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LOVE CANAL: A RETROSPECTIVE

By Gerald B. Silverman

In the 11 years since President Jimmy Carter first declared a federal emergency at a blue-collar neighborhood in Niagara Falls, the words "Love Canal" have become so widely known that they are virtually synonymous with toxic waste.

For many, the two words have also come to symbolize corporate irresponsibility, government myopia, and the high human and environmental costs of living in an industrial society. For others, Love Canal is where good politics and bad science collided, causing hysteria, hype, and overreaction.

For the families who lived in the 10-block area surrounding the site, Love Canal, like the death of a loved one, is something they live with every day of their lives.

There are still a number of questions—indeed, some of the most important questions—that remain unanswered more than a decade after the events at Love Canal shocked the nation. Who should pay for the damages inflicted on the environment, the people of the neighborhood, and their property? What effect did the 21,800 tons of toxic chemicals buried at the site have on the health of the people who lived nearby and the children who literally played on the dump site? Should the area be reinhabited? Who is to blame for the most famous environmental disaster in American history?

Impact

Most people agree that it was Love Canal that led to the passage of the Comprehensive Environmental Response, Compensation, and Liability Act (the federal superfund law) in 1980, a landmark piece of environmental legislation. And it was Love Canal that gave the environmental movement a shot in the arm by broadening its constituencies to include middle-class housewives. It was Love Canal that, in a number of ways, changed the way American companies do business. It was Love Canal that expanded the focus of environmental regulation from water and air pollution to include hazardous waste. And, perhaps most significantly, it was Love Canal that raised the consciousness of a nation about the dangers of hazardous waste.

Thomas C. Jorling, commissioner of the New York State Department of Environmental Conservation, said there was a serious gap in environmental regulation prior to Love Canal. According to Jorling, who was assistant administrator for water and hazardous materials at the Environmental Protection Agency from 1977 to 1979, "The reasons for the deficiency both in the state and federal level were the fact that air and water, which were addressed, had a deep legacy of being public trusts.

"Land, on the other hand, was private property and government had no business involving itself in what people did on their land," Jorling explained. "So it wasn't until there was some pretty demonstrable evidence that abuses on the land were also causing some problems off-site that there was any

rationale for government to intervene on it, and Love Canal provided that in spades."

So, in an attempt to fill the gap that Jorling described, Congress enacted CERCLA, providing a superfund to clean up other sites and establishing a liability scheme that has dramatically changed the way companies do business.

"The thing that has influenced companies' behaviors is the standards of liability in the federal law," Jorling said. "Joint and several liability is something that produces an extremely high standard of care in the corporate community. So, as a general matter, corporations have had [it] built into their decision-making requirements to be good corporate citizens regarding the management of waste because of those standards of liability that were produced by Love Canal."

Karen Florini, an attorney with the Environmental Defense Fund, said "everybody [in industry] really hates superfund. People go far out of their way nowadays to try to avoid things that will cause superfund liability." And, Florini said, superfund has had a significant impact on EPA itself by drawing resources from other programs, particularly from the Resource Conservation and Recovery Act. "I think a lot of the resources that perhaps should have gone to RCRA have gone to superfund."

Florini said the reasons why a disproportionate amount of EPA attention has gone to superfund is that toxic waste sites make big news and there probably are superfund sites in every congressional district, both raising the level of public pressure on EPA.

Agency Learns Its Lessons

Walter Kovalick, deputy director of EPA's Office of Emergency and Remedial Response, pointed out that CERCLA is one of the only EPA statutes that provides for direct federal action at the local level, which means that "EPA had to become better schooled in relating to citizens at the front line." Love Canal itself, he said, was "the advent of the era of the need for long-term citizen participation, both at individual sites and in national policy-making."

According to one environmentalist and former Love Canal resident, EPA, in some ways, has learned its lessons well. For example, the agency recently announced that a trailer park only three miles from Love Canal would be put on the superfund national priorities list and its residents will be offered permanent relocation because of hazardous wastes contaminating the site.

Patricia Brown, executive administrator of the Ecumenical Task Force, a Niagara Falls environmental group, said "EPA has moved very, very quickly on this" by setting up a trailer with information for residents, getting the Federal Emergency Management Agency involved and getting the site put on the national priorities list. Only months earlier, Brown, a former Love Canal resident, had criticized EPA's efforts, claiming that "the government has not learned one thing" from Love Canal.

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At the state level, the Health Department has set up a special office called the Health Liaison Program to foster a dialogue between health officials and citizens at hazardous waste sites. The program is run by Anita Gabalski, the state's public information specialist at the Love Canal site for some five years.

The chemical industry also has learned its lessons from Love Canal, according to Geraldine Cox, vice president of the Chemical Manufacturers Association.

"I think there was a recognition of industry that public opinion was important in how we did our operations," Cox said. "I think, up until that time, industry pretty much worked in a vacuum and the whole involvement of the public in our operations was pretty minimal. Now, we realize that the corporation is a lot like a citizen within a community, that you have to develop a corporate citizenship that goes beyond the profit motive and goes beyond just doing the letter of the law."

Cox said the chemical industry has undertaken a number of programs in the past decade to become good corporate citizens, including the Clean Sites Inc., an industry-funded mediation group; the Community Awareness and Emergency Response Program; and a plan for reductions in chemical releases.

Peter Berle, who is president of the National Audubon Society and was commissioner of the New York State Department of Environmental Conservation at the time of Love Canal, sees the change in the chemical industry differently. "I think that many more corporations had a kind of cowboy attitude about getting rid of the stuff," he said. "Whatever seemed to be convenient, as long as it didn't reflect badly on the corporate image."

Citizen Activists

The crisis at Love Canal actually became a boon to the environmental movement in the 1970s. Middle-class housewives and other average citizens became activists as they realized that their homes and neighborhoods were contaminated by wastes.

Housewife-turned-activist Lois Gibbs said the protests she spearheaded as the president of the Love Canal Homeowners Association had a tremendous impact because "it wasn't students organizing, it wasn't students protesting like in the Vietnam War days. It was homemakers and taxpayers and basically conservative, blue-collar communities who were standing up and saying, 'I'm not going to take this and you have to do something about it.'"

Gibbs, who is now executive director of Citizens Clearinghouse for Hazardous Waste in Arlington, Va., said, "Love Canal had a direct impact on hundreds and hundreds of communities. Beforehand, the American public never thought about dump sites. And then, all of a sudden after Love Canal, everybody started looking in their backyard, or they already knew it was there, but they just didn't realize what dangers were posed there. At Love Canal, we got like 3,000 phone calls from people who had a dump in their backyard and had never thought about it as being dangerous."

Adeline Levine, author of the book *Love Canal: Science, Politics, and People*, said, "The environmental movement had become quite professionalized" in the period before Love Canal. "Most important battles that were going on in the 70s were legal battles. Those things were extremely important, but they're extremely uninteresting to most people."

"What happened with the Love Canal was that the issue of the environment, the issue of pollution as hurting people, became vivid, right down to where you could understand," Levine, a sociology professor at the State University at

Buffalo, said. "You could really say, 'Gee, I'm like that person.'"

The Human Impact

The human impact of the disaster is beginning to take hold on the second generation of Love Canal residents: the children born in the neighborhood. Patricia Brown, whose house in the "second ring" area of contamination is now buried under a cap and a layer of grass and topsoil, said that her daughter, who is now in college, gets nightmares about Love Canal every three or four months. She dreams that she left something behind and has to go back to the house to get it.

Barbara Quimby, who has two daughters, one of whom is severely retarded, said she tells her other daughter that she has nothing to be ashamed of. "But she has to understand the severity of it when it comes to the chromosomes," she said. Quimby was born and raised in the Love Canal neighborhood and has chromosome damage herself. She said her daughter will have some important decisions to make, when it comes time to marry and have children of her own.

Quimby herself still has nightmares from Love Canal. She dreams that her husband has to go downstairs to fix their sump pump and, in the process, his hands disintegrate from chemicals in the pump. "I wake up in such a cold sweat." With her husband sound asleep, "I just have to shake him, I have to see his hands."

History

The 16-acre landfill that has become known as the Love Canal derived its name from a 19th century industrialist named William T. Love. He envisioned a model city in Niagara Falls, based on a canal between the upper and lower portions of the Niagara River. Under Love's plan, the canal would provide a means of transportation and a source of inexpensive hydroelectric power. However, an economic depression and the discovery of alternate current in the late 1890s, which eliminated the need for industry to locate near the source of power, caused Love to abandon his plan. The canal, which is located some 1,500 feet from the Niagara River and is 3,000 feet long by 100 feet wide, was then used as a swimming hole by residents.

In 1942, Hooker Chemical and Plastics Co., which is now Occidental Chemical Corp., purchased the land from the Niagara Power and Development Co. to use as a landfill for wastes generated at its chemical manufacturing facilities in Niagara Falls. According to the company, there were two main reasons why the Love Canal site was chosen. First, the area was sparsely populated. Occidental says early photographs of the area show that there were only six houses adjacent to the canal. Secondly, the site was chosen because of its geological characteristics—the canal is surrounded by clay, a substance of low permeability that still is used in landfills today.

From 1942 to 1953, Hooker dumped some 21,800 tons of chemicals in the canal, including chlorinated hydrocarbon residues, processed sludges, fly ash, and other materials. The City of Niagara Falls also used the site as a dump for municipal wastes for a number of years.

Among the specific chemicals Occidental has confirmed dumping at the canal are 200 tons of trichlorophenols that probably are contaminated with dioxin, 6,900 tons of lindane/BHC, 2,000 tons of chlorobenzenes, and 2,400 tons of benzyl chlorides. (See Table 1)

Moreover, an unknown amount of dioxin, as a constituent of the trichlorophenol waste, was disposed of at the landfill, probably less than 1 percent of the 200 tons of TCP, according to EPA.

In 1953, Hooker sold the property to the Niagara Falls school district for \$1, with a stipulation in the deed that chemical wastes were buried in the ground. The deed also sought to absolve Hooker of any and all future liability related to the property. Occidental claims that the school board was considering acquiring the property through its powers of eminent domain, if it did not sell it to the district.

The deed from Hooker to the school board states:

Prior to the delivery of this instrument of conveyance, the grantee herein has been advised by the grantor that the premises above described have been filled, in whole or in part, to the present grade level thereof with waste products resulting from the manufacturing of chemicals by the grantor at its plant in the City of Niagara Falls, New York, and the grantee assumes all risk and liability incident to the use thereof. It is therefore, understood and agreed that, as part of the consideration for this conveyance and as a condition thereof, no claim, suit, action or demand of any nature whatsoever shall ever be made by the grantee, its successors or assigns, for injury to a person or persons, including death resulting therefrom, or loss of or damage to property caused by, in connection with or by reason of the presence of said industrial wastes. It is further agreed as a condition hereof that each subse-

quent conveyance of the aforesaid lands shall be made subject to the foregoing provisions and conditions.

The school district's position on the Love Canal matter has been that school officials were only lay people, who took the word of chemists. Moreover, the belief at the time was that, if wastes were buried, they were safe.

Occidental officials refused to comment on most of the issues surrounding Love Canal, citing the fact that it is involved in numerous lawsuits on the matter. Instead, it provided BNA with a 1982 company publication called "Factline," a 27-page booklet that tells the company's story. The booklet says, "Hooker warned the Niagara Falls Board of Education and the administrative officers that chemical wastes had been buried in the Love Canal. It documented the warnings in the recorded transfer deed and in letters to and appearances before the school board. Hooker warned that the area was not suitable for construction. The public was informed of Hooker's warnings through articles appearing in local and area newspapers."

The publication goes on to say that the original understanding between Hooker and the school board, although not put in the deed, was that the property would only be used for a school and a park, and that any other use could jeopardize the integrity of the landfill.

Critics charge that Occidental, despite the deed language and other steps, did not provide the school district and the community with adequate warnings. "The board of education and the city fathers are like physical education teachers; they're not industrial hygienists," Gibbs said.

Levine added, "I don't think that the school board people were expert enough to understand how dangerous this stuff was, even though there was a clause in the deed that said it had been used for the disposal of industrial waste. I think that experts knew and surely they wouldn't have put that in the deed if they didn't know. I think they [school board] just sort of ignored that warning like we ignore so many warnings."

Eugene Martin-Leff, the assistant New York state attorney general who has prosecuted the state's lawsuit against Occidental, said the sale of the property to the school board was "a calculated attempt to shift responsibility for the Love Canal."

"When the company made the sale, it knew that home construction nearby was rapidly increasing the risks associated with the site," Martin-Leff said in a 1986 statement. "Homes had become more numerous in the last few years of Hooker's dumping at the Canal. The company persuaded the Board of Education to take three times as much of the site as it needed for a new school on 99th Street. Hooker's executive vice president wrote in April 1952 that '... it would be a wise move to turn the property over to the schools...' because 'the Love Canal property is rapidly becoming a liability...'

"In 1957, a Hooker lawyer wrote that the clause transferring liability to the board of education was 'a legal facade,' and, in 1962, the Hooker production manager said company officials had made 'their best efforts to shed themselves of any responsibility' for Love Canal," according to Martin-Leff.

It was only about a year after the property was sold to the school that the 99th Street School was built on a small portion of the Love Canal. During construction of the school and the nearby 93rd Street School, some 7,000 cubic yards of Love Canal soil was removed and used for grading and construction, according to Occidental.

Neighborhood Springs Up

Within the next decade, a blue-collar neighborhood sprung up around the canal and the city installed roads and sewers, some directly across the landfill.

"When I moved in, I thought I was moving into a really nice

TABLE I

CHEMICALS DISPOSED OF IN LOVE CANAL
BY HOOKER CHEMICAL CORP. (1942-1953)*

Type of Waste	Physical State	Total Estimated Quantity-Tons	Container
Misc. acid chlorides other than benzoyl - Includes acetyl, caprylyl, butyryl, nitro benzoyls	liquid and solid	400	drum
Thionyl chloride and misc. sulfur/chlorine compounds	liquid and solid	500	drum
Misc. chlorination - includes waxes, oils, naphthenes, aniline	liquid and solid	1,000	drum
Dodecyl (Lauryl, Lorol) mercaptans (DDM), chlorides and misc. organic sulfur compounds	liquid and solid	2,400	drum
Trichlorophenol (TCP)	liquid and solid	200	drum
Benzoyl chlorides and benzo-trichlorides	liquid and solid	800	drum
Metal chlorides	solid	400	drum
Liquid disulfides (LDS/LDSN/BDS) and chlorotoluenes	liquid	700	drum
Hexachlorocyclohexane (Lindane/BHC)	solid	6,900	drum and nonmetallic containers
Chlorobenzenes	liquid and solid	2,000	drum and nonmetallic containers
Benzylchlorides - includes benzyl chloride, benzyl alcohol, benzyl thiocyanate	solid	2,400	drum
Sodium sulfide/sulphydrates	solid	2,000	drum
Misc. 10% of above		2,000	
		TOTAL 21,800	

* Interagency Task Force on Hazardous Wastes, Draft Report on Hazardous Waste Disposal in Erie and Niagara Counties, New York, March 1979

neighborhood," recalled Gibbs, who moved to a house about three blocks from the canal in 1973. She said the neighborhood "had the school within walking distance, it had a little drug store, it had two churches, it was a half a mile from a shopping mall, it was two blocks from the river."

"I mean it had virtually everything that you could possibly want in a community. It was a home that everybody searches for when they're looking for their first home, a three-bedroom ranch with nothing special, a regular three-bedroom ranch with a finished basement, with a recreation area. You know, the American dream."

With the school located directly on the canal and dozens of homes adjacent to it, the landfill property became a convenient playground for the neighborhood's children. Former residents, once naive but now somewhat horrified, remembered the games their kids used to play at Love Canal, games involving so-called pop rocks and games involving the "black lagoon," a euphemism for a small pool of chemical sludge on the canal.

"There were children who ran around with phosphorous rocks," said Gibbs. "Phosphorous rocks, if you bang them on the cement, they would pop like a firecracker. So kids had a great time with that. The mothers didn't know it was phosphorous rock. All she knew is it was a hot rock, that's what they used to call them."

According to the New York State Department of Health, residents of the area complained for a number of years to local officials about chemical odors emanating from the landfill. There were persistent reports, according to the department, of chemicals breaking through the top soil, spontaneous fires, and injuries to children and pets.

In the mid-1970s, it became clear that rainwater and melting snow had seeped into the canal and forced waste chemicals to the surface; contamination spread laterally into the yards and basements of adjoining homes. A host of toxic chemicals were subsequently found in ground water, soils, and indoor air at homes adjacent to the canal.

'Bathtub' Effect

The "bathtub" effect occurred because of the unique geology of the canal area, according to environmental officials. A layer of clay with low permeability surrounds the bottom and lower sides of the canal. The middle portion of the canal's sides is bound by a layer of clay with somewhat greater permeability, while the upper five feet of the ground is composed of silts, where most of the leachate migration is believed to have occurred. (See Figure 2.)

In 1978, the Love Canal disaster came to the full attention of the country. On June 20, state Health Commissioner Robert Whelan issued the first of three state health orders. The order said that the toxic wastes posed "a public nuisance and an extremely serious threat and danger to the health, safety and welfare of those using it, living near it or exposed to the conditions emanating from it." He ordered that the site be fenced off and further investigations be undertaken.

On Aug. 2, Whelan issued his second order, declaring a state of emergency and recommending the temporary relocation of pregnant women and children under age 2 who lived in the homes closest to the canal, an area later known as Rings 1 and 2. The order also recommended that residents in these two inner rings avoid using their basements and consuming any home-grown foods.

Whelan ordered the 99th Street School closed. He concluded that there was no evidence indicating a higher level of acute illness in area residents, but there was "growing evidence that there is a higher risk of subacute and chronic health hazards as well as spontaneous abortions and congenital

malformations."

Among the information on which the second order was based was air sampling conducted by the Environmental Protection Agency, which found 26 organic compounds in the basements of 14 houses adjacent to the site. And, in the spring of 1978, the health department sampled the air in 400 homes within four blocks of the canal and found that compounds not present in common household products—chlorobenzene and chlorotoluene, for instance—were present in homes closest to the canal, with less contamination farther away.

The department also sampled the air in the basements of 88 homes located in Ring 2 for 10 selected compounds, seven of which were identified as carcinogenic in animals and one, benzene, as carcinogenic in humans. They found that 23 percent of the homes contained benzene, 26 percent contained chloroform, 84 percent contained trichloroethylene, and 93 percent contained tetrachloroethylene.

A number of tests taken after 1978 found dioxin in soils, storm and sanitary sewers, creek sediments, and fish. The levels of dioxin found were as high as 600 parts per billion in the sewers, 40 parts per billion in the creeks, and 203 parts per billion in soil on top of the canal itself. The Centers for Disease Control has set 1 part per billion as the safe level for dioxin in soil.

Carter Declares Emergency

Five days after Whelan's order, President Carter declared a federal emergency, the first ever in the case of a man-made environmental disaster. New York Gov. Hugh Carey went to Niagara Falls that day and informed residents that the state would purchase all 239 homes in Rings 1 and 2.

A new state health commissioner, Dr. David Axelrod, continued Whelan's state of emergency and extended his recommendations in a Feb. 8, 1979, order that called for the temporary relocation of pregnant women and children under 2 living in the area surrounding the inner rings. Pressure from the increasingly vocal Love Canal Homeowners Association was mounting on state and federal officials to expand the boundaries and to purchase a greater number of homes.

A chronology of the events at Love Canal prepared by the state Health Department and the U.S. Department of Health and Human Services described the period of time this way:

"The decision to relocate residents from Rings I and II has been characterized as a pragmatic one, based on limited data demonstrating beyond any reasonable doubt that toxic chemical waste products had been identified in and/or on the property of some specific homeowners living adjacent to the canal. These findings and the reactions of homeowners to it suggested the relocation of all residents living on the streets immediately surrounding the canal as the most prudent course of action.

"A number of remaining residents felt that these boundaries drawn by the state for relocation may have been arbitrary, and less than fully reasonable, and groups of such residents and advocates began to organize around their convictions. [The] media focused intense public and political attention on the Love Canal situation and a barrage of criticism on the state's policies ensued."

Indeed the homeowners were more than organizing. In May 1980, they took two EPA officials hostage for five hours to draw attention to their demand for evacuation of the area. Two days later, Carter issued his second emergency declaration and offered federal funds for temporary relocation. In October, a unique agreement between the state and federal government authorized the purchase of an additional 564

FIGURE 2
SCHEMATIC OF CHEMICAL ESCAPE
FROM THE LOVE CANAL
NIAGARA FALLS, NEW YORK

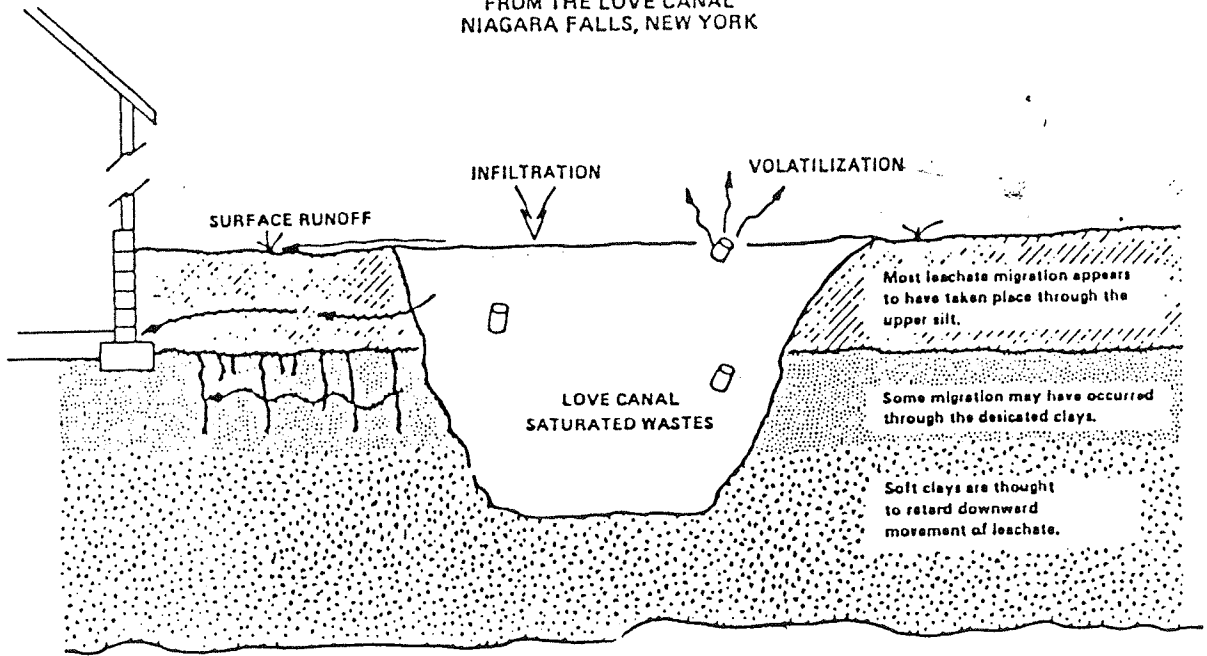
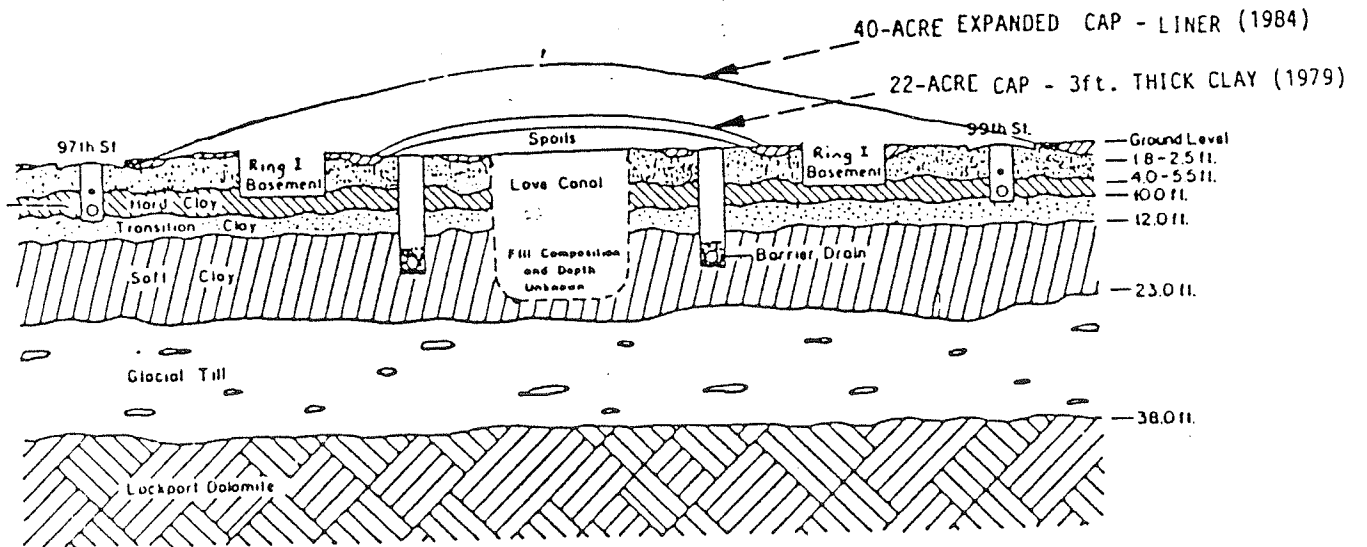


FIGURE 3
REMEDIAL CONSTRUCTION



homes in what became known as Ring 3 or the Emergency Declaration Area (11 ER 139).

Eventually the state, through the Love Canal Revitalization Agency, purchased 495 of the 564 single-family homes in the EDA. All but two of the 239 homes in Rings 1 and 2 have been demolished and covered under the cap that seals the entire canal. About 72 families still live in the area.

Climate Of Confusion

The events that followed the crisis at Love Canal took place in a climate of confusion, uncertainty, public pressure, and politics. There was a struggle between state and federal officials over who should pay for the government's response to the crisis. Angry residents wanted to know if it was safe to live in their homes and, if not, how and when the government would protect them.

Government officials, weighing considerations of science, politics, and property values, had to wrestle with thorny issues such as establishing a boundary for the Emergency Declaration Area. Once the EDA was established, many people sold their homes as much for economic reasons, as for personal health reasons. They realized that no one would want to move into the Love Canal neighborhood.

As in all areas of environmental policy, there was a crucial balancing act between science and politics. Two facts tipped the scales: Hugh Carey was up for re-election as governor of New York in 1978 and Jimmy Carter was up for re-election in 1980. Most observers agree it was no coincidence that the decision to purchase homes in Rings 1 and 2 was made shortly before the 1978 gubernatorial election and the decision to purchase homes in the EDA was made shortly before the 1980 presidential election.

"I think that the science people will probably tell you that the last ring which was bought was really more a function of the gubernatorial politics of the time, Carey's re-election campaign, than perhaps the hard science might have called for," former commissioner Berle said.

"On the other hand, that doesn't mean it was an inappropriate response because part of the process of governance is giving people some confidence in the place where they live. So there the science and the politics might have taken you in different directions. Given the fact that there was no model to follow, the immediate response was perhaps not handled smoothly, but handled adequately."

Rep. John J. LaFalce (D-NY), who has represented the Niagara Falls area since 1974, said the area used for relocation purposes was acquired through the state law, which offered tax abatements to the area's homeowners. "They said, 'Well here, we'll take the area that's been designated by the state [for tax purposes] as the Love Canal area and we'll relocate within that area,' even though there was no health context whatsoever. That's how the decision-making process took place."

LaFalce also said that once the state decided to relocate temporarily, "it might be just as cheap and certainly much more humane to give them permanent relocation."

Gibbs, whose savvy in using the media and playing hardball politics was the main reason why Ring 3 homes were purchased, admits that "it's not a scientific fight, it's a political fight."

"Actually, the state was very good at first," she recalled. "They moved very aggressively. They evacuated people between June and August, which is extremely fast. That wasn't because they felt a moral obligation, it was because Gov. Carey was running for re-election. The federal government's response was the same sort of thing. They didn't respond at all until Jimmy Carter was running for re-election and we

made a big hoopla about Jimmy not caring about the people of Love Canal."

Commissioner Jorling said it was unfair to second-guess decisions that were made in such a highly charged atmosphere. "As far as the decisions to evacuate, in retrospect, it's hard to see how anything else could have happened because of the uncertainty, the lack of knowledge, the lack of methodology. All of those things accompanied just a tremendous groundswell [of people who said] 'do something, do something.'"

"The hardest thing that any public official has in these conditions is to deal with a bunch of neighbors and be asked a question, 'Well, would you live there?' or 'What should I do? Is it safe?' You can't give black-and-white answers to those questions and so erring on the side of precaution is traditional public health policy."

Nevertheless, Jorling said, "with the benefit of hindsight, it would appear from the health risk assessment that it wasn't necessary" to evacuate the third ring of homes. "But that has no bearing on the question was it necessary in the political context in which it arose."

New Task For Government

Levine said a critical element in the Love Canal crisis was the fact that government had never responded to anything like it before. "One of the problems was the government had to define the problem within the parameters of what they had the resources to cover," Levine said. "The people wanted the whole thing to be much more flexible, to see what the problems were and then provide the resources for the problem."

"This kind of clash between people and government is very common in disasters. There's what they call the stress effect of the disaster itself and then the stress effect stemming from the agencies that try to come in and help take care of things. I wish that they [government] had paid much more attention to social factors. They didn't stop to really think carefully about the fact that they needed to communicate with people."

While most people agree that the government's response to the crisis was anything but perfect, Hooker's reaction was a paradigm of poor public relations.

"I think that Hooker made a mistake, and they will say that too, in that they didn't come forward and lay the facts on the table quickly," CMA's Cox said. "Their lawyers told them to keep a low profile and, had they come out with the facts early, I think the whole thing would have been much less emotional."

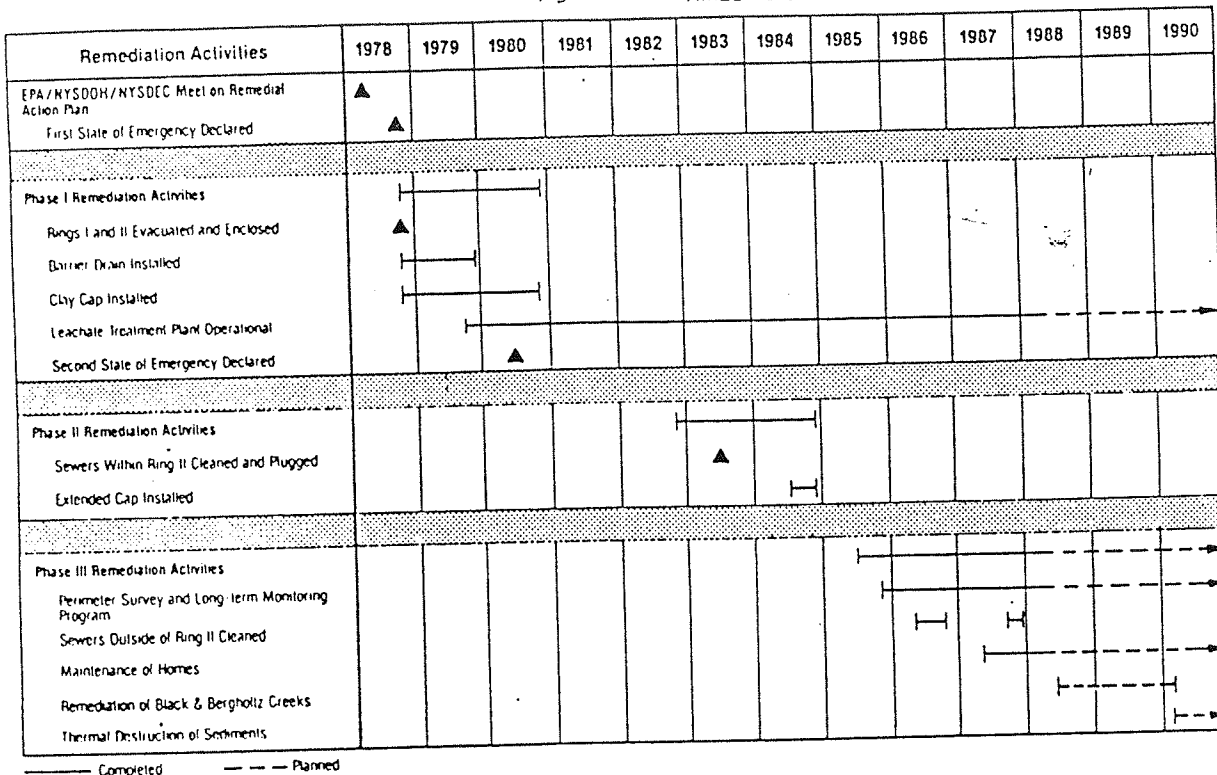
Levine said, "Occidental has been extremely aware of the fact that they were going to be the defendants in huge lawsuits from the very beginning and they kept their mouth shut."

"What they did was all questions were referred to their public relations department. They communicated in three ways. They had a public relations department, which would give standard answers to all questions. They also prepared very slick brochures called "Factline," which presented their viewpoint and they would pass them out to employees and mail them to all sorts of people in the city. The third thing they did was they purchased full-page ads and they would hold press conferences where they would just have press releases and answer no questions."

Remedial Plan

Since 1978, the state and federal governments have spent some \$250 million on remedial work, relocation and other measures at Love Canal, under a cooperative agreement signed in 1979. The main concept of the remedial plan was to

Figure 1-3 TIMELINE OF LOVE CANAL REMEDIATION ACTIVITIES



contain the chemicals from the landfill itself, clean off-site contamination such as sewers and nearby creeks, and thermally destroy contaminants at the site as well as those that have migrated off-site. (See Timeline, Figure 1-3.)

The containment of the Love Canal landfill was achieved by a system of caps, so-called barrier drains, and a leachate treatment plant on the site. The barrier drain system was constructed around the perimeter of the landfill in 1979 at depths ranging from 12 to 20 feet. The drains act as a hydraulic barrier to prevent further migration of chemicals from the canal. Leachate that collects in the drain is pumped to the treatment plant, which removes the contaminants and discharges its treated effluent into the Niagara Falls sewer system. (See Figure 3.)

There are two caps covering the landfill, in addition to a layer of topsoil and grass, which gives the entire fenced-in area the look of a park. The first cap covers 22 acres and consists of three feet of clay. Installed in July 1980, the cap was designed as an umbrella to prevent human contact with the landfill, to limit the amount of water entering the canal and to prevent the emission of contaminants into the air. In 1984, a 40-millimeter-thick, high-density polyethylene liner expanded the cap to 40 acres, covering the original landfill, the demolished homes in Rings 1 and 2, and the demolished 99th Street school. The expanded cap was designed to limit the amount of water entering the leachate treatment system.

There are a number of ground water monitoring wells around the perimeter of the site and in the Emergency Declaration Area, none of which have shown any further migration of chemicals, according to the Department of Environmental Conservation.

With the landfill essentially contained, the focus of the remedial plan was and continues to be the cleaning up of chemical contaminants that migrated from the site via storm

and sanitary sewers and other natural and man-made passageways. Some 60,000 linear feet of storm and sanitary sewers have been cleaned, taken out of service and plugged, and a major project is under way to dredge contaminated sediments from the nearby Black and Bergholtz creeks, where dioxin has been found in sediments and fish. The creek work is about two-thirds complete and should be finished by the end of this year.

Little Prior Experience

The remedial plan at Love Canal was developed with little prior experience in such matters. Commissioner Jorling said that, unlike water and air pollution, for which a substantial body of knowledge already existed, "there was no methodology that you could turn to and say, 'Do this here.'

"That led, in the case of Love Canal, to isolating it, to encapsulating it. In retrospect, that decision was the appropriate one, but it identified that encapsulating a landscape like that really doesn't remediate it, it doesn't bring that landscape back to utility. What it has done is contribute to the evolution of policy under CERCLA of a preference for permanent remedy."

Jorling said the government may eventually dig up the wastes entombed at Love Canal.

A major shift in the direction of the remedial plan and, indeed, in the whole Love Canal story, came in June 1989, when Occidental agreed to take over most of the remaining remedial work at the site (20 ER 332). The agreement, which came in the form of a partial settlement in the government's 10-year old federal superfund lawsuit, would have Occidental build a central thermal destruction plant to handle wastes from Love Canal and other abandoned waste sites in the Niagara Falls area (*United States v. Occidental Chemical Corp.*, DC WNY, No. 79-990C, 6/1/89).

Under the consent decree, Occidental will eventually store and destroy all Love Canal wastes, including contaminated creek sediments, sludge from the leachate treatment facility, and operation and maintenance wastes from the site. It will begin with the creek sediments, half of which have already been taken by the company to its storage facility.

Occidental will operate three main facilities under the consent decree. First, there is a processing area in the EDA, where creek sediments are now being treated and loaded into bags for transportation to Occidental's main plant in Niagara Falls. At the main plant, Occidental has constructed three storage buildings, which will store wastes from a variety of sites, pending thermal destruction. The thermal destruction plant, which is in the process of being permitted by the state and federal governments, is expected to be operational in 1992.

Occidental first announced its proposal for a central waste facility in February 1988, as an alternative to the government plan to build a mobile thermal destruction unit that could be moved from the Love Canal site after all wastes were destroyed (18 ER 2238).

Agreement Hailed

The consent agreement was hailed by government officials as a landmark because it was the first time the company has assumed responsibility for cleanup work at Love Canal.

"The importance of this agreement cannot be overstated," Jorling said when the agreement was announced. "We have succeeded in getting Occidental to accept some responsibility and take an active role in the remediation of Love Canal, even though the company continues to fight [in court] its liability for this national disaster."

Occidental, in a statement, said the decree was "a giant step" toward gaining government approval of its plan to centrally store and eventually destroy hazardous wastes from a number of its western New York sites. "Its [the plan's] implementation is tangible evidence that cooperation is the most productive method of resolving the complex issues associated with the remediation of waste sites," according to Thomas L. Jennings, Occidental's vice president for corporate environmental affairs.

Jorling said the state "is continuing to design and build the facilities that were part of the original plan to store and destroy the Love Canal wastes to ensure that the cleanup will continue, should Occidental fail to carry through with its commitment."

Occidental officials agreed to be interviewed for this story on the condition that they would only answer questions regarding their new central storage plan. All other questions on Love Canal were off-limits because of the complex litigation that the company is involved in.

Jennings said the central storage plan was an Occidental initiative designed to benefit both the community and the company, which has been linked to four other Niagara Falls sites on the federal superfund national priorities list. He emphasized that the agreement to handle Love Canal wastes "was mutually exclusive" of other issues in the case and did not indicate a change in the company's position on Love Canal. Nevertheless, Jennings did say that there was "a new understanding" between Occidental and the state and federal governments.

"We have come to a new understanding of how these [remedial] projects need to be accomplished," Jennings said. "We've come to a new understanding that both the company, the agencies and the community share a common environmental objective: We all want clean air, we all want clean water, we all want good stewardship of land. And we can move these projects forward much faster with a cooperative

effort than we can by just being contentious about every issue that comes along."

More Cooperation

Edward O. Sullivan, deputy commissioner for environmental remediation at the state Department of Environmental Conservation, said this new understanding is due to a high level of cooperation among the various governmental agencies involved in cleaning up the western New York sites and a more aggressive attitude on the part of the state. One indication of the new approach is that the government agencies involved and Occidental have been meeting quarterly for more than a year now. Another consequence, according to Sullivan, is the landmark consent decree.

"The response has been good," Sullivan said. "Occidental has shown . . . a new apparent desire to try to move cleanups [forward], to adhere to schedules and to take a less litigious approach."

Sullivan said Occidental's new approach may also be viewed as preparation for a possible defeat in the massive federal superfund case. "I think they see the handwriting on the wall," he said. In the company's defense, Jennings pointed out that Occidental announced its central storage plan two weeks before the court ruled that Occidental was liable for response costs under CERCLA. (See section below on litigation.)

In addition to construction of the thermal destruction plant and excavation of contaminated creek sediments, there are two other areas of remediation left in the Love Canal project. One involves an investigation into possible contamination by mercury and other chemicals in soil at a church on 97th Street, and the other involves the excavation and capping of an area at the 93rd Street School. At the school, where arsenic, polynuclear aromatic hydrocarbons and levels of dioxin between 1 and 2.3 parts per billion have been found, the state will stabilize and solidify some 7,500 yards of material and then place a cap on the area. The work is expected to begin in spring 1990.

Contamination at the school is believed to have originated from some 3,000 cubic yards of fill material that was taken from the 99th Street School in the 1950s for grading purposes. The school was closed in 1980 for public health reasons.

Health Effects

Eleven years of studies have helped to clarify the record on the health effects from Love Canal, but important questions still remain. One thing is certain: It will take years before the full health impact of Love Canal can be determined. Diseases such as cancer have latency periods of 20 to 30 years and health experts, at this point, just do not know if cancer rates will be higher among those who lived near the canal. Certain adverse health effects have been proven, but some critics, including Occidental, claim that a causal link between exposure to Love Canal chemicals and health problems has not been shown.

There were numerous health studies undertaken from 1978 to 1984 to determine the effects of Love Canal chemicals on cancer rates, pregnancy outcomes, liver disease, and chromosomes. A number of these studies presented conflicting conclusions and two important ones were criticized in the scientific community. There was a general lack of coordination in the early years and poor communication among scientists and with the people affected. All of these factors created fear, anxiety, and mistrust among Love Canal residents that cannot be overstated.

Joann Hale, a former resident who is now a legal assistant to one of the law firms handling the Love Canal litigation, said she was eight months pregnant in the summer of 1978,

when the issue exploded in the news. "I was losing it, mentally. I was a basket case, I was bonkers. I was eight months pregnant and walking around and they were telling me about all these terrible birth defects. My husband literally quit his job because I was losing it."

Barbara Quimby, another former resident, said "I went off the deep end once. I just remember really being out of control. I was just so tired of going through it, tired of reading the headlines, and tired of just disbelief all the time." Quimby said it was difficult to face the fact that the government agencies in charge were not going to solve the problem. "Nobody came and nobody cared," she recalled. "And I was so sick of fighting like I was the criminal, when I was the victim."

Review Panel Appointed

In 1980, Gov. Carey appointed a blue-ribbon panel to review all of the health studies conducted to date. The panel, in its review, said that ambiguity had caused "more than two years of the most intense anxiety and fear" in residents of the neighborhood. "In the absence of clear cut, authoritative answers, many of the residents have come to believe that their health is in fact irreversibly damaged, that they are at future risk of cancer, congenital malformations in their offspring, and an increased incidence of miscarriages and abortions."

The panel also concluded that the controversy over one study caused residents to become "so distrustful of governmental agencies and their scientific reliability that they are unwilling to believe anything except the worst of news about themselves."

Dr. James Melius, director of the Office of Environmental and Occupational Health at the New York State Health Department, said the numerous health studies undertaken so far have proved that the people who lived at Love Canal did experience a higher rate of certain adverse health effects. Melius said the studies have shown a higher rate of low birth weights among babies of women who lived at the canal, improper liver function, and—although the scientific evidence is a bit shaky—a higher rate of miscarriages and birth defects. The studies so far have shown that cancer rates were normal compared with other areas, he said.

"Love Canal is a symbol," Melius said. He is currently working on a major follow-up study for the state. "In some ways, there's a mythology that develops. It sort of gets clouded over time and people do interpret it [health data] from their own personal perspective, some may be political and [some] may be otherwise."

Melius pointed out that it is difficult to show an absolute cause-and-effect relationship in any scientific study, let alone at Love Canal, where the degree of individual exposure is uncertain and other factors complicate the issue. "We use epidemiology, which looks at a group and says that asbestos workers have more lung cancer than people not exposed to asbestos. Does that say that every person that was exposed to asbestos with lung cancer was due to asbestos? Diseases are multi-factorial.

"As we get more information, we will be able to say more definitively. The ultimate in definitiveness is hard to reach. You almost have to deliberately expose people in isolation to get pure causal information."

Ellen Silbergeld, director of the Environmental Defense Fund's Toxic Chemicals Program, said the state and federal government botched an opportunity to conduct early epidemiological studies at Love Canal. "There's been an almost complete failure to take advantage of an opportunity to do sophisticated, prospective health studies," Silbergeld said.

"And that opportunity is now lost. That, from a scientific point of view, is very unfortunate."

Initial Studies

One of the first studies at Love Canal, performed by the state Department of Health, was based on a survey of residents taken in the spring, summer, and fall of 1978. The department conducted 11,100 field interviews of residents, their physicians, and persons in a control group. A standard 22-page questionnaire was administered and some 4,386 blood samples were taken.

An analysis of the blood tests found that residents who lived on 97th and 99th streets, the areas closest to the canal, may face a greater-than-expected risk of developing liver disease. The study also found, however, that none of the individuals with abnormal test results who were subsequently examined by their physicians showed any clinical evidence of liver disease. In addition, the study found that liver functions returned to normal once residents relocated away from the canal neighborhood.

The department also found that there was no evidence of chloracne, a skin disease associated with exposure to dioxin and polychlorinated biphenyls; no excessive incidence of respiratory diseases or disorders, which often occur as a result of airborne chemical contamination; and no excessive incidences of convulsive disorders or cancer of any form.

In a 1981 report to the governor and Legislature, the health department added this caveat to its findings:

While such retrospective epidemiological surveys represent an important source of health data, it is important to point out several inherent shortcomings of such studies in determining potential adverse health effects attributable to chemical exposure: only the prevalence of disease, not the overall incidence of disease can be assessed; the effects of previous chemical exposure within the study population may not be observable since there is a latency period in many diseases, which can be 20 to 30 years in the case of cancer.

The department also looked at adverse pregnancy outcomes, particularly congenital defects, spontaneous abortions (miscarriages), and low birth weight. It found a slight to moderate excess of spontaneous abortions and low birth weight infants in homes on 99th Street and homes that were located in so-called swale areas—areas where natural drainage pathways flowed prior to construction of homes.

The department theorized that the absence of an excessive number of miscarriages on 97th Street, which abuts the canal, might be explained by the fact that these homes were not built until the late 1960s and early 1970s, while the homes on 99th Street, which also abuts the canal, and the homes in wet areas were built before the early 1960s. The department also found that "the rise in spontaneous abortions occurring in the historic water [swale] areas began less than one year after landfilling was largely completed in the general area, which may serve to support the theory that contaminated fill dirt from the canal was used to level low-lying swale areas."

The swale issue was at the center of another health "study," one which was pointedly criticized by the Carey panel but had a significant effect on the relocation of the third ring of Love Canal homes. The study was undertaken by Dr. Beverly Paigen, a biochemical geneticist and consultant to the Love Canal Homeowners Association. Paigen, who now works at the Jackson Laboratory in Bar Harbor, Maine, described her work as a "survey," rather than a study, because of its low budget and informal nature. Her survey found a high incidence of neurological problems, miscar-

riages, and birth defects among residents who lived in the swale areas.

The Carey panel characterized Paigen's study as "literally impossible to interpret," claiming that it "cannot be taken seriously as a piece of sound epidemiological research." Among the specific criticisms were that Paigen had no adequate control groups and that she failed to validate anecdotal information on questionnaires.

Paigen followed up her original survey, however, with a scientific study that confirmed many of her earlier findings. Her later work, which was published in *Hazardous Waste and Hazardous Materials* in 1985 and in *Human Biology* in 1987, involved a study of 523 children who lived in the Love Canal neighborhood and 440 who did not. The study found a higher incidence of seizures, learning problems, hyperactive behavior, and growth problems in the children from Love Canal. In addition, Paigen said the study showed a dose-response relationship, meaning that children who lived in swale areas had a higher rate of problems than those in dry areas and those who lived closest to the canal had a higher rate of problems than those farther away (14 ER 128).

Paigen's initial work, despite the criticism, was influential because it suggested that the health effects from Love Canal went beyond the homes immediately adjacent to the landfill to homes located on swales. Her survey—and an even more widely criticized study sponsored by EPA—were critical factors in the government's 1980 decision to evacuate the third ring of homes.

It was the release of the EPA study, as well as other factors, that precipitated the Love Canal homeowners taking two EPA officials hostage in May 1980. The EPA study, which was conducted by Biogenics Corp. of Houston, involved an analysis of blood specimens from 36 residents in the most severely affected area of the neighborhood. It found that chromosomes in 11 of the 36 samples were abnormal and concluded that chemical exposures may have been responsible for the abnormalities (11 ER 78).

But the study has been almost universally faulted for its lack of controls, the small number of subjects tested, and poor design. In addition, some critics have charged that the study was contracted for by the Department of Justice as evidence for its pending superfund case against Occidental. The Carey panel described the study as "a paradigm of administrative ineptitude."

The Centers for Disease Control followed up the Biogenics study and published its findings in the March 16, 1984, issue of the *Journal of the American Medical Association*. The study involved a cytogenetic analysis of blood samples from 46 residents of Love Canal, 17 of whom participated in the Biogenics study and 29 of whom lived in homes directly adjacent to the canal—homes that tests showed had elevated levels of chemicals. The study concluded that the frequency of chromosomal aberrations and of sister chromatoid exchange, which is another indicator of chemical exposure, did not differ significantly from control levels (14 ER 128).

Other Studies

Scientists at the state Health Department have published two other studies important to the body of public health knowledge on Love Canal. The first study, which was published in the June 19, 1981, issue of *Science*, found that the incidence of cancer in the Love Canal area was no higher than in the rest of the state. The study involved an analysis of data from the state's cancer registry. It looked especially at rates for leukemia, lymphoma, and liver cancer because these cancers have been linked in other studies to benzene and halogenated hydrocarbons, both of which were found at Love Canal. The study did find a higher rate of respiratory cancer,

but concluded that it was inconsistent across age groups and was linked to a higher rate throughout the entire city of Niagara Falls.

The second health department study concluded that women who lived in the swale areas had a higher incidence of low birth weight babies during the period of 1940 to 1953, when dumping was under way. The study, published in *Science* Dec. 7, 1984, found that the rate of low birth weights was comparable to other areas of New York state from 1954 to 1978, when dumping ceased. The study took into account a variety of other factors, including medical histories, smoking, education, age, and birth order (15 ER 1438).

Paigen criticized the conclusions in the cancer study, claiming that they were inconsistent with the research itself. She said the part of the Love Canal neighborhood that was studied was occupied mostly by younger people, who tend to have a lower rate of cancer than older people. In addition, since the homes in that area were relatively new, the people who lived there had less exposure to chemicals from the canal than those who lived in the older parts of the neighborhood. If the entire neighborhood was looked at, Paigen contends, a higher rate of cancer would probably have been found.

A critic of some of the state's work, Paigen said she saw her colleagues at the Health Department undergo a transformation in the years after Love Canal, which affected the quality of the department's work. "I personally saw my colleagues change over the years, partly because of the pressure that was put on them by the people holding the purse strings and partly because they were so offended at the reactions of the Love Canal people," said Paigen, who, at the time of the Love Canal crisis, worked at the Roswell Memorial Institute in Buffalo, a Health Department facility.

"These were physicians in the field of public health, they could have been earning a lot of money on the outside. They were the ones who always went down to the Love Canal community. The frustration and the anger that the Love Canal people felt was vented on these physicians, who were up there trying to help. And they began to see the people in a very negative light."

Habitability

Aside from the complicated legal issues, no aspect of the Love Canal story has been as divisive, complex, and time consuming as habitability: whether, when, and how to reinhabit the neighborhood, which has become a ghost town. It took 10 years, mountains of environmental and health data, millions of dollars, and countless scientific experts to finally conclude that most of the area is habitable.

"The process of arriving at a scientifically and publicly credible decision on habitability has taken longer and cost more in both human and financial terms than anyone expected," state Health Commissioner David Axelrod said in releasing the habitability study Sept. 27, 1988. "Never before has government attempted such a complex and sensitive public health judgment involving the futures of our citizens."

Axelrod declined to be interviewed for this article.

Kovalick of EPA said "this is the only place where the habitability study and the playing out of the health consequences has been so elaborate and detailed."

"We haven't had that issue of moving residents back into a site," he added. "We've temporarily relocated people in various places and then we've cleaned the site and moved [them] back." He said similar issues may arise at Times Beach, Mo., a site that rivals Love Canal in notoriety.

The 1988 habitability study concluded that two-thirds of the Emergency Declaration Area surrounding the waste site is now suitable for residential use, while three out of seven sampling areas are not suitable for residential use without

further remediation. The uninhabitable areas could be used for commercial or industrial purposes, the study said (19 ER 1131).

The study also said that areas affected by remedial work at Black and Bergholtz creeks should not be resettled until excavation and dredging are complete. The study was based on the assumption that safeguards will continue to prevent further leakage from the Love Canal site.

There are about 300 homes in the areas declared habitable and 200 in the areas declared uninhabitable.

Axelrod said that declaring certain areas uninhabitable did not mean the families that still live there faced an immediate health threat, nor was there an immediate need to relocate. It did mean, he said, that the risks associated with certain chemicals found in the neighborhood exceeded the risks posed in comparison areas chosen for the study. Axelrod said "the contamination levels found during the extensive sampling program are relatively low and many orders of magnitude below the levels found 10 years ago in homes immediately adjacent to the Canal."

Soil, Air Samples Compared

To determine habitability, the state compared soil and air samples from seven testing areas in the 232-acre Emergency Declaration Area with samples from four other areas in the region. It took more than 2,500 samples in all and looked at 11 so-called indicator chemicals, including dioxin. The criteria used in the study to determine habitability were established in 1986 by the Love Canal Technical Review Committee, a panel with representatives from the Environmental Protection Agency, the Centers for Disease Control, and the state departments of Environmental Conservation and Health.

The TRC considered six different alternatives for determining habitability criteria and decided on a combination of two methods: comparability, which involved using similar areas from the region as a benchmark; and application of environmental and health standards. The only standard used, however, was one for dioxin, which is 1 part per billion in soil.

The habitability study found that in EDA Area 1, the median level of indicator chemicals found was two to 80 times greater than those found elsewhere in the EDA or in comparison areas. It also found relatively high levels of more than five indicator chemicals in all but two samples taken. It is Area No. 1 that is considered the most contaminated because it is located between Love Canal and the 102nd Street Landfill, another superfund site. The study recommended that this area be used only for commercial or light industrial use.

In the other two areas declared uninhabitable, EDA Areas 2 and 3, the median and highest levels of chemicals found were considered "quite low," but high enough to prevent unrestricted residential use. Dioxin was found at levels of 17 to 35 ppb in one relatively small spot in Area 3 known as Lot C. This area was subsequently cleaned up. Dioxin was not found at any other spots at levels above the CDC standard of 1 ppb.

The study concluded that contamination in the second and third testing areas was probably the result of "airborne transport and deposition/precipitation of chemicals from the Love Canal site prior to remedial actions at the site. This probably occurred during the period of active dumping (1942-1953). Small amounts of contaminated soil from the Love Canal may have been used to fill depressions; however, extensive contamination from this activity can be ruled out."

In the areas declared habitable (Nos. 4-7), the department found that levels of indicator chemicals were actually higher than those found in two comparison areas outside of the city. But it declared the areas habitable because they were consist-

ent with two comparison areas in the city of Niagara Falls.

"Potential sources of LCICs [Love Canal indicator chemicals] other than the Love Canal exist in the Niagara Falls area and could have contributed to soil contamination throughout Niagara Falls to a greater extent than soils in Cheektowaga and Tonawanda [the other two comparison areas]," the study said. "The overall levels of contamination in these areas as measured by the median concentration are not very different, and any additional public health risks are probably very small."

Silbergeld, who served on a panel of experts which advised the Technical Review Committee, has long been critical of the methodology used. "In this country, we've spent a lot of money, a lot of science on developing health-based standards that are independent of comparability," she said.

"We don't say you can drink this drinking water because it's no worse than the drinking water in Chicago. We say drinking water should have X parts per billion of this chemical in it. And it seems to me that that's the approach we should use at Love Canal. A standard for habitability should be based on our best understanding of what is healthy to live in, not based on whether or not that something is worse or better to compare it to."

Silbergeld also said the comparison methodology means twice as many problems and requires twice as many resources because accurate testing is required for both the Love Canal area and the comparison areas.

Moreover, Silbergeld said her doubts about the study's methodology were proven true in March 1989, when highly contaminated soil was found in one of the Niagara Falls areas used for comparison.

But an expert panel convened by the Technical Review Committee concluded that the so-called hot spot should not affect the habitability decision because the contamination is believed to have originated from only a limited amount of fill that was brought to the area at some point in the past.

Paigen said "some parts of the Love Canal area were always habitable and didn't need to be evacuated," but the parts located on former swales "are never going to be habitable again."

Land Use Panel

Along with the habitability study, Axelrod appointed a Land Use Advisory Committee to recommend future uses for the area. The committee, which was composed of Love Canal residents who still live in the neighborhood and other representatives from the community, issued a report in July 1989.

The report recommended that remedial efforts be undertaken to bring two of the three areas declared uninhabitable [Area Nos. 2 and 3] up to a safe level for residential use. If costs prohibit such remediation, then the two areas should be used for light industrial purposes. But the third area declared uninhabitable should not be remediated further, the report said. This area, which is located near a second superfund site known as the 102nd Street landfill, should be considered for "other uses."

The government should offer low-income loans, grants, and other assistance to help revitalize the area, according to the report.

Two members of the 11-member panel dissented from the majority on the report's general recommendations and on resettlement of the so-called uninhabitable areas. Barbara Hanna, executive assistant at the Ecumenical Task Force, and Patricia Powell, public health director at the Niagara County Health Department, said they had concerns about the possibility of future contamination migrating from the canal and about having children and women of child-bearing age living near the canal.

The two recommended that the area be re-zoned to prohibit future residential use; that current residents with children be relocated; that homeowners who wish to remain become the last residential tenant of their particular properties; and that the area be redeveloped for light industrial use.

The proposed land use plan is now being reviewed by the Love Canal Area Revitalization Agency, which is expected to issue its own plan this fall.

Previous Habitability Determination

The 1988 habitability study was the second attempt by the government to determine if the area was safe for resettlement. In July 1982, the Department of Health and Human Services concluded that, based on EPA monitoring data collected in 1980, the area around Love Canal was habitable. EPA found no chemical contamination in areas beyond the inner rings of homes directly adjacent to the canal. DHHS said its decision was contingent on the existence of safeguards to prevent further leakage from the canal and the cleaning up of sewers and their drainage tracts (13 ER 398).

But the DHHS study—and particularly the EPA monitoring study on which it was based—were criticized by the congressional Office of Technology Assessment in June 1983. And the OTA report led to the creation of the Technical Review Committee and the arduous process that culminated in the 1988 Department of Health study (13 ER 291).

The OTA report concluded that “with available information, it is not possible to conclude either that unsafe levels of toxic contamination exist or that they do not exist in the EDA.”

The report raised questions that are still relevant to the future of the Love Canal site. For instance, it pointed out that the chemicals present at the site will be stable and hazardous indefinitely, but questioned whether the remedial technology now in place will work efficiently for more than a couple of decades. And what assurances are there that future governments will “remember, fund and carry out commitments for long-term continued monitoring and maintenance of the site?”

The OTA report also made several technical criticisms of the EPA monitoring effort, claiming that “the design of the EPA monitoring study, particularly its sampling strategy, was inadequate to detect the true level and pattern of toxic chemical contamination that might exist in the EDA.”

Gibbs said the issue of habitability at Love Canal is important for symbolic reasons. “What the chemical industry wants to do is make Love Canal habitable and then use that symbol and destroy it by saying, ‘Even Love Canal has become a pristine environment where people are happily living today.’”

Those Who Remain

There are still some 150 people living in the Emergency Declaration Area in 72 homes, including about 40 families in the areas declared uninhabitable. Many of those who remained are senior citizens like Emma Kelley, who has lived in here 101st Street home since 1950 and lived across the street for 26 years prior to that.

“Yes, we’re supposed to be in the uninhabitable part, but the people who live here don’t feel it’s uninhabitable,” said Kelley, who was a member of the Land Use Advisory Committee. “They’ve lived here and they’ve raised their kids here and it’s their home.”

Kelley said she looked for another home once, but the prices scared her away. “Where could we ever find another place like what we have now that they [state] want to give us \$33,000 for? Where could you go? You couldn’t even buy a trailer with that, a dumpy trailer.”

Kelley said she believes it is as safe to live on her block as it is anywhere else in the city. She says her next door neighbor lived to be 102 and another friend of hers lived to be 94. “I know they haven’t dumped any chemicals on our place. Had I known they were going to dump those things over there when I had my children, I think I would have done like Lois Gibbs.”

Wayne Morgan, a 36-year-old member of the advisory committee, has lived on 103rd Street all of his life. He, too, lives in an area that the state has declared uninhabitable.

“I know what is all around me and what’s buried here,” said Morgan, who owns a beauty shop and antique store in the nearby town of Wheatfield. “When you move from here to another area, you don’t know what you’re getting into.”

Morgan said he feels especially safe living in his home because of all the monitoring and health studies that are undertaken at Love Canal. “In time, this is going to be one of the safest areas in the United States to live in.”

Litigation

The major litigation involving Love Canal has been undertaken on four fronts: a federal superfund case against Occidental and other defendants, which is in the U.S. district court in Buffalo; several hundred personal injury and property damage cases filed by former Love Canal residents against Occidental and other defendants, in the New York State Supreme Court in Niagara Falls; an insurance case filed by Occidental against its carriers, in the state Supreme Court in Niagara Falls; and a case filed by Occidental against New York state in the state Court of Claims in Buffalo to recover any money collected by New York in the federal superfund action.

The superfund case was filed by the Department of Justice Dec. 20, 1979, in connection with Love Canal and three other superfund sites (10 ER 1743). The Love Canal case has been one of massive proportions, with more than 850 documents entered on the court docket, cross-motions and counter-motions and a special master to handle discovery disputes. To better manage the case, Judge John T. Curtin entered a plan July 1, 1987, to bifurcate discovery and trial into two phases, one to determine issues of liability and one to apportion that liability and relief (*United States v. Occidental Chemical Corp.*, DC WNY, No. 79-990C).

William Schoellkopf, the former law clerk who kept track of the massive case for Curtin for two years, said rather succinctly: “They litigate everything.”

The plaintiffs in the case are the United States, New York, and UDC-Love Canal Inc., a public corporation formed to acquire title on behalf of the state to residential properties in Rings 1 and 2. The defendants named in the suit are Occidental Chemical Corp., Oxy Chemical Corp., Occidental Chemical Holding Corp., Occidental Petroleum Investment Co., Occidental Petroleum Corp., the City of Niagara Falls, the County of Niagara, and the Niagara Falls Board of Education. The school board, city, and county are only named as defendants for procedural purposes. The plaintiffs are not seeking any damages from them.

The federal government is seeking damages from the Occidental defendants for the response costs it incurs up to the date of judgment, any future costs relating to Love Canal, and attorney’s fees. It also is seeking an order requiring Occidental to remedy the site. In its second amended complaint, which was filed Dec. 7, 1983, the government estimated its response costs to have been \$65 million.

The government’s claims for recovery of costs were made under CERCLA Section 107(a), but it also asserted claims for restitution and injunctive relief under Section 7003 of the Resource Conservation and Recovery Act, Section 504 of the Clean Water Act, and Section 13 of the Rivers and Harbors Act.

The state of New York is seeking some \$665 million in compensatory and punitive damages from the Occidental defendants, including claims under CERCLA Section 107(a) and the state's common law of public and private nuisance (11 ER 42). Under the state's common law of public nuisance, it is seeking \$250 million for injury to air, land, and water resources, \$250 million in punitive damages, and response costs that were \$125 million when the state filed its first amended and supplemental complaint Dec. 7, 1983. Under the common law claims, the state also is seeking to have Occidental abate the nuisance at Love Canal. Under the state's common law of private nuisance, plaintiff UDC-Love Canal is seeking \$20 million for injury to its private property and punitive damages of \$20 million.

The state is seeking restitution, under common law, for \$125 million plus any costs incurred after the amended complaint was filed. Under CERCLA, the state is seeking \$250 million for damages to natural resources and recovery of response costs (\$125 million at the time of the complaint). The state also is seeking attorney's fees.

Occidental's main defenses in the case are that the release of contamination from the landfill was due to the acts and omissions of third parties and that CERCLA does not authorize recovery of costs that were incurred prior to enactment of the statute. Occidental has made counterclaims against the state and federal governments and cross-claims against the city of Niagara Falls, the school board, and the county of Niagara.

In its March 26, 1984, answer to the Department of Justice's second amended complaint, Occidental stated:

The claims asserted . . . under CERCLA or otherwise are precluded because at all relevant times OCC exercised due care with respect to the residues deposited at Love Canal, took precautions against foreseeable acts or omissions of others and the consequences that could reasonably result from such acts or omissions, and because any release or threat of release of any pollutants, contaminants or hazardous substances and any costs or damages resulting therefrom were caused solely by acts or omissions of third parties over whom OCC had no control, whether by contract or otherwise.

Occidental's counterclaims allege that both the federal and state governments are responsible parties under CERCLA, and any damages imposed on Occidental should be offset by the governments' proportionate share. Occidental contends that the state contributed to the horizontal migration of wastes from the landfill through the construction of the LaSalle Expressway in the 1960s. In constructing the highway near the southern end of the canal, the state relocated a road (Frontier Avenue) and disturbed the landfill by removing contaminated soil, Occidental says. Moreover, construction of the expressway blocked a drainage passageway, thereby leading to the so-called bathtub effect at the landfill, according to the company.

[In a separate action filed in the state's Court of Claims in Buffalo, Occidental has also sought to recover from the state any damages received in the federal action and legal fees of more than \$10 million (*Occidental Chemical Corp. v. New York*, NY CtCl, No. 78285, 2/9/89).]

Occidental alleges that the federal government is a responsible party because it dumped hazardous materials at the site—mostly through the Department of the Army—in the years prior to 1953. In addition, Occidental says that, at times during World War II and the Korean War, "essentially all of the output of OCC's Niagara Falls plant was allocated according to government directives from such agencies as the War Production Board."

The company has a very unlikely ally in its claims against

the federal government. New York Assemblyman Maurice Hinchey, an environmentalist who has headed the Assembly's Environmental Conservation Committee for more than a decade, issued a report in 1981 that concluded that the federal government was as responsible for the wastes at Love Canal as any single company, including Occidental.

"That [report] clearly shows that the Army and the Department of Energy were, in large measure, responsible either directly or indirectly through their contractors for dumping vast quantities—tens of millions of gallons—of toxic substances in the Love Canal area," Hinchey said.

But Bruce Gelber, an attorney with the Department of Justice, said there is very little evidence of direct Army dumping, and the evidence that exists is suspect.

In addition to its counterclaims against the plaintiffs, Occidental has asserted cross-claims against its co-defendants. It contends that, through the construction of the school, roads, and sewers, the city of Niagara Falls and the school district are responsible parties who contributed to the release of wastes. And, as owners of the property, the city and school are responsible parties under CERCLA.

In its cross-claim against Niagara county, Occidental alleges that the county showed malfeasance when it issued orders to clean up the site in the 1970s, after receiving complaints from residents of the neighborhood, but failed to follow up on them.

Two Key Decisions

Occidental has lost two key decisions in the case, one coming Feb. 23, 1988, and one coming Aug. 25, 1989. Only the issues involving cross-claims and counterclaims, including the liability of the municipal defendants, remain in the first phase of the case, according to Schoellkopf.

In the first court decision, Judge Curtin ruled that Occidental was liable under CERCLA for response costs incurred by the state and federal governments at Love Canal (*U.S. v. Hooker Chemicals & Plastics Corp.*, 680 FSupp 546, 27 ERC 1296, DC WNY, 1988; 18 ER 2228).

The court rejected Occidental's two key defenses in the case. First, it held that the governments could seek liability for costs incurred prior to enactment of CERCLA. Occidental argued that such liability violated the Due Process and Taking Clauses of the Fifth Amendment and the Article I Contract Clause in the Constitution.

"While CERCLA contains no unequivocal statement that its liability provisions apply retroactively, CERCLA's legislative history suggests that the statute was enacted as a means of compelling the waste disposal industry to correct its past mistakes and to provide a solution for the dangers posed by inactive, abandoned waste sites," the court said. Quoting from the 1985 decision in *U.S. v. Shell Oil* (605 FSupp 1064, 22 ERC 1473, DC Colo, 1985), the court said, "the whole scheme of CERCLA was specifically designed to apply retroactively."

Occidental's second key defense, based on CERCLA Section 107(b)(3), was that third parties were solely responsible for the release of chemicals from the site, but the court rejected that position on two grounds. It said that CERCLA explicitly bars Occidental from asserting a third-party defense because of a contractual relationship the company had, through the conveyance of the Love Canal property, with one or more of the third parties it claims was solely responsible. The court cited SARA, which states that "the term 'contractual relationship' for the purpose of Section 9607 (b)(3) of this title [42 USC] includes, but is not limited to, land contracts, deeds or other instruments transferring title or possession."

"It is undisputed that OCC deeded the Love Canal property to the Board of Education in 1953, and that the Board

subsequently deeded part of this property to the City," the court said. "OCC's direct or indirect contractual relationships with both the Board and the City preclude the company's assertion of a viable third-party defense in this case because, as the plaintiffs assert, OCC was able to control the acts of these subsequent purchasers because of the nature of its relationship with these defendants in this case."

But the court said Occidental's third-party defense would fail even if no contractual relationship existed, saying, "it is beyond dispute that OCC's disposal practices were at least partially responsible for the release or threatened release of the chemicals from the Love Canal landfill during the subsequent years." The court cited testimony from two expert witnesses, both of whom claimed that, without the subsequent actions of third parties, water still would have infiltrated the landfill through the clay cap, mixed with the chemicals, and migrated south toward the Niagara River through pathways that existed prior to Occidental's ownership of the property.

"It is clear that this release of chemicals from the southern end of the Love Canal property, undisputed by the parties, renders OCC liable under CERCLA Section 107(a)," the court said. "While it is disputed at this time whether or not so-called 'horizontal migration' toward nearby residential properties would have also occurred without the subsequent acts of various parties (including those with whom OCC had contractual relationships), it is also beyond cavil that OCC contributed to the horizontal migration of chemicals from the Love Canal site toward nearby residential properties by allowing a leachate flow to exit the southerly end of the Love Canal landfill.

"Were it not for this release and threatened release of chemicals, which the company alleges was blocked and redirected by the state of New York's construction of the LaSalle Expressway, there would never have been horizontal migration of chemicals from the site and contamination of [the] surrounding neighborhood."

New York Attorney General Robert Abrams, in a statement released the day of the ruling, said it was "a tremendous victory for the state and federal governments and a resounding defeat for Occidental's strenuous and expensive public relations campaign to shift the entire blame for Love Canal to the City of Niagara Falls, the Board of Education, the state of New York and even the people who were forced to abandon their homes. Today's decision puts the liability squarely on Occidental's shoulders, where it so clearly belongs.

"Love Canal," Abrams added, "is the disaster that moved Congress to enact the superfund law, and it is only appropriate that the court has applied its terms to this case with full force. The decision confirms that governments can use the superfund law to force polluters to pay for the damage they do without enormously complex trials. Though it will still take some time to establish the exact amount of damages, the case has been greatly simplified by today's decision."

Public Nuisance Ruling

In the second key decision, the district court held Aug. 25 that Occidental is liable under New York state's common law for creating a public nuisance at Love Canal. The court rejected a number of Occidental's defense arguments, including one claiming that the company terminated its liability when it sold the Love Canal property to the Niagara Falls school district in 1953 (*U.S. v. Hooker Chemicals & Plastics Corp.*, DC WNY, No. 79-990C, 8/25/89; 20 ER 743).

Neither the CERCLA liability decision nor the recent common law ruling apportions the amount of damages in the case. That issue will be taken up in the second phase of the complex litigation. But the court said in its recent decision

that the amount of damages recovered by the state from Occidental may be proportionately diminished, under the assumption of risk doctrine, because the state, in constructing the LaSalle Expressway in the late 1960s, acquired a small portion of the Love Canal property with a covenant in the deed stating that it would assume the liability associated with chemical wastes buried on the land.

The court, citing Section 1411 of the state Civil Practice Law and Rules, said the amount of damages recovered by the state would be reduced "in the proportion which the culpable conduct attributable to the state bears to the culpable conduct which caused the damages."

The court also rejected Occidental's sale defense, claiming that, as the creator of a public nuisance, it could not avoid liability by simply selling the property. "I find OCC's 'sale defense' without merit, and therefore find no genuine issue of material fact with regard to whether OCC's liability for nuisance terminated upon its sale of the Love Canal area, with notice to, and disclaimer of liability as against, subsequent purchasers," the court said.

The court cited its February 1988 decision in rejecting an argument by Occidental that the actions of third parties constituted "superseding causes" for the events at Love Canal. It said that its finding in 1988 that Occidental was at least partially responsible for the migration of wastes "is equally applicable to the pending motion, and sufficiently establishes the lack of any genuine issue of material fact as to whether OCC was a proximate cause of the conditions that resulted in the emergency and 'public health nuisance' declarations [by the state and federal governments]."

Abrams said in a prepared statement that the decision "lays to rest Occidental's principal defense that selling the landfill to a school district relieved the company of its responsibility for the harmful health effects caused by Occidental's dumping on the land. In fact, the company palmed off what it knew to be an enormous toxic waste site for one dollar."

John Stuart, a spokesman for Occidental, said, given the court's prior decision on CERCLA liability, "this decision is not completely unexpected, nor do we anticipate that it will change the scope of the case significantly." He emphasized the fact that the decision does not establish any damages, nor does it affect the cross-claims and counterclaims.

Personal Injury, Property Damage

The issues at Love Canal have also been litigated in a group of personal injury and property damage cases filed by current and former Love Canal residents in three waves in state Supreme Court in Niagara Falls (*In re Love Canal Actions*, NY SupCt, Niagara Cnty, No. 41203). Most of the first wave of cases—involving 1,337 plaintiffs—were settled in 1983 for \$20 million. Some 900 new plaintiffs filed suits in the second and third waves of cases between 1985 and 1987. These actions are in the discovery stage.

The defendants in all of these cases are the same as those in the federal superfund case. But, unlike in the federal case, the plaintiffs are seeking damages from the city, county, and school board, who they claim were also responsible for their injuries. As in the federal case, Occidental has filed cross-claims against its co-defendants. In addition, the municipal defendants have filed cross-claims against Occidental.

The main allegations in the cases are that "past and present residents of the Love Canal area have suffered and continue to suffer great discomfort, illness, disease, emotional strain and even death due to their exposure to toxic and hazardous chemicals emanating from the Love Canal," according to a sample complaint used by the Buffalo firm of

Allen, Lippes & Shonn, who, along with Grossman, Levine and Civileto of Niagara Falls, represent most of the plaintiffs. "In addition, real property in the Love Canal area has been rendered unmarketable."

They allege that Occidental is liable, among other reasons, because of its disposal practices, its poor maintenance of the property, and its failure to warn residents of the dangers. The city and school board are responsible for injuries, among other reasons, because of their poor maintenance of the property, their failure to prevent the spread of the chemicals, construction work that disturbed the chemicals, and their failure to warn residents of the dangers associated with the wastes, according to the plaintiffs. The county is liable because it failed to protect the public health and it acted negligently by telling residents that they were not in danger, according to the lawsuits.

Plaintiffs in all three waves of cases were seeking damages ranging from \$50,000 to \$2.5 million each, depending on the specific injuries, and punitive damages of \$10 million, according to attorney Richard Lippes. The municipal defendants may not be sued for punitive damages, under state law, Lippes said.

Under the 1983 settlement agreement, the court allocated awards ranging from \$2,000 to \$400,000 per plaintiff, based on the individual injuries. Plaintiffs began to receive their money in January 1985, under the agreement, which also set up a \$1 million medical trust fund to handle future medical problems (15 ER 1445).

[A similar settlement, involving \$1.5 million, was reached in 1987 for 87 plaintiffs in the first wave of cases].

While the settlement received overwhelming approval at the time, three former plaintiffs interviewed by BNA said they simply agreed to it in an attempt to put the devastating episode behind them. Joann Hale, who works for Lippes' law firm, said, "We accepted it because it was eight years later and we wanted it behind us." And Barbara Quimby said, "Not that we can ever put it behind us, but it was like, 'Oh, maybe when that chapter is closed we will forget.'"

"We believe that if we went to trial, we could have gotten more," said Lippes. "But we also believe that we were looking at appeals probably 10 years down the line."

Lippes pointed out that support for the settlement was so strong that all but seven plaintiffs agreed, even before the exact amount of their settlement award was known. Under the settlement process, each plaintiff was given the opportunity to present his or her case to the judge before an award was made.

Like the plaintiffs, Occidental agreed to settle the cases in hopes of closing at least one chapter in the horror story called Love Canal. "It is very likely that defendants would have never settled the first wave actions if these hundreds of subsequent actions had been foreseeable," David K. Floyd of Phillips, Lytle, Hitchcock, Blaine & Huber of Buffalo, Occidental's counsel in the cases, said in a June 1988 affidavit.

"My sense is that when the defendants and the insurance carriers settled this case, they did not anticipate more significant litigation," said Lippes. "And I think they're somewhat disgruntled that they find themselves now facing another wave of lawsuits."

Indeed, the company, emboldened by a July 10 state court decision in their favor (*In re Love Canal Actions*, NY SupCt Niagara Cnty, No. 41203), seems poised to fight the second and third wave cases to the end. J. Joseph Wilder, another attorney with Phillips, Lytle, said, "The company feels it has a meritorious defense."

Asked about a possible settlement, Wilder said, "based on Judge [Vincent E.] Doyle's decision, we are further encouraged on the way the litigation is going now. And, given that,

we don't want to encourage further suits. The company went that route one time and, within two years, we had another 900 plaintiffs at the door. That has indicated to us that we can't settle these cases.

"And the other thing that has changed the picture is there's a lot more known now about the situation than was known then. When the settlement was first struck, the preliminary findings that had been made by the New York State Department of Health were not encouraging."

Settlement was reached in the first wave of cases after a period of discovery that "hardly proceeded past the service of bills of particulars and preliminary collection of some medical records," according to Floyd.

Lippes said Occidental's unwillingness to settle is part and parcel of a new aggressive attitude on the part of defendants in these type of cases. He said there are two trends: one is for the defendant to settle early in an attempt to cut its losses and the other is for the defendant to dig in its heels and fight.

"I think that there are some companies that have said, 'the hell with this, we're not going to be held ransom, we think we can potentially win this case.'" And, Lippes acknowledged, "it is difficult to prove a causal relationship between injury and disease" and exposure to toxic wastes.

Questions On Causation

Occidental's defense in the second and third wave of cases is centered around its assertion that a causal link has never been proven between the health problems experienced at Love Canal and the chemical wastes disposed of in the landfill. The company alleges that the chemicals found in the homes surrounding the canal were more likely to have come from household products, were present at low levels, and, by comparison, were no worse than those found in other industrial parts of the country.

"In the nearly 10 years since the first declarations regarding Love Canal by the New York State Commissioner of Health, the Environmental Protection Agency, the Centers for Disease Control and others, a substantial body of research and investigation has been developed regarding the presence or absence of adverse health effects among former residents of the Love Canal area," Floyd said. "No scientifically valid study has ever established a causal relationship between living in the Love Canal area and any health maladies.

"After millions of dollars of expenditures and years of studies, it has been demonstrated that plaintiffs cannot identify dose-response relations between exposure to Love Canal chemicals and animal or human health observations."

In the July 10 *In re Love Canal Actions* decision, Justice Doyle ruled that, prior to further prosecution of the cases, each plaintiff would have to prove that his or her injuries were caused by exposure to chemicals at Love Canal. Specifically, the court said plaintiffs would be required to provide "facts, including street addresses for each plaintiff's exposure to a chemical at or from the old Love Canal landfill" and "reports of treating physicians and medical or other experts supporting each individual plaintiff's claim of injury and causation thereof by exposure to chemicals from the old Love Canal landfill."

The court rejected a request by Occidental to dismiss cases by plaintiffs who fail to provide the required information. Instead, the court said no actions would be dismissed without prior application to the court.

The court, which partially modeled its case management order after the New Jersey Superior Court decision in *Lone Pine Corp.* (NJ SuperCt, AppDiv, No. A-2502-86T8, 3/30/87), said its decision would not cause a hardship for plaintiffs because a recently enacted provision of state law would require them to disclose in "reasonable detail" certain

expert testimony during discovery. And the court said "plaintiffs counsel, here, having been involved in these Love Canal cases for nearly 10 years, with the knowledge that expert's opinion is a necessary concomitant to proof of causation, cannot now claim prejudice or hardship if such evidence of causation must be produced prior to the time of trial."

The court also said that a new approach to handling the cases was needed because of their history of discovery. It cited, among other things, the fact that the plaintiffs had used "form complaints," with hardly any difference from plaintiff to plaintiff, and their bills of particulars were "ambiguous and misleading."

"To the best of our knowledge," Wilder said, "this is the first decision in New York state adopting this approach to coordinated discovery in a multiple plaintiff litigation context."

"The Love Canal case is distinguished from *Lone Pine* because Justice Doyle did not rely upon the massive technical record that was compiled to demonstrate that it was highly unlikely that the plaintiffs could ever prove a causal relationship between injuries and claimed exposure to chemicals from the Love Canal landfill. Rather, as the opinion discusses, Justice Doyle felt the decision was appropriate and within his authority to craft means of dealing with complex litigation. To that extent, Justice Doyle's Love Canal decision may be appropriate for application even beyond the multi-plaintiff mass litigation context."

Lippes said the court's decision will "reverse the order of natural discovery. It's nothing that we can't do. We're just going to have to spend a whole lot of money and those experts are going to have to spend a whole lot of time doing reports now." He said the opinion "has no basis in New York state law" and would be appealed.

Lippes said the state Legislature, in medical malpractice cases, has said that plaintiffs first must go before an expert panel and provide medical evidence of malpractice, essentially a litmus test. It could have required the same for toxic tort cases, but it did not, according to Lippes.

Insurance Litigation

The other case Occidental is involved in is one filed against its insurance carriers to cover costs associated with Love Canal and other waste sites in the area, including the Hyde Park Landfill, the S-Area Landfill, and the 102nd Street landfill (*Occidental Chemical Corp. v. Hartford Accident and Indemnity Co.*, NY SupCt, Niagara Cnty, No. 41009/80).

In the suit, Occidental names some 50 insurers as defendants, all of whom it claims have failed to accept unconditional responsibility for the defense and/or indemnity of the so-called Niagara area lawsuits.

Future

The future of Love Canal is, of course, keyed to the question of habitability. The Love Canal Area Revitalization Agency, the quasi-state agency set up in 1980, is now considering that issue.

William Broderick, executive director of LCARA, said the agency expects to have a land-use plan and draft environmental impact statement prepared by October. If the plan and environmental impact statement is approved on schedule, the first homes at Love Canal could be offered for sale by the end of this year or the very beginning of 1990, he said.

LCARA has a list of some 120 people who are interested in purchasing homes in the area, including two who want to purchase their parents' former homes.

According to LCARA, the northern section of the Emergency Declaration Area is where resale is expected to begin, with more than 200 homes. The agency says rehabilitation and home

sales should take place incrementally to avoid flooding the market. One factor that will slow the process is that many of the homes have been abandoned for some 10 years and are in a state of disrepair. Indeed, many of the homes are boarded up, their yards overgrown, and their walls stained by graffiti.

In addition, LCARA is enjoined from selling the homes until it prepares an environmental impact statement, under a 1985 court order (*Abrams v. Love Canal Area Revitalization Agency*, NY SupCt, Niagara Cnty, No. 58451-85). The order, which was sought by state Attorney General Robert Abrams, was affirmed by the state Supreme Court Appellate Division, Fourth Department, on Nov. 10, 1987.

Michael O'Laughlin, the mayor of Niagara Falls and chairman of LCARA, said "the biggest breakthrough in the whole Love Canal [issue] is when the first family moves back in. It breaks the whole adverse image of people across the country that this is a bad area." O'Laughlin, in a somewhat Orwellian twist, said, once the area is reinhabited, he would like to see the name of the development changed to something like "Sunrise City" or "Sunrise Circle."

"People never talked about Love Canal before and now it has a connotation of evil, destruction, something bad. I would like to change it to something that has a connotation of a great future, bright and cheerful, successful."

For the area where the canal and the first two rings once stood, Commissioner Jorling said, if the chemicals from the dump are not removed at some point in the future, the possibility of a park or golf course is not totally out of the question.

Silbergeld of EDF criticized the idea of rehabilitating the area before the chemicals have been removed from the canal. "From a policy standpoint, the basic mistake at Love Canal is still going on," she said. "And that is this bizarre notion of rehabilitating the place before you've cleaned it up."

"It's almost as if they haven't learned anything. People had to move out of Love Canal because chemicals had escaped from confinement. What's gone on since then has basically been an attempt to improve the confinement, with relatively little removal of chemicals. So the notion that you bring the people back in, with the inevitable happening—that at some point, those chemicals are going to break out again—seems to me extremely foolish and shows very little learning. Moreover, its in contravention to the intent of superfund, which is that dump sites are to be cleaned up, not contained."

Lois Gibbs said, "It's insane, it's absolutely insane" to move people back into the homes in the Emergency Declaration Area. "There's nothing been done to those homes. They did some containment on site. They're cleaning the creeks and the storm sewers, but the homes were contaminated from chemicals that had seeped through the ground into the basements and into the air. That was the main contamination that created the devastating health problems. None of the soils around the basements of these homes have been cleaned or removed or changed in any way. So, to say that it's now habitable is just wrong, I mean it's morally wrong."

Beverly Paigen said that, if the area is reinhabited, the health of the new residents should be monitored.

Most people associated with the disaster at Love Canal want to put the entire issue behind them, Rep. LaFalce said. "That's everybody's druthers: I wish this headache would go away."

"[But] it's our headache, it's not going to go away. We have to live with it. Who knows what time will bring? It could become a distant memory a couple of decades from now. I don't think so. I think it will take longer than a couple of decades. It might take many generations before it's more of a distant recollection."