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Update No. 4

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January 1997

## Dover Township

# Childhood Cancer Investigation

## Public Water Supply Consultation

The public water supply in Dover Township was sampled extensively beginning in March, 1996, to evaluate current potential for exposure to chemical and radiological substances. This information will be considered in the evaluation of childhood cancers in Dover Township. As analytical results become available, information is being provided regularly to the public. This update summarizes the locations of the samples taken, laboratory methodologies and parameters of interest, and test results available to date.

### Background

Public concern over the quality of the water supply led the New Jersey Department of Health and Senior Services (NJDHSS) and the New Jersey Department of Environmental Protection (NJDEP) to conduct comprehensive sampling and analysis of points in the water distribution system and every supply well. Each sample is being analyzed for numerous parameters, including volatile organic compounds, metals, pesticides, semi-volatile compounds, and radiological substances.

### Sampling Points

Water samples were taken from twenty-three public and private schools, twenty-one wells, and eight points of entry into the

public water system. The widespread geographical distribution of the schools gives a good representation of the quality of the water throughout the system on the date of testing. All

samples are taken after a thorough flushing of the tap or well. In addition, to measure lead and copper levels in drinking water, it is good practice to include a first draw sample. This is

### Parameters of Interest

- approximately **60 volatile organic compounds (VOCs)**, including common solvents, dry cleaning fluids, fuel components, and chemical products and intermediates; by gas chromatography/mass spectrometry (GC/MS)
- approximately **35 synthetic organic compounds**, including phthalates, some insecticides, herbicides, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons; by GC/MS
- approximately **90 pesticides and metabolites, and PCBs**, by GC/MS
- approximately **60 semi-volatile organic compounds**, including chlorinated benzenes, nitrosoamines, phenols and phthalates, by GC/MS
- fourteen **metals**, including cadmium, lead and mercury, by inductively coupled plasma, cold vapor atomic absorption spectrometry (AA) and furnace AA
- **asbestos**, by transmission electron microscopy
- **radiological compounds**, including radium, radon and uranium, and gross alpha and beta activities
- **non-volatile, high molecular weight organic chemicals**, by high performance liquid chromatography (HPLC), and HPLC/MS

a sample taken after water has been allowed to set in the plumbing for several hours or overnight, and represents both contaminants coming into the building from the distribution system, as well as contaminants which may be leaching from the building's plumbing. A second sample is then taken after the water is flushed through the plumbing to measure the lead and copper not associated with the plumbing.

The water system in Dover Township has a number of wells which operate seasonally in response to increased summer water demand. All public supply wells have been tested as they were brought on line in accordance with water needs. Both raw water samples (untreated water from the wells) and finished water (water after treatment for corrosivity, removal of volatile organic compounds, and disinfection) were tested.

### **Analytical Considerations: Methods and Laboratories**

The U.S. Environmental Protection Agency (USEPA) and the NJDEP regulate levels of certain contaminants in drinking water, under the federal and state Safe Drinking

Water Acts. Laboratories that analyze drinking water samples for these regulated compounds must maintain certification through ongoing proficiency testing. In addition, laboratories are required to utilize specific USEPA methods which identify instrumentation, calibration and quality control requirements. All samples submitted for regulated contaminants were analyzed by the New Jersey Department of Health and Senior Services laboratory, the NJDEP laboratory, and a NJDEP contract laboratory. Specialized tests were also conducted by the Rutgers Center for Advanced Food Technology laboratory.

A summary of analytes measured is found on the first page of this update.

### **Results to Date**

The Health Consultation on the public water supply, when completed, will discuss the public health issues relating to the water supply. It will also give a thorough review of the toxicology of chemicals found and their significance for health at the levels measured. In general, sampling and testing to date indicate that the water quality is within acceptable state and federal regulatory limits for those chemicals that are

regulated.

Six of the schools had levels of lead above the guidance level of 20 parts per billion (ppb) in the first draw sample, and one first draw sample had an elevated copper level. Lead and copper in flushed samples for each school were below levels of concern. This indicates that the lead and copper found in the first draw samples were from contact with the plumbing, and not contamination from the water supply system. This is not uncommon in Ocean County, where water is naturally acidic and corrosive. Schools have been advised to institute a regimen of flushing water before students arrive each morning.

School and point of entry samples also showed low levels of trihalomethanes, which are chemicals formed from the chlorination of the water supplies. The levels were below the regulatory limit, and are typical of treated groundwater in New Jersey. The levels measured are much lower than in systems utilizing surface water.

Trichloroethylene was found at one point of entry and at some of the schools at levels at or below the regulatory limits. Trichloroethylene is a volatile compound commonly used as a

degreaser. Because of volatile organic chemical contamination in the groundwater supplying two wells in the Parkway well field, an air stripper was put in place in 1988 to remove volatile compounds. The finding of trichloroethylene in the water supply in 1996 led to the diversion of water from an additional well through the air stripper before its passage into the distribution system.

Elevated levels of gross alpha radiological activity in several wells led to increased testing for radionuclides, including radium and uranium. Naturally occurring radium is the likely source of these elevations. One well has been voluntarily taken out of service pending further radiological testing.

Polypropylene glycol was found in treated water samples at three points of entry. The source of this chemical is under investigation.

Polypropylene glycol

(PPG) is used in a variety of industrial and consumer products including antifreeze and lubricants, and as approved additives for foods and cosmetics. There is no indication that PPGs have any carcinogenic or mutagenic potential.

A chemical product of styrene-acrylonitrile plastic manufacturing has been identified at two adjacent well fields. In response, one additional well has been taken out of service as a precaution. The toxicology of the compound is unknown. The source of this contaminant appears to be the Reich Farm Superfund site, located less than one mile north of the well field. Additional testing is underway.

When completed, the final public water supply consultation will summarize and evaluate all collected data. A Health Care Provider Update will be issued at that time to provide you with a summary of its conclusions.

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A public notice was issued to Dover Township residents still using private wells inviting them to participate in water testing as part of the exposure investigation. Actual sampling will begin in January 1997, and will include radiological and chemical testing.

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***Dover Township  
Childhood Cancer  
Investigation***

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**Figure 1. United Water Company Toms River Water Distribution System**



**Note: Boundaries are approximate. Square symbols denote locations of well fields supplying the system.**