
Love Canal *by Michael H. Brown*

For over a century, American industry has been dumping its toxic chemical wastes at thousands of sites across the nation. The total number of these dumps, their contents, and their condition are all unknown; in many cases records have long since been lost. Some dumps contain chemicals that were considered safe years ago but are now known to cause cancer or other sicknesses; some were created perilously close to where people live. Seepage from these chemical dumps has gradually contaminated a significant part of the nation's ground water, on which more than half the population depends for domestic use. Since it can take years for ground water to travel even a few miles, and longer still for the effects of poison to show up in humans, the full scale of the problem may not be apparent for decades.

In this article, Michael Brown describes the impact of toxic chemicals on the community in Love Canal, New York, whose residents had to abandon their homes in 1980. Love Canal was the U.S. first toxic waste scandal and is still the most famous one.

At each turn, the schizophrenia of Niagara Falls, New York, is starkly evident. A city of unmatched natural beauty, it is also a tired industrial workhorse, beaten often and with a hard hand. In summertime the tourist limousines, heading toward the spectacular falls, move alongside soiled factory tank trucks. All the vehicles traverse a pavement film-coated with oils and soot, past large T-shaped steel constructions that string electrical lines above the densely wooded ravines to the horizon. In the southwest, a rising mist of spray from the downward force of the cataracts contends for prominence in the skyline with the dark plumes of towering smokestacks.

These contradictions stem from the magnificent river - a strait of water, really - that connects Lake Erie to Lake Ontario. Flowing north at a pace of half a million tons a minute, the watercourse widens into a smooth expanse near the city before it breaks into whitecaps and takes its famous 186-foot plunge. Then it cascades through a gorge of overhanging shale and limestone to haystack rapids higher and swifter than anywhere else on the continent. From there, it turns mellow again.

Newlyweds and other tourists have long treated the falls as an obligatory pilgrimage, and they once had come in long lines during the warmer months. At the same time, the plunging river provides cheap electricity for industry, particularly chemical producers, so that a good stretch of its beautiful shoreline is now filled with the spiraled pipes of distilleries. The odors of chlorine and sulfides hang in the air.

A major proportion of those who live in the city of Niagara Falls work in chemical plants, the largest owned by the Hooker Chemical Company. Timothy Schroeder did not. He was a cement technician by trade, dealing with the factories only if they needed a pathway poured or a small foundation set. Tim and his wife, Karen, lived on 99th Street in a ranch-style home with a brick and wood exterior. They had saved all they could to redecorate the inside and to make additions, such as a cement patio covered with an extended roof. One of the Schroeder's most cherished possessions was a fiberglass pool, built into the ground and enclosed by a redwood fence.

Though it had taxed their resources, the yard complemented a house that was among the most elegant in a residential zone where most of the homes were small frame buildings, prefabricated and slapped together *en masse*. It was a quiet area, once almost rural in character, and located in the city's extreme southeast corner. The Schroeders had lived in the house only since 1970, but Karen was a lifelong resident of the general neighborhood. Her parents lived three doors down from them, six miles from the row of factories that stood shoulder to shoulder along the Upper Niagara.

Karen Schroeder looked out from a back window one October morning in 1974 and noted with distress that the pool had suddenly risen two feet above the ground. She called Tim to tell him about it. Karen then had no way of knowing that the problem far exceeded a simple property loss - that in fact it was the first sign of a great tragedy.

Accurately enough, Mrs. Schroeder figured that the cause of the uplift was the unusual groundwater flow of the area. Twenty-one years before, an abandoned hydroelectric canal directly behind their house had been backfilled with industrial rubble. The underground breaches created by this disturbance, aided by the marshy nature of the region's surface layer, had collected large volumes of rainfall, and this water had undermined the backyard. The Schroeders allowed the pool to remain in its precarious position until the next summer and then pulled it from the ground, intending to replace it with a cement one. Immediately, the gaping hole filled with what Karen called "chemical water," rancid liquids of yellow and orchid and blue. These same chemicals, mixed with the groundwater, had flooded the entire yard; they attacked the redwood posts with such a caustic bite that one day the fence simply collapsed. When the groundwater receded in dry weather, it left the gardens and shrubs withered and scorched, as if by a brush fire.

How the chemicals had got there was no mystery: they came from the former canal. Beginning in the late 1930s or the early 1940s, the Hooker Company, whose many processes included the manufacture of pesticides, plastics, and caustic soda, had used the canal as a dump for at least 20,000 tons of waste residues - "still-bottoms" in the language of the trade. The chemical garbage was brought to the excavation in 55-gallon metal barrels stacked on a small dump truck and was unloaded into what, up to that time, had been a fishing and swimming hole in the summer and an ice-skating rink during the city's long, hard winter months.

When the hazardous dumping first began, much of the surrounding terrain was meadowlands and orchards, but there was also a small cluster of homes on the immediate periphery, only thirty feet from the ditch. Those who lived there remembered the deep holes

being filled with what appeared to be oil and gray mud by laborers who rushed to borrow their garden hoses for a dousing of water if they came in contact with the scalding sludge they were dumping. Children enjoyed playing among the intriguing, unguarded debris. They would pick up chunks of phosphorus and heave them against cement. Upon impact the "fire rocks," as they were called, would brilliantly explode, sending off a trail of white sparks. Fires and explosions erupted spontaneously when the weather was especially hot. Odors similar to those of the industrial districts wafted into the adjacent windows, accompanied by gusts of fly ash. On a humid moonlit night, residents would look toward the canal and see, in the haze above the soil, a greenish luminescence.

Karen's parents had been the first to experience problems with seepage from the canal. In 1959, her mother, Aileen Voorhees, noticed a strange black sludge bleeding through the basement walls. For the next twenty years, she and her husband, Edwin, tried various methods of halting the irritating intrusion, coating the cinder-block walls with sealants and even constructing a gutter along them to intercept the inflow. Nothing could stop a smell like that of a chemical plant from permeating the entire household, and neighborhood calls to the city for help were unavailing. One day, when Edwin punched a hole in the wall to see what was happening, quantities of black liquid poured out. The cinder blocks were full of the stuff.

Although later it was to be determined that they were in imminent danger, the Voorhees treated the problem at first as a mere nuisance. That it involved chemicals, industrial chemicals, was not particularly significant to them. All their life, all of everyone's life in the city, malodorous fumes had been a normal ingredient of the surrounding air.

More ominous than the Voorhees' basement seepage was an event that occurred in the Schroeder family at 11:12 p.m. on November 21, 1968. Karen gave birth to her third child, a seven-pound girl named Sheri. But no sense of elation filled the delivery room, for the baby was born with a heart that beat irregularly and had a hole in it, bone blockages of the nose and partial deafness, deformed external ears, and a cleft palate. By the age of two, it became obvious that the child was mentally retarded. When her teeth came in, there was a double row of them at the bottom. She also developed an enlarged liver.

The Schroeders looked upon these health problems, as well as certain illnesses among their other children, as acts of capricious genes, a vicious quirk of nature. Like Aileen and Edwin Voorhees, they were mainly aware that the chemicals were devaluing their property. The crabapple tree and evergreens in the back were dead, and even the oak in the front of the house was sick; one year, the leaves fell off on Father's Day.

The canal was dug with much fanfare in the late nineteenth century by a flamboyant entrepreneur named William T. Love. Love arrived in town with a grandiose dream: to construct a carefully planned industrial city with ready access to water power and major markets. The setting for Love's dream was to be a navigable power channel that would extend seven miles from the Upper Niagara near what is now 99th Street to a terrace known as the Niagara Escarpment, where the water would fall 280 feet, circumventing the treacherous falls and at the same time providing cheap power. A city would be constructed near the point where the canal fed back into the river, and it would accommodate 200,000 to 1 million people, he promised.

Love's sales speeches were accompanied by advertisements, circulars, and brass bands, with a chorus singing a special ditty to the tune of "Yankee Doodle": "Everybody's come to town,/Those left we all do pity,/For we'll have a jolly time/At Love's new Model City."

So fired by Love's imagination were the state's leaders that they allowed him the rare opportunity of addressing a joint session of the senate and assembly. He was given a free hand to condemn as much property as he liked and to divert whatever amounts of water. But Love's dream quickly became Love's folly, and, financially depleted, he abandoned the project after a mile-long trench, 10 to 40 feet deep and generally 15 yards wide, had been scoured perpendicular to the Niagara River. Eventually the site was acquired by Hooker.

Except for the frivolous history of Mr. Love, and some general information on the chemicals, little was known publicly about the dump in 1977. Few of those who lived in the numerous houses that had sprung up by the site were aware that the large barren field behind them was a burial ground for toxic wastes. That year, while working as a reporter for a local newspaper, the *Niagara Gazette*, I began to inquire regularly about the strange conditions on 99th Street. The Niagara County Health Department and the city both said it was a nuisance condition but no serious danger to the people. The Hooker Company refused to comment on their chemicals, claiming only that they had no records of the burials and that the problem was not their responsibility. In fact, Hooker had deeded the land to the Niagara Falls Board of Education in 1953 for a token \$1. At that time the company issued no detailed warnings about the chemicals; a brief paragraph in the quitclaim document disclaimed company liability for any injuries or deaths that might occur at the site. Ralph Boniello, the board's attorney, said he had never received any phone calls or letters specifically describing the exact nature of the refuse and its potential effects, nor was there, as the company was later to claim, any threat of property condemnation by the board in order to secure the land. "We had no idea what was in there," Boniello said.

Though surely Hooker must have been relieved to rid itself of the contaminated land, when I read its deed I was left with the impression that the wastes there would be a hazard only if physically touched or swallowed. Otherwise, they did not seem to be an overwhelming concern. In reality, the dangers of these wastes far exceeded those of acids or alkalines or inert salts. We now know that the drums dumped in the canal contained a veritable witch's brew of chemistry, compounds of truly remarkable toxicity. There were solvents that attacked the heart and liver, and residues from pesticides so dangerous that their commercial sale had subsequently been restricted or banned outright by the government; some of them are strongly suspected of causing cancer.

Yet Hooker gave no more than a hint of that. When approached by the educational board for the parcel of property it wanted for a new school, B. Klaussen, then Hooker's executive vice-president, replied in a letter to the board:

"Our officers have carefully considered your request. We are very conscious of the need for new elementary schools and realize that the sites must be carefully selected so that they will best serve the area involved. We feel that the board of education has done a fine job in meeting the expanding demand for additional facilities and we are anxious to

cooperate in any proper way. We have, therefore, come to the conclusion that since this location is the most desirable one for this purpose, we will be willing to donate the entire strip between Colvin Boulevard and Frontier Avenue to be used for the erection of a school at a location to be determined...."

The school board, apparently unaware of the exact nature of the substances underneath this generously donated property, and woefully incurious, began to build the new school and playground at the canal's midsection. Construction progressed even after the workers struck a drainage trench that gave off a strong chemical odor and then discovered a waste pit nearby. Instead of halting the work, the board simply had the school site moved 80 feet away. Young families began to settle in increasing numbers alongside the dump; many of them had been told that the field was to be a park and recreation area for their children.

If the children found the "playground" interesting, there were times they found it painful as well. When they played on this land that Hooker implied was so well suited for a school, they sneezed and their eyes teared. In the days when dumping was still in progress, they swam at the opposite end of the canal, at times arriving home with hard pimples on their bodies. And Hooker knew that children were playing on its spoils. In 1958 the company was made aware that three children had been burned by exposed residues on the surface of the canal, much of which according to the the residents, had been covered over with nothing more than fly ash and loose dirt. Because it wished to avoid legal repercussions, the company chose not to issue a public warning of the dangers only it could have known were there, nor to have its chemists explain to the people that their homes would have been better placed elsewhere.

The Love Canal was simply unfit to be a container for hazardous substances, even by the standards of the day, and now, in 1977, the local authorities were belatedly finding that out. Several years of heavy snowfall and rain had filled the sparsely covered channel like a sponge. The contents were overflowing at a frightening rate, seeping readily into the clay, silt, and sandy loam and finding their way through old creekbeds and swales into the neighborhood.

The city of Niagara Falls, I was assured, was planning a remedial drainage program to reduce chemical migration off the site. But it was apparent that no sense of urgency had been attached to the plan, and it was stalled in a ball of red tape. There was hopeless disagreement over who should pay the bill - the city, Hooker, or the board of education - and the engineers seemed confused as to what exactly needed to be done for a problem that had never been confronted elsewhere.

At a meeting in Buffalo during the summer of 1977, I cornered an independent consultant for the city and requested more information on the dump and the proposed remedial action.

"We're not really sure what the final solution should be," he said. "You can't be sure until you know what you're dealing with."

Was there a chance of harm to the people?

He shrugged his shoulders.

How were the potential dangers to be searched out?

"Someone's going to have to dig there and take a good look," he answered. "If they don't, your child or your children's children are going to run into problems."

The same questions were repeated for months, with no answers. Despite the uncertainty of the city's own consultant, the city manager, Donald O'Hara, persisted in his view that the Love Canal, however displeasing to the eyes and nasal passages, was not a crisis but mainly a matter of aesthetics. O'Hara was pleased to remind me that Dr. Francis Clifford the county health commissioner, supported his opinion. Besides making light of the seepage, O'Hara created an aura of secrecy around information regarding the canal. His concerns appeared to be financial and legal in nature. As manager, O'Hara had pulled the city out from under a staggering debt, and suddenly, with hardly a moment to enjoy a widely publicized budget surplus, his city hall was faced with the prospect of spending an unplanned \$400,000 for a remedial program at the dumpsite. And it was feared there would be more expensive work to do later on - and lawsuits.

With the city, the school board, and Hooker unwilling to commit themselves to a remedy, conditions between 97th and 99th streets continued to degenerate until, by early 1978, the land was a quagmire of sludge. Melting snow drained a layer of soot onto the private yards, while the ground on the dump itself had softened to the point of collapse, exposing the crushed tops of barrels. When a city truck attempted to cross the field and dump clay on one especially large hole, it sank up to its axles. Masses of sludge beneath the surface were finding their way out at a quickening rate, forming constant springs of contaminated liquid. So miserable had the Schroeder backyard become that the family gave up trying to fight the inundation. They had brought in an old bulldozer to attempt to cover pools of chemicals that welled up here and there, but now the machine sat still. Their yard, once featured in a local newspaper for its beauty, now had degenerated to the point where it was unfit even to walk upon. Of course, the Schroeders could not leave. No one would think of buying the property. They had a mortgage to pay, and on Tim's salary, could not afford to maintain the house while they moved to a safer setting. They and their four children were stuck.

Industry had begun its grip on the river as early as the mid-1700s, when Daniel Joncaire constructed a lumber mill just above the American falls, employing a system of overshoot wheels and pulleys to make practical use of the river's swift flow. Ventures like Joncaire's proliferated for the next hundred years, and included the excavation of another canal from the upper river to the lower to create additional power for flour-mill operations. There was concern at the time that sucking in water from above the falls and diverting it around the cataracts would lessen the flow to the point where it would detract from the beauty of the falls, but the Niagara Falls Hydraulic Company dispelled the notion: "Its attractiveness as a watering place will continue undiminished; for the proposed situation of the factories is such as to preclude the possibility of their detracting in the least from the grandeur of the cataract. Electricity was first produced from river power in 1881. Industries quickly filtered into the city, supplied by what

was called the Niagara Falls Power Company at the turn of the century. Within a short span, aluminum, calcium chloride, ferroalloys, and other products were being manufactured quite economically because of the availability of cheap hydroelectricity.

The city had made the decision to accommodate industry at the expense of its great natural attractions. Tourists who ventured into town had to pass a two-mile row of unsightly factories before arriving at the key vantage points near the falls, and when they did, they could see streams of brownish suds in the turbulent waters at the base of the cataracts. Fishing had been largely destroyed in both the river and Lake Ontario, and parks and beaches, once of scenic value, had deteriorated so greatly that it was only on the hottest days they drew large gatherings. The smell of dead fish and garbage often permeated the winds, and the rapids of the river were now at lower levels than ever before - the electrical generators were sucking in too much water. Mink and deer that had once foraged in the brush were unable to reproduce as they formerly had, and the populations of muskrat and ringneck pheasant were dwindling at a rapid rate. The fertility of mallard duck eggs was less than half what it had been in previous decades, and other birds laid eggs with shells so brittle that they cracked from the slightest impact. The wildlife problems coincided strikingly with the increased volumes of chlorinated compounds being produced on the Niagara Frontier.

Despite the frightening environmental indications, O'Hara and the mayor, Michael O'Laughlin, continued to cater to industrial whims and to ignore those who might cause trouble for the plants. When residents appeared at city council meetings, O'Laughlin cut them short in their complaints during the public sessions. Karen Schroeder, for one, had great difficulty reaching the mayor or O'Hara on the phone to tell them of her distress. At one meeting, she said, Tim was told by a councilman, Pierre Tangent, that it was difficult for the city to attack the Hooker Chemical Company while negotiations for its new building were in progress. Obviously, a city-initiated lawsuit against the firm would have been quite untimely.

At the very time City Manager O'Hara was explaining to me that the Love Canal was not threatening human lives, both he and other authorities were aware of the nature of Hooker's chemicals. In the privacy of his office O'Hara, after receiving a report on the chemical tests at the canal, had discussed with Hooker the fact that it was an extremely serious problem. Even earlier, in 1976, the New York State Department of Environmental Conservation had been made aware that dangerous compounds were present in the basement sump pump of at least one 97th Street home, and soon after, its own testing had revealed that highly injurious halogenated hydrocarbons were flowing from the canal into adjoining sewers. Among these were the notorious PCBs - polychlorinated biphenyls. The Hudson River had become so badly polluted with these compounds that a \$200 million project was initiated to dredge contaminated river sediments.

PCBs, which are known to kill even microscopic plants and animals also poisoned animal feed in at least seventeen states during 1979, leading to the destruction of millions of chickens and eggs from Oregon to New Jersey. Quantities as low as 1 part of PCBs to a million parts of normal water are enough to create serious environmental concern; in the sewers of Niagara Falls, the quantities of halogenated compounds were thousands of times higher. The other materials tracked in sump pumps or sewers were just as toxic as PCBs, or more so. Prime among the more

hazardous ones was residue from hexachlorocyclopentadiene, C-56 for short. Few industrial products approach the toxicity of C-56, which was deployed as an intermediate in the manufacture of several pesticides whose use had created well-known environmental crises across the nation. The chemical is capable of causing damage to every organ in the body.

While the mere presence of C-56, however small the quantities, should have been cause for alarm, government remained inactive. It was not until early 1978 - a full eighteen months after C-56 was first detected - that air testing was conducted in basements along 97th and 99th streets to see if the chemicals had vaporized off the sump pumps and walls and were present in the household air. The United States Environmental Protection Agency conducted these tests at the urging of the local congressman, John La Falco, the only politician willing to approach the problem with the seriousness it deserved.

While the basement tests were in progress, the spring rains arrived, further worsening the situation at the canal. Heavier fumes rose above the barrels. More than before, the residents were suffering from headaches, respiratory discomforts, and skin ailments. Many of them felt constantly fatigued and irritable, and the children had reddened eyes. Tim Schroeder developed a rash along the back of his legs and often found it difficult to stay awake. Another Schroeder daughter, Laurie, seemed to be losing some of her hair. Karen could not rid herself of throbbing pains in her head. Yet the Schroeders stayed on.

Three months passed before I was able to learn what the EPA testing had shown. When I did, the gravity of the situation immediately became clear: benzene, a known cancer-causing agent in humans, had been readily detected in the household air up and down the streets. A widely used solvent, benzene in chronic-exposure cases is known to cause headaches, fatigue, loss of weight, and dizziness at the onset, and later, pallor, nosebleeds, and damage to the bone marrow.

There was no public announcement of the benzene hazard. Instead, it seemed that some officials were trying to conceal the finding until they could agree among themselves on how to present it. Indeed, as early as October 18, 1977, Lawrence R. Moriarty, an EPA regional official in Rochester, had sent to the agency's toxic substances coordinator a lengthy memorandum stating that "serious thought should be given to the purchases of some or all of the homes affected.... This would minimize complaints and prevent further exposure to people. There was concern, he said, "for the safety of some 40 or 50 homeowners and their families. In an unsuccessful effort to learn the test results I had regularly called the EPA and other sources, including the private laboratory contracted to conduct the tests; nervousness frequently crept into these discussions. No one wanted to talk.

Up until the second week of May 1978, I was still being told that the results were not ready, so I was surprised that same week to read a memorandum that had been sent from the EPA's regional office to Congressman La Falce. Buried in the letter was a sentence that referred to the analyses, saying that they suggested "a serious threat to health and welfare.

Immediately, local officials grew upset that the results had been publicly released. After an article of mine on the benzene hazard appeared in the *Niagara Gazette*, I received a telephone call from Lloyd Paterson, a state senator representing the Niagara area at the time.

"That Love Canal story," he began. "You know, you can panic people with things like that.

I explained to the senator that the finding was newsworthy and therefore it was my duty to print it. He responded that he did not want to see "people screaming in the streets. Irritation filled his voice as he continued: "We had a meeting last week, and there was no specific agreement on when this would be released.

The county health commissioner, Dr. Clifford, seemed unconcerned that benzene had been detected in the air many people were constantly breathing. There was no reason to believe their health was imperiled, he said. "For all we know, the federal limits could be six times too high," he stated with striking nonchalance. "I look at EPA's track record and notice they have to err on the right side. City Manager O'Hara, when I spoke to him in his office about the situation, told me I was overreacting to the various findings. He claimed the chemicals in the air posed no more risk than smoking a couple of cigarettes a day.

Dr. Clifford's health department refused to conduct a formal study of the people's health, despite the air-monitoring results. His department made a perfunctory call at the 99th Street Elementary School, and when it learned that classroom attendance was normal, it ceased to worry about the situation. For this reason, and because of growing resistance among the local authorities, I went to the southern end of 99th Street to make an informal health survey of my own. A meeting was arranged with six neighbors, all of them instructed beforehand to list the illnesses they knew of on their block, with names and ages specified, for presentation at the session.

The residents' list was startling. Either they were exaggerating the illnesses, or the chemicals had already taken an impressive and disheartening toll. Many people, unafflicted before they moved there, were now plagued with ear infections, nervous disorders, rashes, and headaches. One young man, James Gizzarelli, said he had missed four months of work because he had breathing troubles. His wife had experienced epilepsy-like seizures that she said her doctor was unable to explain. Meanwhile, freshly applied paint was inexplicably peeling from the exterior of their house. Pets too were suffering, most seriously if they had been penned in the backyards nearest the canal; they lost their fur, exhibited skin lesions, and, at quite early ages, developed internal tumors. There seem also to be many cases of cancer among the women. Deafness was prevalent: on both 97th and 99th streets, traffic signs warned the passing motorists to watch out for deaf children playing near the road.

One 97th Street resident, a woman named Rosalee Janese, displayed a number of especially suspicious symptoms. She lived at the canal's southern end, where the chemicals were leaking fastest and surface deterioration was most pronounced. Pimples and sores on her feet, arms, and hands caused her constant pain, and she suffered from daily bouts of nausea, faintness, internal pains, and a thick and oddly colored perspiration. The symptoms had begun suddenly,

within weeks after a routine cleaning of her family's in-ground pool. During that chore, Mrs. Janese had been forced to hurriedly grab a rag and stuff it in the bottom drain: a black sludge was oozing through it into the pool.

Evidence continued to mount that a large group of people, all of the hundred families immediately by the canal and perhaps many more, were in imminent danger. While they watched television, gardened, or did the wash, even while they slept, they were inhaling a mixture of damaging chemicals. Their hours of exposure were far longer than those of a chemical factory worker, and they wore no respirators or goggles. Nor could they simply walk out of the door and escape. Helplessness and despair were the main responses to the blackened craters and scattered cinders behind their backyards. But public officials often characterized the residents as hypochondriacs, as if to imply it was they who were at fault.

Timothy Schroeder looked out over his back land and shook his head. "They're not going to help us one damn bit," he said, throwing a rock into a puddle coated with a film of oily blue. "No way. His calls to the city remained unanswered while his shrubs continued to die. Sheri needed expensive medical care, and he was afraid there would be a point where he could no longer afford to provide it. A heavy man with a round stomach and a gentle voice, he had always struck me as easy-going and calm, ever ready with a joke and a smile. That was changing now. His face - the staring eyes, the tightness of lips and cheeks - candidly revealed his utter disgust. Every government agency had been called on the phone or sent pleas for help, but none of them offered aid.

For his part, Commissioner Clifford expressed irritation at my printed reports of illness, and there was disagreement in the newsroom on how the stories should be printed. "There's a high rate of cancer among my friends," he argued. "it doesn't mean anything. While it was true that the accounts of illness which I printed regularly were anecdotal, Dr. Clifford had even fewer grounds for an evaluation: Mrs. Schroeder said he had not visited her home, and neither could she remember his seeing the black liquids collecting in the basements. Nor had Dr. Clifford even properly followed an order from the state commissioner to cover exposed chemicals, erect a fence around the site, and ventilate the contaminated basements. Instead, he had arranged to have two \$15 window fans installed in the two most polluted basements and a thin wood snow fence erected that was broken within days and did not cover the entire canal. When I wrote an article on a man who had contracted Hodgkin's disease at thirty-three, after a childhood spent swimming in the canal, Dr. Clifford telephoned me. He was brief: "When;" he asked, "are you going to go back to being a reporter?"

Partly as a result of the county's inadequate response and pressure from La Falco, the state finally announced in May 1978 that it intended to conduct a health study at the southern end. Blood samples would be taken to see if there were any unusual enzyme levels indicating liver destruction, and extensive medical questionnaires were to be answered by each of the families. Hearing this, the many residents who had maintained silence, who had scoffed at the idea that buried chemicals could hurt them, began to ask questions among themselves. Would their wives have trouble bearing babies? Would their developing children be prone to abnormalities? Twenty years from now, would the chemicals trigger cancer in their own bodies?

As interest in the small community increased, further revelations shook the neighborhood. In addition to the benzene, as many as eighty other compounds had been discovered in the makeshift dump, at least ten of them potential carcinogens. The possible physiological effects were profound and diverse. Fourteen of the compounds could affect the brain and central nervous system. Two of them, carbon tetrachloride and chlorobenzene, could readily cause narcosis or anesthesia. Many others were known to cause headaches, seizures, loss of hair, anemia, and skin rashes. When combined, the compounds were capable of inflicting innumerable illnesses, and no one knew what different concoctions were being mixed underground. But even then no one realized, since only Hooker could know, that beyond the pesticides and solvents, far beyond the fly ash, one hundred additional chemicals would be identified during the next year, including one recognized by the state health laboratories as the most toxic substance ever synthesized by man.

On July 14 I received a call from the state health department with some rather shocking news. The preliminary review of the health questionnaires was complete, and it showed that women living at the southern end of the canal had suffered a high rate of miscarriage and given birth to an abnormally large number of children with birth defects. In one female age group, 35.3 percent had records of spontaneous abortion. That was far in excess of the norm: the odds against its happening by chance are 250 to 1. Four children in one small section of the neighborhood had documentable birth defects, clubfeet, retardation, and deafness. These tallies, it was stressed, were "conservative" figures. The people who had lived there longest suffered the highest rates....

The data on miscarriages and birth defects, coupled with the other accounts of illness, finally pushed the state's hierarchy into motion. A meeting was scheduled for August 2, at which time the state health commissioner, Dr. Robert Whalen, would formally address the issue. The day before the meeting, Dr. Nicholas Vianna, a state epidemiologist, told me that it also appeared that residents were incurring some degree of liver damage: blood analyses had shown hepatitis-like symptoms among the enzyme levels. Dozens if not hundreds of people had been adversely affected....

When I arrived at the government complex in Albany ... I rode to the fourteenth-floor health offices with Dr. Clifford, who made joking references to the local newspaper's story on possible evacuations at the dump. He found that quite absurd. I entered the department's public relations office and picked up a copy of the *New York Times*. There on the front page, in the lower left corner, was the story: "Upstate Waste Site May Endanger Lives."

Dr. Whalen had begun his meeting just before I arrived. As I entered the auditorium where he was speaking, I spotted the Scbroeders and Aileen Voorhees in the small audience, watching intently. But not Tim; he was bent over in his chair, staring at the floor. None of them expected anything to happen, but they had traveled the five hours to Albany anyway, to make their presence felt.

Minutes later, to their surprise, Dr. Whalen read a lengthy statement in which he urged that pregnant women and children under two years of age leave the southern end of the dumpsite immediately. He declared the Love Canal an official emergency, citing it as a "great and imminent peril to the health of the general public."

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