

ELEMENTS OF INDUSTRIAL TOXICOLOGY

ence of water or moist air, forming hydrochloric acid, phosphorous acid, and phosphonic acid and thus produce acid burns. Their vapors are strongly irritating to the skin, mucous membranes, and respiratory system.

Picric acid (2,4,6-trinitrophenol) is a yellow solid which, in the dry state, is highly sensitive to shock. It is therefore shipped with at least 10 per cent water in glass or wood containers. It must also be kept out of contact with metals and ammonia to prevent the formation of picrates more sensitive to explosion than the picric acid.

Containers should be plainly marked **EXPLOSIVE—KEEP FIRE AND OPEN FLAMES AWAY**, and the same notice should be posted at the doors of all rooms where the material is stored or used. The no smoking rule should be enforced in such areas, electrical installations should be explosion-proof in accordance with the regulations of the National Fire Protection Association, and other sources of ignition, such as welding, must be controlled.

Picric acid was once used extensively as a dressing for burns. This use has been largely discontinued because many cases of skin irritation and systemic poisoning resulted from application of concentrations as low as 1 per cent to large areas of the skin.

Picric acid is rapidly absorbed through the unbroken skin and even more rapidly through wounds, leading to headache, shivering, fever, and insomnia. Absorbed in larger quantities, it produces jaundice and severe inflammation of the kidneys. Exposure to the dust of picric acid may cause irritation of the nose and throat, and especially of the eyes, leading to ulceration of the cornea.

See Industrial Data Sheet 351.

Poison oak, poison ivy, and poison sumac are plant species whose toxic irritant has been identified as urushiol. The dermatitis is the result of hypersensitization to this compound. Individual susceptibility varies greatly and also changes from time to time, depending, at least in part, on how long it has been since the last exposure. No one is so completely immune, however, that a sufficiently rigorous exposure will not result in dermatitis.

Since reaction to these plants is a hyper-

sensitization, it seems logical that individuals could be desensitized by injections of graduated doses of the purified extract. This has been attempted in many instances, and there are a number of extracts on the market for the purpose. They seem to give some limited protection to sensitive individuals. Statistics from field trials, even from those well satisfied with the protection provided, are not impressive.

Limited protection is also given by a number of protective creams containing oxidizing materials such as sodium perborate. The principle of these creams is based on the fact that urushiol can be gradually oxidized to an inert black product. Their success is limited by the fact that the oxidation is slow at best. One of the most effective materials for destroying the poison is ferric chloride, but it is apt to permanently discolor the skin to which it is applied.

The poisoning can most effectively be prevented by destruction of the plants with one or two applications of a herbicide such as one of the 2,4-D formulations. Destroying them by grubbing out and burning is both expensive and hazardous for the men doing the work and is no more effective than application of the herbicide.

See Industrial Data Sheet 304.

Potassium chlorate—see Sodium chlorate.

Potassium cyanide—see Sodium cyanide.

Potassium hydroxide is a white solid extremely soluble in water. It is most commonly furnished as a concentrated solution in tank-car quantities and as the solid in flakes, pellets, and sticks, or cast solid in glass or in metal drums.

The most common injuries suffered with potassium hydroxide are burns of the skin or eyes, caused by solid particles and splashing of the concentrated solution from attempts to dissolve the solid in hot water. The solid alkali generates so much heat on dissolving that there is often local boiling even when cold water is used.

To dissolve the material from a drum in which it is cast solid, the drum should be suspended near the top of a tank of lukewarm water so that the water can circulate through the drum. The high density of the concentrated solution will promote circulation from the top to the bottom of the tank. This method will provide both faster solu-