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Office of Compliance Safety and Health **FAST FACTS**

Portable Fire Extinguishers

The first line of defense against a small fire is often a portable fire extinguisher, typically placed in halls, corridors, large rooms and kitchens. Office of Compliance inspectors found 40 fire extinguisher violations during the 2005 Office of Compliance Safety and Health inspections of Capitol Hill. Such violations will fail to prevent small, manageable fires from becoming large, potentially dangerous ones.

The Right Extinguisher for the Job

The most common fire extinguisher uses a dry chemical powder to extinguish flames, while some use pressurized water or wet chemicals. Other extinguishers, such as that pictured in Figure 1, use carbon dioxide. Carbon dioxide extinguishers can be used on electrical fires, as they do not leave a residue which might damage electrical equipment, but they should not be used in confined spaces where the carbon dioxide may replace oxygen.



Figure 2: Halon fire extinguisher

Still other extinguishers use halon, as seen in figure 2. Halon extinguishers release chemicals which deplete the ozone layer, and are therefore now required to be taken out of service. (NFPA 10, Section 6.2.3.3). Halon extinguishers have also been found to decompose into hazardous chemicals, including hydrogen fluoride, hydrogen bromide, bromine, and others.

Each type of extinguisher is to be used to put out a specific type, or “class,” of fire. The table on the following page illustrates which extinguisher should be used to extinguish each class of fire.



Figure 1: Carbon dioxide fire extinguisher

Type of Fire	Dry Chemical	Wet Chemical	Carbon Dioxide	Pressurized Water
Class A: Regular combustibles such as wood, cloth and paper	YES	YES	NO	YES
Class B: Flammable liquids such as gasoline, oil and certain paints	YES	NO	YES	NO
Class C: Electrical fire such as over-heating electrical wires	YES	NO	YES	NO
Class D: Combustible metals such as titanium, sodium or magnesium	NO	NO	NO	NO
Class K: Food products such as certain cooking oils and animal fats	NO	YES	YES	NO

Maintenance and Inspection

The National Fire Protection Association (NFPA) states that all portable fire extinguishers be inspected on a monthly basis (*NFPA 10, Section 6.2.1*) and maintained by a licensed fire protection company on an annual basis. (*NFPA 10, Section 6.3.1*) Monthly inspections include ensuring that the extinguisher has enough pressure to work properly, that the extinguisher is in its designated place and has not been used, and that the extinguisher contains no obvious defects such as puncture holes, corrosion, or broken or missing parts.



Figure 3: Extinguisher with insufficient pressure

Figure 3 above shows a dry chemical extinguisher with a gauge indicating a low pressure level. If the needle on an extinguisher's gauge falls within the green zone, the extinguisher has adequate pressure. If the needle falls within the red zone, as it does in Figure 3, the unit does not have sufficient pressure. This extinguisher must be serviced by a licensed fire protection company before it can be used again.

Training and Accessibility

Any employee who is expected by his or her employer to use a fire extinguisher must be properly trained on how to do so safely. (29 CFR 1910.157 (g)) All fire extinguishers must also be readily accessible to these properly trained employees. Although the NFPA and OSHA publish regulations and codes regarding how fire extinguishers must be placed, OOC inspectors still find several cases of inaccessible fire extinguishers, as seen in Figures 4 at right and Figure 5 below. Such inaccessibility can allow small fires to grow into large ones, causing a portable fire extinguisher to no longer be sufficient.



Figure 4: Inaccessible fire extinguisher

When Not to Use an Extinguisher

It may be difficult to determine whether a fire is still small enough to put out using simply a portable fire extinguisher. People often either attempt to extinguish large fires that are too advanced for a portable extinguisher, or take too much time attempting to assess whether the fire is still small enough. If you have any doubt about whether or not you should stay to fight a fire, activate a fire alarm immediately and promptly evacuate the building. Taking too much time to assess the situation may prevent you from exiting the building safely, and may put others at risk as well.



Figure 5: Inaccessible fire extinguisher

FAST STATS

- OSHA codes and NFPA regulations require all fire extinguishers be free from obstruction: “the employer shall provide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to employees without subjecting the employees to possible injury.” (29CFR 1910.157 (c)(1))
- In 2004, fire, flame, or smoke inhalation caused 2,740 injuries and 90 fatalities. (*U.S. Department of Labor, Bureau of Labor Statistics*)
- OSHA requires that employers “provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting.” (29CFR 1910.157 (g)(1))
- OSHA requires employers to provide this education “upon initial employment and at least annually thereafter.” (20 CFR 1910.157 (g)(2))
- OSHA regulations preclude an employee who is not properly trained from using any portable fire extinguisher. (20 CFR 1910.157 (g)(2))

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