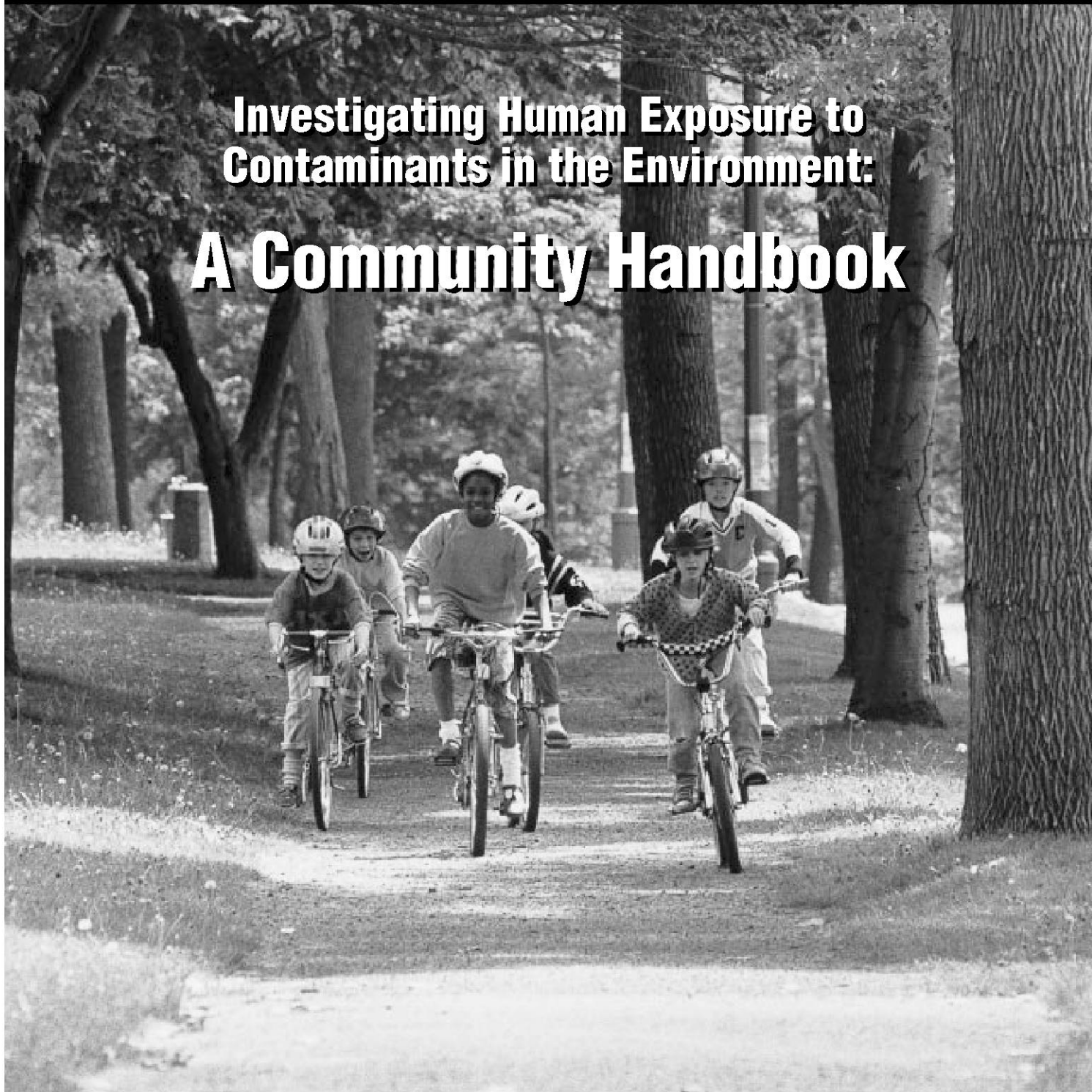




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Investigating Human Exposure to Contaminants in the Environment: A Community Handbook



This document has been divided into a series of files for easier downloading from our web site.

Part 2 of 4

Canada

Investigating Human Exposure to
Contaminants in the Environment:

A Community Handbook

PART A: STEPS ON THE WAY

1. GETTING STARTED

1.1 Investigating Community Concerns

Many community concerns are triggered by the suspicion that there is a health problem in the community and that it is related to environmental contamination. At this point, action on investigating these concerns can be initiated by individuals or groups in the community, local politicians and public health agencies. The following are tips on how you, being any of the above, can investigate these concerns in your community.

Talk to People

The most important way of finding out how others in your community feel about the concerns you may have is to talk to as many people as you can. Find out if they have similar or different concerns. How important are these concerns to them?

- Talk to, or contact your friends, neighbours, other community members and elected officials to see if they share your concern.
- Talk to people from as many different neighbourhoods and backgrounds as you can. Concerns may vary between neighbourhoods and people of different backgrounds.
- Talk to people from municipal, provincial and federal agencies who work on environmental and health issues. They can provide a great deal of background information. Involve these people very early in your investigation. They are valuable resources both now and in the future.
- Identify who else should be consulted. For example, people who have lived in your community for a long time may have useful information on the health of the community and the environment in years gone by. Your local library may be a valuable source of data on the history of your community.

Once you have completed the initial step of talking to people, you will be in a better position to decide the extent of the “concern” and whether there is a need to investigate it more thoroughly.

1.2 Organizing the Work

If after talking to people, you feel that a more thorough investigation is needed, planning will be required. This section briefly discusses some of the planning issues that may arise. Having a plan allows you to focus your efforts on priorities, delegate the work and understand how the various tasks are linked. While planning at the beginning is very helpful, there will be questions that cannot be answered and new

developments that cannot be foreseen. The initial plan should be flexible and will likely change as the investigation unfolds. When you view planning as an ongoing process, it makes it easier to create your initial plan.

Forming a committee

If you decide that a study is needed, you will likely be aware that such an effort usually requires more time and skills than one person can bring to the task. In other words, you will need assistance. Generally, it is better to include a core of interested people in the study right from the outset. By participating in the setting of goals and planning they will develop a sense of ownership and responsibility for the study. Other resource people can be brought in as necessary.



Forming a committee with a group of concerned people may also lend the investigation more credibility. When the results of the investigation are presented as the work of a committee, they are taken more seriously and it may be easier to ensure follow-up action. However, forming a committee also means giving up some control over the investigation. The more you include people with very different interests, the more you may have to compromise your initial goals.

Launching a committee can be straightforward. Invite those who share your concern, including friends, colleagues and people you met during the initial investigation to come to a meeting. The purpose of the meeting can simply be to discuss what you might do about your shared concern. At this point, people can be asked to commit to just this one meeting. The meeting itself will help clarify for the group and for each person what the next steps will be.

Sample Agenda for a First Meeting

- Welcome and purpose of meeting
- Present and approve agenda
- People attending introduce themselves
- Presentation: background and concerns
- Discussion questions:
 - What does each person want to achieve?
 - Is there enough concern to warrant further investigation?
 - What resources can each person bring to the investigation?
 - What role are people willing to play?
 - Who else should be invited to participate?
 - What should the role of the committee be?

Note: a final answer to many of these questions will not be possible at this meeting. Instead it will be important to identify and assign tasks that will help to provide missing answers. The first meeting also allows people to get to know each other, and to discover where each person stands.

- Assign responsibilities for the next meeting.
- Pick a date, time and place for the next meeting.

Questions to consider

Planning initially requires decisions on a number of issues. Addressing the following questions early on will help you focus your efforts. Decisions can always be reconsidered as the situation changes.

What are your goals?

Clarity about your goals makes all decisions easier. When you think about goals, think broadly, about the changes or actions you want to see happen as a result of your work. Possible goals include:

- to discover if there is a link between contaminants and health effects;
- to discover if people are exposed to particular environmental contaminants;
- to raise awareness about the health effects of contaminants;
- to clean up specific pollution sources;
- to shed light on a possible pattern of illness;

- to discover how serious a particular contaminant of concern really is;
- to set clean-up priorities; and
- to give your community a clean bill of health.

In any group of people, goals will differ. As long as some central goals are held in common, it is possible to work together. It is worth spending some time discovering your common interests.

Is an investigation the best route for you?

An investigation of this kind often takes several years and may not give conclusive results. Before you plunge in, it helps to consider whether an investigation is the best way to achieve your goals. For instance, if your goals are oriented toward cleaning up a known pollution source, there may be more effective ways of spending your time. An investigation will not make decisions for the community. You and the community will still have to decide whether the results warrant further action, what type of action should be taken and who will provide the resources to clean up contaminant sources.

What will be the focus of the investigation?

The more focused your investigation, the less effort it will take. Your initial concerns and goals will help you decide on the big questions you want answered. To answer the big questions, it is usually necessary to examine a number of small questions. The investigation becomes a series of mini-investigations. Further research at each stage is focused on areas where the results indicate the largest potential exposures and/or health problems. Such an approach means you will not be able to map out the entire study in detail at the outset. Instead, you will be planning new stages as the results come in.

Exposure Assessment or Community Health Profile: Which one to do?

An important decision for you will be whether to do an exposure assessment or a community health profile. The decision will depend on the initial community concerns.

For example, there may be a source of contaminants in the community which people are concerned about. This may be the impetus to do an exposure assessment so that more can be discovered about the types of contaminants, how they travel through the environment, how people come into contact with them and to what extent people are exposed to them. On the other hand, people may believe that there is an unusual occurrence of a certain disease in their community. This may trigger the desire to perform an assessment of the health of the community, to find out if their initial concern is warranted.

What is the role of the committee?

There are a number of possible roles for the committee. Which role you choose will depend on your goals, and the time and resources committee members can bring to the task. The main roles are:

- decision making;
- collaborating with an agency or researcher under taking part of the investigation;
- communicating about the investigation;
- seeking funding and other resources;
- organizing the work / planning;
- managing the business of the committee, meetings, etc.;
- record keeping;
- researching;
- report writing; and
- interpreting results.

The most important decision is the level of responsibility the committee wants to take for the study. The committee may want to stay in the driver's seat, or it may want to give control over the study to an organization that will carry out the work, with the committee continuing to advise that organization. An outside organization or government agency may also be approached to take on part of the work, especially the investigation itself - data collection, research, report writing and interpretation of the results.

When involving an outside organization in whatever role, seek to understand its mandate and the limits on what it is able to do. Consider how its mandate and ability to act fit with your goals, because any kind of partnership will require compromises.

Clarifying the role of the committee helps committee members understand what may be expected of them. A decision about your role can also help determine the structure of your organization, and its name.

Who should be on the committee?

Once again, consider your goals and the situation you are in. If you need consensus and cooperation from a broad cross section of the community, and such a consensus seems possible, then involving a diversity of community members is advisable. On the other hand, inviting someone to take part who is bitterly opposed to what you hope to achieve makes little sense. You may have to rely on the results of your investigation to change awareness in the community. People you invite to take part should also be interested in the issue, especially if you see the committee playing a very active role. In general, the

broader your representation the more credible your results will be. Consider inviting the following representatives:

- interested citizens;
- people with technical skills you will need, such as a communications person and statistician;
- local politicians;
- staff of the Ontario Ministry of Health, such as the local Public Health Unit and the District Health Council;
- Ontario Ministry of Environment and Energy staff;
- Ministry of Natural Resources staff;
- Health Canada staff;
- people involved with the local Remedial Action Plan;
- community leaders;
- existing community groups;
- local university or college researchers;
- municipal health department staff;
- community health clinic staff;
- local physicians/health professionals with an interest in environmental health; and
- local industry representatives.

Involve expert and non-expert people in your study. The experience and knowledge of experts will be of great help. Non-experts can contribute with their knowledge of the community and can ensure that the community's concerns are communicated and addressed.

On a committee with broad representation, inequalities between members can arise when some members are able to devote more time to the investigation or have more professional expertise than others. This is often a concern for citizen members of the committee. Ways to address this issue include:

- creating and sticking to a mission statement based on your goals;
- being clear about whether important decisions require a consensus of the group or a simple majority;
- willingness on the part of those with technical expertise to share their knowledge and educate others on the committee;
- hard work on the part of citizen members to provide leadership and understand the complexities involved in this kind of project; and
- seeking out resources to assist members to devote more time to the project, such as funding to carry out specific tasks.

Expect new people, invited to join the committee, to want to re-examine some of the questions listed in this section.

What level of leadership and commitment are individuals willing to give?

An investigation of this kind often requires more time and work than anyone could have foreseen. Ask yourselves whether there is enough leadership and commitment in the group to see you through. If your doubts are very great, consider reducing the scope of your plans or make it a priority to find the resources and/or people needed to achieve your goals.

What resources are needed?

What you will need depends on the type and scope of investigation you intend to do. For example, access to medical records, expertise in evaluating them and compiling statistics about the health status of the community are more necessary for a community health profile than for an exposure assessment. General categories of resources needed are:

- access to information - medical records, statistical records, information about contaminant sources, etc.;
- access to equipment such as computers, fax machines, copiers, etc.;
- funding for computer searches, research materials, long distance telephone, etc.;
- time of researchers, including experts in research science, statistics, epidemiology, toxicology, report writing; and
- time of those coordinating and communicating the investigation.

What resources are available?

Before you assess how realistic your goals are, consider what resources are available. Discuss people and organizations you know that can provide funding or in-kind contributions. Local government agencies may be persuaded to take on parts or all of the study. Research assistance can also be found at local universities and colleges, where professors and students are often interested in working on relevant local projects. Non-government organizations may have volunteers, office space and access to equipment. Sources of funding information are listed in **Part C: Information Sources**.

What solutions have other communities found?

Two case studies describing an exposure assessment and a community health profile are outlined in this handbook. The Sault Ste. Marie - St. Marys River Study of polycyclic aromatic hydrocarbons (PAHs) describes an exposure assessment. The Cornwall - Air Quality Study is an example of a community health profile.

The experience of communities which have undertaken similar studies show that they can take up to two or three years to complete. A commitment of time and effort by everyone involved is needed.

Sault Ste. Marie - St. Marys River Study

A diverse mixture of contaminants generated by industrial and municipal sources flows into the St. Marys River at Sault Ste. Marie. Technical and public concern has centred on PAHs because of high levels found in sediments and water, and because there are no health guidelines which could be used to assess the health risks of PAHs at levels found in the river. The issue of sustained exposure of the local community to PAHs in the river also needed to be examined. In order to decide on the priority of clean-up options for the Remedial Action Plan (RAP) process, a risk assessment based on PAH exposure was needed. (For more information on RAPs, see **Part B**)

The St. Marys River study was part of an established RAP process, with a technical team and a binational public advisory committee. The PAH work was suggested by the public advisory committee, and several stakeholder groups already active in the process contributed to the study.

Cornwall - Air Quality Study

The odour in the air, as a result of industrial emissions in the Cornwall area, has fuelled public health concern and has led to perceived connections between air emissions and respiratory disease or cancer. These concerns over health prompted the Cornwall Committee to look at health data rather than focusing on exposure to specific contaminants.

The Cornwall Air Quality Committee was formed as a result of concerns about air quality and odours in Cornwall. It began in response to a letter from the mayor published in the local newspaper asking for public participation and comment on actions to reduce contaminant releases at local industrial plants. The initial committee, comprising concerned citizens, called two public meetings and found support for a focus on determining whether air pollution was causing health effects. The committee identified the issues and the agencies which could supply data, and called on them to provide information or assistance as needed. In this manner, the committee facilitated the study by bringing interested parties in the community together. This committee has retained a very fluid membership and has accomplished a great deal.

Three Strategies

To guide the work of your committee, you may find it helpful to develop three strategies. Preparing and coordinating the implementation of each strategy can be done by sub-committees.

Study Strategy

The study strategy can be developed based on your goals, the suggestions in the handbook and your preliminary discussions about the focus of the investigation. It may take the form of a series of mini-investigations - with details on tasks, who will do them and when - filled in as the results of the previous mini-investigation become available. This approach saves spending much effort researching questions that yield no conclusive results. For instance in Sault Ste. Marie, a river water use survey identified that people used the river for swimming only. As a result, it was not necessary to research the potential effects of using the water for drinking or watering gardens.

Communications Strategy

The topic of health and environmental contaminants can be of great concern to people, especially when they suspect their own health is affected. Communicating about your investigation in a manner that has been well thought through will help to avoid reactions you did not intend. A communications strategy, that evolves from your goals and the study strategy, describes who will communicate what, how and when. **Section 4: Next Steps**, gives further information on developing a strategy.

Fundraising or Resources Strategy

Putting some thought into how you will find the resources you need makes success more likely. A resources strategy sets out what you need, sets priorities and describes the steps to appeal to potential funders you have identified.

Planning tools

The logical organization of information is also a part of planning. The following three tools may be of use to you at various points:

- A timeline shows when each task starts and finishes on a calendar. It helps you to set priorities, schedule work in a logical order and determine how realistic any deadlines may be.
- A budget may show how much time people will require to complete tasks, the amount they are paid and other expenses associated with each task. Budgets are often needed to apply for funds, and to manage the spending of any grants you receive.

- Record keeping in the form of minutes from meetings and an accounting of resources spent (including volunteer hours) makes future planning easier. New plans can be based on decisions already made and using past experience in similar situations.

It is possible to devote too much time to planning. Avoid the temptation to come up with very detailed plans at the outset. What will serve you best is a general framework that keeps your work focused and the ability to be flexible as your planning needs unfold.

1.3 Identifying Sources of Information

There are various sources that can help you to gather the data, information and knowledge needed for carrying out exposure assessments or community health profiles. The following sources of information are described in this Section:

- government agencies (municipal, provincial and federal);
- other community residents;
- universities and research centres;
- owners/operators of industries or municipal facilities;
- community and environmental organizations and associations;
- libraries and archives; and
- environmental professionals.

The information that can be obtained from these sources, whether private or public, will vary according to their policies and resources available for responding to public requests. There may also be costs associated in obtaining information, as some agencies will charge fees to cover their costs of responding to these requests. The sources of information are described in more detail below.

Government Agencies

There are several government agencies that are responsible for different aspects of the environment and health. **Municipal and regional governments** are usually responsible for land use planning, as well as sewage treatment and the collection and disposal of household garbage. In some cases, sewage treatment is a provincial responsibility. However, most municipalities should be able to provide you with information on zoning and the locations of various possible point sources of contaminants, including industries and old and active waste disposal sites. An important point of contact may be the Commissioner of Planning.

For the **provincial government**, begin by contacting the regional office of the Ontario Ministry of Environment and Energy closest to you. It may also be appropriate to contact the offices of the Ontario

Ministry of Natural Resources and the Ontario Ministry of Health for your region. The phone numbers of all these Ministries will be in the blue pages of the telephone directory.

The Ministry of Environment and Energy and the Ministry of Natural Resources have much information on the environment in your area. This may include data on water and air quality, soil contamination and on the health of the fish and wildlife in your area. Ask for a copy of the *Guide to Eating Ontario Sport Fish*. This will give you a general idea whether contaminants are a problem in freshwater fish in nearby lakes or rivers. Both Ministries are also involved in coordinating Remedial Action Plans in the Areas of Concern around the Great Lakes.

The public health unit in your region may also have information on water quality at beaches used for swimming and other recreational activities. Public health units may also have prepared health status and environmental assessment reports for your community. Begin by contacting the Medical Officer of Health for your regional public health unit.

District Health Councils have been delegated, by the Ontario Ministry of Health, the responsibility for health planning in each region of the province. They maintain, or have access to, a great deal of health information on the communities they serve.

Remedial Action Plan (RAP) technical teams exist for each of the Great Lakes Areas of Concern in Ontario. These teams are responsible for developing and implementing plans to clean up the Areas of Concern. They have gathered a variety of environmental and other data as part of their planning. The important point of contact is the local RAP coordinator (see **Part C** for addresses and phone numbers).

The **federal government** will also have information on the environment in your area. Contact the regional office of Environment Canada nearest you. The Canadian Wildlife Service of Environment Canada may have information on contaminant levels in some wildlife species to supplement information from the Ministry of Natural Resources. The Atmospheric Environment Service, of Environment Canada, can provide you with information on prevailing wind directions, climate, and some air pollution results. The Environmental Conservation Service may also be able to provide information and advice on regulations and guidelines.

The Environmental Health Directorate of Health Canada, through the Great Lakes Health Effects Program, is another source of information, particularly with regard to approaches and methods used to evaluate the exposure to and the risk from environmental contaminants. They can provide guidelines for contaminants in air, water and dumpsites,

and advice for health protection and promotion, drinking water safety, radiation and other issues. The Food Directorate can provide information on contaminants in food and advise on effective ways to protect health. The Laboratory Centre for Disease Control has access to large health databases and has expertise in methods of conducting human health studies and interpretation of health data. The Canadian Centre for Health Information of Statistics Canada also maintains and publishes a variety of health statistics for all regions in the country.

Other Community Residents

People living or working near the potential sources of environmental contaminants are an important source of first-hand information based on observation and experience. They can be particularly helpful in identifying general patterns and the sequence of events at a particular factory or site. Former residents can also provide useful information about what happened in the past.

Remember that factual descriptions of what happened or of how the environment changed are more useful than unfounded claims or accusations. Check the information you get from individual community residents, by talking to as many different people as possible. With their permission, keep notes of all conversations.

Universities and Research Centres

Many universities and research centres have faculty members who are knowledgeable about the environment. McMaster University and the University of Toronto have joined together to form the Institute of Environment and Health. Several universities have specific environmental studies programs (University of Guelph, University of Toronto, York University, University of Waterloo, Ryerson Polytechnical University). Ryerson Polytechnical University also has a School of Environmental Health and others have schools of Public Health or Community Medicine (University of Toronto, University of Ottawa, McMaster University, Queen's University, University of Western Ontario). These resource people may be able to offer you suggestions and guidance. If you can interest faculty members in your study, they may encourage students to become involved and to help you, as part of their course work. Many students value opportunities to investigate real-life problems and to apply some of the theoretical ideas that they are learning. Some universities and research centres may have facilities, such as laboratories, libraries or resources centres, that could be of use in your study.

Owners/Operators of Industries or Municipal Facilities

Owners or operators of industries (such as manufacturing plants) or municipal facilities (such as waste disposal sites and sewage treatment plants) have information that could be useful to you. Establish who is in charge of the day-to-day operations of the site or facility or for its maintenance if it is no longer in operation. Some companies have a manager or an office responsible for the environmental management of the facilities operation. Try to make an appointment to meet with them and explain your concerns, using whatever information you have collected already. Ask for specific additional information, explaining what you intend to do with it. It may or may not be easy to get the information you want from these facilities. Follow up on your meeting with a written request for specific information and thank them for information already received.

Community and Environmental Organizations and Associations

Many community and environmental organizations are actively working on issues related to waste management, toxic and hazardous materials, community health, etc. These groups will often be very helpful in providing you with advice, information and contacts. For a list of local groups in your area contact one of the larger environmental organizations, such as Pollution Probe, Greenpeace, Great Lakes United, the Ontario Public Interest Research Group (OPIRG) or the Canadian Environmental Network. Also try health organizations which work on issues related to community health, such as the Lung Association and the Healthy Communities Project.

*Addresses and phone numbers for these and other sources of information are found in **Part C: Information Sources.***

Libraries and Archives

A wide range of reference materials are available to help you with your investigation. Libraries often have (or have access to) reference books on the environment as well as on environmental contaminants. Local archives will have maps and aerial photographs that you can use, as well as historical information on your community.

Environmental Professionals

There may be environmental professionals living in or nearby your community. These include environmental consultants, ecologists and environmental engineers. Many companies have occupational health and safety staff. Some local community health centres and public health units have expertise in occupational health and safety and environmental health. Many are willing to volunteer their time and expertise. Ask people in your community if they know of anyone with relevant knowledge and experience and then make an appointment to see them.

Sault Ste. Marie - St. Marys River Study

In order to identify the sources of information available to address the PAH health issue, Health Canada, in consultation with the St. Marys River Remedial Action Plan team, called a meeting of the various stakeholders in the community. These stakeholders spanned public and private sector agencies and included the Ontario Ministry of Environment and Energy, the Ontario Ministry of Labour, the Great Lakes Health Effects Program of Health Canada, the Algoma Health Unit, Algoma Steel, community residents and representatives of the Native community in the area. These representatives shared information at their disposal, identified gaps in knowledge and devised an action plan to address the PAH health issue.

Cornwall - Air Quality Study

The Cornwall Air Quality Committee called on a number of sources for information. These included the local Lung Association office, the Great Lakes Health Effects Program of Health Canada, the Eastern Ontario Health Unit, local businesses and industries, and community residents. These sources were identified as the committee developed its network of contacts through discussions. More sources were identified as work progressed.

2. ASSESSING EXPOSURE

This Section of the handbook provides guidance on how to assess your community's exposure to contaminants in the environment. It emphasizes exposures to toxic chemicals that remain in the environment over long periods of time. To get a comprehensive picture of exposure in your community, the following activities should be considered:

- gathering the initial information;
- identifying all the potential sources of contaminants;
- establishing the types, nature and amounts of contaminants involved;
- evaluating the exposure pathways;
- defining the potentially exposed population;
- assessing community exposure; and
- preparing an evaluation.

These are described in more detail below.

2.1 Gathering the Initial Information

One of the first steps in assessing your community's exposure to contaminants in the environment is to gather relevant initial information. This includes:

- recording and documenting the concerns being expressed;
- collecting data from first-hand observations;
- interviewing people who are knowledgeable about the local environment; and

*We are all exposed to low levels of many environmental contaminants over our lifetimes. Even though suspected in many cases, health problems due to exposure to low levels of contaminants in the environment are difficult to prove. The effects on health that may result from exposure to selected environmental contaminants are described in **Part B: Background Information**.*

Thomas Rahn



- gathering information from government, industry and other agencies.

These are described in more detail below.

Recording and Documenting the Concerns

First, record and document people’s concerns about environmental contaminants in your community. Why are people concerned? Prepare a summary, including the events or circumstances that caused the concern and who was involved. You should also note where concerns are shared by several people, and where they are not. It is helpful to know whether just one person was concerned, or a hundred people. Similarly, does everyone agree on the concern, or are there several different opinions?

People’s concerns are very important and should be addressed. The information that you gather may help you distinguish whether their concerns are based on “actual” or “perceived” health problems in their community.

Collecting Data from First-Hand Observations

Using the information you have recorded about the community’s concerns, do some research yourself. If the contaminants have a known source in the community, try to make an appointment with the manager or environmental officer to visit their facilities. How are the sites managed and what is the condition of the facility? Record your observations carefully.

Interviewing People Who Are Knowledgeable about the Environment

Talk to local people who are aware of the environment in and near your community. For example, try members of a local “birding” or field naturalists club, or local farmers or anglers. Ask them if they have noticed if the health of the environment has changed, and if so how. Do they suspect anything that could be causing these changes? Keep a record of their remarks.

Gathering Information from Government, Industry and Other Agencies

Contact the relevant government, industry and other agencies and begin to gather information on environmental quality in your area. Include information on air quality, water quality, the presence of contaminants in fish and wildlife, prevailing wind direction, water drainage patterns, soil types, soil contamination problems, previous land use, etc. Synthesize the information so that you have an overview of the environmental quality of your area. Focus on finding information that sheds more light on the concerns you have identified.

*There are many sources of contaminants outside your community that could affect people living in it. These include chemicals or microbio-logical organisms carried into your community by wind or water currents or wildlife. This handbook focuses on assessing exposure from contaminant sources **in** your community.*

Sault Ste. Marie - St. Marys River Study

The St. Marys River Remedial Action Plan team had a great deal of environmental and contaminant emission data at its disposal from various agencies participating in the Remedial Action Plan process. Although enough information existed to identify contaminants of concern in general terms, the team identified the need for current data on PAH levels in the river water and sediments in order to better assess the community's exposure and risk to health. It also felt that not enough was known on who uses the river, for what purposes and how often. Two studies were initiated to obtain this missing information: a sediment and water sampling survey measuring levels of PAHs in samples collected from various sites in the river; and a water use survey during which Ontario Ministry of Environment and Energy summer students and staff used a written questionnaire and door-to-door interviews to obtain an accurate picture of residents' use of the river for purposes such as bathing, showering, drinking or gardening.

"Point" and "Non-Point" Sources

Environmental contaminants can come from two different types of sources. Point sources are single, easily identified sources of pollution. Examples are large smokestacks or the waste water discharge pipe of a sewage treatment plant. When small amounts of environmental contaminants from many sources combine to create a large problem, the sources are considered to be "non-point." Examples of non-point sources are pesticide and fertilizer runoff from farms or the air pollution from cars.

2.2 Identifying All the Potential Sources of Contaminants

The second step in assessing exposure is to identify all the potential sources of contaminants in and around your community.

Possible sources to consider include:

- industries;
- waste disposal sites still in operation (either solid waste or hazardous waste sites);
- farms;
- sewage treatment plants;
- abandoned factories and waste disposal sites or other contaminated sites; and
- "non-point" sources, such as street runoff and areas where pesticides, herbicides or fertilizers are used.

Get as much information as you can on these and other possible sources. Use available maps and aerial photographs to identify their locations. Mark on the maps the location of nearby houses, schools, water supply wells or intakes, and special environmental features such as land drainage, rivers, streams, fish-spawning areas and prevailing wind direction. Include all possible sources on one map of your entire community, so that you can see how different sources relate to each other. You may also need several larger scale maps of individual sources and their surroundings. Identify the facilities or sites about which concerns have been expressed.

Contact provincial (Ministry of Environment and Energy) and municipal (Public Works) officials for information on possible point sources of contaminants in the area. This includes any information on licences or permits to operate facilities. Other information to ask for includes the types and amounts of substances discharged into the environment, as well as previous uses of various sites in the area.

Prepare a written description of the possible sources to complement the maps or aerial photos. Include information on the uses of the site or facility, the processes or procedures used, the numbers of people employed, how long the factory or site has been there, any known accidents or spills involving contaminants and any other relevant information.

CASE STUDY

Sault Ste. Marie - St. Marys River Study

Sources of contaminants were identified from the Ontario Ministry of Environment and Energy data on concentrations in air and water and from data on emissions from sewage treatment plants and industrial effluent streams. The major source of PAHs in the St. Marys River was found to be the local steel mill.

2.3 Establishing the Types, Nature and Amounts of Contaminants Involved

It is important to establish the types, nature and amounts of any contaminants involved and how they are used, stored, manufactured and disposed of at each source you have identified. Some of this information may have already been collected when you were finding out about the potential sources of contaminants.

First, find out about the types of contaminants normally associated with the sources you have identified. For example, sewage treatment plants usually use chlorine to disinfect the waste water. Identify the form or state of the substance. Is it a gas, a liquid or a solid? Does it have an odour? Is it a single contaminant or a mixture of contaminants? Library work combined with data gathered from other sources will enable you to do at least a partial inventory for each source of environmental contaminants. Be as specific as possible. Include information on the amounts and degree of hazard of any contaminants involved.

Contact the managers, operators or environmental officers of the facilities of concern to discuss the types of hazardous materials used or stored there. Find out what's being discharged or released into the

*If you would like more information about the types of contaminants in the environment, see **Part B: Background Information.***



environment. The amount and type of information given in response to requests by the public will vary according to the policies of the facilities. Facilities that use or store hazardous materials are required to label all hazardous materials on site and to retain copies of the “Material Safety Data Sheets” (MSDSs) for each substance. Ask the facility managers if they can provide you with their MSDSs. Some may be willing to work with community groups and to provide this information. Some operations may maintain up to several hundred MSDSs. In these cases, it will be necessary to be as specific as possible about the types of substances of greatest interest. Document your findings clearly, recording the names, dates and times of your appointments and what observations were made.

If you think chemical analysis would be helpful to establish the specific nature and/or concentrations of individual contaminants, try consulting with the regional office of the Ontario Ministry of Environment and

Energy or your local Medical Officer of Health. Commercial labs can also be found in the yellow pages of the phone book. They may suggest ways to collect the appropriate sample and have it analysed. Because it can be fairly expensive, consider chemical analysis of samples after you have an idea of what you are looking for.

Find out if there has been any local human contact with any hazardous substances. Who handles them and how? Do they wear any protective equipment?

Add this information and data to your written description of the potential sources of contamination. Where appropriate, use figures, tables, drawings and diagrams to illustrate the text.

Material Safety Data Sheets

*Material Safety Data Sheets (MSDSs) contain information about a substance's toxicity and hazards and are required under the Workplace Hazardous Materials Information System (WHMIS) regulations of the Ontario Health and Safety Act. Although MSDSs will not tell you how much of any substance is on the site, they will give you valuable information about the nature of the materials and their toxicity. Be aware that, at times, the final products and their by-products derived from the manufacturing process may have little resemblance (and possibly different toxicity) to the original material. MSDSs also may not provide information on the health effects of long-term exposure to low levels of these substances. A sample MSDS is presented in **Part B: Background Information**.*

What is a persistent contaminant?

When contaminants are released into the environment, the length of time they stay in the environment becomes an important concern. A substance that is relatively toxic can be considered a minor hazard if it breaks down quickly into non-hazardous substances before people can be exposed to it. The opposite is also true: a mildly toxic contaminant that remains for a long time in those parts of the environment where humans can be exposed to it can be a serious concern. Some toxic chemicals, such as lead or cadmium, cannot break down. Others can theoretically break down, but only under extreme conditions (such as the heat of an incinerator) not normally found in the environment. Substances that remain in the environment for long periods are called persistent contaminants. Those that are also hazardous are often called "persistent" toxic substances.

CASE STUDY

Sault Ste. Marie - St. Marys River Study

PAHs had been identified previously as the contaminants of concern in the St. Marys River. The nature and levels of PAHs were established by the chemical analysis of samples collected at various sites in the water and sediments survey. Ontario Ministry of Environment and Energy standard collection and analytical techniques were followed in this survey. The sampling sites were selected according to community knowledge of areas of active recreational water use, which was based on the water use survey questionnaire and interview responses, and advice from the Algoma Health Unit and representatives from the Native community.

2.4 Evaluating the Exposure Pathways

Once you have identified the types, nature and amounts of contaminants involved, you should evaluate how each one moves in the environment and how people could be exposed. Is the substance likely to be found in water and enter the municipal drinking water system? Does it evaporate easily into the air and as a result, is likely to be inhaled? Does it concentrate in local fish or in food grown by community residents? Does it remain in the environment for a long time or does it break down quickly? When living organisms absorb the contaminant, do they store it in their tissues, break it down or eliminate it quickly? If it is broken down, are any of the resulting new substances of concern?

*If you would like more information about the sources, movement and fate of contaminants in the environment or about pathways of exposure, see **Part B: Background Information**.*

Find out as much as you can about the substance's behaviour in the environment so that you can establish the most important exposure pathways. This will probably require a fair amount of research work in a library. Alternatively, someone with a background in environmental toxicology or chemistry could be very helpful at this point. Refer to FIGURE 1 (next page) and FIGURE 4 (in **Part B: Background Information**) for more information on exposure pathways.

Using the information you have gathered on exposure pathways, try to find out the level or concentration of the contaminant in each pathway. There may be information from testing of local soil, water, air and food available. For important pathways of the contaminants of greatest concern, you may want to consider further chemical tests if the information you need is missing.

After your investigation of potential exposure pathways, you should prepare a written description of your findings. Summarize what you consider to be the most important exposure pathways and why.

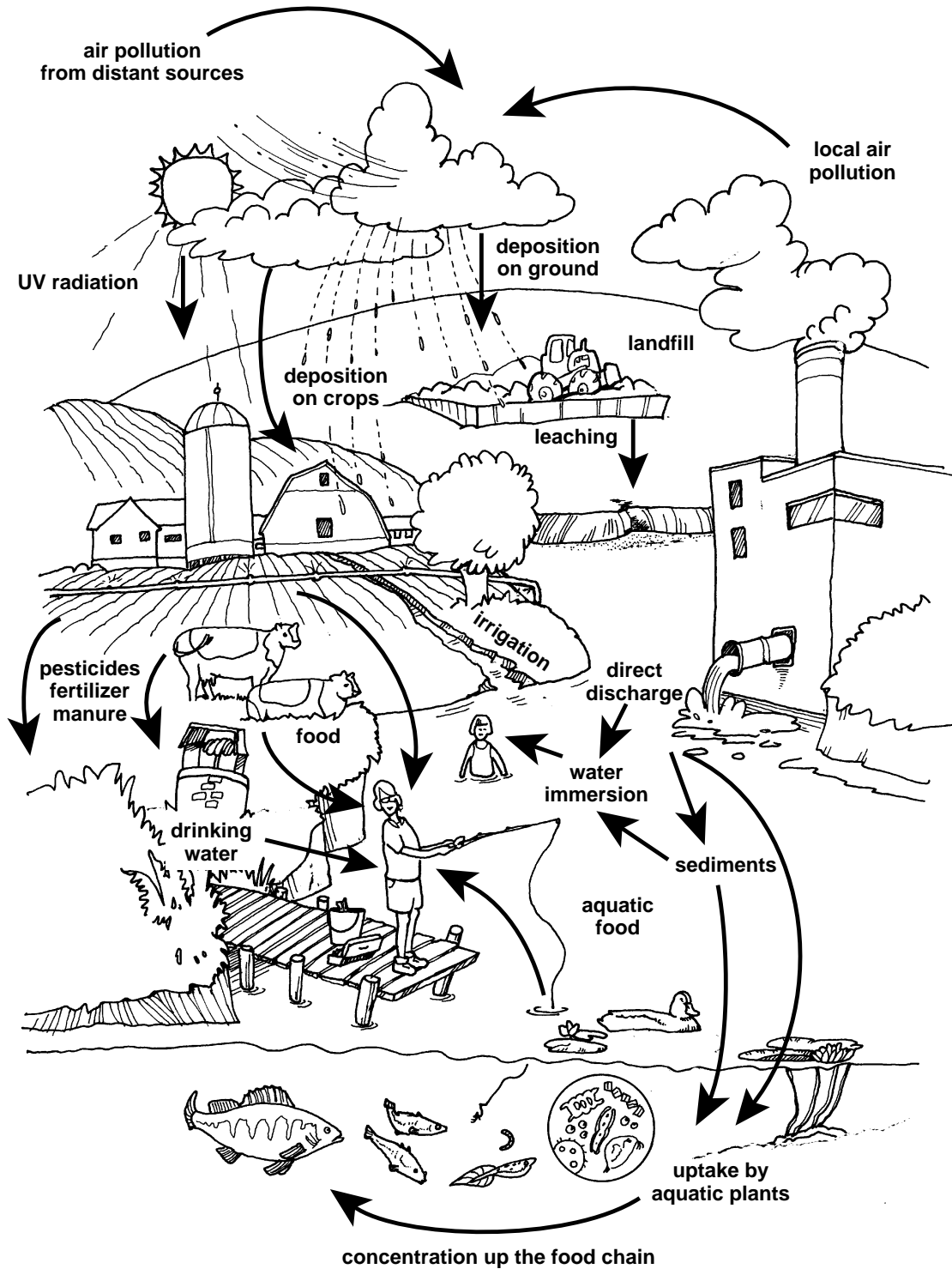
CASE STUDY

Sault Ste. Marie - St. Marys River Study

The main concern expressed by the community was from exposure to PAHs at recreational beach sites. Based on the advice of technical experts, skin contact (i.e., dermal route) was thought to be the most important route of exposure during recreational use of the river, since PAHs breathed in as vapours or ingested through food or water were considered minor contributors to exposure in this situation. Therefore, risk assessment efforts focused on the pathway specific to exposure to PAHs through skin contact with river water and sediments.

FIGURE 1:

Exposure Pathways



2.5 Defining the Potentially Exposed Population

The next step is to identify who could have been exposed to the contaminants you have identified. The group of people who may have been or may be exposed to the contaminant is called the potentially exposed population. Defining the potentially exposed population requires a knowledge of the community itself.

In general, there are two groups of people who could be exposed:

- workers employed at the site or factory; and
- people living, working, going to school or taking part in recreational activities in the community.

Air can contribute up to 10% of our exposure to some persistent toxic substances.

While worker exposure can be a serious concern, this handbook focuses on the second group - community exposure. In Ontario, the *Occupational Health and Safety Act* is designed to protect workers' health, and there are several mechanisms in place, such as joint worker-management committees and the Workplace Hazardous Materials Information System (WHMIS) to reduce workplace exposure to contaminants.

To define who is or could be exposed, consider the exposure pathways you have identified.

Water

To define the potentially exposed population for a water exposure pathway, consider who could have consumed contaminated drinking water or come into contact with polluted recreational water. Could the contaminant have entered the drinking water supply or be in a nearby river or lake? The potentially exposed population could be defined as everyone using the particular drinking water supply (either a private supply, such as a well, or a municipally treated supply) or everyone visiting a particular river or lake and coming into contact with the water through recreational activities such as swimming or water skiing.

Air

To define the potentially exposed population for an air exposure pathway, consider the source of the air pollution, the prevailing wind direction and the geographical area affected. The people living, working or going to school in the area near the source and those living downwind from the source could be defined as the potentially exposed population.

Food

To define the potentially exposed population for a food exposure

pathway, consider who eats the contaminated food. In those cases where a local food exposure pathway is a significant concern, it is often anglers and their families who eat contaminated fish, and hunters who eat wild meat from local moose, deer and ducks, who constitute the potentially exposed population. Also consider locally grown food, as compared to food “imported” into the community as a potential source of exposure.

Soil

To define the potentially exposed population for a soil exposure pathway, consider who is in contact with the contaminated soil. People living or working near or in an area with contaminated soil or those using the site for recreation may be at risk of exposure. Young children, who tend to put dirty objects in their mouths, may be potentially exposed to contaminated soil.

Be as precise as possible in identifying the potentially exposed population. In particular:

- Can you define the geographic boundaries of the exposed populations? In other words, can you say where the potentially exposed population(s) lives, works or goes to school? (use a map)
- Is exposure limited to people doing a particular activity (e.g., fishing, smoking, eating a particular type of food)?
- Is exposure limited to a particular group within the community that can be defined by common age, sex or ethnic background?

The answers to these questions will help you to identify the potentially exposed population.

Did you know that the majority of human exposure to many persistent toxic substances, such as PCBs, is through food, particularly for people who eat a lot of contaminated wild game and sport caught fish?

CASE STUDY

Sault Ste. Marie - St. Marys River Study

The water use survey established that shoreline residents did not use untreated river water for drinking or for watering vegetable gardens, and that the only relevant exposure to PAHs was from recreational activities such as swimming and bathing. Therefore, recreational swimmers and bathers were identified as the potentially exposed population in this situation.

2.6 Assessing Community Exposure

In order to assess your community’s exposure to contaminants in the environment, you must have a general idea about the **level or concentration** of contaminants in the environmental media (i.e., air, water, soil, food) of each exposure pathway. To do a simple exposure assess-

The methods for calculating people's exposure to environmental contaminants are described in detail in Investigating Human Exposure to Contaminants in the Environment: A Handbook for Exposure Calculations.

ment that does not involve complex mathematical calculations, it is often enough to know whether the concentrations of contaminants in each pathway are above or below existing criteria or standards. For example, how do the levels of mercury in sport caught fish in your area compare to guidelines set by the Ministry of Environment and Energy? Are the levels of specific contaminants in soil and water above or below criteria or standards set by the Ontario Ministry of Environment and Energy? Note that criteria and standards set for the maximum tolerable levels of contaminants in the soil depend on the intended use of the area. For example, the allowable levels of contaminants in soil will be lower if an area is intended for agricultural, residential or parkland use compared to commercial or industrial use, because people contact will be greater.

Regulations, Standards, Guidelines and Levels: What's the difference?

A regulation is a legally enforceable limit on the amount or concentration of a substance. Standards, such as those for different air pollutants, and the penalties for exceeding them are usually set out in a regulation. Exceeding the standard set out in the regulation could result in unacceptable harm to human health or the environment and lead to penalties. Guidelines are advisory limits, above which there are grounds for concern, but they are not legally enforceable. Finally, levels are simply amounts or concentrations of a substance.

CASE STUDY

Sault Ste. Marie - St. Marys River Study

A preliminary exposure assessment was carried out only for those exposed to river water and sediments by swimming and bathing. For a complete health assessment, contaminant levels and other information on food and air exposures would be needed. However, in this case, estimates of the risks to health, due to exposure to PAHs from swimming at various sites in the St. Marys River, were developed. The results of the risk assessment indicated that the risks of developing cancer, due to exposure to PAHs from swimming in all inshore swimming areas, were negligible. Only two offshore sites posed some risk to health, but it was unlikely that people would swim in those areas, because of their distance from shore and the strong currents found there.

2.7 Preparing an Evaluation

Once you have finished your exposure assessment, you may want to prepare a written evaluation. It is a good way of summarizing and documenting what you have done and what you have found. This following information could be included in your report:

- a description of the problem or concern you were investigating;
- the objectives of your exposure assessment;
- the methods and procedures used;
- the results and findings;
- your interpretation of the results and findings;
- conclusions and recommendations; and
- a summary that can be distributed more widely.

In your report, present all of the relevant information you have collected. Where appropriate, include maps, figures, tables and illustrations. When you have completed your report, ensure that it receives widespread distribution in the community, and send copies to all people you have consulted. Ask for their comments. Hold a community meeting or think of other ways of distributing your findings.

CASE STUDY

Sault Ste. Marie - St. Marys River Study

A number of reports have been prepared as a result of the St. Marys River Study. Environmental levels of PAHs and other contaminants, measured in samples collected for the water and sediments survey, have been presented in various technical reports. A report on the water use survey and a risk assessment report outlining the lifetime risk to health of swimming in the St. Marys River have been prepared.



3. PREPARING A COMMUNITY HEALTH PROFILE

This Section provides guidance on how to prepare a profile of the health of your community. A community health profile examines the health of the entire community rather than of individual cases. Individual cases may be useful to illustrate a particular problem area, but are of limited value in determining trends in the health of the wider community. By comparing these health trends with other information about your community, and with health trends in other communities, you will get a better sense of whether your initial concerns about the health effects of environmental contaminants are supported.

The amount of information and research available may seem overwhelming. It will help to approach each information source with the simple question: will it help shed light on the concerns identified in the initial exploration of the issue? If you cannot answer the question, it may be worthwhile to seek advice before undertaking further work. Your local Medical Officer of Health and the provincial Ministry of Health are good starting points for advice on how to carry out your study.

In any type of community health profile related to a concern about contaminants in the environment, there are several issues that should be considered, including:

- confidentiality of information;
- lack of relevant data or inconsistency in reporting;
- sources and form of health information; and
- the difficulty of “proving” that an environmental exposure caused a health effect.

These are discussed below.

Confidentiality of Information

Often, detailed health information will be difficult to obtain. Health professionals and hospitals take care to keep patient information confidential, so that anything you are given will not contain the names or addresses of the individuals concerned. If you do any type of survey, be prepared that some individuals will be unwilling to discuss their own or their family’s health problems, because they may view this as an invasion of their privacy. In the interest of confidentiality, you should not give out any information on individuals, except to the individuals themselves.

Finding Relevant Data

Although physicians and hospitals report on several major health diseases and symptoms, information on common health problems, such as headaches, nausea or skin rashes, is not kept systematically. The usual types of health information that are available are:

- *mortality* records, which indicate the cause of death for everyone who has died in the community;
- records of *congenital anomalies* in babies, which indicate trends in birth defects;
- *cancer incidence* records showing the number of cases of different types of cancer; and
- *hospital admission data* showing the medical reason for each patient’s hospital stay.

In all cases, information that could be used to identify individuals, such as names and addresses, will have been removed to maintain confidentiality. There may also be some differences between physicians and hospitals in how they report this information.

Sources and Form of Health Information

The important sources of information that you will need to prepare a community health profile include:

- databases that contain information on the health status of your community, including the mortality database, the Ontario Cancer Treatment and Research Foundation (OCTRF) database, the congenital anomalies database and the Canadian Institute for Health Information (CIHI) database;
- government agencies, especially the Ontario Ministry of Health, Health Canada, Statistics Canada and your local Medical Officer of Health;
- health care professionals in your community, including physicians, nurses, homecare workers, public health professionals and midwives;
- universities, colleges and research centres;
- environmental and community organizations;
- environmental and health professionals in your community, including consultants, epidemiologists, toxicologists and environmental health specialists; and
- industry occupational health and safety professionals.

Many of these information sources were described in more detail in Section 1.3. Addresses and phone numbers of some of these sources are found in **Part C: Information Sources**.

These days, most health information is computerized and uses technical jargon such as “ICD” codes, the “SMR” and “statistical significance.” Experts in universities, public health units, the provincial Ministry of Health and Health Canada with a background in epidemiology or statistics can explain this information.

“Proving” that an Environmental Exposure Caused a Health Effect

It is usually very difficult to prove that an environmental exposure caused a health problem in a community. This is because:

- We are all exposed to many contaminants throughout our lives and different contaminants may cause similar health effects.
- Environmental exposures are usually too low to cause immediate and easily identified health problems.
- Several lifestyle activities (such as smoking, alcohol consumption and the use of medications or other drugs) can act as *confounding factors* that is, they can interfere with our ability to relate health effects to environmental exposures because they cause the same effects.
- There can be a long period of time between exposure to a contaminant and the resulting health effect. This is called the *latency period* and can be as long as 30 years for some types of cancer.

- People move around a lot and do not necessarily live in the same neighbourhood or community for many years. This makes it more difficult to establish a history of their exposure to contaminants.

However, you *may* be able to show that there are corresponding trends between factors in the environment and community health which show the need for a more detailed investigation of your community.

This Section goes on to describe the steps in preparing a community health profile. These are:

- gathering the initial information;
- collecting and summarizing existing health information;
- collecting and summarizing other relevant information;
- finding community-based knowledge; and
- preparing an evaluation.

*More information about the relationship between the dose of contaminants and human health response is found in **Part B: Background Information.***

3.1 Gathering the Initial Information

Getting the facts straight about any health problems in the community involves clarifying and investigating any claims about specific illnesses. Initially, your investigation should focus on the following questions:

- Where do the people with the suspected health problem or illness live and work? How long have they lived or worked in this community? Add this information to a map of your community. Estimate the total number of people in your community as well as the number of known cases of the health effect or illness.
- What are the case histories of the people with the health effect or disease? This may require direct contact with them or their families. Indicate whether the problems have been confirmed by a doctor or whether they are self-reported. When did the disease or health effect first occur and what were the circumstances surrounding its occurrence? What has happened since? Try getting someone with experience in taking case histories, such as a nurse, medical practitioner or a social worker, to perform interviews and to document the information.
- Are there any obvious links between the individuals with similar diseases or health effects? For example, based on the information that you have collected,
 - Do they live or work in the same area?
 - Do they attend the same school?
 - Do they belong to the same social organization, church or other group?

- Do they have common habits or activities such as smoking, fishing and hobbies?
- Do they use a common source of drinking water? Are they all located downwind from a nearby smokestack?
- Do they all live in houses with cracked foundations or leaking basements?
- Do they all eat substantial amounts of the same type of food, for example, freshwater fish?
- How are the suspected health problems distributed in the community, for example, geographically, by age or gender?
- Are the cases of health effects or disease evenly distributed across your community or do they appear to be clustered in any area, age group or gender?

*For information on designing and conducting a detailed community health survey, see **Part B: Background Information.***

DISEASE CLUSTERS

A disease cluster may be described as an unusual aggregation of disease that occurs at a particular time and place. An example of a “cancer cluster” is the reporting of three leukemia cases occurring within two years among residents of the same neighbourhood. Virtually every disease varies in occurrence from one place or time to another. There may be many occurrences of the disease in a particular place or time, and a few or no cases of the disease in another place or time. A number of factors can be associated with a disease, such as geography, socioeconomic factors, ethnic origin and lifestyle factors; but only some associations stand up to scientific criteria.

The appearance of disease clusters within communities can focus attention on their possible causes. In recent years, much concern has been expressed about the possible connection of clusters of cancer cases to pollutants in the environment. However, health agencies which have investigated clusters have found that major associations between exposures and disease clusters are rare. In over 500 investigations of reported clusters by the Minnesota Department of Health, only six went to full-fledged studies, with only one showing positive associations between the cause and the disease.

Even though causes of disease clusters are difficult to establish, preliminary investigations of clusters are worthwhile. They serve to inform citizens and to allay their anxieties. In certain instances, the results of early investigations may point to the need to do full-fledged studies. Some past cluster investigations have led to the identification of their causes, and to measures to protect communities and to prevent diseases.

Cornwall - Air Quality Study

The Cornwall Air Quality Committee sought the help of Health Canada to investigate cancer and lung disease in the Cornwall area. Health Canada contributed staff time and expertise to do the research on the existing Canadian Institute for Health Information (CIHI) database, which was available from the Laboratory Centre for Disease Control in Ottawa. In comparison with six other Ontario cities, Cornwall had the same overall rates of cancer and lung disease as Hamilton, Sudbury and Windsor. However, the rate of hospitalization for asthma was approximately double that of other cities. An epidemiologist from the University of Ottawa, part of a multidisciplinary team investigating ecosystem health in the St. Lawrence River basin, joined the investigation at this time. Further research, recommended by this epidemiologist, showed that infants under two years of age had four times the expected provincial hospital admission rate for asthma. Lung and male rectal cancer rates were also elevated in comparison with the rest of the province.

3.2 Collecting and Summarizing Existing Health Information

The next step is to collect and summarize the existing health information available in your community. Much of this information is found in computerized databases kept by government and private agencies. Because retrieving this information can take a great deal of time, most agencies will charge you to cover their expenses, although lower costs can sometimes be negotiated. In addition, interpreting the data is very difficult. A trained statistician or epidemiologist can help you with this step.

Community Health Status Reports

Under the Ontario Ministry of Health's Mandatory Programs and Guidelines for Public Health, each public health unit is required to produce a community health status information report at least every five years. These reports can cover topics ranging from population characteristics, to lifestyle and disease, which are relevant to the health status of the community. Contact your local public health unit to obtain access to these reports.

Mortality Data

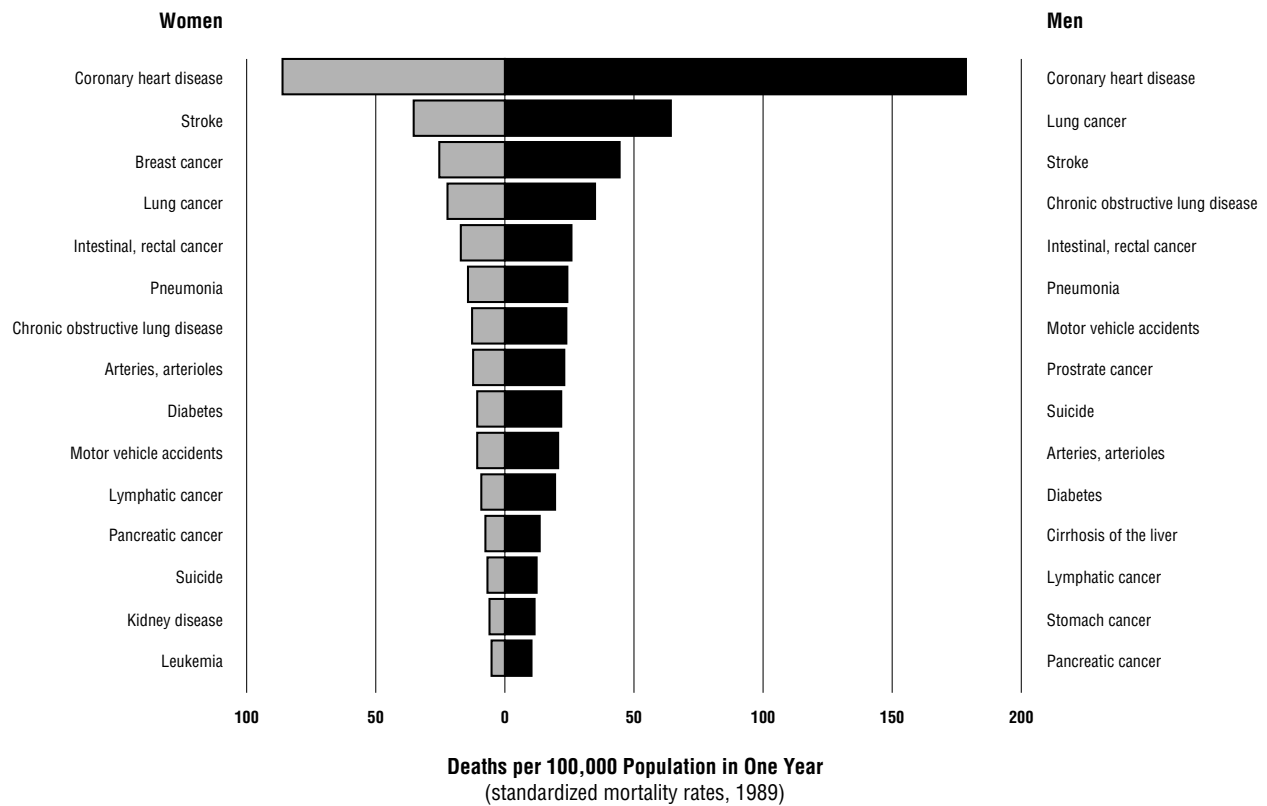
Collect data on the causes of death or mortality in your community. Mortality information for Canada is maintained by the Health Statistics Division at Statistics Canada. Before contacting Statistics Canada, be sure that you are clear about exactly what you want. For example:

Mortality data will give you a good overview of the most common causes of death in your community. However, it is very unlikely that exposure to contaminants in the environment is directly related to patterns in the causes of death.

- What geographic area are you concerned about? Can it be defined by postal codes, municipal boundaries or census divisions?
- What time period are you interested in? For example, you could request mortality data for the previous five or ten years.
- What causes of death are you interested in? Are there causes of death particularly related to your initial concerns? Be specific. Information about mortality data is usually grouped according to cause of death.
- What age groups and genders are you interested in? Do you want the data displayed for different age groups and men and women?
- What will be your control group? To study the mortality rates in your community, it is usually necessary to compare them with another group. Do you want to compare yours to national averages, averages in the Great Lakes Basin or another community?

FIGURE 2:

An Example of Health Data: Major Causes of Death in Canada



Cornwall - Air Quality Study

The results of the preliminary investigation on cancer and lung disease were based on unreviewed medical records. Due to the apparent high rates of hospital admission of children for asthma in the Cornwall area, the Cornwall Air Quality Committee decided to focus on determining the validity of the asthma data.

Discussions with local doctors showed that it was important to determine whether the higher admission rate for asthma was a result of extra beds being available, or of more children having asthma as a result of air pollution. Validating the data could occur in several ways: pediatricians could record the circumstances surrounding new cases of asthma admission for children, schools could be surveyed or medical records could be reviewed by medical professionals.

A multi-agency meeting revealed that a complete study would cost more than any agency could provide. The Committee accepted an offer by the local Lung Association to have its volunteers (who were medical professionals - nurses, etc.) review the asthma admission records. The Eastern Ontario Health Unit, which agreed to lead the study, sought permission from the hospital to access the records, and designed the study in collaboration with the Lung Association. The review of existing medical records then proceeded.

Some chemicals, as well as some kinds of radiation, can cause cancer in laboratory animals under specific conditions. Some of these chemicals and some forms of radiation may cause cancer in people. Substances that cause cancer are called carcinogens. The International Agency for Research on Cancer (IARC) lists over 40 chemicals known to be human carcinogens.

Cancer Incidence

The Ontario Cancer Treatment and Research Foundation (OCTRF) keeps a database of the numbers and types of cancer in Ontario. Be specific about what information you are interested in by answering the questions listed above. There are over a hundred different types of cancer and you should decide which types you want to know about. An epidemiologist or toxicologist can advise you about the types of cancer (if any) that have been associated with the substances of concern to your community.

Congenital Anomalies

A third source of information is the congenital anomalies database, maintained by the Ontario Ministry of Health in Toronto. This database contains information on abnormalities in newborn children reported by Ontario physicians. Again, be specific about what information you are interested in by answering the questions listed above.

Canadian Institute for Health Information

A fourth source of information is the Canadian Institute for Health Information (CIHI) database. This database contains information on

the reasons for hospital admissions in Canada. To use this database, you must ask for information on particular causes, health effects or diseases related to your health concerns that are serious enough to cause admission to a hospital. Examples are respiratory problems including bronchitis and severe asthma attacks. It may help to work with an epidemiologist or statistician when trying to access this information.

Other sources

Other sources of existing health information on your community include:

- any health studies of the community that have been conducted previously; and
- general information from physicians or health care workers.

3.3 Collecting and Summarizing Other Relevant Information

Collect and summarize other information relevant to the health of your community. This type of information includes:

- An employment profile of your community: Where do people in your community work?
- A socioeconomic profile of your community: Socioeconomics includes items such as household size, income, education, home ownership and ethnic background;
- An age/gender profile of your community;
- A lifestyle profile of your community: What activities or behaviours are common in your community? What recreational activities do people enjoy?
- How accessible is health care in your community?

One important source of this type of information is the Canadian Census, conducted every four years by Statistics Canada. As before, be specific when you ask for information.

CASE STUDY

Cornwall - Air Quality Study

The Cornwall Air Quality Committee did not formally collect other relevant information such as employment, socioeconomic or lifestyle profiles of the community. The Committee was aware that the unemployment rate in the community was higher than the provincial rate and that the proportion of the population receiving social assistance was very large. It did not feel that further investigations would add substantially to this knowledge.



3.4 Finding Community-based Knowledge

Don't forget to talk to people in your area about health in the community. Past and present community residents are an invaluable source of information. Get as many independent accounts as possible. Older people who have lived in your community for a long time can give you a perspective on how the health status has changed over time. Talk to people living in different areas to get an idea about the health status in different parts of your community.

Health care workers have a lot of interesting information. Talk to midwives, nurses, homecare workers and physicians. Document all interviews thoroughly, so that you have a record of the information provided.

Cornwall - Air Quality Study

One of the first actions taken by the Cornwall Air Quality Committee was to host two public meetings to discuss the Committee's activities and to gauge community concerns. The response at these meetings was overwhelmingly toward health concerns. The input from the community has significantly influenced the Committee's activities, which has consequently focused on health issues.

3.5 Preparing an Evaluation

The last step in conducting a community health profile is to prepare a written evaluation. Include the following information:

- the nature of the problem or concern;
- the objectives of your survey;
- the methods and procedures used to gather the information;
- the data and information collected;
- your interpretation of the data and information;
- conclusions and recommendations; and
- a clear, concise summary for widespread distribution in the community.

Cornwall - Air Quality Study

The asthma study was in progress at the time of writing. A formal report had not yet been prepared. However, the Cornwall Air Quality Committee continued to meet regularly and report on the progress of the study. Discussions, study updates and other business were recorded in the minutes of the meetings, which were available to the public.

4. NEXT STEPS

4.1 Communicating about Your Investigation

The written evaluation will be one important step in telling others about your investigation. However, it makes sense to think about what you communicate about the study to whom, how and when - right from the beginning. Good communication is all the more important because health issues often call forth strong reactions from the general public. Developing and following a communications strategy, which takes into account the potential impact of your work, also helps you to reach your goals. Indeed, if other organizations are doing much of the research, one of the most important roles your committee can play is to ensure good communications.

Communication about the investigation begins when you start to explore whether others share your concern. It includes how committee members communicate with each other, your contacts with agencies that may provide assistance, public meetings, surveys, contacts with the news media, as well as any reports you produce. A communications strategy can focus just on the most sensitive contacts with the public and the news media, or it might cover all aspects of your communications.

Developing a Communications Strategy

The strategy may be as simple or as complicated as you desire - scale it to the level of effort in your study, the resources available to carry it out and your committee's interests. Consider your goals - whose support do you want to keep, whose do you want to win? How can your communications contribute to that support?

Questions to Consider

When to communicate?

When do you communicate, and with whom? Generally, those involved in the study - either as members of the committee or agencies providing support - should receive news first. Other people to keep informed are those who work in public positions that are central to the issue.

When should you release information to the general public? The public often perceives a high risk where a scientist sees inconclusive evidence. Even the fact that you are carrying out an investigation will suggest to some that there is a real problem. Releasing information earlier can have the advantage of increasing awareness of the issue in the community and building support for change. On the other hand, it may damage your credibility, if "experts" who are not on the

committee perceive your actions as being sensationalist or if your later findings do not support what the earlier evidence seemed to suggest. Consider also any external factors such as an upcoming decision on clean-up. You may want to release information just prior to the decision to build public momentum for a clean-up. You can plan ahead for major communication events, such as a press conference, once you know more about the timeline for the investigation itself.

Who to communicate with?

Create a list of people to keep informed. For each, decide on the frequency and best vehicle for communication. Besides members of your committee, resource people who work with you and the general public, consider the list, found in **Section 1.2 Organizing the Work**, of people who may be interested in the study.

How to communicate?

Communication can take many different forms:

- Committee meeting minutes are a good way to keep both committee members and others supporting the study up to date.
- Personal conversations are an excellent tool to build support with outside agencies, politicians, etc., especially when the contact people remain the same over a period of time and can build the trust that comes from a personal relationship.
- Thank you gestures for assistance received are not only appreciated personally, but the recognition can help an agency to justify providing more assistance.
- Written material, such as a newsletter or a brochure describing your investigation, can be suitable for those who need less information than is in your minutes.
- Public meetings are a good way to reach the concerned public.
- Presentations to committees or the staff of an organization can be informal ways of engaging in a discussion with potential supporters.

Think about matching the form, content and style of your communication with your audience. Politicians and the general public will respond better to shorter, less technical communications than would be appropriate for health professionals or scientists.

What about the news media?

The news media allow you to reach a much wider audience. However, there are usually more stories than the space or time available. Less interesting stories get crowded out. Community newspapers and cable TV generally have more space for local stories. They may even accept

a story or program that your committee writes or creates.

Making a story interesting for the media is an art. Inconclusive study results or a discussion of concerns of which the community is already aware do not make particularly good stories. Sometimes, presenting the story differently to give it an interesting slant helps, or creating an event, such as the launch of your investigation. Public meetings or presentations to public bodies, such as a municipal council, can also become media events. You should be aware, however, that media presence often changes the way people participate at meetings. Because the media are not health experts, it is important to decide what your central message is and interpret results in a manner that is quickly understood.

The science behind health and environment stories is often complex, and you may find your message comes across most accurately by working consistently with the same one or two reporters. They may already have some background understanding of the issue, or you may have to take the time to educate them and provide friendly feedback on stories about your investigation. Letting them know that they are the only ones who have the story helps to get your story published.

Useful media tools include:

- News releases are a news story listing a contact person, written in a catchy newspaper style and sent to the newspapers, radio and TV stations.
- Media interviews can result from a news release or other action on your part. Decide what your main point(s) is and use every question to repeat it. Remember that everything you say, even if you meant it to be “off the record” can appear in public.
- A press conference is a presentation to a group of journalists, followed by a question and answer session. It can be used to announce a significant new initiative or to present the findings of your investigation.
- A local cable TV show may be an opportunity for you to create a show focused on the investigation.

What to communicate?

Situations may arise where you are in possession of sensitive or confidential information. To ensure that confidentiality is not breached, consider developing procedures on handling such information among committee members. It may be useful to appoint a spokesperson who will ensure that communication is consistent with your strategy and with decisions about what is public and what is not. Consult with committee members and any agency partners before releasing any sensitive information.

Do you want feedback?

Communication has more than one direction. Consider where information and responses would be useful to you and create channels for receiving it and dealing with it. It may be as simple as listing a contact name and phone number on information you provide. Public meetings, response forms with questions you want answered and surveys can also provide useful information.

Do you need help?

Communicating well is an art. Some people have made it their profession. You may want to draw on their skills for advice or encourage them to join the committee and help to develop and implement your strategy. People to consider are community leaders, people who work in marketing, the news media, public relations or public consultation, and the communications staff of local public health units or other public agencies.

4.2 Pursuing Your Recommendations

If, in the estimation of the committee and contributors to the research, your investigations support the initial concerns, in terms of either exposure or health effects, it is likely that a quantitative exposure assessment and/or a comprehensive health study will be recommended. If this is the case, these types of studies can be performed by experienced organizations with specialized knowledge on design and interpretation of population studies. The process followed in carrying out community health studies is briefly described in **Part B: Background Information**. These detailed assessments can lead to the development and evaluation of options to reduce exposure to contaminants, remediate (i.e., clean up) their sources or to address the health issues being investigated in the community. With more information, communities can make informed decisions for choosing and implementing these options.

Be prepared to pursue your recommendations. Even if an agency takes on the study, you will need to follow its development to ensure that it addresses the initial concerns of your committee. Ideally, your committee will be a partner in the study development and process.

Even if your studies do not suggest anything out of the ordinary, your committee could consider using its expertise and resource people to establish a local environmental committee. Many municipalities are now forming such committees, usually comprising volunteers who are concerned about the environment and have some relevant knowledge. Their role is to provide advice to municipal Councils or sub-committees of Council on relevant environmental matters. They can also serve as an environmental advocate or “watchdog.”

Sault Ste. Marie - St. Marys River Study

At the outset, the uncertainty over the risks to health posed by exposure to PAHs from swimming in the St. Marys River had led to a high level of concern in the community. The study showed that swimming at beach sites posed little risk to health and public concern over the PAHs in river sediments was reduced.

The results of the study helped to rank areas of the river for clean-up priority. It prompted the local steel mill to clean up the sediments in its slip, which was the most contaminated spot on the river.

Cornwall - Air Quality Study

The asthma study was in progress at the time of writing. However, the Cornwall Air Quality Committee has since obtained administrative and organizational support from the St. Lawrence River Institute of Environmental Sciences. The Committee was also initiating discussions on investigating the incidence of certain cancers in the area.

