



Home
 Current Issue
 Back Issues
 The Archive
 Forum
 Site Guide
 Feedback
 Search

Subscribe
 Renew
 Gift Subscription
 Subscriber Help

Browse >>
 Books & Critics
 Fiction
 Food
 Foreign Affairs
 Language
 Poetry Pages
 Politics & Society
 Science & Technology
 Travel & Pursuits

Subscribe to our free
 e-mail newsletters

[E-MAIL ARTICLE](#) [PRINTER FORMAT](#) [SUBSCRIBE TO THE ATLANTIC](#)

The Atlantic Monthly | July 1989

A Toxic Ghost Town

Ten years later, scientists are still assessing the damage from Love Canal

MICHAEL H. BROWN

.....

More than ten years have passed since a leaky dump in Niagara Falls, a city in upstate New York, became infamous as Love Canal. The site became a matter for public concern during the summer and autumn of 1978, when Governor Hugh L. Carey and President Jimmy Carter declared an emergency there and arranged to evacuate helpless families who had watched industrial sludge invade their back yards. Overnight a blue-collar community six miles from the cataracts of Niagara Falls became America's first toxic ghost town.

Love Canal, about which I reported in the December, 1979, *Atlantic*, was the harbinger of America's toxic-waste crisis. The situation led to the identification of many similar problems nationwide and to the creation of a \$1.6 billion federal Superfund (now valued at \$10.1 billion) for their remediation. At last count, 1,030 families had evacuated the Love Canal area during two separate emergencies, one in 1978, for the 238 households closest to the dump, and a second just a few months after publication of the *Atlantic* article, for 792 households on the

More on politics and society from *The Atlantic Monthly*.

More on the environment from *The Atlantic Monthly*.

From the archives:

"Love Canal and the Poisoning of America" (December 1979)
 A documentation of the miseries and losses induced by the infamous Love Canal dump in Niagara Falls, New York. By Michael H. Brown

periphery of the original danger zone. Roughly \$150 million has been spent to sample the air, groundwater, and soil; survey health problems in the area; pay residents for their homes; move those residents to new homes; and halt and clean up the pollution. The costs were split between the state, which used emergency allocations as well as major shares of its health and environmental budgets, and the U.S. Environmental Protection Agency, which relied on Superfund money and funds administered by the Federal Emergency Management Agency.

Yet even after such expensive measures questions remain, not the least of which is precisely what happened at Love Canal? Though a decade has passed since it first made national headlines, the canal is still a hot topic locally (articles appear in the local newspapers nearly every day), and it is—as it always has been—the focus of bitter dispute. Were all those people really made sick by the chlorinated concoctions? Or was the health crisis they complained of a case of botched science and mass hysteria?

Today Love Canal is a forty-acre mound of clay ringed by warning signs, a high chain-link fence, and a drainage trench. The clay was heaped on the dump to stop rainfall from percolating through the wastes and carrying any more of them outward. The clay cap is reinforced by a high-density polyethylene membrane that is believed to be resistant not only to rainwater but also to the chemicals themselves. The drainage trench, ranging in depth from eight to twenty-one feet, intercepts chemical-laden groundwater and funnels it to a treatment plant, where the

toxic substances are removed by carbon filters. The two streets closest to the chemicals, 99th and 97th streets, have ceased to exist; the homes that stood there were bulldozed under the clay. The more distant homes that were evacuated during the second emergency, in 1980, are boarded up and dilapidated.

At the root of the problem are 43.6 million pounds of process slurries, waste solvents, and pesticide residues that the Hooker Chemical and Plastics Corporation dumped in an abandoned canal from 1942 to 1953. The company trucked much of the waste material from its nearby plant to Love Canal in metal drums that eventually rusted open. Melting snow and spring rains washed the wastes up and outward. The wastes pooled on the surface of the poorly covered canal, causing a stench to envelop the vicinity. In May of 1978, as a reporter for the local newspaper, the *Niagara Gazette*, I took an informal survey of people who lived on 99th Street and logged numerous complaints ranging from loss of fur among household pets to dizziness, respiratory problems, and breast cancer. Residents blamed the fumes. Responding to the growing public alarm over possible health repercussions, and having already obtained hard evidence that the carcinogen benzene was infiltrating household air, the state Department of Health (DOH) moved in with its own survey, finding four birth defects among thirty-nine babies born to families on 99th Street, where waste sludges were seeping through basement walls. That translates into a 10.3 percent rate of birth defects, compared with the 7.3 percent rate in a control group farther from the chemicals.

The rate of miscarriages was 3.5 times the normal rate in one age group of the women living near the canal's southern end, and as the DOH began collecting what would eventually total 4,386 blood samples from 3,919 people, indications were also found of incipient liver damage.

The most dramatic study was conducted in 1980, by a private medical contractor for the EPA and the Department of Justice, which was building a legal case against Hooker—as was State Attorney General Robert Abrams—and thus was interested in proving that there had been a harmful effect. The Justice Department contractor, the Biogenics Corporation, of Houston, studied blood samples from thirty-six residents and concluded that eight of the people had a rare aberration it called "supernumerary acentric fragments," or extra pieces of genetic material. Dante J. Picciano, of Biogenics, claimed that such fragments should appear in only one out of a hundred people and might well forewarn of cancer and birth defects. An uproar ensued among the tested residents, who lived just beyond the 1978 evacuation zone and who now wanted to be evacuated. In May of 1980 their communities were promised government sponsored relocation.

In the years since, several follow-up studies have supported the initial findings of adverse health effects. In 1984 the DOH reported that 12.1 percent of infants born in a "swale" area (where contaminated water may have drained from the canal) experienced low birth weight, as compared with 6.9 percent in other parts of

upstate New York. That was followed by a DOH report that found a statistically significant excess of congenital malformations in the swale neighborhoods, primarily from 1955 to 1964, just after the chemicals were dumped. This time 10.9 percent of 174 infants were found to have birth defects. Beverly Paigen, then a biologist at Roswell Park Memorial Institute, in Buffalo, who compared 239 children exposed to Love Canal during gestation with 707 children in an unexposed control group, found an even greater effect. In 1985 she reported that 17.9 percent of those who had lived in drainage areas were born at below-normal weights and that Love Canal children in general suffered a 12.1 percent rate of birth defects—both figures about twice those for the control group. The same year she reported in another study that Love Canal children experienced 2.45 times as many seizures as a control group, 2.25 times as many skin rashes, and 2.95 times as much hyperactivity. In 1987 Paigen, who has served as an unpaid consultant to the residents, released yet another study, of 493 children who had once lived near the dump. The children not only weighed less but were shorter than the control children, she asserted.

While the more recent data have not yet been carefully examined, the early studies conducted by Picciano and Paigen have been pointedly criticized. In 1980 a special panel headed by Dr. Lewis Thomas, then the chancellor of Memorial Sloan-Kettering Cancer Center, in New York City, and a bestselling author, described a report issued by Paigen in 1979, which claimed to have found a multitude of disorders among canal-area

residents, as falling "far short of the mark as an exercise in epidemiology," inasmuch as it relied on "largely anecdotal information provided by questionnaires submitted to a narrowly selected group of residents." Meanwhile, a follow-up chromosome study conducted for the U.S. Department of Health and Human Services from December of 1981 to February of 1982 on forty-six neighborhood residents—including seventeen whom Picciano had tested—failed to confirm Picciano's claims of supernumerary aberrations.

"We should have known at the time what Picciano was talking about when he used the term 'supernumerary acentric fragments,'" says Michael A. Bender, a senior scientist in the medical department at Brookhaven National Laboratory. "Several papers from the 1970s had noted similar phenomena. We just never had seen it put in those terms and, unfortunately, failed to recognize what we were dealing with, partly because we never got to see Picciano's material. If we had, I think we would have immediately known. Such aberrations are a natural phenomenon, which is seen particularly in females and which increases with age. They appear in the form of extra X-chromosomes, which have no known association with exposure to anything nasty. It's just something that happens as an odd spontaneous event."

Other follow-up studies, by the DOH, have shown few effects on health that can be attributed to the chemicals, which included the notorious dioxin, an unwanted by-product of the manufacture of Agent Orange and other

herbicides. In 1981, when the DOH checked data from its cancer registry for a census tract that includes the Love Canal area, it failed to find elevated rates of liver cancer, lymphoma, and leukemia. Lung cancer was higher than average (twenty-five incidents in males, versus the fifteen that an actuary would have expected), but the rate of respiratory disease was high throughout the region, where industry was once concentrated and air pollution was severe.

Most of Paigen's and Picciano's work involved residents who lived outside the 1978 evacuation zone, in an area where contaminated creeks flowed. While few officials doubt that the 1978 evacuation was necessary, the second evacuation—sparked in large part by Picciano's findings—is more questionable. Chemical levels were far lower in these homes, but the EPA began relocating their occupants after a group of activists, led by the housewife Lois Gibbs, held two EPA officials hostage at the activists' headquarters to protest what they saw as government inaction. Gibbs, who has since founded a national clearinghouse for citizen protests involving hazardous wastes, is an increasingly controversial figure, especially among people who lived near Love Canal and did not want to leave. They accuse her of exaggerating the health problems and seeking celebrity by playing to television cameras.

Former Governor Hugh Carey makes the same assertion about Gibbs, and the district's congressman, John LaFalce, has come to the conclusion, as have many others, that the second evacuation may have been too extensive. "You

had a very, very serious problem," LaFalce says, "but then judgments were made on soft data or no data at all. The evacuation of 1978 clearly should have taken place, but the second crisis, in 1980, got out of hand."

The protests and emotional uproar have caused state and federal officials to think twice before declaring similar emergencies elsewhere. Caught between residents who accuse it of understating the health effects and scientists who believe the effects were overstated, the DOH has grown wary. Peter Slocum, a DOH spokesman, says, "I think a lot of our health people feel they went out on the front line and got burned."

What the chemicals at Love Canal did or didn't do is of consequence not only for those who lived there but also for the uncounted others nationwide who live near any of the 29,463 potentially hazardous waste sites identified by the EPA. If Love Canal one day proves to be less of a threat than originally thought, other problems might be taken less seriously in the future, and support for the Superfund, which was established during the Carter years (and, ironically, greatly expanded under President Reagan), could wane as a result. Some suggest that science is simply not up to the task of proving a toxic cause and effect. Because residents move in and out, because families suffer multiple ailments (not just the illness that serves as the subject of a given study), because the effects of chemicals when they interact with one another are all but unknown, and because the survey populations are quite limited,

attempts to prove a statistically significant effect may be doomed to failure. "It's very hard in a small population of a few thousand or so to demonstrate a five or ten percent increase in miscarriages or birth defects," says Dr. Arthur Bloom, a geneticist who helped evaluate Picciano's study for the Department of Health and Human Services. "The best studies were done by the DOH, and those related to an increased incidence of spontaneous abortions [miscarriages]. Those studies were the most definitive, positive studies—the only ones that stood the scientific tests."

The DOH, in an attempt to settle the matter of other health problems, last year began a comprehensive two-year health survey that will eventually include 5,000 to 10,000 people who lived at or near Love Canal between the 1940s (when dumping began) and 1978. But Beverly Paigen believes that the state is hoping not to find anything. Health studies already done by the DOH and the Centers for Disease Control, Paigen says, are riddled with misrepresentations and procedural holes that make the situation seem less serious than it is. Paigen, who now works in the research laboratory at Children's Hospital in Oakland, California, cites the follow-up chromosome tests and the state's cancer study as cases in point. The chromosome test that found no damage among Love Canal residents, she argues, was conducted after those residents had left the area; such tests use the short-lived white blood cells, so few of the chromosomes examined had been exposed to toxic chemicals. And the survey that failed to show elevated cancer rates in the entire census tract, Paigen

says, included hundreds of unexposed people, who diluted the statistics.

Paigen claims that the state tried so hard to suppress panic at Love Canal that when she started reporting ailments there, her travel was restricted (Roswell is a division of the DOH) and she was prohibited from applying for grants. She also says that her office was rifled. That was when she moved to California, where she maintains a keen interest in Love Canal developments.

Another party deeply interested in health effects is Hooker Chemical, which, since all the bad publicity occurred, has changed its name to Occidental Chemical (it is a subsidiary of Occidental Petroleum Corporation). Occidental has steadfastly maintained that no adverse health effect can be proved to be a consequence of the wastes it disposed of in Love Canal and that government overreacted at just about every stage. It also maintains that, in any case, the problem wasn't its fault, because in 1953 it sold the Love Canal land for the token sum of one dollar to the Niagara Falls school board as the site for an elementary school, freeing the firm of legal responsibility. The corporation has never changed this stand. Once the Love Canal problems began to be heavily publicized, Occidental embarked on a nationwide campaign—involving thousands of glossy pamphlets and a traveling two-man "truth squad"—to convince the press that the problems at Love Canal were, not its fault.

In February of last year, however, John T.

Curtin, a federal judge in Buffalo, found Occidental liable for whatever is finally deemed to be the justifiable government costs at Love Canal. Curtin ruled, in a partial summary judgment, that the company handled its wastes in a way that would eventually result in chemical seepage. It was one in a series of legal blows to the firm. In 1984 Occidental had settled a suit filed against both the firm and the city by 1,328 residents, who collected \$20 million. The payments ranged from \$2,000 to \$400,000 per plaintiff, though Occidental continued to maintain that it could not be shown to be responsible for adverse health effects. Other suits over Love Canal remain unresolved. Attorney General Abrams calls Hooker's conduct in "foisting" the canal upon the school board "extreme selfishness" under the guise of munificent corporate citizenry. Occidental is expected to appeal Judge Curtin's decision.

The people? In addition to whatever they were awarded by Occidental, the victims received fair market value for their homes. At the time, the Niagara area was economically depressed and home values at Love Canal hovered around \$50,000. Most recipients spent the money buying or building new houses in the area. Lois Gibbs has moved to Virginia. Karen Schroeder, one of the first residents to demonstrate against the pollution, has moved to the center of Niagara Falls with her daughter, Sheri, who was born with a cleft palate, deformed ears, a hole in her heart, impaired learning ability, and deafness, and who later developed a double row of bottom teeth. Now twenty years old, Sheri is in a special-education

program and is planning to attend college. She received the highest settlement from Occidental, and plastic surgery has repaired some of her problems.

Schroeder's mother, Aileen Voorhees, whose home, on 99th Street, was where the highest chemical reading was taken, now lives about six miles from Love Canal, in an impressive new brick home she had built. But she misses the old community: Voorhees says she longs for her children's first shoes and her cedar closet and other things she had to leave behind because of the contamination.

Others have sought solace in rural parts of Niagara County. Many complain that they were not given enough to buy comparable houses elsewhere, and some of them—sixty households in all—stayed behind in the boarded-up neighborhoods. Ironically, the depopulation has turned the area into a wildlife refuge of sorts. Those who still live there tell of seeing deer, rabbits, snowy owls, and even a bald eagle. Birds were scarce when I first tramped the canal in the 1970s, but now at least eighteen species can be spotted there, according to Florence Best, a bird watcher who has stayed in the area because, as she sees it, "the whole world's polluted, no matter where you go." Last year the DOH commissioner, Dr. David Axelrod, concluded after a \$14 million study funded by the EPA that once creeks and sewers are cleaned, homes to the north and west of the canal—those abandoned during the second evacuation—can be reinhabited if local authorities so desire. The study said that of 562

homes and churches sampled, only one showed the presence of chlorotoluene, a solvent found in the canal and used as an indicator that other chemicals may be present. The level was 18 micrograms per cubic meter—a negligible amount compared with the 6,700 micrograms found in Aileen Voorhees's home in 1978. "The clay cap works, the leachate-collection system works," Stephen Luftig, of the EPA's regional office, says. "It seems like the mother lode has been contained."

Though dioxin is still detected in some spots, the levels are below the one-part-per-billion threshold that the CDC has set for emergency action. Contaminated creeks are being dredged and the tainted sediments stored for incineration, at a cost of \$20 million. The outlying homes evacuated during the second emergency may soon be sold to bargain-hunters. The mayor of Niagara Falls, Michael O'Laughlin, would like to forget the whole thing and rename the canal area Sunrise Park. Love Canal has no place in the image of a tourist town.

But none of those who abandoned their homes can forget. "My daughter had rheumatoid arthritis that used to flare up, and a tumor on her knee so rare it was sent to clinics in Cleveland and the Soviet Union for analysis," says Patricia Brown, who lived on 99th Street and now works for a task force in Niagara Falls that helps the city locate and clean up local pollution. "Since we got out, she has improved. The arthritis has only flared up twice since we left; before, it was far more frequent."

Luella Kenny, another former resident, administers a \$1 million medical fund set up for the beneficiaries of the Occidental settlement. One of her sons died from a mysterious kidney ailment after playing, according to Kenny, in one of the dioxin-laden creeks. A medical researcher by profession, Kenny saw strange rashes and warts on another son, headaches in the rest of the household, and immune problems in her husband. All the symptoms have diminished or disappeared since they moved away. "The improvement of rashes and allergies," she says, "has been seen by almost everyone."

While neither the DOH nor any other health agency has warned that the residents may one day fall victim to latent disease—indeed, the DOH has said that no abnormal incidence of cancer is likely—these residents, deeply suspicious of government reassurances, worry about ailments that can take years or decades to show up. "There's not a night you put your head on a pillow and don't wonder, Who's next?" Patricia Brown says. "Will it be me? My husband? My child? I keep seeing repeated cases of cancer among those who lived there. This is the type of fear you'll live with the rest of your life."

What do you think? Discuss this article in [Post & Riposte](#).



[E-MAIL
ARTICLE](#)



[PRINTER
FORMAT](#)

[SUBSCRIBE TO
THE ATLANTIC](#)

Copyright © 1979 by Michael H. Brown. All rights reserved.

The Atlantic Monthly; July 1989; A Toxic Ghost Town - 89.07; Volume 264, No. 1; page 23.

Subscribe to ^{THE} Atlantic
Guaranteed savings, no risk. Click here.

[Home](#) | [Current Issue](#) | [Back Issues](#) | [Forum](#) | [Site Guide](#) | [Feedback](#) | [Subscribe](#) | [Search](#)

Advertisement: [Travel Guides](#) [Guide to Hotels](#) [Discount Hotels](#)