



BE SAFE-ENSURE A HAPPY HOLIDAY

KSU Division of Facilities

Volume 4, Issue 12

December 23, 2011

When You Should Wear PPE

Eye and Face

Flying Particles
 Molten Metals
 Liquid Chemicals
 Acids
 Caustic Liquids
 Chemical Vapors or Gases
 Light Radiation
 Electrical Hazards
 Other

Head

Falling or Flying Objects
 Work Being Performed Overhead
 Elevated Conveyors
 Electrical Hazards
 Striking Against Fixed Objects
 Forklift/Aerial Lift Hazards
 Exposed Electrical Conductors
 Other

Foot

Falling and Rolling Objects
 Objects Piercing Sole
 Electrical Hazards
 Wet or Slippery Surfaces
 Chemical Exposure
 Environmental
 Other

Hand

Skin Absorption
 Electrical Hazards
 Cuts or Lacerations
 Abrasions
 Punctures
 Chemical/Thermal Burns
 Harmful Temperatures
 Other

Respiratory

Harmful Dusts
 Fogs
 Fumes
 Mists
 Smokes
 Sprays
 Vapors
 Other

Torso

Hot Metals
 Electrical Hazards
 Cuts
 Acids
 Radiation
 Other

Miscellaneous

Bloodborne Pathogens
 Lifting
 Load Noises
 Other

Personnel Training

All personnel should know the basics of personal protective equipment use.

When to wear PPE and how it will protect based on task being performed.

What type of PPE should be worn when performing certain job assignment tasks.

What are the PPE limitations.

How to wear PPE and take care of it appropriately.





Air Quality—Make Sure to Monitor

Atmospheric hazards include a lack of oxygen, an oxygen-enriched environment, explosive levels of vapors, and toxic air contaminants.

Oxygen

An oxygen-deficient atmosphere is one in which there is less than 19.5 percent oxygen available. Low oxygen levels in a confined space can be caused by a number of conditions, including chemical reactions in sewage or other decomposing organic matter (for example, plants and leaves) or oxidation of metals (i.e., rusting). An oxygen-deficient confined space should never be entered without a respirator that supplies air to the user.

An oxygen-enriched atmosphere is one in which there is more than 23.5 percent oxygen. An oxygen-enriched environment is dangerous because it will cause flammable and combustible materials, such as clothing and hair, to burn violently when ignited. For this reason, pure oxygen should never be used to ventilate a confined space; a combined space should be ventilated with ambient air.

Flammable atmospheres

Flammable atmospheres develop as the result of a buildup of flammable vapors in the confined space. Methane, a product of certain types of decomposition, is a common flammable vapor found in confined spaces. Even when a flammable vapor is present, it must be in a range of concentrations that will allow it to ignite in order for it to be a hazard. Below a certain chemical/oxygen mix, there will be no ignition. This is known as the lower explosive limit (LEL). Conversely, above a certain chemical/oxygen mix, there is too much of a chemical vapor and too little oxygen for ignition to occur; this is called the upper explosive limit (UEL). Between the LEL and UEL, there is a hazard of ignition if a source, such as a spark or flame, is present a fire or explosion can occur. According to OSHA, a confined space is unsafe if a flammable gas is present at a level above 10% of the LEL. Workers may not enter a confined space under this condition. It must be ventilated to safe levels prior to worker entry.

Toxic gases

Toxic gases and vapors come from a wide variety of sources. For example, hydrogen sulfide and carbon monoxide are produced by sewage and rotting organic materials. Other sources of toxic atmospheres include spills or dumping of chemicals in the confined space. If toxic substances exceed OSHA regulatory limits, then the confined space needs to be appropriately ventilated or the workers need to wear appropriate respiratory protection.

Required monitoring

Air monitoring must be performed before entering any confined space or area of concern. The Division of Facilities has two four gas air monitors available for monitoring air quality. One is located in the Safety Closet at the east end of Dykstra Hall and the other at the Power Plant in the lower level office area. In addition, located in the Safety Directors office is the Volatile Organic Chemical monitor that will assist in identifying VOC contaminants in an area.

Sizing up the Hazards

Atmospheric hazards usually are invisible. This is not Hollywood; we don't have nice green clouds floating inside the space to show you, "I am toxic, stay away!" Carbon monoxide, a huge problem, is colorless, tasteless, odorless, and undetectable without the use of an air monitor, as we all should know. Oxygen deficiency can occur for many reasons and also is colorless, tasteless, and odorless. The effects of oxygen deficiency are instant and will incapacitate a person immediately.