

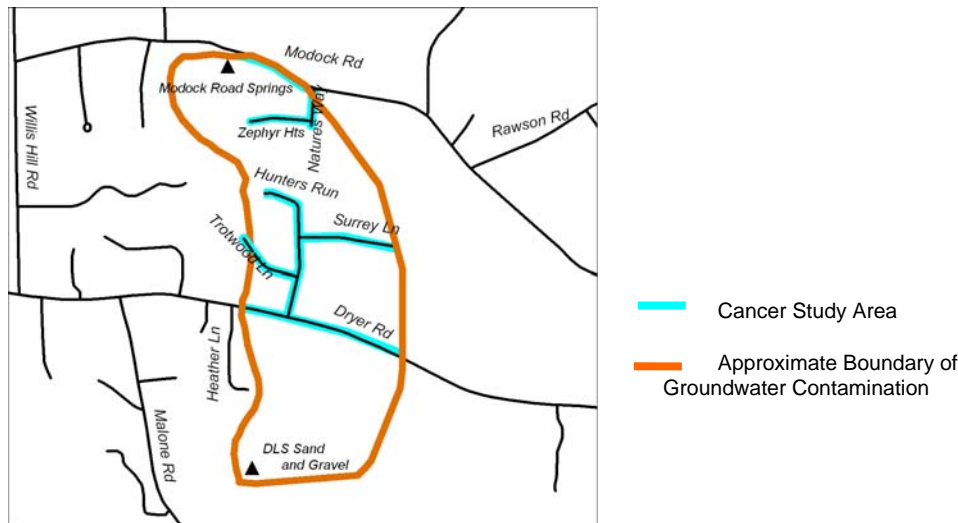
SUMMARY OF METHODS AND FINDINGS

ADDRESS-SPECIFIC REVIEW OF CANCER INCIDENCE IN THE TOWN OF VICTOR, ONTARIO COUNTY, NEW YORK, MODOCK ROAD SPRINGS STUDY AREA

In response to a request by area residents and public officials, the New York State Department of Health conducted a review of cases of cancer among people living near the Modock Road Springs in the Town of Victor. A preliminary evaluation had shown an unusual number of brain tumors among neighborhood residents. The area is located above a mile-long plume of contaminated groundwater associated with the Modock Road Springs – DLS Sand and Gravel inactive hazardous waste site. Contaminants related to the site include the industrial solvents trichloroethylene (TCE), 1,1,1-trichloroethane (1,1,1-TCA) and 1,1-dichloroethene (1,1-DCE). These contaminants have been found in the private drinking water wells or the air inside or beneath a small number of homes within the study area.

METHODS

- To make sure that the study addressed the community's concerns, public input was obtained into the selection of the study area. The map below shows the area chosen.



- The New York State Cancer Registry was used to identify all people who had been diagnosed with cancer since 1990 while they were living in this study area. The Cancer Registry collects reports on all persons diagnosed with cancer in New York, as required by law since 1940 for New York State, outside of New York City (1973 for New York City). Information from the Cancer Registry was then examined to see if there were any unusual cancer patterns.
- Community members provided reports on former residents who had developed cancer after they had moved away from the area. These reports were checked against the Cancer Registry.

FINDINGS

- Twenty tumors were identified that were diagnosed in 17 people living in the approximately 70 homes in the study area (some people had more than one tumor diagnosed). The tumors were diagnosed between 1990 and 2004. The ages of the people with cancer ranged from the late teens to over 80, with most of them age 50 or over at the time they were diagnosed.
- The cancers diagnosed most often in the study area were breast cancer and brain tumors. (To protect patient confidentiality, specific numbers of these cancers are not provided.) Cancers of the breast, prostate, lung and colon and rectum are the most frequently diagnosed cancers in adults. Seven cases of these four types of cancer were found in study area residents. Thirteen cases of nine other, less common, types of cancer were found. In all, the 20 tumors represented 13 different types of cancer.
 - Results of private well sampling were available for 11 of the 16 homes where people with cancer had lived. Results of soil vapor intrusion testing were available for 13 of the 16 homes. The overall patterns of sampling results for the homes of people with cancer were similar to those for all homes sampled.
- The number of brain tumors that was found was unusual. The brain tumors included all those that were confirmed in the preliminary study; no others were found. People with brain tumors were middle-aged or elderly at the time they were diagnosed, and all the tumors were diagnosed from the late 1990s to 2004.
 - Results of private well sampling and soil vapor intrusion testing were available for the homes of most of the people with brain tumors. The results varied considerably, from no detections of site-related contaminants in either the air inside and/or beneath the homes or the private well water, to detections at levels where actions to address current or potential exposures were recommended.
 - Additional information on the people with brain tumors was obtained and reviewed. Some, but not all, of these patients had family histories of cancer. None of the patients had occupations that have been linked with an increased risk of brain tumors. The people with brain tumors had lived in the study area for varying amounts of time, but all were diagnosed 10 or more years after first coming to live there.
- This study identified people with one or more of the cancers that have been found in studies of people exposed to TCE, the contaminant of greatest concern for its cancer-causing ability. Cancers that have been linked with TCE include cancers of the liver and bile ducts, kidney and esophagus, and non-Hodgkin's lymphomas. TCE has not been linked with brain tumors.

- Results of private well sampling and soil vapor intrusion testing were not available for the homes of all of the people who were diagnosed with cancers that have been associated with TCE. For homes where data were available, TCE was not detected in any of the samples.
- Fewer than six former residents who were reported by community members were confirmed as having been diagnosed with cancer after they had moved away from the study area. The types of cancer were typical for people of their age, and none of the former residents were diagnosed with brain tumors. Adding these cancers to the cancers identified by the Cancer Registry would not change the conclusions of the study.

DISCUSSION

Cancer, unfortunately, is a common disease, more common than many people realize. It occurs in people of all ages, but most often among people who are middle-aged or elderly. Cancer is not a single disease, but a collection of over 100 separate diseases, each with its own risk factors, occurrence patterns, outlook, effective treatments and, most likely, causes.

Based on these facts, there are certain features that could indicate the presence of unusual cancer patterns. These include 1) an unusually high number of any one cancer type; 2) two or more cases of any single particularly rare cancer; 3) a cancer occurring at ages where it is not commonly found; and 4) an unusual number of cancers occurring in a short time span (one or two years).

- This study found an unusual number of people living in the study area who were diagnosed with brain tumors. Brain tumors occur in people of all ages, but most often in two age groups - children under the age of 15, and adults 65 years of age and older. Brain tumors in children are most often malignant (cancer), while many of the brain tumors found in adults are benign (not cancer). Little is known about the causes of brain tumors. It has been estimated that about 5% of brain tumors are due to hereditary factors. The only established environmental risk factor for brain tumors is exposure to high doses of ionizing radiation, such as X rays. Other exposures that have been suggested as possible risk factors include dietary factors, certain exposures in the workplace, and head trauma.

For anything in the environment to have an effect on human health, people have to come into contact with it. This is known as exposure. People may be exposed to a chemical contaminant by breathing it in, consuming it in food or water, or getting it on their skin. Whether someone will experience health effects from exposure to a substance also depends on how long they are exposed to it, how often they are exposed to it, and how much of it they are exposed to.

Even with exposure, not all hazardous substances cause cancer. Of the three contaminants associated with the Modock Road Springs – DLS Sand and Gravel site, scientists consider TCE a probable human carcinogen. Cancers that have been linked with TCE include cancers of the liver and bile ducts, kidney and esophagus, and non-Hodgkin's lymphomas. TCE has not been linked with brain tumors. Evidence regarding the carcinogenicity of the other contaminants (1,1,1-TCA and 1,1-DCE) is less clear.

This type of study can not prove any cause-and-effect relationships. Available data are reviewed to gain a better understanding of the conditions under which any unusual cancer patterns occurred, but this information does not allow the determination of what caused the patterns. In addition to questions of exposure, cancers have many possible causes, including genetic, lifestyle (smoking, diet etc.), and occupational factors as well as environmental exposures. It is currently not possible to separate out all possible causes to determine the role of any single environmental factor.

CONCLUSIONS

This Registry-based review provided a complete identification of cancers diagnosed among people living in the Modock Road Springs study area at the time of their cancer diagnosis. Other than the already confirmed unusual number of brain tumors, there were no other unusual cancer patterns.

Additional information that was available for the people with brain tumors was reviewed. Some, but not all, of the people with brain tumors may have had family histories of brain tumors. Some, but not all, of the people with brain tumors lived in homes where further action was recommended to address site-related contaminants. None of the factors examined, however, applied to *all* of the people with brain tumors. For the small number of people with brain tumors who lived in homes where further action was recommended to address site-related contaminants, the extent to which they were actually exposed to the contaminants is not known. There is also no strong evidence that any of the contaminants can cause brain tumors. It can not, therefore, be concluded that exposures to site-related contaminants contributed to some of the brain tumors, but that possibility can not be ruled out either.

This Registry-based review can not prove any cause-and-effect relationships, however it adds to the understanding of the conditions in which cancers occurred.

HEALTH EVALUATIONS STILL IN PROGRESS

Two additional health evaluations are being conducted by the NYSDOH related to contamination at the Modock Road Springs. The first is a study of birth outcomes, including birth defects and low birth weight, among residents of the Modock Road Springs study area. The second is a study of cancer and birth outcomes among people who may have been exposed to contaminants through the Village of Victor public water supply, which obtained some of its water from the Modock Road Springs prior to the discovery of the contamination in 1990. Findings of these studies will be shared with the public when they become available.

For more information on this investigation or on cancer in general, please contact Ms. Aura Weinstein, Director, Cancer Surveillance Program, New York State Department of Health, at (518) 474-2354. 10/09

New York State Department of Health
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