

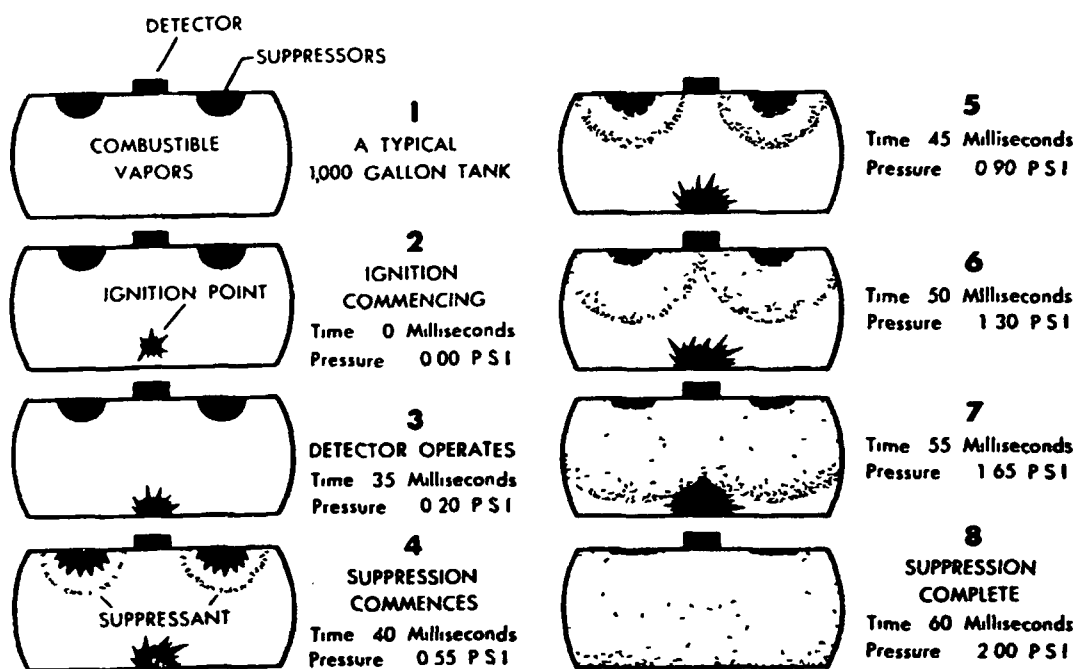


FIG 43-37—Schematic diagram of suppression of an explosion in a large cylindrical tank

Courtesy National Fire Protection Association

pressure changes. When rapid changes take place, such as caused by product withdrawal, a means is provided which opens a large supply line until the pressure equalizes. This type of system is extremely efficient and has the advantage of reducing product vapor losses by maintaining a slight positive pressure within the chamber.

Preventing explosions

There are a number of methods for preventing the development of explosive mixtures. They are the first line of defense against explosions.

Equipment for handling and storing of flammable gases should be constructed, inspected, and maintained so that the danger of leakage and explosive mixture formation is reduced to a minimum. Equipment design should comply with existing codes and other regulatory ordinances. Equipment should be inspected at regular intervals by qualified individuals either from the regular plant staff or from an outside source.

Ventilation will prevent excessive accumulations of gases and vapors under certain conditions. The method of ventilation neces-

sarily varies with the nature of the gas or vapor to be removed and depends upon whether it is heavier or lighter than air at the point of removal. Inasmuch as heating or cooling of the gas or vapor may change its density, the ventilation or exhaust system, or both, should be designed for operating conditions and should not be based on the published density figures. (See NFPA Standard No. 91, *Blower and Exhaust Systems, Dust, Stock and Vapor Removal*.)

Natural draft ventilation may be through openings near the floor or near the ceiling or both. However, the best method is a positive local exhaust system, using explosion-proof electrical equipment and taking suction as close to the source of a vapor or gas as possible. A motor other than explosion-proof driving an exhaust fan, may be used if it is properly installed outside the dust work and outside the hazardous area.

In general, industrial gases, such as acetylene, carbon monoxide, hydrogen, and natural gas, are lighter than air. The vapors of flammable liquids are generally heavier than air. Examples are alcohol, naphtha, gasoline, benzene, kerosene, amyl acetate, and carbon di-