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SKIN PROBLEMS - A TOP JOB HAZARD

Introduction

Two out of every five workers exposed to some form of skin irritant will develope industrial dermatitis-skin irritation or disease-from this exposure. However, nearly all of these dermatoses are preventable.

Industrial dermatitis is the term used to describe any inflammation of the skin which results from exposure to irritants in the workplace. Such exposure may produce skin reactions ranging from slight reddening or mild itching to a rash or swollen, weeping or open sores. The fact that industrial dermatoses account for more than half of all compensation claims for occupational diseases, and that these claims come from all types of industry, underscores the widespread severity of the problem.

Employees who work as pesticide applicators,assembly line workers, bartenders, or office workers, or those who come into contact with turpentine, styrene, acetone, trichloroethylene, perchloroethylene, or formaldehyde are particularly vulnerable to industrial dermatoses.

SENSITIZATION

Almost 80% of all industrial dermatitis is due to exposure to "primary" chemical irritants and is called "contact dermatitis". A primary irritant causes an immediate onetime reaction upon initial contact with the skin, or it may cause that reaction after prolonged, repeated exposure. Plastics, synthetic resins, solvents, chemical lubricants, acids and caustics are primary irritants. Some chemicals are both irritants and "sensitizers".

Sometimes a worker who does not develope dermatitis immediately during or after exposure to a chemical or substance, will, after extended or repeated exposure to the substance, develope an allergic type of skin irritation weeks or months later. This delayed reaction is called "sensitization" dermatitis. Contact allergic sensitization may not become apparent until 5 days after exposure. During this time, a person becomes sensitized but does not show any signs of dermatitis. However, the next exposure to the substance will result in an observable reaction within three days. Once a person has become sensitized, even a slight exposure to the substnace can cause severe dermatitis. Typical sensitizers include: epoxy resins, hardeners, azo dyes, bichromates, coal tar derivative, certain spices, pollen and some antibiotics.

Coal tar pitch, some crude petroleums, fluorescent dyes, and some plants can sensitize the skin to light so that a worker so sensitized may develope sunburn, skin rashes or hives more easily than those not exposed.

Although a contact dermatitis can be severe enough to require medical treatment, the worker usually can return to his or her job as soon as the dermatitis is brought under control.

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IRRITANTS

Work clothing that is soiled with irritating chemicals or oils can cause dermatitis problems not only for the wearer, but also for his or her family, if the clothing is laundered at home. Other causes of dermatitis include:

1 Chemical Compounds such as nitric acids, sulfuric acid, sodium hydroxide, strong soaps, mild solvents, and detergents which can produce reations ranging from chemical burns to mild skin irritation.

2. Mechanical Agents such as small particles of glass fiber and rock wool insulating materials which can get caught in the ridges and folds of the skin and cause irritation and itching.

3. Physical Agents such as excessive heat, cold, sunlight, ultraviolet light, x-rays, or other ionizing radiation.

4. Plant Poisons from several hundred different plants shrubs, woods (including poison oak), poison ivy, chrysanthemums, geraniums, and primroses.

5. Biological Agents such as bacteria, fungi, and parasites can produce skin irritations. Packing house workers, bakers, fruit and vegetable handlers, greenhouse and agricultural workers are most often affected by these potential skin irritants.

6. Inhalation or Ingestion of chemicals such as atabrine, sulfa compounds, and antibiotics (most likely to occur in the pharmaceutical trades) accounts for a small percentage of industrial dermatitis.

PRECAUTIONS

The incidence of industrial dermatitis and skin diseases can be eliminated or reduced by following these precautions:

1. Eliminate skin contact with irritation chemicals or substances.

2. Substitute chemicals with the lowest toxicity and irritant potential for the hazardous substance.

3. Use Engineering Controls to minimize worker contact with the hazardous substances. When it is necessary to work with highly corrosive or irritating materials, enclosures, guards, and mechanical handling facilities may be necessary for safe operation. Suitable exhaust systems should be installed where operations that give off dust or fumes are located. Machines and work areas should be kept clean and work room floors should be cleaned daily. Containers should be labelled to identify the material and the hazards of using it, as well as to list precautions to take in handling the material.

4 An employee education program should be established so that workers who will be exposed to skin irritants are informed about the precautions to take and processes and equipment to use to avoid or minimize exposure.

5. Personal protective equipment and clothing is not an adequate substitute for good engineering controls, good housekeeping or a well informed worker. However, if it is used intelligently and kept uncontaminated, protective equipment can minimize skin irritations on operations where it is not pratical to control exposures in other ways. All personal protective equipment and clothing must be kept clean and in good repair. A laundering procedure should be specified to ensure that irritating materials are removed. All protective and street clothing should be carefully removed and properly washed after each use.

   Natural and synthetic rubber gloves, aprons, boots, and shoes provide protection against most dusts, liquids, and vapors. Work clothing made from tightly woven acid and caustic resistant fabrics, and treated for water repellancy, provides reasonable protection against the corrosive dusts and mist generally found in acid dipping and plating operations.

   Safety goggles, face shields, or acid-type hoods provide eye, face, and full head protection against irritants and corrosive chemicals. Work gloves made of leather or coated fabric and asbestos provide protection against mechanical and physical agents.

6. Protective creams, when used properly and applied frequently, provide limited protection against irritants to hands and arms. Protective creams should be applied after each hand washing; it is considered good practice to wash the hands and arms every two hours during exposure to uncured resins and hardeners. Cleaning facilities and materials should be provided for employees.

   Repeated washing to remove the barrier cream provides the additional benefit of facilitating cleanliness, which is extremely important when working with potential skin irritants.

   Personal cleanliness is one of the best preventative measures against skin irritation and dermatitis.

   Skin exposure to sweat, water, chemicals, abrasion, and laceration will increase the chance for occupational dermatoses to develope.

7. Normally, face and eye protection are required for compounding, mixing, and dispensing operations where there is a splashing hazard. If the eye is exposed to an irritant, promptly flush it with plenty of water for at least 15 minutes and seek medical attention.

8. Preplacement examinations can screen out those individuals who have a history of skin disorders and who for that reason may be especially susceptible to skin irritants. Onsite monitoring and medical surveillance can ensure identification of specific problems.

In addition to following carefully all procedures for handling potential skin irritants, employees should assess their own predisposition to dermatitis. Employees with fair or sun-sensitive skin should be cautious when working in the sun. Employees who have oily skin should be particularly cautious when working with grease, oil, and other lubricants. Employees with dry skin should avoid excessive contact with detergents.

EPOXY AND DERMATITIS

People who handle or work around basic epoxy resins, reactive curing agents, reactive dilutents and modifiers, should take special care to avoid developing industrial dermatitis from contacts with these irritants.

The most severe skin reaction is caused by direct contact with the hardener or uncured resin. Exposure can result also from contact with volatile materials which are given off during compounding, handling and curing of resins. These following precautions can assure that epoxy operations are performed with reasonable safety:

1. Use hardeners and modifiers which have the least irritating effect. Do not use more hardener than necessary.

2. Segregate the epoxy work area-
   Use closed systems for compounding,mixing and curing operations.

   Provide adequate local exhaust systems for dipping, potting and filling operations.

   Establish excellent housekeeping practices.

3. Minimize handling and make sure that all employees concerned understand the hazards associated with exposure to epoxy resin and the importance of keeping the material off the skin.

4. Emphasize good personal cleanliness as the best preventative measure.
   Hands should be washed with a mild soap before and after work, before going to the lavortory, and whenever the skin is directly exposed to hardener.

   The face or other exposed areas of skin should not be touched with contaminated gloves.

5. Specify personal protective equipment such as protective creams, rubber finger cots, gloves, sleeves, aprons, face shields, safety glasses, etc., as necessary.

6. Reduce the use of solvents to the absolute minimum. Dispose of contaminated solvent immediately in a suitable safety container. Do not use solvent to clean tools or equipment unless appropriate personal protective equipment is worn to prevent skin contact.