

Preventing Warehouse and Factory Fires

One of the biggest risks to warehouses and production facilities is fires, which can spread rapidly in these environments.

Facilities that are most at risk are those that have high ceilings, large footprints and hold large quantities of inventory that is stored close together. Once a fire starts in that kind of setting, it's difficult to suppress, putting your entire inventory at risk, as well as machinery and the building itself.

If you operate such a facility, you need to make sure that you reduce the risk of fires, and that you keep your inventory clear of any potential ignition sources.

To start, you need to understand what kind of ignition sources you have on your premises, and how to identify hazards.

Ignition sources to watch for include:

- Paint
- Oil and chemicals
- Wiring
- Heat sources, like lighting and portable heaters
- Dust

The next step is to put together a fire protection plan.

Your plan will depend on the materials and inventory that you are storing and using. For example, materials in corrugated cartons are much less combustible than plastic packaging. And inventory such as paint, oil and sawdust is extremely flammable.

Shelving design

One of the first orders of business is to evaluate your current shelving design.

One factor is the height of your storage. The higher you stack your inventory, the greater the fire suppression challenge becomes. That's because the sprinkler system that will run along your ceiling has to reach not only the top layers of your inventory, but also the bottom layers - and in some cases that could be 30 to 40 feet to the floor.

One way to alleviate this risk is to install in-rack sprinklers, which can reach down to the bottom levels as well.

Another issue to consider is solid versus open shelving. Solid shelving increases the fire risk because it creates an enclosed area where the fire can burn more easily. Fires among products on open shelving are easier to douse.

One of the keys to preventing fires is clearly defined and adequate storage.

Failing to arrange such storage can increase your fire risk for several reasons:

- Crowded aisles may block fire exits and make it harder for people to escape,
- Fires spread more easily in cramped warehouses, and
- Storing hazardous materials such as flammable liquids with other warehouse stock greatly boosts the chances of a fire.

Keep these storage tips fully in mind:

- Keep electrical switchgear and heating equipment clear of storage.
- Never let goods sit within 18 inches of lighting.
- Allow enough clearance between sprinkler heads and stored goods to make sure your sprinkler system can effectively douse the area.
- Segregate hazardous and non-hazardous materials.

Dust danger

One of the biggest risks is dust igniting. When accumulated dust particles are suspended in the air and contained in a confined space, all it takes is one small ignition source - like static electricity or metal-on-metal friction - to set off a chain reaction of explosions.

When that happens, it's actually a series of small explosions of dust particles that go off at the same time to create a large explosion.

That creates a rise in temperature and a rise in pressure. The pressure will push outwards and if your building is not designed to contain the explosion and vent it safely, the result can be widespread damage.

On top of that, the initial explosion may dislodge additional dust on horizontal surfaces, which will add to the fire.

One example of a devastating dust fire: On January 29, 2003, a powerful explosion and fire ripped through a rubber-products manufacturing plant at West Pharmaceutical Services in Kinston, NC, taking the lives of six employees and injuring 38 others, including two firefighters who responded to the accident.

The fuel for the explosion was a fine plastic powder, which had accumulated above a suspended ceiling over a manufacturing area at the plant and ignited. The blast occurred without warning during a routine workday and could be heard 25 miles from the plant.

Dust fire prevention

Dust fires can be prevented via proper housekeeping and regular maintenance and upkeep of equipment, and the installation of vacuum-powered dust collectors on the outside of the warehouse.

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