

Shpack Landfill: Evaluation of Cancer Incidence in Census Tracts of Attleboro and Norton, MA: 1982-2002 - Questions and Answers

Why did the Massachusetts Department of Public Health (MDPH) evaluate the incidence of cancer in Attleboro and Norton?

At the request of residents from the town of Norton concerned about the possible relationship between cancer and environmental contamination at the Shpack Landfill, the Massachusetts Department of Public Health (MDPH), Center for Environmental Health's (CEH) Community Assessment Program (CAP) conducted an evaluation of cancer incidence within Norton and Attleboro. The Shpack Landfill is located on the border of Norton and Attleboro.

What is the Shpack Landfill?

In 1986, the Shpack Landfill was designated a National Priorities List (NPL) Superfund site. NPL sites are those considered by the U.S. Environmental Protection Agency to pose a risk to human health and/or the environment. The Shpack Landfill operated from approximately 1946 until 1968, receiving domestic, industrial, and low-level radioactive waste. It is located on the border between Norton and Attleboro and it comprises approximately 9 acres.

How were cancer incidence data evaluated?

Prior to beginning the evaluation, townwide data for both communities were evaluated and presented at a public meeting with residents of Norton and Attleboro. Cancer incidence data (that is, reports of new cancer diagnoses) for the years 1982-2002 were obtained for the communities of Attleboro and Norton from the Massachusetts Cancer Registry (MCR), a division of the MDPH Center for Health Information, Statistics, Research, and Evaluation (CHISRE). The 21-year period, 1982-2002, constitutes the period for which the most recent and complete cancer incidence data were available from the MCR at the time of this report.

What types of cancer were studied and why?

The CAP evaluated the incidence of 13 different types of cancer within Attleboro and Norton and their respective census tracts for the 21-year period of 1982–2002. The 13 cancer types selected for this evaluation were based upon cancer types that were elevated in an earlier MDPH report entitled *Phase I: Evaluation of Cancer Incidence in Attleboro and Norton, MA, 1994–1998*, those cancer types associated with environmental contaminants detected at the Shpack Landfill, and input from attendees of the public meeting.

The 13 cancer types include: Hodgkin's disease, leukemia, non-Hodgkin's lymphoma (NHL) and multiple myeloma, as well as cancers of the bladder, bone, brain and central nervous system (CNS), breast, kidney, liver, lung, pancreas and thyroid.

How did the study determine if rates of certain cancers were elevated?

To determine whether elevated numbers of cancer cases occurred in Attleboro and Norton, cancer incidence rates were tabulated that compare the observed number of cancer cases to the number that would be expected based on the statewide cancer rate. Cancer rates were calculated for four time periods, 1982–1987, 1988–1993, 1994–1999, and 2000–2002, to evaluate patterns or trends in cancer incidence over time.

How did MDPH determine if the pattern of cancer was unusual or not?

In addition to evaluating time trends, the geographic distribution of residence at diagnosis for those individuals diagnosed with cancer in Attleboro and Norton was evaluated using mapping software, to determine if any atypical spatial patterns existed.

What other information was evaluated to determine if cancer incidence appeared unusual?

MDPH evaluated risk factor information (for example, age, gender, smoking history, occupation, and cancer subtype) for individuals diagnosed with cancer in Attleboro and Norton and compared their risk factor information to statewide and/or national risk factor patterns. This was aimed at determining whether risk factor patterns in Attleboro and Norton were similar to what would be expected based on the medical and epidemiological literature.

Did the study review cancer patterns at the neighborhood level?

Yes. To evaluate trends at smaller geographic levels, particularly in those areas closest to the Shpack Landfill, cancer rates were calculated for each census tract in Attleboro and Norton. The CT is the smallest geographic area for which cancer rates can be accurately calculated because it is the smallest area for which accurate population counts by age group and gender are available. In addition, the geographic distribution of residence at diagnosis for those individuals diagnosed with cancer in Attleboro and Norton was evaluated, to determine if any atypical spatial patterns existed at the neighborhood level.

What did the study find regarding the incidence of cancer in Attleboro and Norton?

Of the 13 cancer types evaluated in the city of Attleboro and the town of Norton during the four time periods, the majority occurred approximately at or near expected rates, based on the statewide rates of cancer and the populations of Attleboro and Norton. There were some exceptions. Lung cancer in Attleboro was statistically significantly elevated for two consecutive time periods: 1988-1993 (females only) and 1994-1998 (males only). Some cancer types were statistically significant elevated during one of the four time periods. These included thyroid cancer among males in Attleboro during 1988–1993; liver cancer among males in Attleboro during 2000–2002; and, bladder cancer among females in Attleboro during 2000–2002. Although particular cancer types may have been elevated in one of the four time periods, these elevations did not persist over time.

Was the geographic distribution of cancer unusual in relation to the Shpack Landfill?

In addition to evaluating time trends, the geographic distribution of residence at diagnosis

for those individuals diagnosed with cancer in Attleboro and Norton was evaluated to determine if any atypical spatial patterns existed. Some census tracts demonstrated statistically significant elevations in the incidence of some cancer types. However, review of the geographic distribution of cancer did not reveal any unusual spatial patterns or concentrations of cases at the neighborhood level that would suggest a common factor (environmental or non-environmental) played a primary role in any of these elevations. The geographic distribution of cancers appeared to follow closely the population density of the communities.

What was the cancer experience within a one-mile radius of the Shpack Landfill?

A separate review of the Massachusetts Cancer Registry data for residents of Attleboro and Norton living within about a 1-mile radius of the Shpack Landfill did not reveal any unusual patterns with respect to any one cancer type or geographic or temporal patterns.

What did the evaluation of non-environmental risk factors demonstrate?

Analysis of non-environmental risk factor information (for example, age, gender, smoking history, and occupation) for individuals diagnosed with cancer suggested that the trends observed in Attleboro and Norton are similar to those seen in the general population. The analysis also suggested that smoking likely played a role in the incidence of some cancer types in these two communities.

Can a cancer incidence evaluation such as this identify a specific cause of cancer in a community or individual?

Descriptive epidemiological analyses such as this can be useful in identifying cancer patterns in a geographic context, assessing if a common cause or etiology seems likely, and serving to identify areas where further public health investigations or actions may be warranted. A descriptive analysis of cancer incidence data alone cannot be used to establish a causal link between a particular risk factor and the development of cancer, nor can it determine the cause of any one individual's cancer diagnosis.

Did MDPH evaluate environmental information?

The MDPH/CEH is conducting an evaluation of available environmental data for the Shpack Landfill and potential exposure pathways to contaminants on the site under a cooperative agreement with ATSDR. The ATSDR is required to conduct comprehensive evaluation of environmental data at National Priority List Superfund sites and the Shpack landfill is an NPL site. A preliminary Public Health Assessment (PHA) was conducted in 1989, based on environmental data available at the time, followed by a Site Review and Update in 1993.

Is this Health Consultation considered a final document?

No. Consistent with ATSDR's protocol for conducting Health Consultations, this report is being released for a 30-day public comment period. Response to public comments and a final report are typically released within several months after the closing of the public comment period. Comments for this report will be accepted at MDPH until February 16, 2007.

Does MDPH recommend any additional follow-up?

The Public Health Action Plan for Attleboro and Norton, Massachusetts, contains recommendations for actions to be taken at and in the vicinity of the Shpack Landfill. The purpose of the Public Health Action Plan is to ensure that this health consultation not only identifies potential public health hazards, but also provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. Included is a commitment on the part of the ATSDR/MDPH to follow up on this plan to ensure that it is implemented. The public health actions to be implemented by ATSDR/MDPH are as follows:

- The MDPH will continue to monitor the incidence of all cancer types in the city of Attleboro and the town of Norton through city/town cancer incidence reports published by the Massachusetts Cancer Registry.
- Under a cooperative agreement with ATSDR, the MDPH/CEH is conducting an evaluation of available environmental data for the Shpack Landfill and potential exposure pathways to contaminants on the site.
- The MDPH/CEH will forward a copy of this health consultation to the Attleboro and Norton Boards of Health for consideration in the planning of community prevention and intervention strategies to reduce cancer risk among residents (e.g., tobacco cessation programs).

Who should I contact for more information, or if I want to obtain a copy of the report Evaluation of Cancer Incidence in Census Tracts of Attleboro and Norton, Bristol County, Massachusetts: 1982-2002?

This report is available on the MDPH website at http://www.mass.gov/dph/environmental_health. Comments on the public comment release of the Health Consultation should be sent to:

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