

INDUSTRIAL HYGIENE

The variety of substances and processes that present occupational health hazards steadily increases. Recently developed raw materials and methods of manufacture or new combinations of their older counterparts create new environmental stresses. Improved techniques for the prevention and control of existing hazards and stresses are also being developed.

The prevention and control of occupational health hazards are the responsibility of company management. To assist those individuals charged with this responsibility—the industrial hygienist, physician, safety engineer, nurse, or plant superintendent—this chapter discusses the principles and practices of industrial hygiene. It presents information on the recognition of hazards, their qualitative and quantitative evaluation, and engineering methods for eliminating or minimizing them.

The Industrial Hygienist

Definitions

The following definitions* have been approved by the American Industrial Hygiene Association.

"Industrial hygiene is that science and art devoted to the recognition, evaluation and control of those environmental factors or stresses, arising in or from the workplace, which may cause sickness, impaired health and well-being, or significant discomfort and inefficiency among workers or among the citizens of the community."

"An industrial hygienist is a person having a college or university degree or degrees in engineering, chemistry, physics, or medicine or related biological sciences who, by virtue of special studies and training, has acquired competence in industrial hygiene. Such special studies and training must have been sufficient in all of the above cognate sciences to provide the abilities: (1) to recognize the environmental factors and stresses associated with work and work operations and to understand their effect on man and his well-being; (2) to evaluate, on the basis of experience and with the aid of quantitative measurement techniques, the magnitude of these stresses in terms of ability to impair man's health and well-being; and (3) to prescribe methods to eliminate, control or reduce such stresses when necessary to alleviate their effects."

Scope

Recognition of environmental factors and stresses which influence health requires that the industrial hygienist be familiar with work operations and processes. The categories of stresses that interest him are: (1) chemical—liquid, dust, fume, mist, vapor, or gas, (2) physical—electromagnetic and ionizing radiations, noise, vibration, and extremes of temperature and pressure, (3) biological—insects, mites, molds, yeasts, fungi, bacteria, and viruses, and (4) ergonomic—body position in relation to task, monotony, boredom, repetitive motion, worry, work pressure, and fatigue. The industrial hygienist recognizes that such stresses may immediately endanger life and health, accelerate the aging process, or cause only significant discomfort and inefficiency.

Evaluation of the magnitude of the environmental factors and stresses arising in or from the workplace is done by the industrial hygienist, aided by his training, experience, and quantitative measurement of the chemical, physical, biological, or ergonomic stresses. He can thus give an expert opinion as to the general healthfulness of the environment, either for short periods or for a lifetime of exposure.

Prescription of corrective procedures, when necessary to protect health, is based on the industrial hygienist's experience and knowledge and on the quantitative data he has obtained. He can prescribe control measures such as isolation of a work process, substitution of a less harmful material, or any of the other measures discussed later in this chapter.

Function

The industrial hygienist:

- 1 Directs the industrial hygiene program
- 2 Examines work environment, environs:
 - a Studies work operations and processes to get full details of the nature of the work, materials and equipment used, products and byproducts, number and sex of employees, and hours of work

*American Industrial Hygiene Association Journal, 20:428-430 (Oct. 1959).