

## Case Study

“While preparing 10600 L of a 25% aqueous solution of sodium chlorite ( $\text{NaClO}_2$ ), the solid salt was spilled and not cleaned up promptly. Combustible materials, including cardboard sheets and polypropylene fabric, became contaminated with solid sodium chlorite. Subsequently, a spark, initiated by inadvertently striking metal drum sealing rings together, ignited the oxidizer-contaminated combustible materials. The fire spread to a polypropylene bag containing 800 kg of sodium chlorite. The contents of the bag detonated causing one fatality, two serious injuries, and extensive property damage.”

Langerman, N., *ACS Chemical Health & Safety* **2021**, 28 (6), 402. <https://doi.org/10.1021/acs.chas.1c00035>



## Working with Sodium Chlorite

### Hazards:

1. Can cause irritation or burns to the skin and eyes, harmful if swallowed
2. Strong oxidizer, reacts with organics, (solid) reacts and ignites rapidly with combustible materials
3. (Solid) explosive in contact with chlorine, acid or acidic materials like alum

### Handling Precautions

1. Do not get in eyes, on skin or on clothing, do not breathe, taste or swallow
2. Keep containers closed
3. Mix it into water, never add water into sodium chlorite
4. Remove and wash contaminated clothing to avoid fire

### PPE Requirements

1. Chemical goggles, gloves and chemical-resistant suit
2. (If splashing or spraying is possible) Face shield
3. (If exposed to dust) NIOSH approved acid gas respirator with dust/mist pre-filters

## Related First Aid

**Contacted:** take off contaminated clothing, wash contacted area with water for 15-20 minutes; call poison control center or doctor immediately

**Swallowed:** Drink water immediately if able to swallow; call poison control center or doctor immediately, do not induce vomiting unless told to do so

**Inhaled:** Move person to fresh air and monitor for respiratory distress. Call poison control center or doctor for advice. Call 911 or ambulance if person is not breathing.