World Chlorine Council Chemical Safety Webinar Chlorine & Chemical Safety

Recreational Water Quality Committee
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POOL & HOT TUB ALLIANCE

US Pool/Spa Chemical Safety

General Rules

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Facility Safety

- SAFETY RULES
  - Emergency Response Plan-SARA Title III
  - SDS for every chemical at facility
  - Staff training of all chemicals on hand
  - Proper storage for all types of chemicals

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SARA Title III

Emergency Planning and Community Right-to-Know Act

- State and local emergency planning, regarding hazardous chemical spill or release
- Facility must have and emergency response plan for accidental chemical release

Pool/ Spa Chemicals covered under SARA Title III

- Alum
- Ammonia
- Calcium Hypochlorite
- Gas Chlorine
- Hydrogen Peroxide
- Muriatic Acid
- Sodium Bisulfate
- Sodium Hypochlorite

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OSHA

- OSHA – US Occupational Safety and Health Administration
  - Created to assure safe and healthful conditions in the workplace
- Regulates employers who use or handle hazardous chemicals
- Requires the development of a hazardous communication program
  - SDS – Safety Data Sheet for all hazardous chemicals
  - Training on handling of hazardous chemical
  - Labeling of hazardous chemical
  - Proper storage of hazardous chemicals

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OSHA

- SDS
  - Must be available to all employees
  - Must train employees on use and location of SDS
  - Maintain copies of SDS's received with shipments
  - Not required to provide SDS's to consumers
  - SDS's provide
    - Identification of Substance
    - Hazard Identification
    - Composition
    - First Aid Measure
    - Firefighting Measures
    - Accidental Release Measures
    - Handling and Storage
    - Exposure Controls/PPE
    - Physical and Chemical Properties
    - Stability and Reactivity
    - Toxicological Information
    - Ecological Information
    - Disposal Consideration
    - Transport Information
    - Regulatory Information
    - Other Information

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OSHA

- Employees must be trained on handling chemicals
  - Reading Labels and SDS
  - Use of PPE
- Labeling of Chemicals

  - Symbols or pictograms:
  - Signal Words: Danger
  - Hazard Statements: H272 - May intensify fire; oxidizer
  - Other Elements
    - Precautionary statements: P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
    - The product identifier: Sodium dichloroisocyanurate
    - Supplier identification: Big Pool Industries
    - Supplemental information: white solid

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OSHA

- Proper storage for all types of chemicals
  - Prevent mixing of incompatible chemicals from accidents or spills
  - Keep moisture out of storage area
  - Keep chemical in original container
  - Properly ventilated to prevent chemical gases from accumulating
  - Store in a locked location to protect people and animals
  - Wear PPE

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Transporting Chemicals

- Clean Vehicle
- Keep incompatible chemicals separate during transportation
  - No Damaged Containers
  - Have all supporting documents including SDS in vehicle at all times
- Placards on all sides of vehicle
  - Dry weight of 10,000 lbs.
  - Liquid 100 gallons
  - Daily Vehicle Inspection Report
  - List of all regulated products being shipped
  - Check local and interstate regulations

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Safe Storage of Chlorine

- Calcium Hypochlorite
- Sodium Hypochlorite
- Tri-chlor and Di-chlor

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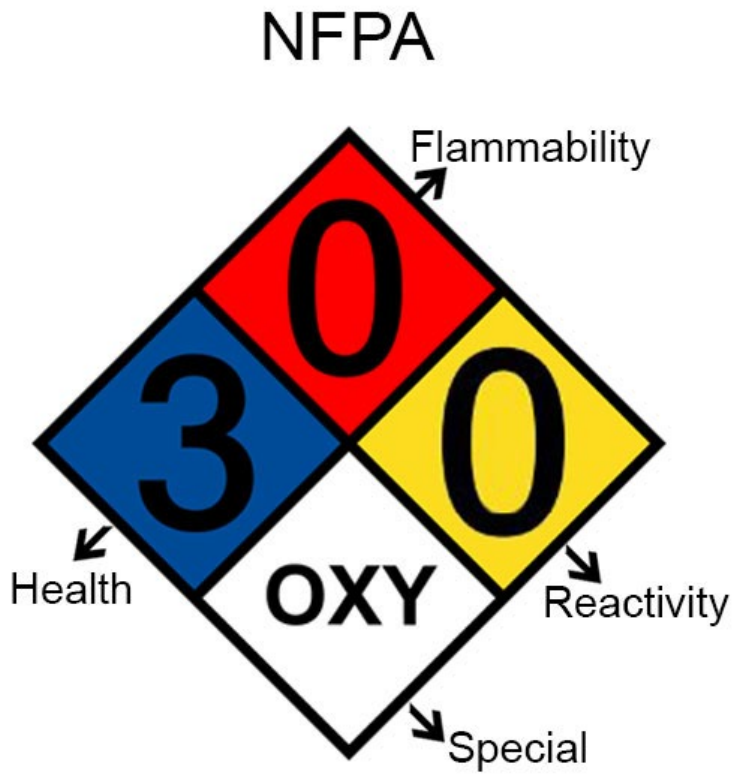
NFPA Symbol



- Provides information on hazards that exist during an emergency response
- Typical location
  - Storage buildings
  - Storage tanks
  - Doors
- Visibility to first responder
- As addition info on some SDSs
- Numerical rating 0 – 4
  - 0 = minimal hazard
  - 4 = severe hazard

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Calcium Hypochlorite

Signal word **Danger**

Pictograms

GHS03, GHS05, GHS07, GHS09

Hazard statements

H272 May intensify fire; oxidiser

- Dry form of chlorine ‘cal-hypo’
- Granular, Tablet, or Briquette 47% to 76% available chlorine
- Classified by the National Fire Protection Association (NFPA) as Class 3 Oxidizer
- Can ignite if contaminated or heated
- Incompatible with organic compounds

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Storing Cal Hypo

- Store in a cool, dry, well-ventilated storage room
- Keep raised off of the floor
- Away from moisture, oils, acids and organics
- Keep away from other chlorine products especially trichlor
- Store away from heat sources and flame

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Sodium Hypochlorite-Liquid

- Liquid Sodium Hypochlorite
- Slightly yellow to clear liquid bleach from 6% to 12.5%
- Corrosive
- Non-flammable
- Non-reactive
- Oxidizer

2.2 GHS Label elements, including precautionary statements

Pictogram	
Signal word	Danger
Hazard statement(s) H314	Causes severe skin burns and eye damage.

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Storing Liquid Sodium Hypochlorite

- Liquid sodium hypochlorite degrades in heat and light.
- Store in a cool, dark area.
- Storage room should be well-ventilated
- Due to the corrosive nature of liquid sodium hypochlorite, it should be stored away from metals and switches
- Store away from muriatic acid

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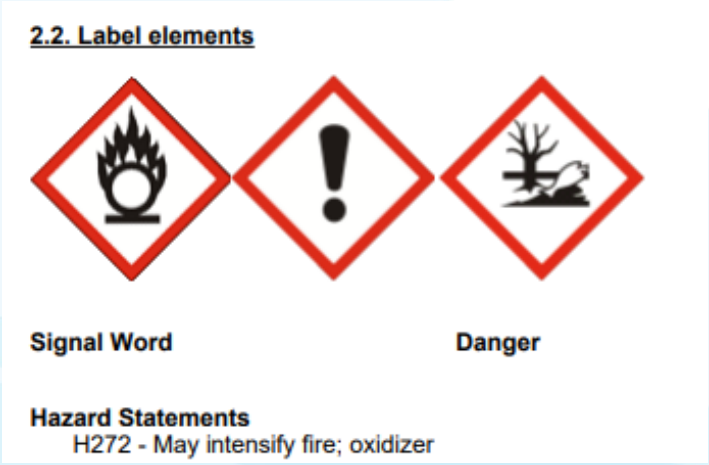
Tri-Chlor and Dichlor



2.2. Label elements

Signal Word **Danger**

Hazard Statements

H272 - May intensify fire; oxidizer

- Trichlor- 3” to 1” tablets and granular pH 2.8 to 3
- Di-chlor granular in 56% and 62% available chlorine pH 6.8
- Manufactured by adding cyanuric acid, sodium carbonate to chlorine gas
- Stabilized chlorine

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Storing Trichlor and Dichlor

- Trichlor and dichlor are both strong oxidizing agents.
- Store in cool, dry, well-ventilated area
- Keep away from other chlorinating agents and acids
- Store away from metals
- Partially filled container should never be mixed
- Flammability of 62% Di-chlor is higher than 56%

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Final Precautions

Safe Handling

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Common Sense Practices

- Always wear the appropriate personal protective equipment (PPE) when handling chlorinated products
- Always dispose of spills, contaminated product according to label instructions and SDS. Know in advance and post in storage room
- Never mix differing chemicals physically. NEVER.
- When diluting always add chemical to water-NEVER ADD WATER TO CHEMICAL.
- Understand, post, all safety response info and make sure all staff are trained for proper response to any chemical spill or exposure

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