Coffee Break Training - Hazardous Materials

Hazard and Risk Assessments

No. HM-2012-1 October 22, 2012

Learning Objective: *The student shall be able to explain the difference between risk and hazard as part of an essential assessment performed by an Incident Commander (IC) at a hazardous materials event.*

Federal requirements established by the Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor (DOL) in 29 Code of Federal Regulations (CFR) 1910.120 *Hazardous Waste Operations and Emergency Response* require that the individual in charge at a hazardous materials emergency must be able to identify, to the extent possible, all hazardous substances or conditions present and must address as appropriate site analysis, use of engineering controls, maximum exposure limits, and hazardous substance handling procedures.

An Incident Commander must be prepared to conduct a hazard assessment of this facility to assure responders are adequately protected. *Photo courtesy of Scott Stookey, Austin, TX.*

Furthermore, the IC is responsible for assuring that the personal protective equipment (PPE) worn is appropriate for the hazards to be encountered. To fulfill that obligation, the IC must implement a process commonly referred to as a **hazard/risk assessment.**

A **hazard** is a physical, chemical, or environmental condition that can cause harm to people, property, or the environment. For example, a flammable liquid or gas presents the hazard of flammability. However, other hazards may be presented by the material, such as displacement of oxygen. At an incident, a truck rollover may present not only the hazards of the contents of the tank but also mechanical hazards of sharp metal, unstable vehicles, etc.

A **risk** is the probability or likelihood that a hazard will affect vulnerable people, property, or the environment adversely. Using the example of a flammable liquid or gas, the hazards of the materials are always present. However, when properly contained or used, the risks of the materials generally are at a publicly acceptable level.

Gasoline or diesel fuel spilled onto a roadway in large quantities generally would pose an unacceptable risk to the public and responders. Therefore, administrative controls (e.g., isolation), engineering controls (e.g., blanketing with foam or reducing spill surface area), and personal protective controls (e.g., PPE) are employed to maintain the risks at an acceptable level.

A **hazard assessment** is the process of identifying the hazards associated with a material or incident. A **risk assessment** is the process of assessing the risks that those hazards present to life, property, or the environment.

Hazard/risk assessment involves the assessment of not only the hazardous material but also other onscene hazards (e.g., environmental, mechanical). A complete hazard/risk assessment not only looks at the properties of the hazard but also looks at the likelihood of harm. Once this assessment is made, action can be taken to reduce the risk to an acceptable level.