

FLAMMABLE AND COMBUSTIBLE LIQUIDS

a gassy or oxygen deficient tank unless he is attended on the outside by another worker who is similarly outfitted with appropriate respiratory (hose mask with blower, prescribed gas mask, or self-contained or self-generating breathing apparatus) and protective attire as needed so that the latter can rescue the man in the tank in case of an emergency

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.

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 the vapor 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 connection, a break in the bottom of the tank, sludge, sediment, or sidewall scale, or wood structures soaked with the liquid. The

interior framing of floating tank roofs can trap quantities of liquids that will release vapors. Therefore, periodic tests with a combustible gas indicator should be made during the hot work.

Burning or cutting may release lead fumes from paint on either the inner or outer surface of the tank or from some other source. An approved mask for protection against lead may be necessary, or it may be advisable to exhaust the fumes. Wood supports inside the tank should be protected or removed before hot work is begun.

Some companies use low-voltage transformers to eliminate the danger of electric shock, especially when men are required to work in wet areas. All portable electrical equipment should be grounded.

Cold work in a tank may present a dust problem, and approved dust respirators and goggles should be worn if tests definitely show that wearing of a hose mask is not necessary.

Gas tests should be made frequently if the presence of gas is suspected. The concentration of gas or vapor in a tank or vessel may increase as work progresses, especially if the inside of the tank is scraped or heated during the operation.

Forced ventilation may be required in many cases where repair work is to be done inside a tank.

Where fumes develop from welding or other repair work, mechanical air movers should be used or the workmen should wear fresh air hose masks. On a large tank, a door sheet or sheets may be removed for ventilation after the tank has been made gas free. The opening also can be used to expedite removal of sediment and to increase illumination.

If a tank has been closed for some time, there may be a deficiency of oxygen due to rusting (oxidation) of the metal of the tank. In that case, no one should enter the tank without a supplied air mask or, for a relatively brief stay, a self-contained or self-generating breathing apparatus.

Steps to clean aboveground tanks

Here in step-by-step form is a summary of a typical procedure for cleaning tanks that have contained flammable or combustible liquids.