

APRIL: Week 2 – Hydrogen Cyanide & Toxic Gases

Overview: While there is inherent danger from the flames and high heat from fire, smoke inhalation is usually the cause of death in many residential fire fatalities. A byproduct of combustion, smoke is usually the first element of a fire to affect anyone nearby because of its toxicity, temperature, and prevalence in a fire.

Smoke is a collection of airborne solid and liquid particulates and gases. The most dangerous elements of smoke are its toxic gases: hydrogen cyanide, carbon monoxide, and ammonia, among others. These gases have harmful effects on the human body and can immediately affect one's ability to escape a house fire.

It is important for residents to understand the dangers of these gases and their role in home fire fatalities. The vast majority of home fire deaths are not a result of flame impingement on the human body, but rather a result of asphyxiation and gaseous poisoning which leads to immobilization or unconsciousness.

Resources: The following resources are available:

- "Smoke Inhalation" YouTube video
 - <https://www.youtube.com/watch?v=JKvDKwvWDg>
- Hydrogen cyanide gas index from CDC:
 - https://www.cdc.gov/niosh/ershdb/emergencyresponsecard_29750038.html
- Ammonia index from CDC:
 - <https://www.cdc.gov/niosh/topics/ammonia/>
- Carbon monoxide index from CDC:
 - <https://www.cdc.gov/co/default.htm>
- Carbon monoxide fact sheet
 - https://www.cdc.gov/co/pdfs/flyer_danger.pdf
- Carbon monoxide safety tip sheet
 - http://www.nfpa.org/~/_media/files/public-education/resources/safety-tip-sheets/COsafety.pdf

Media Tools: Use the following pre-written media releases and social media posts in your efforts to promote awareness of toxic gases:

- **Twitter**
 - Smoke is the real danger! Most home fire deaths are from smoke inhalation rather than fire itself. Smoke alarms are key! @TNCommercelnsur
 - Did you know hydrogen cyanide is 30 times more toxic than carbon monoxide? HCN is present in smoke & can incapacitate quickly. @TNCommercelnsur
 - Hydrogen cyanide is a toxic gas that is present in smoke during most home fires. It can affect humans far quicker than CO! @TNCommercelnsur
- **Facebook**
 - Did you know that smoke inhalation is most common cause of most home fire deaths? Smoke is a collection of airborne solid and liquid particulates and gases and can usually incapacitate or render unconscious anyone who is nearby. Always make sure to have working smoke alarms in your home and remember to keep your door closed at night, to prevent the spread of smoke and fire. For more info, go to www.tn.gov/fire

- Smoke is the real danger! Most home fire deaths are from smoke inhalation, rather than the fire itself. Always have working smoke alarms in your home! It can mean the difference between life and death. For more info, and to request a free smoke alarm, go to www.tn.gov/fire
- Hydrogen cyanide is a toxic gas that is present in most home fires. It is incredibly dangerous and can be lethal in humans in very small amounts. It usually occurs when synthetics and plastics burn in a low oxygen environment (such as house). One of the most common side effects of hydrogen cyanide poisoning is loss of consciousness, making it a very dangerous gas during a home fire. For more info, go to: www.tn.gov/fire

Educator Tip: When talking to residents about the importance of fire safety, make sure to emphasize the dangers of smoke as well. Let residents know that the real danger is in the smoke levels of the home as a result of a fire being present, rather than just the flames.

One great way to meet and talk to residents about the danger of smoke is by getting your department on board with *Get Alarmed, TN*, a state-wide fire safety education and smoke alarm installation program. By offering to install free smoke alarms in people's homes, you will have the opportunity to talk to them about fire safety, including the dangers of smoke and its toxic gases.

NFPA Messaging:

Home Smoke Alarms

Fire Deaths-Smoke Alarms Save Lives

1.1.1 Working smoke alarms save lives, cutting the risk of dying in a home fire in half. Smoke alarms should be installed and maintained in every home.

Installation

1.2.1 Install smoke alarms in every sleeping room, outside each separate sleeping area, and on every level of the home, including the basement. Larger homes may require additional smoke alarms to provide a minimum level of protection.