

Dow Chemical Company Freeport, Texas

Dow produces or uses 30 regulated chemical substances in its Freeport, Texas facility. Dow's Risk Management Plan (RMP) filed with the U.S. Environmental Protection Agency (EPA) includes chemicals that are most dangerous to human health and the environment in the event of a release. These RMP-reported chemicals include (among others): phosgene, chlorine and vinyl chloride. Other chemicals of concern include hydrochloric acid, ammonia, ethylene dichloride and epichlorohydrin.

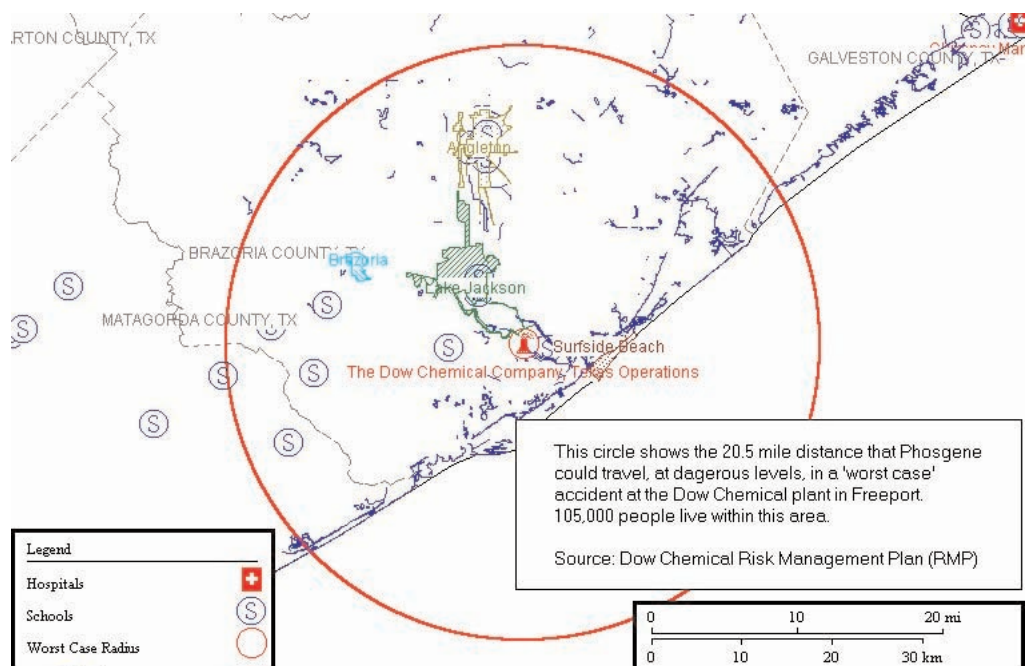
In 2000, the Dow facility in Freeport released 387,356 lbs. of carcinogens into the air and 8,540 lbs. into the water, according to its own reports to the EPA. This includes 701.9 grams of dioxin (total 2,3,7,8 dioxins and furans). The Dow facility in Freeport produces more than 4.5 times more dioxin than any other facility in Texas.

According to the U.S. Public Interest Research Group, Texas experienced greater releases of carcinogens, neurological toxicants and dioxins than any other state in 2000. Recently, it was discovered that Dow has off-site environmental contamination in Freeport. In the area known as Lake Jackson, Dow's open-air waste pits have leaked into the Brazos River and the groundwater 35 to 80 feet below the surface.

Chemical Profiles

Phosgene is a colorless gas with a suffocating odor like musty hay. It is extremely toxic when inhaled and inhalation is the major route of phosgene toxicity. Phosgene also breaks down into hydrochloric acid and carbon dioxide on contact with water, making an accident or accidental exposure even more hazardous.

Phosgene is used as an intermediary in the manufacture of many chemicals, including isocyanates, polyurethane, polycarbonates, dyes and pesticides. Combustion of phosgene can lead to the formation of dioxins, which the EPA considers to be a long-term threat to the general human population. The Dow facility in Freeport holds 71,500 lbs. of phosgene.



Chlorine is a greenish gas used as a bleaching agent and to make plastics and fertilizers. When chlorine is combined with other carbon-based substances, dioxins can be formed. Moreover, the combustion of chemicals and other materials containing chlorine is commonly regarded as the number one source of dioxins. The Dow facility in Freeport stores 7,667,963 lbs. of chlorine.

Vinyl Chloride is a colorless, extremely flammable gas used to make polyvinyl chloride (PVC) plastics. Cancer is a major concern from exposure to vinyl chloride via inhalation. Long-term exposure to vinyl chloride is known to result in a rare liver cancer, angiosarcoma. Studies have reported effects on the liver, kidney, and central nervous system in animals from chronic exposure to vinyl chloride.

Combustion of materials containing vinyl chloride, such as PVC pipes or siding, can result in the formation of dioxins. The Dow facility in Freeport stores 16,000,000 lbs. of vinyl chloride.

Hydrochloric Acid is a clear liquid with a strong sour smell. The primary concern over hydrochloric acid is its corrosiveness and the lung damage it causes when inhaled. For example, firefighters exposed to hydrochloric acid formed from the burning of PVC wiring, have suffered permanent damage to their lungs. During combustion, hydrochloric acid and carbon-containing materials react to form dioxins. The Dow facility in Freeport contains 7,326,161 lbs. of hydrochloric acid.

Ammonia is a colorless, highly irritating gas with a pungent, suffocating odor. Ammonia is among the five most abundantly produced chemicals in the world. Most is used in fertilizers. Exposure to ammonia may be fatal if it is inhaled. Even fairly low concentrations of ammonia produce rapid onset of eye, nose, and throat irritation; coughing and bronchospasms. Ammonia goes from liquid to gas easily, where it can spread quickly. The Dow facility in Freeport stores 658,000 lbs. of ammonia.

Ethylene Dichloride (EDC) is a clear flammable gas or liquid used to make vinyl chloride, during which it releases dioxin, a known human carcinogen. EDC effects the central nervous system and is considered extremely toxic. Combustion of EDC can lead to dioxin formation. The Dow facility in Freeport holds 523,000 lbs. of EDC.

Epichlorohydrin (Epi) is clear liquid with an irritating smell and a known carcinogen in animals. Epi is classified by the National Institutes of Health (NIH) as "reasonably anticipated to be a human carcinogen." Combustion of epichlorohydrin can lead to dioxin formation. The Dow facility in Freeport holds 16,214,051 lbs. of epichlorohydrin, and 148,532 lbs. were release into the air in 1999. This facility also accounts for 41 percent of total emissions of epi into the air and 96 percent of total emissions into the water, in the United States, according to the NIH.

Alternatives

Safer substitutes exist for most dangerous chemicals and Congress is currently considering legislation that would require chemical companies to take steps to reduce or eliminate chemical hazards.

Any plans to phase out toxic chemicals and switch to safer substitutes will take time and require an orderly transition. Plans must prevent or compensate for economic or social dislocation that will protect public and worker health and environment from persistent and toxic chemicals. A transition fund should be established to assist workers and communities affected by any transition, provide educational opportunities, income protection and health insurance.

Sources: Agency for Toxic Substances and Disease Registry Web site; U.S. Public Interest Research Group Web site; Oxford University Web site; Vulcan Chemical Web site; the National Institutes of Health Web site; National Institute for Occupational Safety and Health Pocket Guide to Chemical Hazards; Risk Management Plan, Dow Chemical Company, Texas Operations, Freeport.