Seveso Disaster

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https://www.worldatlas.com/articles/what-happened-during-the-seveso-disaster.html

Activity

Seveso is a small town in Italy, 15 miles from Milan. About 17,000 people inhabit this city. The Icmesa Chemical Company owned a plant in Seveso and its product was hexachlorophene, a bactericide, with trichlorophenol produced as an intermediate. During normal operations, a small amount of TCDD is produced in the reactor as an undesirable side-product.

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Hazard

TCDD is one of the most potent toxins known to man. Studies in animals show TCDD to be fatal in small doses as small as 10^{-9} times the body weight. This chemical is insoluble in water, which makes decontamination difficult

Preventative Actions and Safeguards

Analyze a process before any system is started up and have proper operating procedures.

Contingency Plan/ Mitigating Actions

Ensure a proper emergency response is in place if any release were to occur.

Initiating Event

On July 10, 1976, the trichlorophenol reactor reached a higher than normal operating temperature and increased the production of TCDD

Incident

This critical level set off a pressure release valve opening it and emitting about six metric tons of toxic gas over the city of Seveso, contaminating about 10 square miles. Due to poor communication between the plant and the local authorities, evacuation of Seveso took up to seven days after the release of TCDD. By that time, over 250 cases of chloracne (an acne-like disease that can persist for several years) were reported. Over 700 inhabitants were evacuated from the most severely contaminated areas. No immediate human fatalities happened, however a small number of domestic animals in the area died due to exposure. This release also cause more than 77,000 animals to be slaughtered in order to protect the food chain.

Lessons Learned

This accident could have been prevented. First, with the design of the reactor and ensuring a proper containment system is present in case of an unwanted release. Proper hazard evaluation was not originally completed otherwise the hazards could have been identified and corrected before the release occurred. A process should always be properly evaluated of the dangers before start up. Improvement on emergency response is critical for the safety of everyone in the city. There are now strict regulations and requirements in Europe for facilities storing, manufacturing or handling hazardous materials. These plants must notify local authorities and communities about the nature of their facility, and to construct and publicize measures to prevent and respond to any future accidents that could occur.