

POLLUTION: Is it causing cancer in my community?

People are naturally concerned when family members, friends and neighbours get diagnosed with cancer. We want to understand why this is happening, and if there is something affecting our community that may be causing these cancers. It can be especially concerning when there are obvious sources of pollution nearby.

This briefing note presents some of the key questions asked during a community cancer investigation, (usually called a cancer cluster investigation), along with an explanation of why each question is important and some of the challenges faced when trying to form an answer. You can use these questions as a guideline to support you in better understanding cancer rates in your community, and to gather useful information to present to your local health agency if you feel a formal investigation is required.

QUESTIONS YOU CAN ASK:

What kinds of cancer do people in your community have?

Investigating a cancer cluster usually starts with making an accurate count of the number of people with each type of cancer and their age.

Why this is important: Cancer is not a single disease. There are more than 200 kinds of cancer, with many different causes. If there is something unusual causing cancer in your community, you should expect to see a number of people with the same kind of cancer, or more cases of cancer in young people.

Challenges: You may need to ask people to check their medical records or consult with their doctors to get exact details. If an investigation goes forward, a cancer specialist will need to look at all the medical records and may have to share information with other specialists.

Have the people with cancer lived in the community or nearby for most of their lives?

You will need an accurate record of where each person with cancer lived and for how long.

Why this is important: Cancer usually takes a long time to develop. If the people with cancer did not live near the source of pollution for a large part of their life, there is less chance that their cancer is due to the pollution. It may also be possible that their cancer is related to different pollution at other places they lived during their lifetime.

Challenges: Developing an accurate history of where each person lived and for how long may be difficult if people moved a lot and do not remember the details accurately.

If you are concerned that there are people with the same kind of cancer who have lived in the community for a large part of their lives, you may want to request a more detailed investigation.

If you contact your health agency with a request to investigate cancer rates in your community, the cancer cluster specialists will need to gather more information to see if there is a link between the cancers and environmental pollutants.

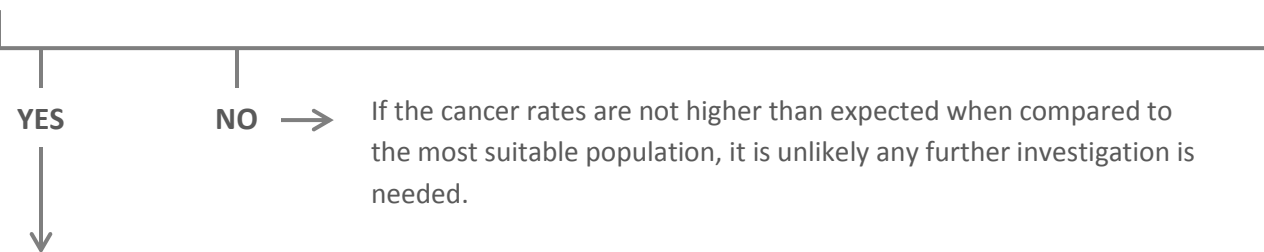
QUESTIONS A CANCER CLUSTER SPECIALIST WILL ASK:

Are the cancer rates in your community higher than expected?

An expert will compare the rates for each kind of cancer in your community to the general population or to similar communities that do not have these pollution sources.

Why this is important: Cancer is actually very common – 40 percent of people living in Canada will develop some kind of cancer in their lifetime. What seems like a lot of cancer in a community may not mean pollution is to blame, especially if there are different kinds of cancer and the rates are similar to those in other places.

Challenges: Determining if cancer rates are higher than expected is very difficult if the community population is too small, which is often the case. Also, whether or not the rates are higher than expected also depends on which groups are being compared. For example, the answer may be different if you compare cancer rates in a small, rural First Nations community to: 1) the entire provincial population; 2) all other First Nations people in the province; or 3) all other First Nations in rural communities.



If the cancer rates are found to be higher than expected in your community, this does not prove the cancers are linked to pollution in the environment. Additional studies will be needed.

What pollutants are present in the community?

An accurate list of all possible sources and the pollutants they emit is required.

Why this is important: The presence of pollutants that are known or suspected of causing cancer can help to establish if there is a link to increased cancer rates. There may be scientific evidence linking the specific pollutants to the kinds of cancer seen in the community.

Challenges: There are many gaps in the scientific data about cancer and environmental pollution. We simply may not yet know the links between some pollutants and cancer. Also, it may be difficult to find out accurate information if pollution sources in or near the community many years ago are no longer present.

Is there an exposure pathway and if so, what is (was) the level of exposure?

A specialist will need to find information showing the people with cancer had direct contact with the pollutants, through breathing, drinking water, or eating food.

Why this is important: Even when there are sources of pollutants nearby, community members may not be exposed to them. For example, there may be water pollution in a river, but if the community is not getting drinking water or fish from that river, there is no chance of exposure. A specialist will identify the possible ways community members can be exposed, look for measured levels of pollutants, ask questions about where community members get drinking water and food, and determine how much they eat and drink.

Challenges: Most of the time, there are no measurements of pollution levels in the air, drinking water or food now or in the past, and people may not remember exactly how much they ate or drank. The less accurate the information about exposure is, the harder it will be to find a link between the pollutants and cancer.

What other risk factors are associated with these cancers?

Risk factors increase the chance of getting cancer, and a cluster investigation needs to take all possible risk factors into account.

Why this is important: Cancers are rarely caused by a single risk factor. Investigators will not be able to make a link between environmental pollution and the cancers in your community if they do not have information on other risk factors for each person with cancer. For example, if there are a number of people with lung cancer in your community, you will need to know how many were smokers, how much they smoked, and for how long. This is not meant to blame people for their lung cancer, but without taking this risk factor into account, an investigator cannot make a strong case for a link with pollution.

Challenges: An investigator may need to ask people about smoking, drinking and diet behaviour from many years in the past. Research shows we are often not very accurate at remembering these details. It is also true that researchers may not yet know all the risk factors linked to each different cancer.

We want to move forward in improving environmental quality: the air we breathe, the land we walk on, the water we drink, the food we eat; that's who we are as a people. If our earth is health, we are healthy.¹

Most of the time, it is not possible to prove a link between cancers in a community and environmental pollutants because of all the challenges in collecting enough accurate information and measurements.

A recent study in the US² showed that of 428 cancer clusters suspected by communities and investigated since 1990, only three found links with pollution. One study found the cancers were definitely related to working at a shipyard, the other two found possible links between childhood cancers and water polluted by industrial sources.

Proving environmental pollutants are causing cancer in your community may not be possible, but there are a number of ways to move forward when you are concerned about pollution and the health of your community.

- **Find ways to measure the contaminants in the air, drinking water and food.** You may already be collecting data, or may be able to negotiate with local industry for community monitoring now and for the future.
- **If you have measurements, consider conducting a preliminary risk assessment to identify which pollutants pose a high risk.** The International Agency for Research on Cancer has identified 117 substances as known carcinogens, 74 as probable carcinogens, and 287 as possible carcinogens³. Understanding which pollutants are the most hazardous can help you prioritize next steps.
- **Find ways to reduce exposure levels.** This may mean working with local industry to improve practices or remediate contaminated sites, or it may mean reducing or avoiding consumption of contaminated water or foods until levels are improved. You may also need to negotiate with companies proposing new resource development to make sure community members will not be exposed to pollutants through breathing, drinking water, or eating.

USEFUL LINKS

You can find complete lists of all substances evaluated by the International Agency for Research on Cancer here: <http://monographs.iarc.fr/ENG/Classification/>

You can find more information about different kinds of cancer under the Cancer Information tab on the Canadian Cancer Society website: <http://www.cancer.ca>

CAREX Canada:

- Learn how to conduct a simple risk assessment using the eRISK tool (<http://www.carexcanada.ca/en/tools/>)
- Find more information from profiles of known and suspected carcinogens (http://www.carexcanada.ca/en/profiles_and_estimates/)

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References

¹ First Nations Knowledge Translation Working Group. *A Strategic Plan for Transferring and Exchanging Knowledge about CAREX Canada Tools with First Nations Organizations*. (2013).

² Goodman, Michael, et al. "Cancer clusters in the USA: What do the last twenty years of state and federal investigations tell us?" *Critical reviews in toxicology* 42.6 (2012): 474-490.

³ <http://monographs.iarc.fr/ENG/Classification/>.