Fire Prevention



INCIDENT

Spencer Beach didn’t want to go to work. As a flooring service technician, he had spent several days removing linoleum from a home under construction in Edmonton. On the third day, he only had to finish the laundry room and half bathroom, but he was considering calling in sick – something he never did. Despite the warning bells in his head, he went to the job site. He was working on his hands and knees when he heard a loud whistle and a bang. Beach was immediately engulfed in a flash fire that spread quickly throughout the entire house. He tried to open the front and back doors but they wouldn’t budge, since the fire was sucking up all the oxygen. He ran to the garage and tried to open the door, but it wouldn’t open either.

“My clothes were immediately burning, my hair was immediately melting, the skin on my face felt like it was shrinking, the pain was really deep,” Beach recalls.

After about 20 seconds, he was completely drained and collapsed on the ground. Time stopped. The heat and pain all disappeared. Beach had a near death experience. Then he thought about his wife and unborn child and he somehow found the will to try again. He got up, pulled the garage door as hard as he could and, miraculously, he got out.

NEED TO KNOW

Eliminating fire hazards is a central part of any workplace safety program.

These seem like simple and straightforward requirements. But in operation, they often prove to be anything but. Alarming numbers of citations get issued because employers fail to carry out these tasks; sadly, such breakdowns also lead to fatalities.

The key to avoiding mistakes is to remain vigilant. You must be constantly on the lookout for problems **before** fire breaks out (or an OSHA inspector finds them for you). Like most employers, you might form your workers into fire safety teams and have them conduct regular inspections. But you also need to ensure those teams know what they’re doing. That’s a training imperative if you want them to conduct a meaningful inspection. All of the above is just rhetoric without a well-planned and cogent foundation. The optimal inspection is the formation and implementation of a comprehensive

Fire prevention policy which incorporates the following:

1. **Emergency Plans**

Tells how to evacuate in case of fire and how to account for all those evacuated. Fire drills based on the emergency plan will assist in understanding what to do during an emergency.

1. **Fire Safety Equipment**

Fire extinguishers, fire alarms, smoke detectors, fire sprinkler systems all play a vital role in fire prevention. It is important therefore to ensure that all equipment is in working order and in compliance with fire safety codes.

- The stipulated number of extinguishers are present (within 75 feet distance from any place in your facility).
- The size, rating, and type of fire extinguishers match the requirement for your kind of business. (At least a 2A-10BC size rating).
- The extinguishers, fire alarm panels, and fire sprinklers have been serviced and inspected within the previous 12 months.
- All extinguishers are mounted on the wall in keeping with the specified fire safety recommendations (the top of the unit must be no higher than 3.5 feet if extinguishers are greater than 40 pounds and 5 feet if lighter.)
- There are no warning lights on your fire alarm panel.
- There is adequate clearance around fire sprinkler deflectors (at least 18 inches, according to the NFPA).
- There are no signs of leakage, physical damage or corrosion on any of the equipment.
- The valves, hose connections, and water pressure are adequate to the requirements of the fire code.

1. **Fire, Exit Routes**

Ensure that there are no obstructions to people exiting the building in case of a fire emergency.

This includes pathways, exits, aisles, and walkways.

- At least two stipulated fire exits are present.
- All exit doors are unlocked at all times of occupancy.
- Aisles that lead to and away from fire exits are unobstructed.
- The pathway that leads to exit doors is wide enough (at least 36 inches wide.)
- Fire exits are provided with panic hardware.
- All doors to fire exits can be easily opened in case of emergency.
- Easy access to fire protection equipment like fire extinguishers and fire alarm control panel.
- The paths to the exits are well lit and clearly marked.
- The exit signs have backup batteries (to allow for a minimum of 90 minutes power backup) in case the lights go off during a fire emergency.

1. **Good Practices for Fire Safety**

Strictly adhering to compliance standards in the following areas can go a long way in ensuring

fire prevention.

- All combustible materials are stored in fireproof cabinets.
- The number of people in your premises doesn’t exceed the maximum occupancy limits at any time.
- Electrical sockets are not overloaded and there are no improper multi-plug adapters used.
- All electrical panels are easily accessible and there are no obstructions to their use.
- All potentially flammable materials are kept away from electrical panels. (Usually, a 3 feet clearance is required.)

BUSINESS/REGULATION

Employers should train workers about fire hazards in the workplace and about what to do in a fire emergency. If you want your workers to evacuate, you should train them on how to escape. If you expect your workers to use firefighting equipment, you should give them appropriate equipment and train them to use the equipment safely. **(See Title 29 of the Code of Federal Regulations Part 1910 Subparts E and L; and Part 1926 Subparts C and F.)**

What the Law Requires

OSHA has several standards that address fire safety in the workplace.

The Means of Egress Standard requires employers to ensure that exits are available to escape from fires and other emergencies. Among other things, each exit must be clearly visible and continuously maintained so that it’s free of obstructions or impediments.

The Portable Fire Extinguishers Standard sets requirements governing the placement, use, maintenance and testing of portable fire extinguishers to be used by workers. Among other things, portable fire extinguishers must be mounted, located and identified so that they’re readily accessible. They must also be fully operable and visually inspected at least once a month. Workers expected to use fire extinguishers must also be trained how to do so.

STATISTICS

Fire kills more people each year than all-natural disasters combined.

- Every 24 seconds there is a fire that requires the fire departments attention.
- There were 1,319,500 fires reported by fire departments in 2017 resulting in 3,400 deaths.

Every 85 seconds, a fire breaks out somewhere in Canada. And in the United States, the number of fatal work injuries resulting from fires and explosions in 2010 rose to 187, an increase of 65% over the previous year. Of the 187 fatalities, 82 occurred in multiple fatality incidents.

More than one in every four office property fires (29%) was caused by cooking equipment, but these fires accounted for just 6% of the direct property damage experienced by office properties. Fires that were intentionally set caused the largest share of direct property damage (20%), while causing 10% of office

property fires. Electrical distribution and lighting equipment was the second leading cause of office property fires (12%) of fires, while causing 15% of direct property damage

Just over one-fifth (22%) of the reported fires in office properties began in the kitchen or cooking area, causing one percent of the direct property damage. The highest share of direct property damage (24% of total) resulted from fires starting in an office, which were the cause of 12% of office property fires. Although just two percent of office fires began in the attic, ceiling/roof assembly or concealed space, they were responsible for 13% of the direct property damage. Four out of five office property fires were confined to the room of origin.

When present, wet pipe sprinklers operated 90% of the time in fires large enough to activate the equipment, and they were effective in 88% of these fires. Deaths per 1,000 fires were 62% lower in stores and offices equipped with wet pipe sprinklers compared to properties with no automatic extinguishing equipment.

RECOMMENDATIONS

Forming fire safety teams with workers to ensure workers carry out fire inspections effectively is the goal. **A Questionnaire** will greatly assist in the compliance of law, regulation and common sense.

Standardize inspections: Distributing the **Questionnaire** will ensure that each team is checking for the same things and asking the same questions—the ones you mandate. This results in standardization of inspection results which facilitates analysis of the data. For example, it enables you to compare different departments within a single facility or to monitor the same department on an ongoing basis.

Keep inspections short and focused: Fire inspection duties, although vitally important, also diminish “productive time.” That puts pressure on the safety director to keep fire safety inspections short, sweet and to the point. **A well-organized Questionnaire** enables team members to do an appropriate inspection and then get back to their regular jobs as quickly as possible.

Identify and correct problems early: A Questionnaire can be tailored to the unique problems of your facility or operations. For example, if your fire exit is near loading docks, you can design the **Questionnaire** to ensure team members go out of their way to verify any loaded materials aren’t being kept nearby.

Build fire safety awareness: One of the benefits of having fire safety teams conduct inspections is that it builds awareness not just among team members but other workers in areas undergoing inspection. A **well-designed Questionnaire** can maximize the awareness-building function of inspections by ensuring inspectors cover the right ground.

How to Use Questionnaire

Give the **Questionnaire** to the team leader and have that person distribute a copy to each team member responsible for inspecting an area of the facility. Once the inspection is over, the team leader should review the **Questionnaire** and sign it upon verifying that it’s complete.

After inspections, you might want to hold interdepartmental meetings with facility managers to discuss the findings. This is especially true if the inspections unearth major or recurring safety problems. Give the department leaders copies of **completed Questionnaires** of inspections in their area and include notes and suggestions for corrections. Appoint somebody to be in charge of corrective actions and set a deadline. Once the deadline passes, do a follow-up inspection to verify corrections have indeed been made.

How to Create Questionnaire

Fire inspection team Questionnaires must be tailored to the configuration, operation and needs of your particular facility. But the essential approach is the same. Like our Model Questionnaire, your form should:

Provide Clear Instructions: The first part of the Questionnaire should explain what you want team members to do. At a minimum, ask them to conduct the inspection, fill out the form and return it to the team leader; then have the team leader review the form and give it to you.

List Inspection Detail: Leave space for the inspection date, team leader's name and signature, inspecting team member and area inspected.

Ask 10 Questions: Next comes the heart of the Questionnaire, the actual things you want inspected. Like ours, your Questionnaire should ask questions about 10 things:

1. Whether all exit doors are clearly marked.
2. Whether all exits and exit routes are unobstructed.
3. Whether there are any doorways that workers might mistake for exits during a fire. Remember the OSHA General Requirements Standardrequires you to mark any doorway or passageway that might be mistaken for an exit.
4. Whether workers know where in their work area portable fire extinguishers are located.
5. Whether workers in the area have been trained to use portable fire extinguishers.
6. Whether workers who are supposed to be trained to use portable fire extinguishers really know what they're supposed to be. Ask them to tell you in their own words what they would do when using the fire extinguisher.
7. Whether all fire extinguishers are where they're supposed to be. If a fire extinguisher has been removed or is missing, you'll need to immediately replace it or provide "alternate equivalent protection".
8. Whether all fire extinguishers appear to be in fully operable condition. Verify there are no signs of corrosion or mechanical damage.
9. The date of the last visual inspection listed on the tag of each portable fire extinguisher. Remember that OSHA requires that fire extinguishers be inspected at least once a month.
10. Whether there are any combustible materials, scraps or debris in the area.

Fire Inspection Team Questionnaire

Instructions: Each of the ABC Company fire inspection teams has been assigned a specific area of the facility to inspect. A team leader has also been designated to serve as the head of each team. That team leader will notify each member of the team of his or her duties including which area to inspect.

Each team member must complete this Questionnaire in conducting the inspection of the area to which he or she has been assigned. After completing the inspection, the team member will ensure that the Questionnaire has been thoroughly filled out and give it to his or her team leader. The team leader will review completed Questionnaires and sign them upon verifying their completeness and accuracy. The team leader will give all signed Questionnaires to the ABC Company Safety Director for evaluation and follow-up.

PREVENTION

Have you ever considered what you would do if you suddenly saw or smelled a fire in your work area? Take the time right now to ensure you're ready to respond.

Here are the keys to survival in the wake of a fire in your workplace.

Notify others: Are emergency numbers posted in a visible location next to the telephone in your work area? Do you know how to describe your exact location to the fire department? Where is the nearest fire alarm? Do you know how to activate it?

Follow the emergency plan: What is your company's emergency plan? Where would everyone meet so your supervisor can be sure you are safely out? Who is responsible for helping co-workers needing assistance? Do you have any other duties such as closing windows and doors or checking employee washrooms?

Find your exits: Which fire exits would you use? Can you find two fire exits—right now— from the room that you are in? Always plan two escape routes, so if one becomes blocked by fire you have an alternative exit.

Use the stairs. Do you know that you should never use an elevator when the fire alarm sounds? Elevators can jam between floors or accidentally drop to the floor that the fire is on. When the doors open, you could be subjected to flames, hot gases and toxic smoke.

Fight or flee: Do you know how to use a fire extinguisher? Some small fires, about the size of a wastepaper basket, can be successfully fought with a portable fire extinguisher. But if you're not sure what you are doing with the extinguisher or if the fire is spreading, get out!

You should not fight a fire when:

- A properly rated fire extinguisher is not readily available.
- You are not trained or do not feel comfortable using a fire extinguisher.
- There is a chance that the fire could block your escape route.
- The fire is too large to fight or seems out of control.

GENERAL PRECAUTIONS IN THE WORKPLACE

Eliminate *workplace fire hazards:*

- Damaged electrical outlets, cords, cables, etc.
- Overloaded outlets and circuits
- Combustible objects in unsecured locations (included excessive trash and recycling)—keep these far from electrical equipment!
- Fire exit obstacles

Keep workspace *and equipment clean, dry, and well-ventilated, and especially clean of oil and dust.*

Prepare for emergencies:

- Follow workspace protocol and guidelines to ensure safety and health; know and understand rules and procedures concerning fire emergencies.
- Ensure that smoke alarms and sprinkler systems are installed, working properly, and are not blocked.
- Conduct regular fire drills.

Employers should *follow these workplace* fire safety *tips:*

- Post clear fire escape plans on every level.
- Educate all employees on emergency procedures, exit locations, escape routes, fire alarms and drills, and the use of fire extinguishers.
- Conduct regular drills.
- Install and properly maintain all fire safety equipment.
- Provide for disabled employees.

HAZARDOUS ELECTRICS AND EQUIPMENT

Use only electrical products *evaluated by a nationally recognized laboratory (i.e. UL).*

Immediately replace damaged, hazardous equipment:

- Look out for anything that appears overheated, smells strange, or delivers electrical shock.
- Replace all damaged, worn, frayed, or old wires.

Only use three-prong plugs in three-slot outlets *(and, similarly: two-slot plug into two-slot outlets).*

Equipment that emanates substantial heat *should be at least several feet away from combustible surfaces and objects.*

- Heaters must include a thermostat control mechanism.

SMOKE ALARMS: A NECESSITY, NOT AN OPTION

Invest smoke detectors *for every room or office.*

- Install dual sensor smoke alarms; make sure they contain both ionization and photoelectric smoke sensors.

Test *your smoke detectors (and sprinkling system) once a month.*

Replace *the batteries at least once a year (possible exception: non-replaceable 10-year lithium batteries; still, be sure to test them); many manufacturers also encourage a replacement of the smoke detectors after a decade.*

Never disable *a smoke alarm.*

Consider smoke alarms for the disabled.

- Audible alarms (pauses between the siren wail allow for auditory communication) are available for the visually impaired; **visual alarms**(with a flashing light or vibrating pad) are available for the hearing impaired.

A NO-SMOKING ZONE IS LESS OF A DANGER ZONE

Keep the workspace a no-smoking zone. *If you must smoke, smoke outdoors, and always ensure that you properly extinguish the cigarette in a sand-filled can, or drown cigarette butts and ashes in water.*

- Never throw away hot cigarette butts or ashes without attending to them properly.

Be alert and then alert others. *If you smell or spot fire or smoke, bring it immediately to attention.*

Never smoke where oxygen is being used; *for instance, in a hospital room or hallway, or at a nursing home. Even if the oxygen is turned off, the building is much more vulnerable—oxygen can be explosive and will only serve to fan the flames.*

IN CASE OF FIRE: FOLLOW THE EVACUATION PLAN

Immediately call 911 *in case of a fire.*

Know and understand *the fire emergency and evacuation plan with these workplace fire safety tips:*

- Plan at multiple escape routes from as many locations as possible.
- Check the condition of fire ladders and fire escapes; ladders should be collapsible and have been evaluated by a nationally recognized laboratory (i.e. UL);
  fire escapes need to be stable, secure, and easily accessible.
- Ensure that windows don’t become obstacles; glass should be opened easily and screens should be swiftly removed.

Never use the elevator. *Walk—don’t run—down the stairs.*

If you cannot evacuate,

- Remain calm and put as much distance as possible between yourself and the fire.
- Seal all cracks with wet materials (towels, jackets) to prevent smoke from seeping into the room.
- Wait at the window; shout for help and signal your location by waving the most visible object

Open the window for air, but try not to break it; you may need to close it if smoke begins to seep in.