



GRAND TRAVERSE METRO FIRE DEPARTMENT

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Know the Difference between Carbon Monoxide and Natural Gas?

Winter is here, which means furnaces are on, fireplaces are crackling and ovens are baking up tasty treats. Do YOU know the difference between these two potentially toxic gases? If you didn't even know there was a difference, you're not alone. Here's the scoop.

First of all, breathing and oxygen (O₂) 101: You take a breath of room air (which is about 21% O₂ here on Earth), and the air goes into your lungs. Your red blood cells pick up the O₂ from your lungs, and they carry it on to your organs, which need O₂ to work properly. The organs that use the most O₂ are your brain and heart.... Yep, those are pretty important ones.

Natural gas is the general term for a fuel that is piped into many households to ovens, furnaces, water heaters, clothes dryers and the like. Natural gas is mostly methane, along with some ethane, propane and other assorted “-ane” gases. So how is it dangerous? First of all it's flammable—which is the point since it fires up ovens and furnaces. It works as a poison by decreasing the amount of O₂ your body takes in when you breathe. Basically, if natural gas leaks into the air, it takes up the space of O₂. The more gas in the air, the less O₂ in the air since two things can't be in the same place at the same time. Breathe air with less O₂, your red blood cells pick up less O₂, and thus carry less O₂ to your organs. So, natural gas getting into your body itself is really not the problem, but rather it's the decrease of oxygen getting into your body that is the problem. Natural gas is invisible, but reeks of rotten eggs due to a chemical that the gas company adds to it so that people can tell when there is a leak in their house. Exposures to natural gas can occur if there is a leak in a gas line, a pilot light is out, etc.

Carbon Monoxide (CO) is a substance produced from the combustion (burning) of carbon based substances. What kinds of things are carbon-based substances you ask? Well...most things are: wood, paper, coal, cloth, flesh, etc. This is why CO is such a big deal in fires because almost everything in your average house has carbon in it. Also, natural gas (and all the aforementioned ‘-anes’) contain carbon too. That's why faulty or improperly ventilated furnaces or clothes dryers can result in CO in your house. Gasoline? That's another carbon substance and why car exhaust is associated with CO.

CO is poisonous because when you breathe it in to your lungs, it actually binds to your red blood cells, hogs all the room (very selfish, CO is), and prevents those cells from carrying O₂ to your needy organs. CO is odorless and invisible, which is why it is so important to have a working CO detector in your home.

Ultimately, both of these nasty gases affect the amount of oxygen getting to your brain and heart, so the symptoms are similar: drowsiness, headache, nausea, dizziness, and shortness of breath in lower exposures; and vomiting, confusion, coma, seizures and death in bad cases. The word for not getting enough oxygen? Suffocate. Usually you'd associate ‘suffocate’ with Boston strangler documentaries, and plastic bags with the ‘this is not a toy’ warnings, but it can happen with poisonous gases too!

To sum up, natural gas is flammable but CO is made during burning; natural gas stinks while CO is odorless. Both of these gases can be dangerous but CO is considered to be the bigger villain because it can cause harm in lower air concentrations, and because it actually latches on to your cells.

As with all potentially poisonous substances, the amount of gas and length of exposure is going to determine how sick someone can get. If you ever think you have been exposed to one of these, call your local fire department or emergency services.