

Moorestown Drinking Water Evaluation

Moorestown, Burlington County, New Jersey

Frequently Asked Questions– May 2019

Why did the NJDOH become involved in the investigation of drinking water contamination in Moorestown?

The NJDOH received a request from the Moorestown Water Group to evaluate the potential health effects from drinking water contaminants, which were found during the USEPA's testing for unregulated contaminants. The Moorestown Water Group also requested that we evaluate the cancer incidence in the community. We have released two Health Consultation documents in response to their requests.

What is the purpose of these two Health Consultation documents?

- The Health Consultation titled, "Evaluating Potential Public Health Implications of Drinking Water Contamination" reviewed available data to evaluate the potential public health implications from exposures to drinking water contaminants. In this evaluation, we use ATSDR's established risk assessment methodology to determine the following: 1) the potential for adverse noncancer health effects among Moorestown residents and 2) to characterize the cancer risk from exposures to these contaminants. The calculated cancer risks are based on the theoretical risk of developing cancer because the actual risk of developing cancer from exposure to a carcinogen cannot be determined.
- The Health Consultation titled "Analysis of Cancer Incidence in Moorestown, Burlington County, New Jersey" compares cancer incidence data in Moorestown to state-wide rates over a 26-year time-period (1990-2015) using New Jersey Cancer Registry data. This analysis evaluates the cancer incidence rate of all types of cancer among Moorestown residents and compares it to the state-wide rate. The analysis also includes 12 specific types of cancers that have previously been demonstrated to be associated with environmental exposures.

What is the difference between a regulated and an unregulated contaminant?

Regulated contaminants are routinely tested by community water suppliers (CWS) per state and/or federal requirements. If a contaminant level exceeds the state or federal standard, known as a maximum contaminant level (MCL), then the CWS must implement measures to lower the contaminant level within a specific timeframe to protect human health.

Unregulated contaminants do not have any state or federal standards that require CWS to test or take action if detected. Every five years, the USEPA collects data for select unregulated chemicals that may be present in drinking water but are not currently subject to federal drinking water regulations.

Abbreviations: ATSDR – Agency for Toxic Substances and Disease Registry; NJDEP – New Jersey Department of Environmental Protection; NJDOH – New Jersey Department of Health; USEPA – United States Environmental Protection Agency

Consumer, Environmental and Occupational Health Service
Environmental and Occupational Health Surveillance Program
PO Box 369
Trenton NJ 08625-0369
(609) 826-4984





What were the findings regarding past exposures to drinking water contaminants?

Based on the available data, noncancer health effects are not expected from exposures to drinking water contaminants. Cancer risks were low for combined exposures to 1,2,3-Trichloropropane (TCP), 1,4-Dioxane, and hexavalent chromium for the majority of the community. A cancer risk is considered low based on a theoretical model where one additional case of cancer would occur among 100,000 people drinking contaminated water for 33 years. Our risk assessment indicated there may have been an increase in cancer risk for a small portion of the population who live near and may have received their water primarily from the North Church Street water treatment plant. A cancer risk is considered increased based on a theoretical model where one additional case of cancer would occur among 10,000 people drinking contaminated water for 33 years.

What were the findings regarding current and future exposures to drinking water contaminants?

TCP - For TCP, there are no ongoing exposures in the Moorestown drinking water supply as actions have been taken to treat the water for this contaminant.

1,4-Dioxane - Based on our evaluation of the available data, current and future exposures to 1,4 dioxane in the Moorestown drinking water supply are not likely to harm people's health.

Hexavalent Chromium - We do not have current data for hexavalent chromium in the Moorestown drinking water supply and therefore cannot conclude whether current and future exposures to hexavalent chromium could harm people's health. However, if the hexavalent chromium levels remain unchanged since last sampled during the USEPA's 2013-2015 sampling event, cancer risks would be low. Non-cancer health effects, such as anemia and gastrointestinal irritation, would not be expected based on the evaluation of the available data.

Have there been any actions taken to reduce exposures to these contaminants?

A treatment system was installed by the Moorestown Water Department in 2017 to remove TCP contamination from the water supply.

In 2018, the NJDEP moved forward in adopting an MCL for TCP, which is now a regulated contaminant in New Jersey.

What are the recommendations regarding the unregulated drinking water contaminants?

The NJDOH recommends that the USEPA and the NJDEP proceed with the development of MCLs for 1,4-Dioxane and hexavalent chromium. In the interim, the NJDOH recommends that the NJDEP continue to work with Moorestown Water Department to ensure that 1,4-Dioxane and hexavalent chromium be monitored and treated.

The NJ Drinking Water Quality Institute is currently developing an MCL recommendation for 1,4-Dioxane.



Health Consultation Document: “Analysis of Cancer Incidence in Moorestown, Burlington County, New Jersey”

What are the uncertainties associated with estimating actual drinking water exposures in Moorestown?

The possible health risk from exposure depends on the concentration of the chemical in the water, how long someone is exposed, and the amount of water they drink. These uncertainties include the following:

- These are unregulated contaminants that were not tested each year, therefore we do not know how long the contaminants were present in Moorestown’s water supply. We also do not know the levels of these contaminants in the past.
- This is a blended system, in that multiple water sources supply water to residents. We are not able to determine which homes received the contaminated water.

How were these uncertainties addressed in the risk assessment model?

We modeled different scenarios of potential community exposures to estimate the risk described below:

- In all of our scenarios, we assumed that the drinking water had always been contaminated since it is unknown when the drinking water supply was impacted by contamination. We modeled a “worst-case scenario” which assumed people drank above average amounts of water and lived in the same home for the longest period specified in the model (for 33 years).
- We assumed that the only water source was the contaminated treatment plant, even though it is a blended system. Only a small portion of the town would potentially receive water from the contaminated plant, but in this worst-case scenario, we assumed the whole town was provided with water from this treatment plant for the 33-year period. We assumed the entire town was exposed to the same amount of contaminated water.
- We modeled a scenario reflecting that the community received water from the blended system. This model also assumed above average ingestion, longest duration of exposure, and that the contamination had always been there.

What were the findings regarding cancer incidence in Moorestown over the 26-year time period (1990-2015)?

Adults

- Among females living in Moorestown, there was no difference in the incidence rate of total cancers compared to the rest of females in New Jersey. Among males in Moorestown, the occurrence of all cancer sites combined was slightly lower than the state rates.
- The breast cancer incidence rate among females in Moorestown was slightly higher than expected compared to state rates.
- The incidence rates of stomach cancer, lung cancer, and bladder cancer were lower among females than expected compared to the state rates.
- The incidence rates of oral cavity and pharynx cancer, colorectal cancer, lung cancer, and bladder cancer were lower among males than expected compared to the state rates.

Children

- Among children ages 0 to 19, the incidence rates of childhood cancer in Moorestown were similar to the state for: all cancers combined, leukemia, lymphoma, and brain and central nervous system.

What are the limitations of this type of cancer incidence analysis?

This type of analysis (comparing cancer rates in the community to state rates) looks at overall health outcomes and it is not possible to incorporate an individual's exposure or disease status. This is a practical surveillance or screening method to evaluate cancer incidence in a community using available data. This study design does not incorporate specific information to assess an individual's actual exposure to the contamination (that is, who was exposed and who was not exposed, for how long, and the magnitude of the exposure that did occur). Furthermore, information on an individual's other relevant risk factors such as family history, lifestyle factors, smoking, alcohol consumption, hormonal exposures (reproductive history, breastfeeding, contraceptive use, etc), are not captured in this type of analysis.

What are the uncertainties with this cancer analysis?

As previously noted, it is not possible to definitively identify the subset of homes in the town that received drinking water from the contaminated treatment plant. This evaluation of cancer incidence was completed for the entire town and therefore should be interpreted with caution. The uncertainty of when potential exposures may have begun, and which homes actually received the contaminated water is further complicated by the fact that cancer often takes many years to develop following an exposure.