

## CERCLA Case Study of Love Canal, Part I

The article below was written by Eckhardt Beck, who was administrator of the U.S. Environmental Protection Agency's Region 2 from 1977 to 1979. This article describes his account of the Love Canal situation until 1979, when the tragedy was still emerging. It ends with his plea to create a law that will hold polluters accountable for their actions.

### **The Love Canal Tragedy**

by Eckardt C. Beck, *EPA Journal*, January 1979

Quite simply, Love Canal is one of the most appalling environmental tragedies in American history. But that's not the most disturbing fact. What is worse is that it cannot be regarded as an isolated event. It could happen again—anywhere in this country—unless we move expeditiously to prevent it.

It is a cruel irony that Love Canal was originally meant to be a dream community. That vision belonged to the man for whom the three-block tract of land on the eastern edge of Niagara Falls, New York, was named: William T. Love. He felt that by digging a short canal between the upper and lower Niagara Rivers, power could be generated cheaply to fuel the industry and homes of his would-be model city. But despite considerable backing, Love's project was unable to endure the one-two punch of fluctuations in the economy and Nikola Tesla's discovery of how to economically transmit electricity over great distances by means of an alternating current.

By 1910, the dream was shattered. All that was left to commemorate Love's hope was a partial ditch where construction of the canal had begun. In the 1920s, the seeds of a genuine nightmare were planted. The canal was turned into a municipal and industrial chemical dumpsite.

Landfills can, of course, be an environmentally acceptable method of hazardous waste disposal, assuming they are properly sited, managed, and regulated. Love Canal will always remain a perfect historical example of how not to run such an operation. In 1953, the Hooker Chemical Company, then the owners and operators of the property, covered the canal with earth and sold it to the city for one dollar. It was a bad buy. In the late '50s, about 100 homes and a school were built at the site. Perhaps it wasn't William T. Love's model city, but it was a solid, working-class community. For a while.

On the first day of August 1978, the lead paragraph of a front-page story in the *New York Times* read:

NIAGARA FALLS, N.Y.—Twenty-five years after the Hooker Chemical Company stopped using the Love Canal here as an industrial dump, 82 different compounds, 11 of them suspected carcinogens, have been percolating upward through the soil, their drum containers rotting and leaching their contents into the backyards and basements of 100 homes and a public school built on the banks of the canal.

In an article prepared for the February 1978 *EPA Journal*, I wrote, regarding chemical dumpsites in general, that "even though some of these landfills have been closed down, they may stand like ticking time bombs." Just months later, Love Canal exploded. The explosion was triggered by a record amount of rainfall. Shortly thereafter, the leaching began.

## CERCLA Case Study of Love Canal, Part I (continued)

I visited the canal area at that time. Corroding waste-disposal drums could be seen breaking up through the grounds of backyards. Trees and gardens were turning black and dying. One entire swimming pool had popped up from its foundation, afloat now on a small sea of chemicals. Puddles of noxious substances were pointed out to me by the residents. Some of these puddles were in their yards, some were in their basements, and others yet were on the school grounds. Everywhere the air had a faint, choking smell. Children returned from play with burns on their hands and faces.

And then there were the birth defects. The New York State Health Department is continuing an investigation into a disturbingly high rate of miscarriages, along with five birth-defect cases detected thus far in the area. I recall talking with the father of one the children with birth defects. "I heard someone from the press saying that there were *only* five cases of birth defects here," he told me. "When you go back to your people at EPA, please don't use the phrase '*only* five cases.' People must realize that this is a tiny community. Five birth defect cases here is terrifying."

A large percentage of people in Love Canal are also being closely observed because of detected high white-blood-cell counts, a possible precursor of leukemia. When the citizens of Love Canal were finally evacuated from their homes and their neighborhood, pregnant women and infants were deliberately among the first to be taken out. "We knew they put chemicals into the canal and filled it over," said one woman, a long-time resident of the Canal area, "but we had no idea the chemicals would invade our homes. We're worried sick about the grandchildren and their children." Two of this woman's four grandchildren have birth defects. The children were born and raised in the Love Canal community. A granddaughter was born deaf with a cleft palate, an extra row of teeth, and slight retardation. A grandson was born with an eye defect.

Of the chemicals that compose the brew seeping through the ground and into homes at Love Canal, one of the most prevalent is benzene—a known human carcinogen, and one detected in high concentrations. But the residents characterize things more simply. "I've got this slop everywhere," said another man who lives at Love Canal. His daughter also suffers from a congenital defect.

On August 7, New York Governor Hugh Carey announced to the residents of the Canal that the state government would purchase the homes affected by chemicals. On that same day, President Jimmy Carter approved emergency financial aid for the Love Canal area (the first emergency funds ever to be approved for something other than a "natural" disaster), and the U.S. Senate approved a "sense of Congress" amendment saying that federal aid should be forthcoming to relieve the serious environmental disaster that had occurred. By the month's end, 98 families had already been evacuated. Another 46 had found temporary housing. Soon after, all families would be gone from the most contaminated areas—a total of 221 families have moved or agreed to be moved. State figures show more than 200 purchase offers for homes have been made, totaling nearly \$7 million.

A plan is being set in motion now to implement technical procedures designed to meet the seemingly impossible job of detoxifying the Canal area. The plan calls for a trench system to drain chemicals from the Canal. It is a difficult procedure, and we are keeping our fingers crossed that it will yield some degree of success. I have been very pleased with the high degree of cooperation in this case among local, state, and federal governments, and with the swiftness by which the Congress and the president have acted to make funds available. But this is not really where the story ends. Quite the contrary.

## CERCLA Case Study of Love Canal, Part I (continued)

We suspect that there are hundreds of such chemical dumpsites across this nation. Unlike Love Canal, few are situated so close to human settlements. But without a doubt, many of these old dumpsites are time bombs with burning fuses—their contents slowly leaching out. And the next victim could be a water supply, or a sensitive wetland. The presence of various types of toxic substances in our environment has become increasingly widespread—a fact that President Carter has called “one of the grimmest discoveries of the modern era.” Chemical sales in the United States now exceed a mind-boggling \$112 billion per year, with as many as 70,000 chemical substances in commerce. Love Canal can now be added to a growing list of environmental disasters involving toxics, ranging from industrial workers stricken by nervous disorders and cancers to the discovery of toxic materials in the milk of nursing mothers.

Through the national environmental program it administers, the Environmental Protection Agency is attempting to draw a chain of congressional acts around the toxics problem. The Clean Air and Water Acts, the Safe Drinking Water Act, the Pesticide Act, the Resource Conservation and Recovery Act, and the Toxic Substances Control Act—each is an essential link. Under the Resource Conservation and Recovery Act, EPA is making grants available to states to help them establish programs to ensure the safe handling and disposal of hazardous wastes. As guidance for such programs, we are working to make sure that state inventories of industrial waste disposal sites include full assessments of any potential dangers created by these sites.

Also, EPA recently proposed a system to ensure that the more than 35 million tons of hazardous wastes produced in the United States each year, including most chemical wastes, are disposed of safely. Hazardous wastes will be controlled from point of generation to their ultimate disposal, and dangerous practices now resulting in serious threats to health and environment will not be allowed.

Although we are taking these aggressive strides to make sure that hazardous waste is safely managed, there remains the question of liability regarding accidents occurring from wastes disposed of previously. This question covers a missing link. But no doubt the question will be addressed effectively in the future.

Regarding the missing link of liability, if health-related dangers are detected, what are we as a people willing to spend to correct the situation? How much risk are we willing to accept? Who’s going to pick up the tab? One of the chief problems we are up against is that ownership of these sites frequently shifts over the years, making liability difficult to determine in cases of an accident. And no secure mechanisms are in effect for determining such liability.

It is within our power to exercise intelligent and effective controls that are designed to significantly cut such environmental risks. A tragedy, unfortunately, has now called upon us to decide on the overall level of commitment we desire for defusing future Love Canals. And it is not forgotten that no one has paid more dearly already than the residents of Love Canal.

*Source: Adapted from [www.epa.gov/history/topics/lovecanal/01.htm](http://www.epa.gov/history/topics/lovecanal/01.htm).*

## Researching Superfund Sites

So far, approximately 1,300 Superfund sites have been placed on the National Priorities List. Sites on the National Priorities List are those places that represent an immediate and severe threat to human health. Although those sites are scheduled for total cleanup, the degree to which they are improved varies and takes an average of 12 years. Cleanup of a site must use the most cost-effective methods, which have taken approximately \$30 million per site. Use the following questions and the websites listed to learn more about Superfund sites in the United States.

### Understanding What Has Passed

Go to the Environmental Protection Agency's (EPA's) website at [www.epa.gov/superfund/20years/index.htm](http://www.epa.gov/superfund/20years/index.htm), and click on "Chapter 2: The Birth of Superfund." Read pages 1, 2, and 3 of that chapter. (Note that the numbers used herein match the numbers in the teacher's guide.)

In the space below, briefly describe what the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is and why it was created.

---



---



---



---



---

### The Road That Lies Ahead

For the next part of the activity, you will be researching the pollutants that affect the air, soil, and water of a particular county using [www.scorecard.org](http://www.scorecard.org). After entering the zip code of your selected county, scroll down to the section titled "Toxics" to answer the following questions.

How is your county ranked among other counties in the United States?

---



---

What are the names of the top polluting companies in your county?

---



---

What are the top polluting chemicals that are released in your county?

---



---

What is the risk of exposure to lead in the houses in your county?

---



---

## Researching Superfund Sites (continued)

Click on the bullet "See how your county stacks up against all others in the U.S." under the heading "Toxic Chemicals Released by Factories, Power Plants, and Other Industrial Companies." Then scroll down to the blue heading "TRI Data Summary" to find information to answer questions 6-10.

How many National Priority List or "Superfund" sites are in your county? \_\_\_\_\_

How many sites are in the preliminary stages (they would be listed as remedial assessment or emergency removal of contaminants)? \_\_\_\_\_

How many sites are currently being prepared for decontamination (they would be listed as study under way, remedy selected, or design under way)? \_\_\_\_\_

How many sites are currently being decontaminated (construction under way)? \_\_\_\_\_

How many sites have completed cleanup? \_\_\_\_\_

Return to the "Pollution Report Card" page. Under the heading "Worst Toxic Waste Sites (Superfund Sites)" in the "Toxics" section, click on the bullet "See what Superfund sites are in your community." Select a Superfund site to research with your lab group. You will need to gather as much information as possible so that you can explain how this site became contaminated, can describe its contaminants, and can explain what the EPA expects to do to clean up this site.

What is the source of the contamination? What type of industry has contaminated the site?

---

---

How could the contamination have been avoided?

---

---

What are the primary chemicals that have been released at this site?

---

---

Read the "Threats and Contaminants" section for your Superfund site, and answer the following questions. What are the greatest threats these chemicals pose to the environment?

---

---

---

---

---

---

## Researching Superfund Sites (continued)

How has the area been affected by the contamination (groundwater, surface water, air, soil, or other)? Include a description of any information that is directly below this chart.

---



---

What are the "Pre-Cleanup Rankings" for this site?

---



---

Click on one of the chemicals, and read the information on the page that pops up. Scroll down, and click on the "Links" section after you have read this page; next click on "EPA Health Effects Notebook for Hazardous Air Pollutants" or "EPA Office of Groundwater and Drinking Water Contamination Fact Sheet." Read this page, and then write a summary of where this chemical comes from and how it affects human health. Note: Links for different locations may have other summaries.

### Preparation for Your Presentation

Go to [www.epa.gov/superfund/sites/query/basic.htm](http://www.epa.gov/superfund/sites/query/basic.htm) to look up your county and state (press "Submit Query" after county and state have been entered). If there are any blue checkmarks on the chart that appears, you can click on those checkmarks to get information about that site.

Use the Internet to search for more information on your Superfund site or the contaminants in preparation for your presentation. You will probably need to conduct a search to find the most current information concerning cleanup progress. You must address these categories in your presentation:

- History of your Superfund site: Describe what industry used this site and what it did to contaminate the site.
- Pre-cleanup state: Describe how bad the contamination is rated for this site, as well as the areas contaminated (air, soil, water).
- Contaminants: Name and describe each chemical that is contaminating this site. Describe what the chemical does to human health and environmental health.
- Cleanup: Describe how the EPA plans to decontaminate this site. Describe what has been accomplished so far and what still needs to be completed. Describe what the level of contamination will be after the cleanup has been completed.

## Presentation Evaluation Rubric

Use the following rubric to grade each group presentation.

| <b>Score</b> | <b>Qualities Apparent in the Presentation</b>   |
|--------------|---|
| 5            | All members of the group participate in dispensing information. All group members demonstrate that they are informed about all aspects of this topic by answering questions and by assisting in explanations in any area ,either spontaneously or when called on. |
| 4            | All members of the group participate in dispensing information. Some group members demonstrate that they are informed on aspects of this topic other than the topic they presented by answering questions and by assisting in explanations in those other areas.  |
| 3            | Each group member dispenses at least one fact or area of information. Each group member demonstrates knowledge of the particular area that the group is presenting, but they do not seem well versed in the areas of knowledge of their teammates.                |
| 2            | One person in the group does not participate and does not demonstrate knowledge of the subject being presented.   |
| 1            | More than one person in the group does not participate and does not demonstrate knowledge of the subject being presented.   |