Methods to Help Communities Investigate Environmental Health Issues

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Peppers in Port Maitland showing fluoride damage. Photo courtesy of Larry Gosnell.

Introduction

Many communities are concerned about the environmental impacts of industrial emissions on their health and local ecosystem. However, some communities are more successful than others in getting environmental health problems addressed. A number of communities have worked with social and scientific researchers doing a form of community based research called *popular epidemiology*. Several communities that have participated in this kind of research are examined in this paper, including:

- Love Canal in Niagara Falls, New York where barrels of toxic chemicals were disposed in a former canal, and
- Port Maitland, Ontario and Northeast Strathcona County, Alberta, both communities that are close to phosphate processing factories.

Each of these communities participated in public hearings, which ultimately produced unsatisfactory outcomes. This paper closes with a methodology for communities to examine how environmental hearings are conducted and how official reports are produced. Hopefully this method will help communities to challenge the process of public hearings.

Getting Answers

Contaminated communities are organizing to find answers to questions that are not being answered by "experts." They are challenging the validity of government and industry reports, and holding key industry or government officials responsible for their environmental health concerns and problems (Brown et al., 2000). These communities are asking whether experts can be trusted, especially when the expert's knowledge is so different from the community's knowledge of living with environmental health problems (Giddens, 1990).

Some contaminated communities have been working together with sympathetic scientific researchers doing a form of research called *popular epidemiology* to investigate what they perceive to be clusters of illness and disease (Brown and Mikkelsen, 1990). Popular epidemiology involves active mutual learning among communities and experts. Researchers learn from community members and community members learn how to help with health surveys. Insight from community members helps experts to ask questions related to pollution exposure that they might have missed otherwise. This teamwork helps to reduce research costs. As well, communities can use their research find-

ings to press industry and governments for cleanups, compensation, relocation and independent community health studies. Popular epidemiology involves a number of steps which are not necessarily followed in the same order.

Love Canal: Popular Epidemiology, Politics, and Timing

The most famous case of popular epidemiology occurred during the 1970s in the Love Canal community in Niagara Falls, New York. Older residents in this community knew that Hooker Chemical had dumped barrels of chemical waste in the nearby canal (Levine, 1982). When Hooker Chemical filled in the

Popular Epidemiology: Key Steps

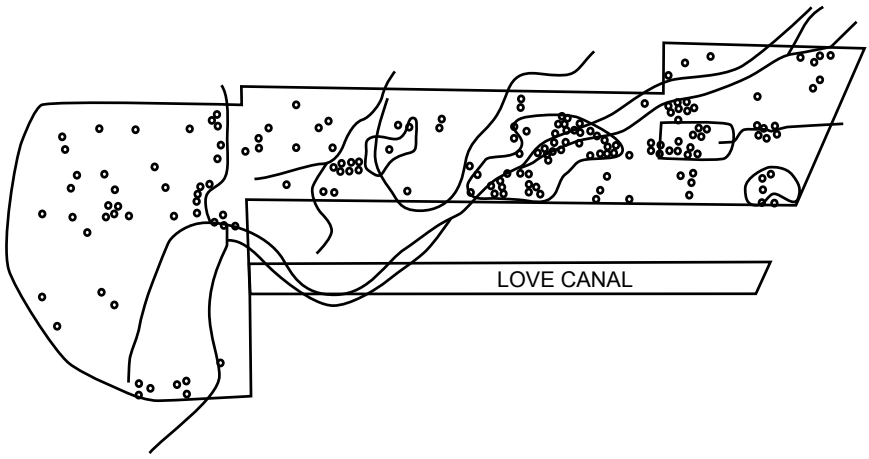
Popular epidemiology involves a number of steps with residents:

1. Noticing pollutants (fumes, chemicals in the water);
2. Noticing damage to crops, vegetation. and animals;
3. Noticing health effects in themselves, their families, or neighbours;
4. Suspecting a connection between the health effects and the pollutants;
5. Sharing observations with other members of their community;
6. Forming a common approach to the pollution and health concerns;
7. Coming together as a group, researching the issue, and asking questions;
8. Talking to government, industry officials, and scientific experts about local health problems and their suspected links to contaminants;
9. Organizing a residents' group to investigate further;
10. Seeking media attention;
11. Pressuring government agencies to investigate the contaminants and the health problems;
12. Finding experts for the community group to carry out a health study and to investigate the source of the contaminants, and pathways of exposure;
13. Pushing for scientists and government authorities to accept the results of these studies;
14. Seeking action such as compensation, relocation, cleanup of contaminants and pollution controls. Residents try to influence government and/or industry by participating in environmental hearings, lobbying politicians, seeking media attention and direct action (Adapted from Brown, 1990).

canal, it capped it and sold the land to the local school board. Once a school was built on the land, parents began to notice that their children's feet were irritated after they played barefoot in the schoolyard (Levine, 1982). People living near the school noticed chemicals leaching in through cracks in their basement.

Lois Gibbs, a young mother, became alarmed when her child developed a rare blood disorder. She read old newspapers and found that she lived two blocks from Hooker Chemical's dump, and that her son's school was built on top of the dump. When she went door-to-door to discuss her concerns with her neighbours, she found that nearly every family had some form of health problem (e.g., children with birth defects, bone disease, or cancer) (Gibbs, 1986). Gibbs organized the Love Canal Homeowners Association which conducted letter-writing campaigns, drew media attention through street protests, and lobbied government authorities to act.

In August 1978, as a result of this community organizing, New York Department of Health officials ordered the evacuation of pregnant women and children under the age of two in homes next to the canal (Gibbs, 1986). They ordered the closing of the school and advised families not to eat veg-



This map indicates the findings of the popular epidemiological research in Love Canal. It reflects how researchers built upon local people's knowledge of the former streambeds. Health problems were found to be concentrated near the old streambeds. The dots represent miscarriages, still births, crib deaths, nervous disorders, hyperactivity, epilepsy and urinary disease. (Gibbs, 1986: 188)

etables from their gardens and not to spend time in their basements. The New York State government then purchased 239 homes at fair market value to help the families move away from Love Canal and began a clean-up program. Once the evacuated area was fenced in, the government declared that "there was no evidence of abnormal health problems outside the fenced area" (Gibbs, 1986: 180).

The families outside the fenced area knew there were health problems beyond the evacuated homes because of a health survey that they had conducted. The remaining residents picketed the contaminated site, led a letter-writing campaign, got media attention, and lobbied politicians. The group worked with Dr. Beverly Paigen, a cancer research scientist who helped the group members design and conduct their own health survey (Levine, 1982).

Working with Dr. Paigen, the group interviewed each family in the contaminated area, and marked reported diseases in these families on a map. This enabled them to see the clustering of diseases in certain areas of the neighbourhood (Gibbs, 1986; Levine, 1982). People's knowledge of the local area provided important clues.

> Older residents in the community suggested that the clusters seemed to follow the path of old streambeds that had crossed the Love Canal many years ago but which had since been filled when homes were built. So we looked at old aerial photographs and geological survey maps and asked the residents for any available old photographs. The residents came up with several photographs showing how the old streambeds intersected Love Canal (Gibbs, 1986: 181).

When the residents and Dr. Paigen compared the number of health problems in homes along the streambeds (wet areas) with homes not along the streambeds, they found higher rates of birth defects, nervous breakdowns, and urinary tract disorders along the streambeds (Gibbs, 1986).

The residents found it difficult to convince government authorities to accept these findings. Authorities called their research "useless housewife data." The key to the Love Canal residents' success is that they were politically active at a strategic time — just before the US Presidential election. The residents protested in the streets, led a major letter-writing campaign, and lobbied politicians. In addition, the residents engaged in direct action, detaining several officials from the US Environmental Protection Agency for several hours (Levine, 1982). This public campaigning created so much public concern that in 1980, US President Jimmy Carter ordered the evacuation of the entire community.

> President Carter did not want to spend 15 million dollars at Love Canal. Everything — from the health studies to evacuation — was done for political reasons. None of the decisions that were made were based on scientific evidence. I truly believe that if it was not for our large, strong citizen organization, we would still be living at Love Canal with the health authorities saying there was no health problem (Gibbs, 1986: 189).

After Love Canal (New York State), the US government set up a Superfund program that helps to pay for the relocation of people from contaminated communities and the cleanup of these sites (Levine, 1982). In Canada, decisions regarding the relocation of residents from toxic sites depend upon politicians and bureaucrats, who may or may not be very concerned about the affected community (Barlow and May, 2000).

Popular Epidemiology near Phosphate Processing Factories

This section provides a comparison of examples of popular epidemiology in two rural communities with health concerns related to industrial emissions from phosphate fertilizer factories near their homes. People in the communities of Port Maitland, Ontario (south of Hamilton) and Northeast Strathcona County (near Fort Saskatchewan, Alberta) have been living near factories that release fluoride. The Agrium phosphate factory near Fort Saskatchewan is the only remaining active phosphate processing factory in Canada, but a number of former phosphate factories in Newfoundland, New Brunswick, Quebec, Ontario, Alberta, and British Columbia have left a toxic legacy.

While both the Port Maitland and the Northeast Strathcona County communities have been involved in popular epidemiology, there is almost a forty year gap in these two examples. The Northeast Strathcona County Residents (NESCR) have benefited from this time lapse, learning from action in other fluoride-contaminated communities. They also benefited from scientific research on the health effects of fluoride emissions from phosphate processing factories. In addition, they used new technologies to help them work with researchers at a distance.

Port Maitland Community: An Early Form of Popular Epidemiology

During the 1960s, the British owned Electrical Reduction Company (ERCO) set up a phosphate processing factory in Port Maitland, Ontario.

Fish and wildlife officials immediately noticed damage to cattails that grew in a local canal. People in the area complained of dust and pitting of windowpanes and car finishes (Haley, 2000). Farmers noticed crop damage and problems in their animals, and contacted government officials in the Department of Agriculture and the Department of Health (DOH) for advice. Critics argued that DOH authorities lacked "the knowledge, ability and equipment to handle all aspects of air pollution control" (Baker, 1967). Although the Ontario DOH was in charge of air pollution, it had a poor record of enforcing pollution control laws. In addition, the DOH kept the public "in the dark" by not releasing information (Haley, 2000). While government and industry officials came and collected many samples of specimens from local farms, they shared very little information with farmers.

> [T]he farmers knew that everybody, but everybody, was wanting samples, everybody that came on the farm carried off branches, leaves, bags, boxes, urine and what-have-you, but nobody ever came back to tell you what they have taken away or what had happened to it. (Mr. Middleton, in Committee of Inquiry, 1968: 1575)

Dr. George Waldbott (right) listening to Joe Casina, Port Maitland farmer, for CBC documentary Air of Death." Photo courtesy of Larry Gosnell.

Finally in 1965, local farmers read a story about fluoride poisoning (fluorosis) in cattle near another phosphate company in Trail, B.C. They recognized the symptoms in the cattle, and asked their local veterinarian to investigate. The vet collected samples, and sent them to a university laboratory which diagnosed some of the cattle with fluorosis. Once the farmers learned that the factory emissions contained fluoride, they formed an action committee to stop the damage (Crew, 1967) and appointed Mr. Don Middleton, Secretary of the Ontario Federation of Agriculture to negotiate with government and industry officials on their behalf (Haley, 2000; Crew, 1967). Local people noticed their own health symptoms and became concerned that the emissions might also be affecting their health.

In 1966, the farmers sought media attention and the Canadian Broadcasting Corporation (CBC) produced a radio documentary. CBC TV followed up by making the documentary film "Air of Death" (1967) on air pollution, which focused in part on the pollution in Port Maitland. The CBC helped the community to carry out a form of popular epidemiology, simply by researching for the film. The CBC film producer brought in an American fluoride specialist, Dr. George Waldbott, who toured the area with the residents, as they showed him the fumes and dust from the factory, and damage to crops and livestock. Dr. Waldbott listened carefully to local peoples' accounts of bouts of stomach and flu-like problems after eating locally grown food, and other symptoms.

The CBC film raised concerns about the human health effects of emissions from the ERCO factory. Dr. Waldbott had to be careful because as an American doctor, he was not legally permitted to practice medicine in Canada. Therefore in the CBC film, he explained how fluoride emissions affected human health, and only implied that several people in Port Maitland had industrial fluorosis.

Dr. Waldbott also exposed the politics behind the fluoride pollution. He pointed a finger at government officials for being too cozy with industry.

> Dr. Waldbott: The government officials who should look into this matter carefully and should be guided by uh uh [sic] scientists not connected with industry — they have fallen down in their job. (CBC, 1967: 40)

The CBC film sparked a great deal of public criticism of the failure of industries and of various levels of governments to address industrial pollution. In reaction, the Ontario Conservative government set up a Royal Commission,

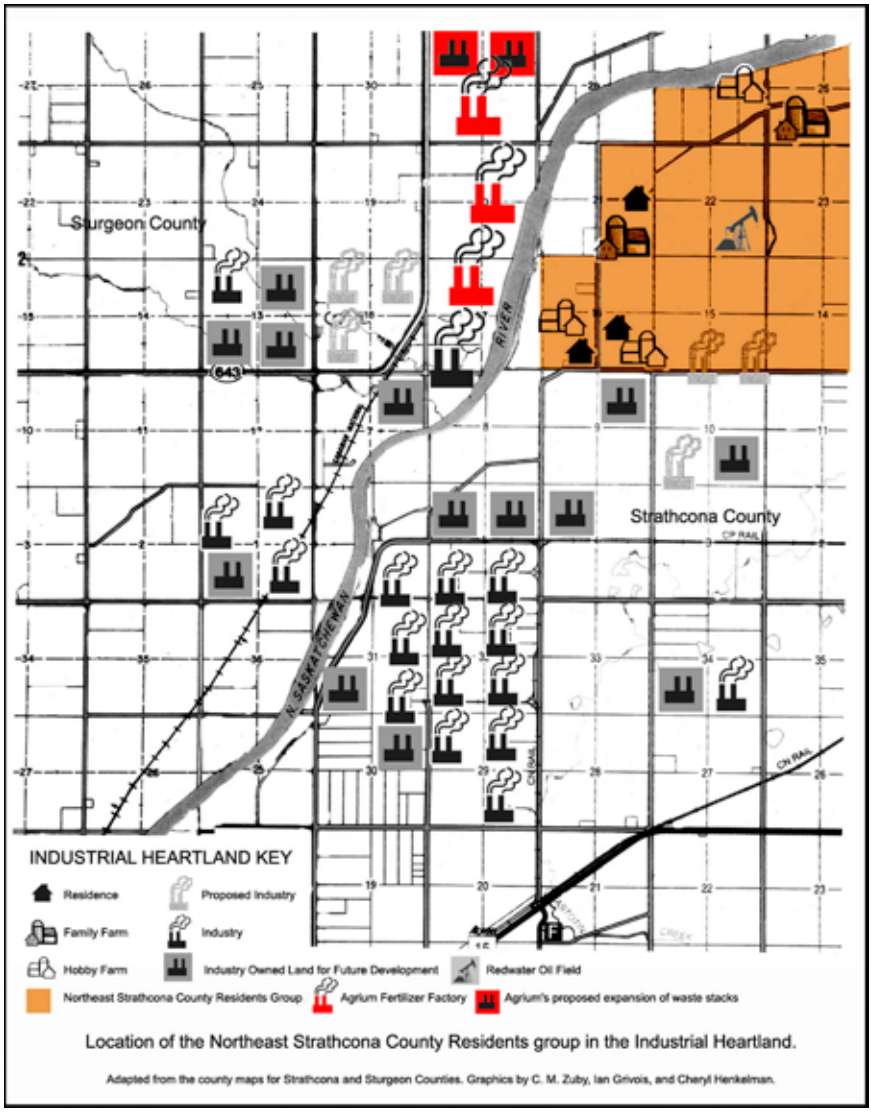
appointing Dr. G.E. Hall to chair it, and two other staunch Conservatives: Dr. W. Winegard and Mr. A. McKinney. However, the previous work and political leanings of the three doctors left the Commission's final report suspect to communities.

Each doctor had a potential conflict of interest with the work of the Commission. Even though he was the former President of the University of Western Ontario, Dr. Hall had a vested interest in promoting fluoride as safe as he had served on another Commission to approve the fluoridation of municipal drinking water in Ontario. He had also been the Honorary Head of the Pro-Fluoridation League (Haley, 2000). Dr. Winegard, the President of the University of Guelph, won the Alcan award for "the advancement of metallurgy in Canada" just prior to the broadcast of CBC's film (Armstrong, 1967). Alcan also had a phosphate fertilizer plant (Haley, 2000; Committee of Inquiry, 1967: 1172). ERCO was involved in collaborative research with several researchers from Dr. Winegard's university (Haley, 2002). Mr. McKinney "a conservative stalwart" was not the farmers' choice (*Hamilton Spectator*, 1969). He played a very passive role on the commission, but provided the impression that the farming community's interests were represented.

The final written submission of the *Hall Report* (Hall, 1968) carried great weight because of the prestige and composition of the Commission. The report argued that there was "no evidence" that the factory emissions were causing human health problems. It chastised the CBC and its key informants for making false statements, and effectively prevented the CBC version from becoming the publicly recognized version. The pollution story lost media attention, and Port Maitland community lost a key basis of mobilization. Later in this chapter we will analyze the Hall Commission to show how the local residents' story was dismissed.

Northeast Strathcona County Residents — Using Technology to do Popular Epidemiology

Alberta's Industrial Heartland, thirty minutes away by car from Edmonton, is Canada's biggest chemical alley. The website for the Industrial Heartland boasts that this area has the "largest petroleum and petrochemical processing network in Canada," and is Canada's largest upgrading centre for the petroleum, petrochemical, and chemical industries (Industrial Heartland, 2004). Bitumen which has been extracted from Alberta's northern tar sands is shipped here by pipeline. This oily mixture of hydrocarbons is then processed into oil by huge petrochemical "upgraders" or refineries. Much of the refined



Map of the Alberta Industrial Heartland. The Northeast Strathcona Residents live in Strathcona County near Fort Saskatchewan, but directly across the river from Agrium near Redwater. To check the total reported emissions in the residents' local air shed, go to www.ec.gc.ca/pdb/querysite/location_query_e.cfm and type in the first three letters of the residents' postal code (T8L). Type Edmonton under major urban centre. Under Community, Step Two, type Fort Saskatchewan to check the emissions from Agrium and some of the other factories listed above.]

oil is then distributed to the United States. A number of other chemical factories (for example, pesticide, fertilizer, and vinyl chloride factories) are gathered around these petrochemical factories. A small group of residents directly across the North Saskatchewan River from the Agrium phosphate factory became increasingly concerned about chemical odours and factory noise.

Agrium's factory is the "sole source of phosphate fertilizer production in Canada" (Alberta Natural Resources Conservation Board, 2004b). Over the thirty-five years that the factory has operated, the residents have noticed crop damage, health problems in their animals, and human health-related problems. With the expansion of industry around them, the residents have shared their concerns with one another and formed a group, known as the Northeast Strathcona County Residents (NESCR). Representatives from the group have approached local and provincial politicians, government bureaucrats, and industry officials with their concerns, but have failed to get their issues addressed. In 2003 when Agrium announced its plans to expand its waste phosphogypsum and waste-water lagoons, Alberta's Lieutenant Governor "determined" that a comprehensive hearing under the NRCB "was necessary" (Roth, 2005).

Living within two kilometers of the factory, the residents were deemed directly affected. Therefore, they were entitled to request intervener funding to pay for a lawyer and experts to help them research and present their concerns about Agrium's expansion at hearings held by the NRCB. I had studied the Port Maitland case for my doctoral research and as a community volunteer, I was able to help the residents to learn about fluorosis, and find resources and fluoride experts.

The Northeast Strathcona County Residents had several advantages over community members in Port Maitland. The residents learned from the Port Maitland case, by viewing CBC's documentary film "Air of Death." In the film, they recognized the characteristic crop damage from fluoride emissions. Until they saw the film, the residents had believed that the burnt crops were due to drought conditions. The residents also learned about industrial fluorosis from the growing peer-reviewed scientific literature on the internet. Much of this information is posted on a user-friendly website www.fluoridealert.org that is run by Dr. Paul Connett, a chemistry professor at St. Lawrence University, New York.

To prepare for the hearing, leading fluoride experts were found who would testify about the negative impacts of fluoride emissions from phosphate factories on crops, animals, and human health. There are very few fluo-

ride experts and even fewer who are not funded by industry. The key independent fluoride experts in North America are Dr. Hardy Limeback, a professor of dentistry, and Dr. Lennart Krook, a professor of veterinarian medicine. Since both of these experts live thousands of miles away from Alberta, NESCR worked with them via email, phone, fax, and regular mail before the hearing. NESCR was instructed how to collect samples, and how to take digital photos of cattle's teeth. While not conducting scientific studies, they were gathering data to present at the hearing to document the community's concerns about the impacts of the emissions on their crops, animals, and health, and to press for a full health investigation.

Work was done as a team. Dr. Krook and Dr. Limeback sent detailed instructions on how to carefully collect and label samples of garden crops, leaves, berries, hay, grain, and bones from deceased livestock. The experts also mailed detailed instructions and photos to the residents on how to take digital photos of the teeth of local cattle and of children's teeth. The residents sent photos by email to the experts, who guided them with feedback

Farmer examining cow's teeth for signs of fluorosis. Photo courtesy of Larry Gosnell.

by phone and email, until they learned how to photograph children's teeth properly. Residents then collected and mailed these samples to Dr. Krook for fluoride analysis.

NESCR benefited from technological changes such as the digital camera, the computer, and high-speed internet. These advantages helped residents to work with researchers from a distance, to learn about the health impacts of emissions from phosphate factories, and to keep research costs down. The experts then analyzed the photos for signs of fluoride damage. From these samples and photos, both fluoride experts were able to document that the cattle and the residents were being exposed to high levels of fluoride.

Through the Alberta Environmental Law Centre, the residents had made contact with an environmental lawyer, Jennifer Klimeck, who worked with them on pollution related concerns. Klimeck worked closely with Verona Goodwin, a local industrial hygiene consultant, helping the residents to summarize their health symptoms, and their observations of pollution damage.

The NRCB panel was made up of people with general knowledge (for example, in engineering, occupational medicine, and water), none of whom were fluoride experts. The residents told the panel that it was unreasonable for Agrium to expand its waste phosphogypsum stack, due to their documented health concerns. While the NRCB panel felt that Agrium's health and environmental risk assessment was unreliable, it argued that production of phosphate related products was in the public interest (Alberta Natural Resources Conservation Board, 2004b). The panel agreed that Agrium's expansion should go ahead, provided a number of recommendations were followed. It left it up to Alberta Environment to issue an approval based on these cautions.

In 2004, the Director of Alberta Environment gave Agrium an approval without requiring many of the NRCB's recommendations to be followed. The Northeast Strathcona County Residents challenged this decision before the Alberta Environmental Appeals Board questioning whether the Director of Alberta Environment had breached his environmental duties (Klimeck, 2005). The residents are skeptical of Alberta Environment's reliance on Agrium to monitor its own emissions, its perceived close relationship with industry, and its failure to be an environmental watchdog for the public (Haley, 2004).

Analyzing Environmental Hearings

To understand why residents near these phosphate factories did not win either one of these hearings, we need to examine how environmental hear-

ings are conducted, and how official reports from these hearings are written. Just as an apprentice mechanic takes apart a car motor to learn how it was put together, we can take hearings apart to see how the hearing officers gather information and make sense of it to help them make decisions. While some inquiries such as the Berger inquiry are exemplary in how they include community input, many inquiries involve "game playing" (Richardson et al., 1993; Haley, 2000; Kaminstein, 1988; Ashforth, 1990; Turner, 2003).

Based on a review of the literature on official inquiries in Canada and various other countries, I have developed a method that can be used to examine how other environmental inquiries are conducted and how their reports are assembled. This method is based on *"institutional ethnography,"* which is a way of doing research that enables us to see "people's actual activities" (e.g., the Commissioners) within an institutional structure (e.g., official inquiry) and how they coordinate activities and institutions that come to have power over us (Smith, 1990; Turner, 2003). We can examine how the Hall Commission went about conducting an inquiry, collecting its evidence, and writing its "official" report, and how these strategies organized the experiences of the local people who testified. This enables us to dissect the work involved in creating an official report, and to understand how the Hall Commission's official version was so different from people's everyday knowledge of living with the emissions from the phosphate factory (Haley, 2000). Communities can use this method to understand and address discrepancies between official and experiential accounts of environmental health issues.

Examining How the Hall Commission Was Set Up and Conducted

In its inquiry and report, the Hall Commission raised questions about the health effects of the fluoride emissions, and stifled whatever bases of public support the CBC film had created through media attention. We can see how this was done by looking closely at a number of factors. These include:

1. background factors (e.g., how the Hall Commission was set up);
2. how the Commission collected its evidence (the inquiry stage);
3. how the Commission worked with this evidence in its report and
4. how the final written report was accepted and used.

The hearing officers for the Hall Inquiry used many *strategies* to make sure that only certain information was allowed in the inquiry. First, people

The Background Phase: What to Check Before the Hearing Begins

- Watch the newspapers closely for announcements of inquiries and the deadline to comment.
- Check the original terms of reference. Check to see if and how these change.
- What **powers** are the hearing officers given? Do they have free access to whatever records they need? Can they call witnesses?
- Search the internet, media and reports to find the hearing officers' **views** on other environmental health issues.
- Is adequate time given for the public to request to participate, and to prepare their statements?
- Is the inquiry held in a **convenient place and at a convenient time** for members of the community?
- Is the inquiry held when the hearing officers (and news reporters) will notice the pollution?
- Check the **qualifications of the hearing officers.**

felt that the hearing officers were not independent and therefore could not impartially review the data. Second, hearings were *not held in the best place or at the best time.* Most of the hearing was held in Cayuga, a 30 minute drive from Port Maitland, instead of in Dunnville, the closest town. This was less convenient for farmers, and it was away from the emissions and the signs of pollution damage. The hearing was held during the winter, when much of the dust from ERCO's waste phosphogypsum piles looked like snow. It was not held during the summer when the pollution damage could be seen, and when health problems increased (for example, itchy skin and eyes, nosebleeds).

The hearing officers used a variety of strategies to prevent evidence of the pollution-related health effects from being entered into the public record. They *changed the terms of reference* from an investigation of health problems to an investigation of "allegations" (claims) of fluoride-related health problems. When one reads the transcript of the hearing, it appears as if the CBC, the people with health concerns, and Dr. Waldbott are on trial for suggesting that the pollution is causing health problems.

The hearing officers *expanded the area being studied* to include areas that were not affected by the factory emissions. This meant that some people tes-

tified that there was no pollution problem. There were *two sets of rules* — one for the local people and one for the Commission's consultants and witnesses and ERCO's witnesses. Local people with health concerns had to swear on the Bible to tell the truth, and they were put under tough questioning (cross-examination). However, the health consultants for the inquiry did not have to give sworn testimony, and they were *not cross-examined.*

The hearing officers *blocked* residents from presenting their most important evidence. These were the lab results showing high levels of fluoride contamination of the residents' drinking water. The Commission blocked these results, arguing that the water samples had not been collected by a staff member of the DOH. Yet the samples had been collected by the local reeve, following the instructions of the local Medical Officer of Health, and analyzed by the DOH which detected the high fluoride levels (Committee of Inquiry, 1968: 1462, 299). The Commission and DOH displayed a double-standard by rejecting the local reeve's samples, while accepting ERCO's data on its water and air emissions and urine samples from its workers, as part of the studies for the inquiry (Committee of Inquiry, 1968: 1462, 299). No questions were asked about how ERCO had collected its samples or about its fluoride consultant.

None of the doctors who examined the local residents were qualified to diagnose fluorosis. All of them testified that they had no experience with fluorosis (Haley 2000: 229, 307). Yet the hearing officers *accredited* these doctors, treating them as if they were qualified to diagnose fluoride poisoning (fluorosis). Dr. Waldbott, the farmers' fluoride expert *was not given a time slot in which to testify.* Therefore he sent his submission in writing to the Ontario Minister of Health. In this report, he documented that he had diagnosed ten people in the Port Maitland area with chronic fluorosis and that he suspected that seven others also had fluorosis-like symptoms (Waldbott, 1968). This research was based on a joint investigation with a Hamilton doctor (Waldbott and Cecilioni, 1969).

All of the consulting doctors to the Commission testified that they had no experience in diagnosing human fluorosis (Committee of Inquiry, 1968). Yet these doctors were treated as if they had authority in this area of medicine. For example, Dr. Marson *used his authority to discredit patients and Dr. Waldbott.* He called two of his patients "boys." These were farmers who were 35 and 50 years old. Dr. Marson denied one farmer's accounts of an office visit, implying the farmer was lying. He called the CBC film "rubbish" and a "dreadful lot of nonsense" (Committee of Inquiry, 1968: 380-397). Dr.

Marson called Dr. Waldbott a "complete and utter eccentric [oddball] … an expert in … rabble-rousing [trouble-making]" (Committee of Inquiry, 1968: 397-98).

People with health concerns who testified were *belittled, blocked from discussing their health problems, and sidetracked.* Government officials and the doctor in charge of investigating the community's health problems gave vague testimonies, supported with *very little actual evidence.*

The hearing officers protected ERCO from close scrutiny. None of the three "health experts" for the inquiry discussed any data related to ERCO's emissions. Two experts — one for the Commission and one for the farmers testified that they were *instructed* by the Commission *not to discuss the ERCO plant* (Committee of Inquiry, 1968: 505).

There were many *missing voices and data.* This included people who should have testified, but who either were not invited or chose to stay in the background. The missing voices include:

- DOH officials who analyzed the specimens sent by local doctors,
- the government-appointed officials who determined the damage to crops and livestock and arranged compensation for local farmers,
- the sickest local citizens who were hospitalized for medical investigations during the inquiry by the Commission's key investigator,
- Dr. Waldbott, the farmers' fluoride expert, and
- Dr. Karstad, the University of Guelph researcher who diagnosed fluorosis in the wildlife on ERCO's property.

There was also a great deal of data that were not presented, such as:

- the government standard for fluoride in fruits and vegetables,
- the levels of fluoride found in water and food samples taken as early as 1965,
- the health questionnaire conducted by the local nurses and its results, and
- medical information about the patients who were hospitalized.

The Commission used other strategies to prevent the community's health concerns from being heard and data from being presented. The hearing officers and their consultants *worked like a team with ERCO's lawyers.* Together they dismissed people's accounts of health problems and pollution damage. They blocked people's testimonies and their evidence, and "corrected" their understandings about their health concerns and fluoride's toxicity.

The Listening or Hearings Phase

- Note the **tone, manner, and language** of the hearing officers towards their experts, the company, government officials, the public and the public's experts. Do they speak so that the public can understand them?
- Do the hearing officers **apply the rules fairly**?
- Check the **qualifications of the scientific experts** who testify. Are they really experts in the area under investigation?
- Are witnesses given **instructions that enable or restrict** what they can discuss?
- Check to see if there are **missing voices** — people who do not testify.
- Check to see how complete the investigation is, the quality of the information gathered, and if there is any **missing data.**
- Check to see if hearing officers use any strategies to **dismiss** a witness's testimony or evidence. Do they block or discredit the witness? Do they "correct" lay understandings of the pollution issue? Do they distract the witness, deny the witness's story, or play down environmental health concerns?

They played down the stated pollution problems and distracted witnesses from raising pollution issues by mentioning other possible causes of the rural community's health problems, such as aging, and anxiety caused by CBC's documentary (Committee of Inquiry, 1968: 27, 38, 148, 310-21, 373, 409-11, 415-17). This is repeated in the *Hall Report.*

> [It] is mandatory that recognition be given to the fact that, in any group of some thousands of people spanning the normal age-group distribution of population, there will inevitably be persons suffering from cardio-vascular disease, respiratory disease, allergies, arthritis, rheumatism, kidney disease, post-accident disabilities, gastro-intestinal disturbances, and statistically almost every type of illness and ailment to which a population group is subject. This is not said to denigrate or discredit any of the witnesses involved; it is pointed out only in a spirit of realism (Hall, 1968: 74).

The inquiry took several months and in December, 1968, the hearing officers issued their report. The background documents from most inquiries are usually submitted to a public archive. However, Chairman Hall chose not to

submit the background documents to the archive, making it very difficult to check the accuracy of the Commission's statements in its report.

Examining How the *Hall Report* was written

If we look closely at some of the strategies that the Commission used in writing the report, we can see how the report could state that there was "no evidence" of fluoride related health problems. Here are some of the strategies used to shape the report.

There is a lot of *missing data*. The report does not include any information that would contradict the Commission's position that there was no evidence of health problems from the fluoride emissions. The report relies upon a selective review of the scientific literature, and does not cite any studies that document the health effects of exposure to industrial fluoride emissions (Haley, 2000).

Key testimony from Dr. Sullivan, one of its own experts, is excluded. Dr. Sullivan had expressed his concerns in particular about silicon tetrafluoride emissions, testifying that these were not very easy to control, and "extremely irritating to breathe" (Committee of Inquiry, 1968: 513). The report does not include Dr. Waldbott's written submission to the inquiry, or criticism by one of its experts of Dr. Waldbott's report.

Although the inquiry officers claim to have carried out studies and collected a lot of data, very few results are in the report. This makes it difficult for others to find these studies and to check if the hearing officers reported on these findings in an accurate way. During the hearing for example, Dr. Tidey of the DOH testified that 200 water samples were collected from the area homes, one from each home (Committee of Inquiry, 1968: 347), and that the results show that the fluoride levels in the local drinking water are not a health risk. Dr. Tidey did not indicate how the samples were collected, nor was he asked for any details and none of this information is included in the report. This information is crucial given that most people in the polluted area had switched from cisterns and shallow wells, to purchased water from Dunnville, negating the results of Dr. Tidey's water survey (Haley, 2000).

The report provides many *excuses* for not providing data, for not collecting key data, and for government officials not sharing test results with the community**.** For example, the Commission argues that some data is not presented in the report because there were difficulties in measuring the emissions, and in assessing the damage. Discrepancies in the measuring units were also used as an excuse. Various measuring devices were used, and the units

of measurement were different for the various devices, making it difficult to compare the results of one method of measurement with those of another (Hall, 1968: 305). The report states that information was not shared with the community because the pollution problem in Port Maitland is complex, and there were problems in "coordinating and communicating information between government officials and pollution researchers, and between government officials and the community" (Hall, 1968: 292).

In their report, the hearing officers continue to use some of the strategies that they used in the inquiry. The report implies that the specialists who testified were skilled in diagnosing human fluorosis, even though each of them testified that they had no experience in this area.

The report is very critical of the CBC and key participants in the film. The report also suggests that Mr. Middleton's testimony about a secrecy pact between himself and representatives from the Department of Health and ERCO is fictitious. Mr. Middleton is cast as a liar in reference to the agreement (Hall, 1968: 81-82).

> [T]he DOH and ERCO, deny that any such agreement existed. The Committee rejects the evidence of Mr. Middleton. The Committee cannot understand why Mr. Middleton found it necessary or desirable to express the view that such a "secrecy agreement" existed. (Hall, 1968: 289)

Mr. Middleton stated that he had been warned by a DOH official that he would not be supported if he went public about this agreement.

The Writing or Report Phase

- Check to see how you can get a copy of the transcript from the hearing. Sometimes this is posted on the internet.
- Does the report accurately reflect the information that was presented during the hearing?
- Is key information missing?
- Is some information given more weight?
- Did the inquiry officials do the research that they said they would do?
- Compare the conclusions of the report with the information that was presented in the hearing.
- Do the hearing officers make their background research available? This helps you check the accuracy of their report.

> So, I was aware … of some evidence that was available from the Department of Health, but I was also told that if I quoted these figures anywhere, it would be denied that I had ever heard them. (Committee of Inquiry, 1968: 1570)

The report *edits out* statements from ERCO's lawyer, and a health official that show how secretive ERCO was (Committee of Inquiry, 1968: 1479). It also edits out a statement from the farmers' key witness about how secretive the phosphate industry was (Committee of Inquiry, 1968: 1167).

The *Hall Report* doles out its strongest criticism toward the CBC. This upgrading in criticism reflects Smith's (1999) work on the repression of alternative viewpoints by people in authority.

> The Committee has no other alternative but to record that *unwarranted untruthful, and irresponsible statements* were made by the publicly-owned and publicly-financed Corporation, the CBC. They treated a complex problem in a way designed to *create alarm and fear.* (Hall, 1968: 285, italics added)

Both documents claim that the inquiry was thorough. Both play down the fluoride exposure to the local people. Both reports state that the industrial emissions from the phosphate factory did not pose health risks.

Using the various strategies discussed above, the hearing officers made sure that we, who read the *Hall Report*, only see certain information. This helps us to believe the following sentence in the report.

> [T]here has been no acceptable evidence to indicate that any sort of human health hazard relative to the pollutants exists in the area. (Hall, 1968: 113)

Effect of the Report

The *Hall Report* was treated as the official version of what really happened in Port Maitland because it was written by respected scientists. It had a number of effects: ERCO could run its factory without paying any compensation to the local people for health problems. These people were silenced — no one

The Archival Phase — Effect of the Inquiry Report

- Check to see the **impact** of the official report.
- Check to see how the media cover the report. What findings do the media stress? What findings do they play down?
- Note how the prestige of the hearing officers influences how the media cover the report.

would believe them because the "experts" had spoken. The report was very important in a political sense — it helped the Ontario government to save face after being embarrassed by the CBC film.

Conclusion

The residents in Love Canal participated in an inquiry conducted by the prestigious Thomas Panel that used similar strategies to those of the Hall Commission, but the key to the success of the Love Canal residents lies in how they practiced the last step of popular epidemiology. All three groups made use of the results of their community-based research, becoming politically active and pressing government and industry for action on what they wanted: compensation, relocation, cleanup of contaminants and/or pollution controls. However, Love Canal residents were more daring, using direct action such as holding government bureaucrats under "house arrest" for several hours. This gave them national media attention at a very strategic time, just before the election.

In the Port Maitland case, while the media played a key role in mobilizing the public and making their health concerns about the industrial emissions a political issue, the Hall Commission silenced the community. When we analyze the Hall Inquiry and report we see how the official version of the pollution controversy was written. The *Hall Report* carried great weight because of the prestige of the Commissioners and was widely accepted by the media (Haley, 2000). The *Hall Report*'s conclusions, that there were not health effects from the industrial emissions — continue to influence other investigations about health concerns from phosphate processing factories. The report was cited by industry and the local health authorities even when ERCO's successor (IMC) was in the midst of decommissioning its operations in the early 1990s (Haley, 2002). It was also cited in an inquiry in Long Harbour, Newfoundland, where local people had concerns about the emissions from another one of ERCO's phosphate processing factories (Canadian Public Health Association, 1978).

The case of the Northeast Strathcona County Residents differs from Love Canal and Port Maitland, because the residents are surrounded by so many industries in the Alberta Industrial Heartland. It is more difficult for this community to get media attention in a province that is wooing the petrochemical industry, and bragging about its slack regulations (Industrial Heartland, 2004). It is also more difficult for people to organize politically — the residents are exhausted from challenging so many industries. Any neighbours who have made land deals with industry or Strathcona County are silenced by gag

clauses that forbid them from discussing the terms of their buyout (Haley, 2004). The residents are learning quickly though, and are sharing their techniques with neighbours who have not been involved, and with neighbouring communities who are beginning to have similar concerns.

Official inquiries and their reports are a form of governance — they help governments deal with controversies and influence policy (Haley, 2000). Through a case study of the Hall Commission, we have seen how citizens participated in an inquiry that turned out to be protecting ERCO, rather than the community's health.

Two methods have been presented in this paper to empower local communities: popular epidemiology and a method of critiquing official inquiries. Both of these methods reflect efforts to democratize science and open up decision making about environmental health issues to wider public participation. Popular epidemiology involves residents working closely with social and scientific researchers, doing collaborative research on environmental health issues related to industrial contaminants. It also involves acting on these results to press governments to act in a more precautionary fashion (e.g., by relocating families from contaminated areas and cleaning up toxic sites).

In addition, the method of analyzing how the reports from official inquiries are written involves taking a close look at how information is collected and then how this information is woven together to produce the official version of what happened. If governments were truly intent on protecting people's health rather than chemicals, there would be no need for environmental inquiries of contaminated communities. These governments would prevent the exposure of these communities. We do not live in an ideal world, so this method is offered to help communities to scrutinize official inquiries.

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