

Process Safety Incident of the Week Seveso Disaster

<https://www.alexandani.com/rings/lotus-peace-petals-spoon-ring.html>

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. 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^{-6} times the body weight. This chemical is insoluble in water, which makes decontamination difficult. On July 10, 1976, the trichlorophenol reactor reached a higher than normal operating temperature and increased the production of TCDD. 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. The poor communication between the local authorities and the plant caused civilian evacuation to be seven days after the release. By then, over 250 cases of chloracne (an acne-like disease that can persist for several years) were reported. Over 600 people were evacuated, and an additional 2000 people were given blood tests. The most severely contaminated area next to the plant was fenced and is still in the same condition today.



Lessons Learned

This accident could have been avoided if the reactor had a proper containment system. The proper application of fundamental engineering safety principles would have prevented this accident. First by following proper procedures, the initiation steps would not have occurred and also by using proper hazard evaluation procedures. If proper procedures were followed, the hazards could have been identified and corrected before the release occurred. The response to the release was widely criticized for how slow it took to announce the accident to the city. Lessons taken from this disaster is the tough regulations and requirements now in place for facilities storing, manufacturing or handling hazardous materials. The facilities in Europe must inform local authorities and communities about the nature of their facility, and to create and publicize measures to prevent and respond to any accident that could arise.