

equipment must be kept a safe distance from the tank being cleaned

Protective equipment

Although full details on personal protective equipment can be found in Chapter 19, it is well to discuss specifics concerning tank cleaning here

It is considered good practice to wear watertight rubber boots, thoroughly cleaned and in good condition, for tank cleaning. It is advisable to wear rubber or impermeable gloves, but, if the work does not permit their use, a protective cream recommended for the exposure should be used. In an atmosphere which is dangerously irritant or corrosive to the skin, a complete outfit of impervious clothing must be worn.

Supplied-air hose masks with blowers and safety harnesses with lifelines, or self-contained or self-generating breathing apparatus, must be worn by men entering tanks unless the person in charge has determined that the vapor concentration is below the threshold limit value (see Chapter 38, "Industrial Toxicology") and that no oxygen deficiency exists.

If a test of the tank shows it to be deficient in oxygen, whether or not it is otherwise immediately hazardous to life, the tank should be ventilated with fresh air and be checked for oxygen before entering with approved breathing apparatus. This can be either a compressed-air type of self-contained breathing apparatus, a self-generating type, or air-supplied type. The fit of the facepiece should be carefully checked before the workman enters the tank. If the environment contains a substance that is dangerously irritant or corrosive to the skin (lead tetraethyl, for example), the breathing apparatus may be supplemented by complete attire of impervious clothing.

Some medical authorities advise that individuals with broken eardrums not work in vapor-laden atmospheres, because no mask will protect these abnormal openings.

The supplied fresh air hose mask with blower is generally the best type of respiratory equipment for continuous use in a tank.

Proper procedures

A tank should be free of gas before any work is performed inside it.

A worker should not be allowed to enter a gassy or oxygen-deficient tank unless absolutely necessary, such as in an emergency. When this is necessary, the man should be attended on the outside by another worker who is similarly outfitted with approved respiratory protection and protective attire as needed so that the latter can rescue the man in the tank if necessary. In some states this is a legal requirement.

Men engaged in tank cleaning should be instructed in the method of giving artificial respiration and should be retrained periodically. If a tank cleaner is overcome by vapor or gas, he should be removed to fresh air immediately and given artificial respiration until he resumes breathing. A physician should be summoned, and the resuscitated man kept quiet and warm until breathing and circulation are normal.

The sense of smell cannot be relied upon for an accurate estimate of the amount of flammable vapor present in a tank. It does, however, give warning that vapors of some kind are present. Symptoms of dizziness, nausea, and headache indicate that a dangerous concentration of flammable and toxic vapors is present. Exposed workers should leave the contaminated area immediately and not return until vapors have been cleared.

Workers should always have a clear path of escape from a tank and should bear in mind that they may have to use it in a hurry. A ladder should always be used when a tank must be entered from above, and it should be left secured in place until the last man is out of the tank. Under severe conditions, a lifeline is recommended to assist with rescue work.

Burning, welding, cutting, and spark-producing operations should not be permitted in a tank until the area to be heated has been thoroughly cleaned and tests have determined that the tank atmosphere is vapor free. Where any vapor is present, further ventilation will be required to remove it from the tank.

Hot work repairs (welding and cutting) should not be made whenever other means can be used more safely. Even after a tank has been freed of vapor, combustible mixtures again may be formed through admission of flammable vapors or liquids from other sources, such as an unblanked line or con-