

Instructor Notes: Diesel exhaust is a serious health hazard for us and equally destructive to the environment. Educate your staff on the hazards of diesel exhaust and what your employees can do to minimize their risk. Everyone will breathe a little easier when this important health hazard is shared and discussed.

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Hidden Diesel Danger

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For many decades, diesel engines have grown in popularity due to their efficiency, durability, reliability and low operating costs. Diesel engines provide power to a wide variety of vehicles, heavy equipment and other machinery used in a large number of industries including mining, transportation, construction, agriculture and maritime but, unfortunately, it comes with a hidden cost: toxic diesel exhaust.

What Is Diesel Exhaust?

Diesel exhaust is a complex mixture of thousands of gases and fine particles that pose an environmental pollution threat as well as an urgent health risk as it contains over 40 cancer-causing contaminants. The gases in the exhaust contain carbon monoxide, nitrogen oxides or NOx (leading to smog) and sulfur dioxide (leading to acid rain). The solid component of diesel exhaust is called “particulate matter.” Some particles are large and dark enough to be seen as soot or smoke but most are very, very small particles that can travel deep into the lungs where it can aggravate existing health problems such as asthma, chronic bronchitis, emphysema and other lung conditions. Our respiratory system filters out larger particles, but the smaller particles get trapped in the lungs, while the smallest pass through the lungs into the bloodstream.

Reducing Environmental Pollution

In 2010, the U.S. Environmental Protection Agency (EPA) mandated that all diesel engine manufacturers

develop cleaner engines to reduce NOx and solid particulates in their exhaust. One answer to combat air pollution was by lowering NOx levels in exhaust through the introduction of Diesel Exhaust Fluid (DEF). DEF is a non-hazardous liquid solution which is 32.5 percent urea and 67.5 percent de-ionized water. DEF is sprayed into the exhaust stream of diesel vehicles to break down dangerous NOx emissions into harmless nitrogen and water. This system is called Selective Catalytic Reduction (SCR) and can be found on newer, late model trucks. DEF is not a fuel additive and never comes into contact with diesel. It is stored in a separate tank, typically with a blue filler cap. Your truck cannot operate effectively without DEF and the driver will receive a series of alerts on dashboard displays (much the same way as if running low on diesel) before powering down and limiting operation to five mph until the DEF tank is refilled.

DEF is safe to handle and store and poses no serious risk to humans, animals, equipment or the environment when handled properly. If DEF is spilled, absorb it with a non-combustible absorbent material such as sand. If DEF is spilled on your vehicle, rinse with water. DEF should never be ingested. If it is ingested, do not induce vomiting and call a physician if you begin experiencing any symptoms.

Minimizing Health Risks

Many workers are exposed to diesel exhaust during their typical workday including mechanics, truck drivers, dock workers, toll collectors, etc. Short-term exposure can cause immediate

irritation of the eyes, nose, throat and lungs, dizziness, headaches, fatigue, nausea, aggravated asthma and coughing. Long-term exposure can cause wheezing, bronchitis, emphysema, decreased lung function, heart disease, heart attacks and lung cancer.

What Can We Do to Minimize Diesel Exhaust Contamination?

- Implement a regular inspection and maintenance program of diesel engines. A well-tuned engine runs better and burns cleaner.
 - Limit your exposure to diesel exhaust or fumes.
 - Limit idling of trucks to what is absolutely necessary and be aware of local laws that encourage the same. For example, New York City vehicles cannot idle more than three minutes or more than one minute in front of schools.
 - Prohibit running diesel engines indoors without vehicle exhaust hoses.
 - When working outdoors, attempt to position trucks downwind from a work area.
 - Use specialty cleaner-burning fuels (e.g., bio-diesel) or other additives to reduce harmful emissions.
 - Use alternative fuels such as natural gas, propane, etc.
- Do what you can to limit your diesel exhaust exposure and to protect our environment. Be part of the solution – not part of the pollution.

If you need any ideas on how to prepare and present this information to your drivers, please call me at 847-894-0042 or email pgratz548@comcast.net.