriers that separate *incompatible materials* (PFC Section 2703.9.8).
- Storage and displays of pool chemicals is limited to a maximum storage height of 6 feet (PFC Section 2703.11.3.2).
- Liquid products are not permitted to be stored above solid swimming pool chemicals (NFPA 430 Section 9.2.2).
- Individual containers of swimming pool chemicals shall not exceed 100-pounds or 10-gallons capacity (PFC Section 2703.11.3.6).
- Aisles at least 4 feet in width shall be maintained on three sides of a palletized or solid-pile display of swimming pool chemicals (NFPA 430 Section 9.2.10 and PFC Section 2703.11.3.9).
- A storage plan illustrating the intended storage arrangement, including the location and dimensions of aisles, and storage racks protected with in-rack sprinklers shall be provided (PFC 2703.11.3.11).

Quantity Limits:

- The Phoenix Fire Code limits the amount of hazardous materials that may be stored and displayed inside a retail store. The Phoenix Fire Code limits the quantity of swimming pool chemicals based on the hazardous materials classification and if the store is protected by an automatic sprinkler system. The quantity limits for the identified hazard classes of swimming pool chemicals are indicated in the following table for S and M occupancies. (PFC Table 2703.11.1)

Swimming Pool Chemical	Phoenix Fire Code Hazard Classification	Maximum Allowable Quantity Sprinklered Building	Maximum Allowable Quantity Nonsprinklered Building
Calcium Hypochlorite (65% avail. Chlorine)	Solid Class III Oxidizer	2300 Lbs.	1150 Lbs.
Sodium dichloro-s-triazinetriene (sodium dichloroisocyanurate)	Solid Class III Oxidizer	2300 Lbs.	1150 Lbs.
Sodium dichloro-s-triazinetriene dihydrate	Solid Class I Oxidizer	36,000 Lbs.	18,000 Lbs.
Trichloro-s-triazinetriene (trichloroisocyanuric acid)	Solid Class I Oxidizer	36,000 Lbs.	18,000 Lbs.
Muratic Acid	Corrosive Liquid	2,000 Gal.	1,000 Gal.
Sodium Hypochlorite (<15% by vol.)	Corrosive Liquid	2,000 Gal.	1,000 Gal.

Fire Protection:

If your store is protected by an automatic sprinkler system or fire alarm system, ensure that the system has been inspected within the year. A green approval tag should be affixed to the sprinkler riser. If the store staff cannot locate the tag, or it's been more than 12 months since the most recent inspection, a fire protection contractor with a current Phoenix Fire Department Certificate of Fitness must perform the inspection. (PFC Section 901.6.3).

- The Chemicals used in many portable fire extinguishers can adversely react with most oxidizing swimming pool chemicals. In the area where pool chemicals are stored, the fire extinguisher should use water. Known as air-pressurized-water extinguishers, these devices can be safely used to control a fire involving a swimming pool chemical. (NFPA 430 Section C.2.1.1). Extinguishers designed for use on Class A, B and C fires that use potassium bicarbonate or mono-ammonium sulfate are not permitted. (PFC Section 4003.1.4).
- Calcium hypochlorite shall be provided with a means of temperature control that maintains the storage room temperature control that maintains the storage room or area at a temperature of 85⁰ F or less. An audible and visual temperature control alarm shall be provided at a constantly attended location. The alarm shall activate in the event that the temperature in the storage room or area exceeds 85⁰ F for more than one 30 minute period in a 24 hours (PFC 4004.1.8.2).

Training and Emergency Procedures:

- Store employees who handle swimming pool chemicals should be trained in storage, handling practices, manufacturer's instructions, and in accordance with your company's guidelines for hazardous materials (PFC Section 2703.9).
- When an employee or store patron identifies a container that has been damaged, it should be removed from the display aisle and moved outside the building. Disposal of the material should be in accordance with the manufacturer's instructions. If the container is warm to the touch, emitting vapors, hissing, bubbling, or bulging a reaction is likely to have begun. In such a case contact the Phoenix Fire Department by calling 911 (NFPA 430 Section C.2).
- For further information and questions please contact:
 - Phoenix Fire Department Special Hazards Unit: (602) 262-6771
 - National Fire Prevention Association (NFPA): www.nfpa.org
 - Chemtrec: 1-800-424-9300