

Guide to Industrial Hygiene



Every workplace has hazards that pose potential threats to workers. Construction sites, for example, regularly expose workers to high elevations, heavy machinery, and dangerous construction materials, putting workers at risk of falls and injuries.

According to NSC Injury Facts, the construction industry experiences the highest number of workplace deaths. However, construction is just one of many industries with work environments that can compromise worker safety. Health care, education, forestry, agriculture, and aviation are other industries considered especially dangerous to work in.

Today, the issue of workplace safety has become more important than ever. With COVID-19 still spreading across the country, even the safest-seeming workplaces can pose a health risk to their workforces.

The top workplace dangers include:

- Slips, trips, and falls
- Electrical hazards
- Fire hazards
- Working in a confined or poorly ventilated space
- Physical hazards
- Ergonomic hazards
- Chemical hazards
- Biological hazards
- Asbestos
- Noise/hearing damage hazards

Depending on the industry, employees may be exposed to one or more of these potential dangers.

The top ways to avoid workplace injury and/or death are:

- Implementing preventive safety measures
- Supplying protective equipment
- Performing routine safety inspections

Recognizing these risks and devising methods to mitigate them are an integral

part of industrial hygiene, the science of keeping workplaces and their employees safe.

What Is Industrial Hygiene'

The Occupational Safety and Health Administration (OSHA) defines industrial hygiene as the process of recognizing, evaluating, and controlling potentially harmful hazards in or around the workplace that may impact employees by causing injury or making them ill.

Industrial hygiene is important because it protects employees from a wide variety of injuries and illnesses, such as:

- **Repetitive stress injuries:** These are caused by performing the same motion many times throughout the day, which can have a negative impact on joints and bones.
- **Hearing loss:** This can occur when employees are exposed to high levels or high frequencies of noise.
- **Poisoning:** Toxic chemicals such as pesticides, herbicides, cleaning agents, and formaldehyde can lead to poisoning when absorbed through the skin.
- **Respiratory conditions:** Chronic bronchitis, pneumonitis, and asbestosis can result from exposure to air that contains dust or other contaminants.
- **Skin diseases:** Rashes, blisters, eczema, and dermatitis may occur when workers' skin comes into direct contact with hazardous materials or chemicals.
- **Nonfatal and fatal illnesses:** Workers can be exposed to a wide variety of illnesses in settings such as hospitals and laboratories. Additionally, COVID-19 is a top concern for most companies whose workers spend extended periods of time close to one another.

When an employee is sick or injured, consequences result. First and foremost, productivity diminishes, which may translate to a loss of profit for the company. Additionally, workplace injuries and illnesses are damaging to morale and can lead other employees to think they, too, are in danger of getting sick or injured.

Implementing industrial hygiene programs and practices keeps employees safe and ensures companies can operate with minimal interruption. While OSHA puts certain requirements on companies through industrial hygiene regulations and occupational health standards, individual companies are responsible for hiring their own expert trained in identifying, analyzing, and controlling workplace conditions ' an industrial hygienist.

What Are the Types of Hazards Defined by Industrial Hygiene'

Industrial hygienists work with companies to help identify and resolve potential workplace safety issues. These issues fall into the following categories:

1. Air contaminants, such as aerosols and fibers
2. Biological hazards, such as bacteria and viruses
3. Chemical hazards, such as harmful vapors and fumes
4. Ergonomic hazards, such as lifting heavy objects or working with large

machinery

5. Physical hazards, such as radiation and heat

What Does an Industrial Hygienist Do'

An industrial hygienist is a scientist/engineer committed to protecting workers' health and safety. However, each company and its workforce are unique, so industrial hygienists must tailor their approach to the circumstances. In addition to keeping employees safe, industrial hygienists ensure that companies are adhering to federal, state, and local regulations.

The following are the typical duties of an industrial hygienist:

- Conducting worksite analyses to anticipate, identify, and recognize potential problems and hazards
- Taking inventory of all current workplace risks and anticipating any developing risks
- Evaluating all risks with the goal to achieve 'as low as reasonably practical' (ALARP) risk levels
- Controlling hazards to minimize employee exposure by either removing the hazard, keeping workers away from the hazard, or providing employees with personal protective equipment
- Making informed recommendations that will increase workers' health and safety
- Monitoring and reviewing the results of industrial hygiene measures
- Ensuring that industrial hygiene programs are in line with the company's core objectives
- Working with company leadership and managers to integrate industrial hygiene programs

Industrial hygienists take on a huge responsibility. Their work supports workers' continued health and safety and allows companies to function more efficiently.

Industrial hygienists must be uniquely qualified to perform their complex job. In addition to earning a public health degree in industrial hygiene, industrial hygienists must also be certified. The certified industrial hygienist (CIH) credential is the industry's gold standard. Industrial hygienists should be prepared to demonstrate they are competent in the following areas:

- Air sampling
- Analytical chemistry
- Biohazards
- Epidemiology
- Biostatistics
- Community exposure
- Ventilation
- Ergonomics
- Health risk analysis
- Hazard communication
- Program management
- Noise
- Radiation
- Thermal stressors

- Toxicology
- Work processes

Importance of Industrial Hygiene

In 2020, the United States recorded an unsettling 4,764 fatal work injuries, according to the Bureau of Labor Statistics (BLS), equating to 3.4 fatalities for every 100,000 full-time employees.

Additionally, the BLS states that private industry employers reported 2.7 million injury and illness cases in 2020. Although injury cases declined from 2.7 million in 2019 to 2.1 million in 2020, illness cases more than quadrupled to 544,600 in that same year. The majority of that increase can be attributed to COVID-19.

The statistics on workplace fatalities, along with the reports of injuries and illnesses, point to the crucial importance of industrial hygiene. Workplace hygiene measures keep companies accountable for potential workplace hazards and keep the U.S. workforce safe through programs and practices that minimize or eliminate those hazards.

Industrial hygiene is also important to a company's financial success. Industrial hygienists contribute to an organization's ongoing profitability by anticipating potential hazards and addressing issues as they are discovered. This vigilance translates to increased revenues while also ensuring that employees will continue to be able to do their jobs safely.

Industrial hygienists can also benefit companies and their workers in the following ways:

- They work to improve indoor air quality in the workplace.
- They determine environmental lead exposure.
- They discover and alleviate hazards such as radon and asbestos.
- They detect nonlethal hazards such as noise and light pollution.
- They implement measures to decrease repetitive stress injuries.

Industrial Hygiene Informational Resources

Industrial hygiene is critical to helping companies discover potential workforce hazards. Not only do industrial hygienists keep a company's workforce safe, but they also ensure companies adhere to state, local, and federal regulations so that they may continue operating without interruption.

People looking to learn more about the industrial hygiene industry, how it benefits companies, or how to become an industrial hygienist can consult the following resources.

- 1Source, Guide to Industrial Hygiene: A comprehensive overview of industrial hygiene's importance, how industrial hygiene benefits employees and employers, an industrial hygienist's role, the specific hazards an industrial hygienist detects, and how to create a successful industrial hygiene program
- American Industrial Hygiene Association: Information about the AIHA that includes who they are, what they do, their mission statement, and relevant

industry statistics

- American Industrial Hygiene Association Public Resources: A compilation of public resources that includes a vendor directory, a list of consultants, and publications with the latest industry news
- Board for Global EHS Credentialing: A resource for those interested in becoming a certified industrial hygienist that provides the certification requirements along with the steps to take to become certified
- OSHA, Industrial Hygiene: Official documentation, developed by OSHA, that is intended to help workers, employers, and other interested parties understand industrial hygiene basics
- U.S. Bureau of Labor Statistics, Occupational Health and Safety Specialists and Technicians: Salary information, job outlook, and career information about the role of occupational health and safety specialists and technicians

Industrial Hygienist Education and Certification

To pursue a career in industrial hygiene, a candidate should be highly analytical, excellent at problem-solving and communication, and very skilled at using technology and software systems to conduct tests and collect data. Individuals who are interested in entering the field of industrial hygiene should first complete the appropriate degree program.

Earning a Master of Science in Public Health in Industrial Hygiene degree can prepare students to pursue the certified industrial hygienist credential. The CIH credential certifies an individual's skills and knowledge as an industrial hygienist and makes them stand out as a job candidate who is prepared to succeed in this important field.

Source: Tulane University School of Public Health & Tropical Medicine