

SPF Insulation: What You Should Know

Spray polyurethane foam (SPF) has become an increasingly popular insulation material used in residential and commercial construction. According to Fed/OSHA, the use of SPF insulation has increased by 60 percent in the past five years. Employers and workers should both be aware of hazards that are associated with SPF insulation.



Isocyanates

One of the major hazards associated with SPF insulation include worker exposure to Isocyanates, a family of highly hazardous chemicals that can irritate the mucous membranes of the eyes and the gastrointestinal and respiratory tracts. Isocyanates include methylene bisphenyl diisocyanate (MDI), toluene diisocyanate (TDI), hexamethylene diisocyanate (HDI), and isophorone diisocyanate (IPDI). Direct skin contact can also cause marked inflammation.

Symptoms from immediate exposure to isocyanates can include:

- Wheezing
- Fever
- Shortness of breath
- Sore throat
- Chest tightness

Symptoms from longer exposure to isocyanates can include:

- Asthma
- Reactive airways dysfunction syndrome (RADS)
- Hypersensitivity pneumonitis, or inflammation of the lung

Additional Hazards

Working in a confined space environment when applying SPF insulation in some areas such as crawl spaces and attics can also pose problems. In a confined space, there is always the danger of a buildup of gases or decreased oxygen levels. Employers must follow Cal/OSHA's confined space entry procedures for this type of work.

Certain conditions can also cause SPF insulation to ignite, such as having an ignition source(s) nearby. Once a fire starts, there is also the potential to further release toxic chemicals into the air. To prevent a fire from happening in the first place, make sure workers have adequate ventilation and turn off any sources of ignition (such as gas stoves, pilot lights, dryers, light switches, etc.). If a fire does occur, an ABC fire extinguisher appropriate for SPF should be available when working with this material.

Other chemical hazards associated with SPF insulation to be aware of are:

- Flame-retardants in the material which have the potential to build up in the body and are associated with various cancers and reproductive problems in women
- Solvents can impair mental acuity, irritate mucous membranes, cause headaches, and loss of coordination
- Amines, which irritate the eyes and nose and cause blurred vision

Safe Work Practices

To help prevent the risk of injury or death, make sure workers become familiar with these various chemical hazards. Provide workers with training and safety data sheets (SDS), which communicate the hazards of chemical products. The SDS will also list the proper personal protective equipment (safety goggles, chemical resistant full-coverage clothing, and gloves) recommended by the manufacturer.

Make sure to let building occupants know about the application schedule, chemical hazards, and emergency procedures. Workers who are not wearing protective equipment must not be allowed in the work area.

The work area should also be:

- Properly ventilated, including an exhaust ventilation system
- Isolated with a plastic sheeting to prevent chemical spread

A respirator is also required when spraying SPF; the employee must be medically evaluated for respirator use, and fit tested to ensure proper fit. One of the following types of respirators should be used:

- Full face supplied air respirator
- Powered air purifying respirator
- Full face respirator with organic vapor cartridges and an N95 filter pad over the cartridges

After the work is complete, it is typically safe to enter the area when the insulating foam has hardened to the point where it is no longer wet or sticky. This could range from about 12 hours after the end of spraying for unprotected workers and 24 hours for residents (conditions may also depend on the temperature, humidity, and the amount of foam sprayed). Good housekeeping is crucial; clean up the work area, remove protective clothing, and wash up immediately.

