

Paulsboro Train Derailment and Vinyl Chloride Release, November 30, 2012 Health Survey Findings and Air Quality Impacts

**New Jersey Department of Health
September 5, 2014**

At about 7:00 a.m. on November 30, 2012, several chemical tank cars derailed on a railroad bridge over the Mantua Creek at Paulsboro, NJ. Four cars ended up in the creek. One of these cars, which contained about 24,000 gallons of vinyl chloride, ruptured and released the hazardous chemical into the air.

There was widespread public concern about the health impacts of the event. The New Jersey Department of Health (NJDOH) requested assistance from the U.S. Centers for Disease Control and Prevention (CDC), including the Agency for Toxic Substances and Disease Registry (ATSDR) and the National Institute for Occupational Safety and Health (NIOSH). Objectives were to characterize exposure and health effects of those impacted by the vinyl chloride release.

The NJDOH is releasing the following two reports:

Air Quality in Paulsboro, New Jersey This Health Consultation summarizes the impact of the derailment and vinyl chloride gas leak on the air quality in Paulsboro. The purpose is to understand the amount of exposure and the potential for short-term and long-term health effects among community residents and emergency responders.

Surveys of Residents of Paulsboro, New Jersey This Health Consultation describes the results of health surveys conducted among Paulsboro residents.

NIOSH released a separate document describing a health survey among emergency responders. ATSDR is preparing a report summarizing a review of medical records at hospital emergency departments that saw patients complaining of effects from exposure to vinyl chloride.

Questions and Answers

Were Paulsboro residents exposed to vinyl chloride?

Yes, Paulsboro residents were exposed to vinyl chloride by breathing it in, as a result of the train derailment and gas leak. The train derailment caused a leak of vinyl chloride from one ruptured tank car. Based on limited air monitoring data and computer models, it is likely that most of the vinyl chloride was released quickly. Exposures were likely to have been highest in the first hour or two after the derailment and in the areas closer to the site.

Were exposures high enough to cause symptoms?

Yes. In much of Paulsboro, exposures to vinyl chloride were likely to have been high enough to cause reversible, short-term health effects.

What did the Health Surveys find?

The Health Surveys showed that more than half of Paulsboro residents responding to the survey experienced symptoms consistent with exposure to vinyl chloride.

Within Paulsboro, those living closer to the derailment site (within 3,500 feet) reported symptoms at higher frequencies than those living farther away. Those who reported smelling odors also reported experiencing symptoms more frequently.

Commonly reported symptoms were: headache, irritation of the nose and throat, cough, difficulty breathing, eye irritation, dizziness, and nausea.

How many people sought medical care?

About one in ten individuals who participated in the Health Surveys sought medical care at a hospital emergency department. Those living closer to the derailment site were more likely to go to a hospital emergency room. According to the medical records review by ATSDR, more than 250 individuals (residents and emergency responders) visited hospital emergency departments as a result of the incident.

Are there long-term health effects from the vinyl chloride exposure in Paulsboro?

It is not known whether there could be long-term, non-cancer harmful health effects from the exposure to vinyl chloride that occurred in Paulsboro. However, medical management guidelines from ATSDR indicate that such effects are unlikely in persons who recovered from their symptoms.

Vinyl chloride is a known cancer-causing chemical, based on an increased risk of a rare type of liver cancer (angiosarcoma) in workers who had long-term exposure to high levels of the chemical. It is uncertain whether short-term exposure increases the risk of getting cancer.

Are there medical tests to tell me whether I will get sick from the vinyl chloride exposure?

There is no specific medical testing that is recommended. Routine blood tests that check for liver function may show signs of many kinds of liver diseases, but such tests would not be specific to damage from vinyl chloride. Although there are screening tests for liver cancer, these are not recommended unless an individual is at high risk due to other medical conditions such as chronic cirrhosis or hepatitis B virus infection.

In the absence of specific testing recommendations, NJDOH recommends that Paulsboro residents seek routine, age-appropriate health care.

What recommendations is NJDOH making to lessen the public health impact of a future chemical exposure event?

Employers of emergency responders, and incident commanders should follow established regulations and guidance regarding the use of personal protective equipment (such as self-contained breathing apparatus).

Schools should ensure that emergency response plans are designed to protect children and staff from chemical exposures.

Residents close to an exposure scene should be evacuated as soon as it is feasible.

What recommendations are there to improve communications about emergencies to the public?

The Health Surveys found that Paulsboro residents received information about the derailment and what to do about it from a variety of sources. Social contacts (relatives, friends, neighbors and co-workers) played an important role in spreading information about the incident, as did television broadcasts and local authorities. Many in the community were dissatisfied with communications to alert the community about the incident and what actions residents should take to protect themselves. Residents wanted more direct communication from persons in authority.

Communities should develop, test and follow emergency communication plans. Local officials should prepare and make available community-specific emergency planning educational materials tailored to the initial response to relevant catastrophic hazards. Within the incident command system, public health agencies should be engaged to provide guidance to and address health concerns of the community.

Are there plans for further public health evaluation?

NJDOH will consider forming a group of community residents, emergency responders, and medical experts. This group could discuss the need and feasibility of future public health activities, such as conducting community health surveillance or epidemiologic research, establishing an exposure registry, and communicating health risk information.

For more information about these reports, you may contact the New Jersey Department of Health at (609) 826-4920 or (609) 826-4984.