Commentary

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Psychosocial Impact of Toxic Chemical Waste Dumps

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On the basis of three years' intensive observation of the community and interactions at the Love Canal in Niagara Falls, NY, the present study addresses the psychosocial problem of creating and maintaining trust between the residents of an area contaminated by toxic waste materials and the government-sponsored scientific researchers and other health professionals who worked and studied there (the "scientific professionals"). The problem is important, for without trust and confidence, no research involving people's cooperation can be performed in a scientifically acceptable manner, if at all.

At Love Canal, because the challenge of maintaining and increasing initial feelings of trust was not recognized by the scientific professionals, the residents' feelings of uncertainty about their health and welfare were increased. As their feelings of uncertainty increased as well about the competence, wisdom and motivations of government-sponsored scientific professionals, their initial feelings of respect and confidence in the scientific professionals changed. A large number became increasingly suspicious, lost respect for the scientists, reacted angrily, and finally refused to cooperate at all with government-sponsored research. The scientists themselves suffered from feeling misunderstood, unappreciated, often insulted. Some viewed the people as the "enemy," and finally they were not able to proceed with "research as usual."

Because the social factors leading to the breakdown of trust are likely to be present in any region where a toxic waste dump has contaminated a residential area and where government-sponsored researchers study environment and health effects, I think it is important to understand what happened at Love Canal.

The problem begins, sociologically speaking, with the assumptions, expectations and viewpoints about the roles and the behavior of scientists which existed prior to the actual playing out of the relationships between the two groups. Scientific professionals are trained to think analytically. They try to select narrow problems, communicate chiefly with each other and do so in precise, technical terms. They control the quality of their work in part through cautious interpretations of data. Furthermore they do research for its own sake, to pursue knowledge. Ideally, they are not involved or influenced by anything outside the technical problem. That is, they are not influenced by financial or political considerations, or by emotions. Although we all know that is not entirely true, that disinterested attitude is the ideal for which we strive. The residents on the other hand, think of the problems as total. For them it is not just a body part that is involved, but their whole bodies, the bodies of their families, their homes, their lives—all are involved. The residents of Love Canal were told they might be living in a dangerous situation and they wanted information to let them know what to do. They were uncertain about how to proceed; many felt they had lost control over important aspects of their lives. They expected scientific professionals to give them useful, comprehensible information. They felt the purpose of research is to help make decisions, to help people in trouble. Furthermore, they knew that the decisions that would be made about their fate—whether or not to clean up the dump and how, whose homes would be purchased, who would pay costs, what the outcome of lawsuits would be, were all dependent, at least in part, upon the conclusions and the statements of scientific professionals. They viewed the researchers as politically involved, as financially involved, and as influential in the decisions, whether or not the scientific professionals viewed themselves in that way.

Finally, while the scientific professionals see

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themselves as different from each other, with different backgrounds, training, specialties and locations in various government bureaucracies, the residents viewed them as part of whatever agency they were employed by: the New York Department of Health, the CDC, the EPA or other governmental agency.

The playing out of relationships between groups is done through communications both by word and deed. Examining some events viewed by residents as key will show how the Love Canal populace was moved from a point of trust and respect for scientific professionals, in the spring of 1978, to one of mistrust for them, to the point that they finally refused to cooperate in further studies in the summer of 1980, and now no longer believe what government-sponsored scientific professionals say.

In the spring of 1978, the residents were given information about the quality of the air in their basements in the following manner. At a public meeting, they were handed mimeographed lists with the names of ten polysyllabic chemicals on them. Next to the chemical compound names were numbers representing values for air readings done in their basements. The people's addresses were written in at the top of the sheets. After the first shocked silence, the questions began. When residents asked whether they could continue to use their basements (many of which were playrooms, or bedrooms), when they asked whether the numbers meant there was "a lot of contamination," whether the rest of the house was contaminated, the answer was a repetitious, "We don't know." The scientists were trying to communicate what they had learned, leaving open the question of interpretation. They could not communicate their own broad context of understanding. The people interpreted their action as incomprehensible and responded with fear and anger.

In August, 1978 the New York Health Commissioner made a crucial announcement. He issued an official order, declaring the area a hazard to the health of residents living near the Canal, ordering health and environmental studies to assess the damage, and advising that pregnant women and children under age two move temporarily but as quickly as possible from the homes bordering the old canal.

The Commissioner and his staff thought they were doing their job, for they had preliminary studies showing excess rates of miscarriage among women at Love Canal, had had their findings reviewed by experts, and issued a warning they assumed would involve about 20 families. When I asked a DOH scientist later what they had planned to do once the health order was announced, he replied that as scientists they dealt solely with health matters, not with social or political ones.

In the city of Niagara Falls however, 300 miles from the capital in Albany where the Commissioner made his announcement, the residents of Love Canal heard the news via the mass media of all sorts. There was no one in the city to give them correct, official information, or advice. Hundreds of Love Canal residents streamed out of their homes and gathered on the streets. A few started to burn mortgages; they all shared their fears and organized a strong citizens' group which they then relied upon as their intermediary with the world, including scientific professionals.

It was in this atmosphere of rush and disorganization that the health studies of the Love Canal people expanded. As the autumn and winter wore on, as the Department of Health staff made numerous phone calls to request information missing from elaborate self-administered questionnaires, as the results of tests were not forthcoming, as the rumors flew that collecting 4000 blood samples within a few weeks had resulted in overloaded laboratory facilities, as rumors about the presence of dioxin in the area were at first denied and then confirmed by the Department of Health, people's suspicions grew.

While the scientific professionals had tried to respond to what they suddenly saw as an emergency, they acted in such a way that their own professional competence was questioned by the people. Then, as more and more information about possible hazards was revealed, people grew suspicious that the extent of the problem was being concealed to fit the solutions already put in place by the governor of New York, through the purchase of homes for example, before the extent of the problem was known.

In February 1979, the Health Commissioner met with the Love Canal residents and, in discussing the problem of excess rates of miscarriages, low birth weights and birth defects, he and others repeatedly used the term "fetal wastage." Scientists use technical terms for precision and to remove emotion from the concepts. The people to whom he spoke however, thought of "fetal wastage" as referring to "the baby I lost," "poor little Nancy with the club foot," "my little son that was born dead" and the like. They reacted, in short, in terms of the personal meanings these events had for them. They were more convinced that the scientific professional could not understand them.

With a tremendous fanfare of publicity, the EPA announced in the spring of 1980 that a study of Love Canal residents showed that there was a high rate of chromosome breakage among the 36 subjects

of the research. The people were notified of the results by teams of EPA scientific professionals who arrived in Niagara Falls shortly after the news appeared in the newspapers. Teams of three professionals met with each resident who took part in the study and they also gave them letters describing the blood study findings.

When I arrived at the Love Canal that day, two events impressed me immediately. I was greeted by the mother of a sick child who had just been told the study results. She held a letter in her hand describing the chromosome breakage in her blood sample. She showed it to me and told me that she had had it all explained but still did not really understand anything except that she and Love Canal were somehow responsible for her sick child. Another woman's shout reached me as I walked in the building. "I don't care if you only have a half hour to spend with me! I don't care if you have more people to see. I don't understand and I want you to explain this to me until I do." It didn't help when people learned their time was attenuated because a press conference had been scheduled later that day.

Two weeks later, the same people learned that there was controversy about the meaning of the chromosome study, when a reporter called from a New York newspaper and told them about it. One of the women who got the news in this way became mildly hysterical. Another, the mother of a profoundly retarded child, said that she had planned to have her tubes tied on the basis of the first report. Now, she wanted to know, what was she supposed to do? Whom was she supposed to believe?

In this instance, the control of scientific information had gotten completely out of the hands of the scientific professionals and had become part of the political bargaining between the federal and the state levels of government leaders. People tend to be cynical about politicians, for they see them as expedient. They do not expect scientists to be expedient, or to be involved with expedient measures. As a consequence, the blood chromosome breakage story and its refutation were seen as the final straw piled on a huge heap. The organized Love Canal residents announced in midsummer 1980 that they would simply "boycott" all further studies undertaken under governmental sponsorship. In this way, they regained some control over this aspect of the situation.

In the midst of the publicity which followed the blood chromosome breakage study, in the midst of criticism of the way in which the scientific professionals from the state and the federal government had handled the Love Canal health related research, Governor Carey appointed a high level committee in June 1980, to review and evaluate all research done at Love Canal. Dr. Lewis Thomas, Chancellor of Memorial Sloan-Kettering headed this panel. The report issued in October 1980 (*1*) said it was clear that there was no indication of a variety of specifically named acute illnesses, and that the studies of chronic illnesses allowed no firm conclusions to be drawn.

As far as I have been able to determine, there were no studies available to substantiate these statements about acute illnesses. The studies of what were defined as chronic illnesses were interpreted in such a way as to ignore, overlook, downplay, or omit findings suggestive of health problems for Love Canal residents. When I attempted to learn about the studies which were the basis for their conclusions, the Thomas committee members and chairman refused to answer questions, surely not a usual scientific collegial response. I later learned (*2*) that the governor's own political aides had helped to shape the final report. Their contributions were unacknowledged in the report.

In this instance, prestigious scientific professionals lent their names and the names of their eminent institutions to what was viewed among the Love Canal residents as a politically inspired cover-up. The feelings and attitudes of the residents about the Thomas committee report can best be summed up by a resident who said: "It's the miracle of Love Canal!" She went on to suggest that the world's toxic wastes should be sent there for it was the only place in the world where hundreds of people could live for years near tons of chemicals and show no effects whatsoever.

As these few examples suggest, the psychosocial impact on the relationship of trust between scientist and citizen is important to understand. The issues go beyond empirical investigation, and reflect basic choices for scientists. Participation in the investigation of highly threatening and controversial problems, in highly politicized contexts, requires political sensitivity and awareness and social sensitivity and awareness. There is a basis of trust and goodwill, but that basis is readily ruptured. To maintain trust requires that physical scientists learn how to take into account variables, social and political, that go beyond those issues that are normally considered in approaching problems from one's own necessarily narrow disciplinary perspective.

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