



Online Ethics Center
FOR ENGINEERING AND SCIENCE

The Love Canal Disaster: An Error in Engineering or Public Policy?

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Year

1996

Description

A student-written essay dealing with the causes of the Love Canal toxic waste case. This essay was the second-place winner in a 1996 OEC contest for student-authored websites on topics in science and engineering ethics.

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Historical Background

The purpose of this page is to inform the reader of the horrendous mistakes that were made to the "Love Canal" area of New York and to its residents. The errors made will continue to effect the local environment for thousands of years, and has made genetic mutations that will survive for generations.

Near the end of the nineteenth century, after America was once again a unified country, the entrepreneurial pioneers looked towards shipping. Many canals, such as the C&O and Erie Canals, unified American waterways to provide an efficient shipping system. In 1894, venture capitalist William Love envisioned a "power canal" (the purpose of which was to supply cheap hydroelectric power) in the Niagara Falls region of New York State. Construction began on Love's vision, but soon a depression hit the nation, and Love was left with no investors and little more than an empty ditch. "Love Canal" -- as the hole became affectionately known by the local townspeople -- became a swimming hole in the summer, and an ice skating rink in the winter. This attitude towards the canal was to end by the mid-1900's.

In 1942, Hooker Chemical and Plastics Corporation negotiated a deal with the current title-holders of the land, the power company, whereby the Corporation was allowed to dump any wastes into the canal. Hooker finally bought out the land, and its surroundings, in 1947. To the company's defense, [the chemicals were dug into impermeable clay soil [oec]], but many tons of hazardous, indeed deadly, chemicals were then dumped into the Love Canal. Local homeowners were not apt to complain, for environmental concerns were not at such a forefront of social consciousness as they are today, and also the Hooker Corporation was a large employer in the area. What was the Love Canal became a huge field upon which children could play soccer.

And so, the disaster began...

A Chemical Timebomb

In 1950, all of the dumping into the Love Canal was completed. The Hooker Company went to great lengths to seal the chemicals forever. The Canal was dug into impermeable clay soil [oec] and a [oec] clay soil cap [oec] was placed on top to prevent any rain water from leaking in. The precautions made were, in fact, more than sufficient.

About the same time, the district school board was looking for a place to send all of the baby boomer children entering school. Eyeing the large field, the board approached the Hooker Plastics and Chemical Corporation. Hooker was eager to get rid of the virtual wasteland, but did not want to give the risk to the public. The company went so far as to make test digs into the ground to prove the existence of the chemicals to the government executives. Despite the warnings, however, the school board prepared eminent domain cases. Reluctantly, the company gave the land over nearly for free, and in return was loosened of all liability.

What followed was series of follies by the local government. First, dirt was removed from above the dump to provide for the building of a school. Some of the cement cap was also removed, allowing rain to seep in. The school became the first in the area without a basement, for obvious reasons. Later, the city constructed a sewer line that penetrated a few of the cement walls. Surrounding the lines was *permeable* gravel. In 1960, a storm drain was put in place that pierced the wall of the covering. The punctures allowed any and all chemicals to be able to swept away with the rain water into surrounding lakes, rivers, and wells. As the area's population density increased, pressure was put upon the city government to sell the land for development, which is exactly what happened in the later 1960's.(2)

Finally, the attention of many people became the focus the ever growing problem of Love Canal.

Besides breathing toxic fumes, people were exposed to actual pools of chemicals bubbling up to the surface. Slowly, as the mass media began to draw attention toward the ever-growing problem, the U.S. government got involved. Slowly, homes were evacuated. By 1980, everyone was allowed to evacuate.

A Corporate, Governmental, and Fatal Error

In all, 20,000 tons of 248 assorted chemicals were buried at Love Canal, including: the pesticide hexachlorocyclohexane (known as Lindane), chlorobenzenes, chlorinated hydrocarbons, benzene, chloroform, trichloroethylene, methylene chloride, benzene hexachloride, phosphorous rocks, polychlorinated biphenyls, and 1, 3, 7, 8- tetrachlorodibenzo- para-dioxin (or just dioxin). There was an estimated 130 pounds of dioxin contained at the Love Canal dumpsite; it has been estimated that three ounces can kill in excess of one million people. (1)[\(3\)](#) With that degree of chemical contamination, it is easy to blame the Hooker Chemical Company, as the media and public did, but were they at fault?

The Hooker Company took great precautions, especially when compared to the standards of the day, in [digging the chemicals into impermeable clay soil [oec]]. They did "sell" the land to the government, when they had to expect the land would be developed, but they were nearly forced to under the threat of [eminent [oec]] domain cases. Even after the land was sold, Hooker continued to try to stop development of the land. It was the local government who went against all repeated warnings and tried to profit off of the contaminated land.[\(5\)](#)

The government knew of the chemicals, but pierced the clay container more than a few times for the sake of fill dirt, and to put sewer lines in place. Then, by selling the land for development, they virtually asked for attention to be brought to the site. It was the government's shoddy handling of the waste land, and their concern for money over their constituents, that caused the ultimate Love Canal Disaster.

How Much Did (Does) the Love Canal Cost Us?

The cost of the Love Canal waste dump is not yet well documented. Many of the long-term health effects due to exposure to the chemicals are not yet known. Some

short-term effects have started to show up, though. In one case, a woman's genes mutated so that all of her children, and her children's children, and so on, will be permanently blind. In another case, two brothers came into direct skin contact with some chemicals that had bubbled to the ground surface. One has chronic ear problems, the other respiratory problems. Other known problems are miscarriages, liver abnormalities, and rectal bleeding.⁽³⁾ In at least one case, a health accident occurred in [which a child [oec]] collected some [pieces of [oec]] phosphorus lying on the ground, and put them in his pocket. There, they ignited and burnt much of his leg.

Monetarily speaking, the cost of the evacuation of the Love Canal, and the cleanup of that site specifically, is insignificant [when compared with (oec)] the overall cost of the disaster. The real cost [lies in the cost (oec)] of the national toxic waste cleanup fund, or Superfund. This fund, established in 1980 and greatly increased in 1986, was the United States government's response to the cause celebre that the Love Canal became. Love Canal was, by comparison, a smaller site than many others, but it received the most media attention.

Superfund was supposed to clean up all of America's toxic waste dumps. The fund was established through a tax on oil producers and chemical manufacturers. The Superfund has now spent over ten billion dollars, but has accomplished little. "'All sides agree that the Superfund program for cleaning up hazardous wastes sites is not working as intended and that progress on permanent cleanups has been painfully slow,' former Environmental Protection Agency administrator Russell Train wrote earlier this year."⁽⁴⁾ The most famous toxic waste site in America's history has cost us money, life, and land.

Will It Ever Be Clean? And, How Clean is Clean?

They say that out of all bad things, must come some good. If any good came out of the Love Canal, it is that America has wakened up to its growing toxic waste problem. Superfund is *currently* ineffective, but with the growing environmentalism of the 1990's, perhaps a real solution might come. The Love Canal Toxic Waste Dump Site has opened our eyes to America's need to find a real, permanent

solution.

The Love Canal area today is starting to be re-inhabited. The chemicals there will not decompose for approximately 20,000 years, the genetic mutations will survive indefinitely, the legend and stigma will live on in history books. Who knows how long the lesson will be remembered?

Referenced Material

1. Andleman, J.B. and Underhill, D.W., editors. Health Effects from Hazardous Waste Sites. Lewis Publishers, Inc., Michigan: 1987.
 2. Levine, A.G., Love Canal: Science, Politics and People. Lexington Books, 1982. [oec].
- [\(3\)](#) [a](#) [b](#) Nader, Ralph II; Brownstein, Ronald III; Richard, John, ed. Who's Poisoning America. Sierra Club Books, San Fransisco: 1981.
 - [\(5\)](#) Some additional documentation for these conclusions can be found in Eric Zuesse's 1981 article in Reason magazine.
 - [\(4\)](#) Stroup, Richard L. and Shaw, Jane S. "The Free Market and the Environment," The Public Interest. Fall 1989, pp. 30-43.

Notes

Author: Joshua Hertz, Alfred University student, 1996.

A note from the Online Ethics Center: This report was a second-place winner in a 1996 contest for student-authored websites on topics in science and engineering ethics. The opinions and conclusions are the author's own, not those of the staff of the Online Ethics Center. In some cases we have corrected factual errors. These corrections are contained in square brackets and marked with "[oec]". Photos that originally accompanied the essay have been removed, because we could not identify their source or contents.

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