

## Health & Safety: General

# Overview and Management Systems

Industrial hygiene is a science devoted to the protection and improvement of the health and well-being of workers exposed to chemical and physical agents in their work environment. Specifically, it involves the anticipation, recognition, evaluation, and the controlling of workplace hazards that may cause workers' injury or illness. The specific regulatory requirements of workers' protection differ from country to country and sometimes within the same country where there are differences from region to region. Please refer to local rules and regulations for all applicable requirements.

Industrial hygiene starts with an assessment of hazards in the workplace. These hazards can be chemical, physical or biological in nature:

- Chemical hazards may include exposure to harmful compounds in the work environment through inhalation, absorption or ingestion.
- Physical hazards may include ergonomics, noise, vibration, temperature extremes and radiation.
- Biological hazards may include bacteria, viruses, fungi and other living organisms that can cause acute and chronic infections.

A workplace hazard assessment requires a thorough understanding of the production process and the work environment:

- A chemical hazard assessment typically starts with an inventory of chemicals and their associated hazards. The degree to worker risk depends on the nature and potency of the toxic effects and the magnitude and duration of the exposure.
- A physical hazard assessment examines worker exposure to constant loud noises, excessive vibration, heavy lifting and repetitive motions. A poorly designed work environment can expose workers to significant physical health hazards.
- A biological hazard assessment identifies the potential for workers to come in contact with living organisms or bodily fluids, such as blood.

Once the hazards have been identified and assessed, the next step is to find ways to effectively control these hazards. The hierarchy of hazard control is listed below, starting with the most effective, and therefore, preferable:

Hierarchy	Control Measure	Comments
01	Elimination	Removing the hazard from the workplace
02	Substitution	Substitute less hazardous materials, equipment, processes or substances
03	Engineering Controls	Mechanical changes to process or system to isolate or minimize hazards, e.g., local exhaust ventilation and machine guarding
04	Procedural Controls	Establish appropriate administrative procedures such as policies, guidelines, standard operating procedures (SOPs) and job rotation to minimize worker exposure levels
05	Personal Protective Equipment (PPE)	Provide appropriate, correctly fitted and properly maintained personal protective equipment (PPE) and the necessary training

Even after putting all Health and Safety controls in place, an Emergency Preparedness and Response is necessary to mitigate negative consequences should all controls fail to stop an emergency situation.