

MANHOLE FIRES

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This is the electric manhole fire season in those areas where cold weather, snow, and slippery roadways necessitate the placement of ice-melting salt onto roadways to make them safe. When the salt is put on top of slick roads, the result is a melting of the ice and snow that coats them. As a result, the roadway becomes safely passable but at a price. The mixture of salt and melted snow and ice filters into manholes, coating the underground electrical wiring and equipment. This salt-water cocktail is very corrosive and causes the wiring, transformers, and other elements of the underground electrical delivery system to deteriorate, sometimes resulting in arcing exposed wires. The arcing, burning wire generates various toxic and combustible gases including high concentrations of carbon monoxide and neoprene gas. These gases are contained in the black noxious smoke billowing out of the manhole at a manhole fire.

Firefighters responding to these incidents should be aware of the many hazards that may accompany this phenomenon.

1. The black smoke can at any moment suddenly ignite, exposing people and vehicles nearby. A person inside a car parked over such a manhole would be severely injured or killed should the smoke ignite as he tried to move the parked car away from the manhole.
2. The ignition can be explosive, sending the 300-pound manhole cover flying into the air. Manhole covers have been blown onto the roofs of six-story buildings and have gone up in the air only to come crashing down through the roofs of passing vehicles.
3. Manholes are connected underground to other manholes by electrical conduit through which wires pass. Fire in one manhole can spread to other nearby seemingly uninvolved manholes, which can suddenly start to smoke, erupt into flames, or blow their covers into the air.
4. The explosive and toxic gases created at these incidents can pass through underground conduit into surrounding structures served by the underground electrical delivery system. The result can be overcome occupants and an explosive atmosphere in the electrical service box or the entire building. These explosive gases can also travel along underground conduit and enter and fill up hollow street light poles. A spark from a traffic light control box can ignite these gases, causing the lights' access panels to blow off the poles.
5. Salt water is a good conductor of electricity and, as a result, manholes and grates covering underground electric equipment have become energized, resulting in the deaths of passing pedestrians, pets, and in one case a carriage horse. A metal bus stop shelter and metal curb strip became charged in one instance; in another, a nearby hydrant was charged.
6. Flowing water into a burning manhole could result in electrocution of the firefighters on the line and could cause an explosion. It could also force the CO in the hole through conduits into other manholes or structures.

When responding to these incidents take the following actions and precautions:

1. Notify your electric utility to respond.
2. Stay clear of the trouble manhole.
3. Stop any traffic that might be endangered by a flying manhole.
4. Find and stay clear of the next manhole on either side of the trouble manhole.
5. Check nearby structures for carbon monoxide and evacuate them, if necessary.
6. Do not attempt to kill the power to a building, even if its lights are blinking; there could be an explosive atmosphere in the electric panel box. A spark created by opening the main cut-off could result in an explosion.
7. Do not flow water into manholes until requested by your electric utility. When requested to flow water, do not flow it directly into the manhole from a hoseline. Bounce it off of the street and let it flow along the ground into the manhole or, better still, let water from an unmanned open butt flow into the manhole.
8. Be aware that the danger area around a burning manhole may extend to other manholes, nearby street light poles, and traffic control boxes as well as the surrounding structures. If electric service is delivered by a combination of overhead and underground wiring, be aware that a manhole fire can extend up to the overhead wires via a connecting conduit. This would put the run of overhead wiring in the danger area.

Manhole fires often do not have catastrophic results-they can often be concluded without explosions and without having to evacuate buildings. However, conditions can change without warning from lazy smoke seeping from a manhole to smoke billowing out under pressure. The smoke can suddenly erupt into flame or explode. Use caution and common sense when responding to these incidents. Seek and heed the advice of your utility representative and expect the unexpected. A manhole response is not a "routine" response. There are no "routine" responses.

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