

INDUSTRIAL HYGIENE

Occupational Skin Diseases

Industrial skin diseases account for about one half to two thirds of all compensation claims for occupational diseases. These claims are scattered throughout all types of industry and sometimes appear where occupational skin diseases may be least expected.

Types of dermatitis

There are two general types of dermatitis, primary irritation and sensitization.

Nearly all persons will suffer primary irritation dermatitis from mechanical agents such as friction, from physical agents such as heat or cold, and from chemical agents such as acids, alkalis, irritant gases, and vapors. Brief contact with a high concentration of a primary irritant or prolonged exposure to a low concentration will cause inflammation. Allergy is not a factor in these conditions.

Sensitization dermatitis, on the other hand, is the result of an allergic reaction to a given substance. The sensitivity becomes established over a relatively long induction period which may be a few days to a few months. In most cases, it is ten days to a month. After the sensitivity has become established, exposure to even a small amount of the sensitizing material is likely to produce a severe reaction. There are various grades of sensitivity, and many people who are sensitized to the materials they are handling can continue to work with them without trouble if they simply take precautions against direct contact. With severe sensitization, however, it may be difficult or impossible to control the exposure sufficiently to permit the individual to go on working with the material.

Some substances can produce both primary irritation dermatitis and sensitization dermatitis. Among them are organic solvents, formaldehyde, and chromic acid.

Causes of dermatitis

Causes of occupational dermatitis are classified under these main headings: chemical agents, mechanical agents, physical agents, plant poisons, and biological agents.

Chemical agents are the predominant causes of dermatoses in manufacturing industries. Table 39-C, therefore, is concerned only with these agents. The information

given includes the action of the listed chemicals on the skin as either primary irritants or sensitizers. The table is not, of course, exhaustive in any respect, but can provide quick reference data on some of the more common chemical irritants.

Cutting oils and similar substances are especially important chemical agents because the oil dermatitis which they cause is probably of interest to a larger proportion of industrial concerns than is any other single type of dermatitis.

Mechanical causes of skin irritation include friction, pressure, and trauma, which produce cuts, which may become infected with either bacteria or fungi, and callosities. If the horny layers of the skin become softened by high temperatures and excessive perspiration, the development of friction (for example, between the buttocks) then leads to dermatitis. Other examples of mechanical causes are low atmospheric pressure in high-altitude flying, and abrasions.

Physical agents which lead to occupational dermatitis include heat, cold, water, sunlight, X-rays, ionizing radiation, and electricity. Hot water softens the skin so that substances more readily attack it, as typified by dermatoses occurring among laundry workers and dish washers. X-rays and other ionizing radiation may cause dermatitis, severe burns, and even cancer. Prolonged exposure to sunlight produces skin changes which may cause dangerous body alterations. Frostbite produces chilblains.

Plant poisons which can cause dermatitis are produced by several hundred plants. The best known are poison ivy, poison oak, and poison sumac. Dermatitis from these three sources may result from bodily contact with any part of the plant, exposure of any part of the body to smoke from the burning plant, or contact with clothing or other objects which have previously been exposed to the poison.

Biological agents which cause dermatitis may be bacterial, fungal, or parasitic. Anthrax from handling hides, tularemia from handling skins, erysipelas from handling animal products, boils and folliculitis caused by staphylococci and streptococci, and general infection from occupational wounds are

(Text continues on page 39-24.)