



CRA BULLETIN

Issue 38 – 29 October 2007

Signed: _____ Dated: _____

Draft Alert on Fires in Spray Booths

Workers safety endangered by fires in booths

Introduction

The application of paint and other materials by spraying generates an aerosol of flammable and toxic substances.

While the purpose is to apply a coating to vehicles, manufactured articles or other objects, the overspray is collected on overspray filters, and is also deposited on the interior surfaces of the booth.

The paint deposits build up, and provide fuel to any fire that may occur. The booth ventilation provides a draught of air, which will assist fire spread.

Such fires are likely to grow rapidly, produce a great deal of smoke, and endanger the lives of any workers within the booth, and other people within the building.

Case Study One

The spray booth operator noticed a change in noise from the extraction fan motor. He discovered a glow behind the overspray filters.

By the time he returned with a fire extinguisher, flames had developed. The fire spread rapidly from the booth into the roof and surrounding areas.

The exact cause could not be established. A possible cause was the ignition of paint residues in the tray underneath belts driving the exhaust fan. Friction of the belts on accumulated residues may have generated enough heat to cause ignition.

Fortunately, no one was harmed. The booth and a large number of manufactured stock items were destroyed, and the building was damaged.

Case Study Two

A fire occurred in a spray booth that was about five years old. Workers used nine fire extinguishers to try to put the fire out.

Five workers were affected by fumes from the combustion of polystyrene foam used in the construction of the booth. They were treated at the scene by Ambulance Officers, and taken to hospital for treatment for smoke inhalation.

The fire started in an electric motor that was part of the booth ventilation system. Investigation revealed that paint residue had built up on the motor, fan blades, and the inside of the duct. Friction of the fan blades on the paint build up may have initiated the fire.

Case Study Three

A high gloss resin was used to finish natural wood tabletops. The process was carried out within a spray booth, as it provided a dust-free environment. A fan heater at the main doors to the booth provided warmth.

A worker was using a gas torch to smooth out resin that had been applied to tabletops, when the flame made contact with lacquer overspray that had accumulated on a wooden support table. This support table was situated directly below the overspray filters, at the rear of the booth.

The overspray build-up caught alight, as did the overspray filters. Two fire extinguishers and a fire hose were used, but the fire was now out of control. The booth doors were closed and the Fire Service called.

The use of an ignition source within the booth was the obvious primary cause. Again no one was harmed, and there was extensive property damage.

Summary

Drawing from the above incidents, several observations can be made:

1. The build up of overspray on filters, fan blades and other parts of the ventilation system provides a readily ignitable fuel for any fire.
2. The use of ignition sources and/or unsuitable electrical equipment within the hazardous area of the booth can easily start a fire.
3. The health of a number of workers was affected after they inhaled smoke from burning polystyrene foam insulation.
4. Considerable distress, and loss of production was caused in all cases. No serious injuries occurred, only by the greatest of good fortune.

Prevention of fires in spray booths

The NZ Fire Service and the Department of Labour strongly recommend that the following matters are addressed, to help prevent fires in spray booths:

Housekeeping

Areas and components of the booth subject to overspray and paint build up should be inspected regularly. Cleaning frequencies should be established, and followed.

Overspray residue should be removed from surfaces with non-sparking tools or approved strippers, and not by using low flash-point solvents.

Waste disposal

Waste such as unused liquid coatings, wiping rags, filter waste and overspray residue should be collected and deposited in metal containers with tight fitting lids, and removed from the building to a safe storage location.

Incompatible substances

The intermittent application of natural wood oils (eg. Danish oil or linseed oil) and lacquers can create an unexpected significant hazard.

Deposits from both materials on an overspray filter have ignited spontaneously, and with the air draught a rapidly spreading fire has resulted.

Likewise, filter waste containing incompatible materials has spontaneously ignited in waste bins.

Use of tools and electrical equipment

Tools and other electrical equipment operating in the hazardous area must be suitable for such areas.

Unsuitable fans, lights and heaters are known sources of ignition. Advice on suitability of electrical equipment should be sought from a Registered Electrical Inspector.