



Safety Brief – 2012-11

Fire Safety at the Shop

Public Works departments contain flammable chemicals, fuels and tanks that could turn a small fire into a serious incident. This safety brief will review some of the sources of fire hazards in public works and what to do to help reduce the potential for a fire.

Fire hazards in the shop

Different types of hazards can be found in a public works shop, such as flammable materials, oil soaked rags, paper trash, and accumulations of corrugated boxes. Certain materials, such as paints, solvents, aerosols and other flammable or combustible materials can cause intense fires or generate dense smoke and are easily ignited by matches, welder's sparks, and cigarettes or may even start from spontaneous combustion.

Fuels used in various pieces of equipment are also potential fire hazards. Examples of such equipment include: generators, snow removal equipment, grounds maintenance equipment, small internal combustion engines and motor vehicles. Fuels also include welding acetylene, stored liquid or gaseous fuels. These fuels or compressed gases can be a significant fire hazard and must be controlled.

Steps for reducing risk of fire

Clean up. To limit the fire potential, storage areas should be kept clean and orderly. Aisles providing access to fire exits should be clear. Service bays should be kept clean and should not be used to store combustible materials. Combustible waste materials placed outdoors for trash collection should be located away from the building. Trash dumpsters should be located so that a possible fire will not spread to the building.

Store and use chemicals with care. Flammable and combustible liquids should be stored in accordance with National Fire Protection Association (NFPA) Regulation 30. Storage rooms should have a ventilation system and automatic sprinkler system. Flammable and combustible liquids should be kept in covered containers when not in use.

Some containers should be bonded and grounded to prevent creating sparks when liquids are transferred from one container to another. You only need to bond those containers that conduct electricity, such as those made from metal or special, conductive plastics. A wire with alligator clips can be used to connect one container to another (bonding) and one container to an underground water pipe or electrical ground (grounding). Spills should be cleaned up promptly and disposed of on a daily basis.

Maintain your vehicles. National Fire Protection Agency (NFPA) statistics show that 75 percent of highway vehicle fires resulted from mechanical malfunctions. Collisions or overturns caused only three percent of vehicle fires. What's a good preventative strategy? **Preventive maintenance**

Vehicle preventive maintenance does not just happen. Managers, operators, and mechanics must take ownership in the preventive maintenance cycle of inspection, service and repair of vehicles and equipment.

Here are some vehicle safety tips from AAA and the Federal Highway Administration:

- Watch for fluid leaks under vehicles, cracked or blistered hoses, or wiring that is loose, has exposed metal or has cracked insulation. Have any of these conditions inspected and repaired as soon as possible.
- Be alert to changes in the way your vehicle sounds when running, or to a visible plume of exhaust coming from the tailpipe. A louder than usual exhaust tone, smoke coming from the tailpipe or a backfiring exhaust could mean problems or damage to the high-temperature exhaust and emission control system on the vehicle. Have vehicles inspected and repaired as soon as possible if exhaust or emission control problems are suspected.

Regularly check your electric service. Electrical service panels in the shop should be readily accessible, well maintained, and be without evidence of overheating (such as melted wires). All wiring insulation in outlet and junction boxes should be in good condition and not frayed or loose.

In case of fire

First, the shop should have fire detection and alarm systems installed, guided by your local fire code. The systems should be maintained, tested and inspected based on the manufacturer's guidelines.

Second, employees should be trained on procedures using those systems as well as manually activating the fire alarms.

It is important that you train your staff to respond to each possible type of fire: electrical fires, chemical fires, general fires and vehicle fires. And staff will need the necessary equipment to battle fires: fire extinguishers. Fire extinguishers come in different sizes and different types to put out different classes of fire.





Types of fire extinguishers

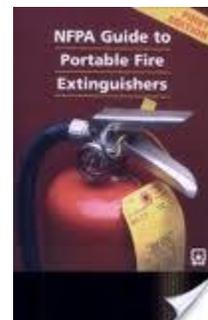
Because the nature of each kind of fire is different, the fire extinguisher used on each kind of fire must be fit the need.

- *Type A* extinguishers are used on ordinary combustibles such as paper, wood, fabric, and other easily ignited materials.
- *Type B* extinguishers are used on flammable combustibles such as gasoline, solvents, and grease.
- *Type C* extinguishers are used on electrical fires.

Some extinguishes are designed to be multi-purpose, and most likely, the fire extinguisher for in your facility or your vehicle is rated Type A, B and C. This is a multipurpose dry chemical extinguisher. It is filled with the chemical monoammonium phosphate, a yellow powder that leaves a sticky residue.

Proper extinguisher placement in the shop

The Occupational Safety and Health Administration (OSHA) recommends placing fire extinguishers throughout the workplace and readily accessible in the event of a fire (OSHA, 29 CFR 1910.157(c)). Maintenance facilities must have at least a 10 B,C rated fire extinguisher placed every fifty feet and immediately outside certain storage areas (i.e. fuel or paint areas).



Most important: Be prepared

Fire extinguishers are only effective at the start of a fire. Within seconds, (most fire extinguishers complete their discharge in 8 to 12 seconds) fires will outstrip a 10- 20 ABC fire extinguishers dousing capacity. There is no time to read instructions or to be confused about how to hold the extinguisher and where to spray. For this reason, it is important that your staff participate in hands-on drills to become familiar with extinguishers and their use and know when to evacuate.

Fire safety planning

The Occupational Safety and Health Administration (OSHA) 29 CFR requires employers of more than 10 people to establish a written fire prevention plan. OSHA standards also require employers to provide proper exits, fire-fighting equipment, and employee training to prevent fire deaths and injuries in the workplace.

The plan should educate and train employees on the preferred means of reporting fires and other emergencies, types of evacuations to be used in various emergency situations, the alarm system and fire extinguisher training. The plan should also detail emergency escape routes, accounting for all employees after an emergency evacuation has been completed and rescue and medical duties for those employees who are able to perform them.

One way to accomplish this is for your agency to incorporate fire drills into annual and new employee orientation trainings. Talk to your local fire department. Local fire departments often will hold fire extinguisher training at no cost or for the cost of refilling the extinguishers.

It is also important to make sure that all of your extinguishers are visible, clean, and fully charged. Fire extinguishers have a small gauge or a pressure-test pin. The arrow of the gauge is fully charged when in the green. There should also be a plastic tie holding the pin into the handle. If the gauge is not in the green or the plastic tie is not on the pin, the fire extinguisher is not usable. It is an OSHA requirement that portable fire extinguishers are visually inspected monthly – 1910.157(e) (2).

It is also required by the NFPA and local fire codes that a fire safety inspection is to be completed on a yearly basis. The inspection must be completed by a licensed fire extinguisher company that (for government agencies) has been selected through a Request for Proposal process. Licensed fire extinguisher companies are also located in the yellow pages under “Fire Extinguishers.” Under OSHA requirements 1910.157(e) (3), employers shall assure that portable fire extinguishers are subjected to an annual maintenance check.

Conclusion

Fire prevention in the shop begins with preventive maintenance, good housekeeping, and proper storage of equipment and materials. Complete fire prevention includes training as well as having a detailed fire safety plan. Routine fire audits can help ensure that you are never surprised by any unknown fire violations. The steps you take to adequately prepare for an emergency can make all the difference.

Sources:

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National Fire Protection Association Regulation 30 (NFPA). “Storage of Flammable and Combustible Liquids.” 2012. Web. November 3, 2011. <http://www.nfpa.org/aboutthecodes/aboutthecodes.asp?docnum=30>

Winter 2012 issue of the *KS LTAP Newsletter*, a publication of the Kansas Local Technical Assistance Program (LTAP) at the Kansas University Transportation Center (modified and reprinted with permission)

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