

The Dangers of Spraying Ignitable Liquids at Construction Sites

Attention: Painters and Other Contractors, General Contractors (GCs), and Site Superintendents

Workers Injured and Property Damaged

In 2012, a residential construction project in Seattle exploded and burned, injuring four workers and destroying the work site.

The initial flash fire melted one painter's gloves to the backs of his hands causing second- and third-degree burns. Another painter working outside on a ladder suffered impact injuries when thrown by the explosion. Two workers of the general contractor (GC) were also injured by the blast's impact.

The explosion happened shortly after a painter finished spraying a flammable primer (flashpoint 21° F) onto several uninstalled doors set inside an unventilated basement room serving as a temporary spray area. The doorway to the room had been covered with plastic sheeting to keep overspray (paint vapor and mist) away from others working in surrounding areas. The room and adjacent areas contained a working gas-fired HVAC furnace, electrical outlets, switches, lighting, and other ignition sources.

With spraying finished, the painter removed the plastic sheeting and opened the home's exterior doors to ventilate the area. Overspray drifted from the basement room into adjacent areas, contacted an ignition source and caused an explosion.

What can GCs and site superintendents do?

- **Prevent risk** for explosion, fire, and inhalation hazards through your required Accident Prevention Program (or site-specific safety program). For example, restrict spraying of ignitable liquids to off-site locations equipped with the safety features of an NFPA 33-compliant spray booth.
- **Check with the local fire jurisdiction** for fire codes that cover spraying of ignitable liquids.
- **Make contractual agreements** with painting and other contractors to ensure spraying of ignitable liquids is done off site before installation.
- **Thoroughly review change orders** to help you spot material, equipment, and other work modifications that could possibly add or increase risk for an explosion hazard onsite. Follow up with contractors to help ensure risks are evaluated and safely addressed.
- **Update your Accident Prevention Program**, as required, to reflect current safety measures to prevent fires and explosions.
- **Look for clues of onsite spraying** of ignitable liquids during required weekly safety walk-throughs. Signs include temporary enclosures, spray equipment and containers of flammable or combustible liquids.
- **Inform all contractors** about the dangers of spraying ignitable liquids. Discuss this alert during required crew safety meetings held at the beginning of each job and weekly after that to ensure prevention measures are working.



Warning! Construction sites can suddenly turn dangerous, and possibly deadly, when ignitable liquids are sprayed. Ongoing identification and elimination of ignition sources is **expected but difficult to achieve** because multiple contractors' activities, equipment, and materials can quickly change, especially as deadlines approach. Taking action to prevent on-site spraying of ignitable liquids is often the safer option.

The Hazards of Spraying Ignitable Liquid

When spray equipment is used to apply an ignitable (flammable or combustible) liquid finish, a substantial amount of overspray is released and can drift into surrounding areas. When this overspray mixes with air and accumulates inside enclosed or unventilated areas, it can ignite and cause an explosion if an ignition source is present.

Ignition sources at construction sites can include fuel-burning heaters and vehicles, table saws and other electric equipment or tools, welding sparks and arcs, portable and permanent lighting, temporary and permanent electrical system components (e.g., outlets, switches), cigarettes and static electricity.

In addition, some liquid finishes contain hazardous ingredients that can harm eyes and skin or cause risk for health problems when mist or vapor is inhaled.

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What can contractors, crew leaders and workers do?

- **Read each product's required safety data sheet (SDS).** Look for a flashpoint (f.p.) temperature in Section 9 - Physical and Chemical Properties. **Liquids with a f.p. up to 199.4° F are now regulated as flammable** per WAC 296-901-14024 B.6.1. If this information isn't listed, follow up with the product supplier, manufacturer or other qualified source to get an answer **before** you allow use.
- **Don't assume spraying a liquid with a higher f.p.** (up to and even above 200° F) **is safe.** These liquids can quickly create an ignitable atmosphere even when the temperature in the work area is below (cooler than) the product's f.p. temperature. Ignition sources as common as a light bulb may be enough to start a fire.
- **Follow NFPA 33 standards and applicable local fire codes** when ignitable liquids are sprayed in an enclosed area.
- **Pay attention to other contractors' activities,** equipment and materials that may indicate spraying of ignitable liquids.
- **Immediately alert** jobsite safety personnel about unsafe spraying of ignitable liquids.
- **Verify fire and explosion hazards** have been eliminated before working around spraying operations. Dispersing accumulated ignitable overspray can be dangerous around uncontrolled ignition sources.
- **Share this alert** and discuss it at required weekly crew meetings.



Chemical Hazard Communication Program requirements in Chapter 296-901, WAC, apply to all contractors at multi-employer job sites.

For rules and safety resources that address ventilation, isolation of ignition sources, safe work practices, training, PPE, respirators and other topics, please see the Painting Hazards topic page at: www.Lni.wa.gov/Safety/Topics/AtoZ.

Other resources you can access

To find an **electronic** copy of this Hazard Alert, go to www.Lni.wa.gov/Safety/Basics/HazAlerts.

L&I Safety Web page: www.Lni.wa.gov/Safety

For other related rules, contact your local L&I office or visit the safety rules webpage.

How can I get help from Labor & Industries?

The Department of Labor & Industries provides consultations, training, and technical assistance at no cost to employers. Call today to schedule a free confidential consultation or go to www.SafetyConsultants.Lni.wa.gov for more information.

You may also call 1-800-423-7233 or visit a local L&I office and ask for the Consultation Manager.

*This alert was developed by L&I's Division of Occupational Safety and Health (DOSHS) to alert employers, labor groups, and employees to potential hazards associated with work activities. **This is not a rule and creates no new legal obligations.** The information provided includes suggested guidance on how to avoid workplace hazards and describes relevant mandatory safety and health rules. DOSHS recommends you also check the related rules for additional requirements.*