

Frequently Asked Questions on Cancer Clusters

What is a cancer cluster?

A cancer cluster is defined as a greater than expected number of the same or etiologically related cancer cases that occurs within a group of people in a geographic area over a defined period of time.

Etiology refers to causes and risk factors associated with the development of disease. Cancers are a group of more than 100 diseases that all begin with uncontrolled growth and the spread of abnormal cells. Different types of cancers have different rates of occurrence and different causes.

How is a cancer cluster identified?

The first step in identifying a cancer cluster is to identify a population who has been exposed to a hazardous substance. This is done by evaluating available environmental data and determining the extent of any environmental contamination, the geographic area impacted, the route of exposure, and the timeframe during which exposure may have occurred. For environmental contamination to impact human health, there must be a completed exposure pathway, either past or present, such as drinking contaminated water or breathing in contaminated air.

It should be noted that if there is a current completed exposure pathway identified in an evaluation, immediate steps are taken to reduce or stop exposure. For example, residents may be advised to use raised-bed gardens if soil contamination is present until the permanent cleanup measures are completed under the oversight of regulatory agencies or to drink bottled water if private wells are contaminated.

A public health assessment is conducted using environmental sampling data collected by or under the oversight of regulatory agencies such as the NJ Department of Environmental Protection (NJDEP) or the U.S. Environmental Protection Agency (EPA) and establishing whether an environmental exposure pathway exists. The presence of a contaminated site in a community does not necessarily mean that people are being exposed. The public health assessment process evaluates data to determine if environmental exposure pathways are present such as direct contact with contaminated soil or contamination affecting indoor air in homes. If there is an environmental exposure pathway, the public health assessment process determines whether there is an increased theoretical risk of cancer or other health effects associated with exposures to environmental contaminants for all exposure pathways using a risk assessment model. The public health assessment process, as outlined in the [Agency for Toxic Substances and Disease Registry's Public Health Assessment Guidance Manual](#) incorporates toxicological data and exposure parameters, such as how much soil a child may eat per day, and how long a person has lived in their home to assess the risk for cancer and other health outcomes.

If the risk assessment findings indicate that there is an increased theoretical risk of cancer, a cancer analysis may be carried out using data from the New Jersey State Cancer Registry for cancers that are known to be associated with exposure to the specific contaminant. Several factors are considered before proceeding with this type of analysis. These include the types of cancers that are associated with the contaminant, whether there are enough cases to support a



scientifically valid analysis and if the affected geographic area is large enough to conduct a valid statistical analysis.

The Standardized Incidence Ratio (SIR) analysis is the statistical method that is used to determine whether the number of observed cancer cases in a geographic area is higher than would be expected. The expected number of cases is calculated by multiplying age-specific statewide cancer incidence rates using cancer registry data and the age-specific population in the geographic area being analyzed. To proceed with an SIR analysis, there must be a defined geographical area where an environmental exposure pathway has been established and a defined time period when exposures occurred considering the latency period, which is the time between an exposure and disease onset.

What factors contribute to a cancer cluster?

The term “cancer cluster” is often used in several ways, with varying interpretations. Cancer clusters may be suspected when people report that several family members, friends, neighbors, or coworkers have been diagnosed with the same or related cancer(s).

An SIR analysis that finds a statistically significant increase in the number of observed cancers in an area compared to what would be expected in the geographic area over a specific period of time must be interpreted cautiously. The purpose of the SIR analysis is to determine whether there is an increased number of cases in a community than would be expected if that community had rates similar to the state.

These types of analyses are conducted at an aggregate level and therefore individual exposures are not captured in the analysis. Specifically, the amount of exposure that each individual may have had is unknown and we cannot control an individual’s exposures to other risk factors that may also be associated with cancer. The other risk factors that can influence the risk of cancer include genetics, smoking history, access to cancer screening, occupational exposures and other exposures. Additionally, this type of analysis does not account for how long community members were exposed in the community prior to disease onset. It also does not account for individuals who were exposed and moved away from the community. Therefore, conclusions cannot be made about whether an elevated rate of cancer is associated with environmental exposures based on an SIR analysis. An SIR analysis cannot be used to establish causality between an exposure and disease.

Why is the public health assessment process critical to address community health concerns in communities with exposures to environmental contaminants?

It is important to note that in communities where environmental exposures have occurred and a public health assessment determined there was an increased theoretical risk of cancer from exposures, there may not be an observable increase in cancer rates within the community. The primary public health goals are to identify and interrupt any potential environmental exposure pathways as quickly as possible, to provide information to residents who have been exposed about how their health may be impacted and provide recommendations for protecting public health. These actions are based on the findings of the public health assessment which utilizes environmental data and risk assessment modeling.



Where can I learn more about the Department of Health process for evaluating community environmental exposures and health concerns?

To learn more, visit:

nj.gov/health/ceohs/documents/Evaluating_Potential_Public_Health_Implications_from_Environmental_Exposures_FAQs.pdf

Where can I learn more about the cancer registry and how to verify my cancer is in the registry?

To learn more about the cancer registry, visit:

nj.gov/health/ces/documents/CancerRegistryFAQ.pdf

To confirm that your cancer is in the registry, visit:

nj.gov/health/ces/documents/auth_form_and_directions_pt_v05132026.pdf