

Summary

In June 2004, township officials and the New Jersey Department of Environmental Protection (NJDEP) requested assistance from the New Jersey Department of Health and Senior Services (NJDHSS) in the interpretation and public health evaluation of site-related contamination detected at the North Brunswick Township High School site, Raider Road, North Brunswick, Middlesex County. Prior to development, an area within the present location of the North Brunswick High School (NBTHS), the Public Service Electric and Gas (PSE&G) easement (NBTHS property), and Veteran's Park properties was used as a municipal dump which received various wastes including pharmaceutical/ laboratory research materials dating back to the 1940s through to approximately 1967. The waste material was partially discovered during school construction activities circa 1971/1972; however, the extent of the buried waste material was not fully encountered until 2003 during a school expansion project. The subsequent site investigations and remedial activities focused on the NBTHS, the PSE&G easement, Veteran's Park and the nearby Judd Elementary School properties.

Investigations and remedial actions were also conducted in the nearby residential area and were evaluated under a separate report titled *Site-Related Contamination At Three Nearby Residences* (ATSDR 2005). An update to this residential investigation has been incorporated into this PHA. In the autumn of 2004, contaminated soil at all three residences was remediated to below the regulatory cleanup levels under oversight by the NJDEP; therefore, the soil exposure pathway is considered eliminated. Past concentrations of arsenic in household dust was cited as a health hazard for one residence. The dust was remediated in April and May 2005. Post-remedial dust wipe samples indicate that the arsenic concentrations in household dust for this residence were reduced to levels that no longer pose a potential health concern for children. Trichloroethylene (TCE) was detected in the indoor air at six residences due to vapor intrusion from groundwater contamination. As a mitigation measure, the basement sumps were sealed and vented to the existing radon remediation system for all six residences.

The primary contaminants of concern (COCs) for the investigated areas include arsenic in surface soil, lead in settled dust, and TCE in indoor air for the NBTHS; arsenic in surface soil for Judd Elementary School; lead and arsenic in surface soil at Veteran's Park; TCE in groundwater; and TCE in indoor air at six nearby residences. Additional COCs posing a lesser risk and detected mainly in subsurface soil include several metals, volatile and semi-volatile organic compounds, polycyclic aromatic hydrocarbons, and Aroclor 1254 and Aroclor 1260 (fractions of Polychlorinated Biphenyl compounds). Completed exposure pathways include incidental ingestion of surface soil at high school building perimeter areas, areas outside the waste-fill boundary and the football field at the NBTHS, Veteran's Park and Judd Elementary School properties; incidental ingestion of lead contaminated settled dust on interior surfaces at NBTHS; and inhalation of indoor air contaminated with TCE at six nearby residences. Exposed individuals include area residents (children and adults), elementary and high school students (children and adults) and school employees (adults). Adverse non-cancer health effects are not expected to occur in children and adults for all past, present and future exposure pathways present at areas of concern. Additionally, since the NJDEP is monitoring indoor air at the six residences, chronic exposures to TCE in indoor air at concentrations exceeding NJDEP's Indoor Air Screening Level are not expected to occur to residents regarding current and future exposures.

It is noted that arsenic concentrations in soil outside the waste-fill boundary are likely present due to natural background levels and not associated with historic landfill activities. Judd Elementary School, the majority of the NBTHS building perimeter, and the NBTHS football field are outside the waste-fill boundary area.

Cumulative Lifetime Excess Cancer Risks (LECRs) were calculated based on past and present exposures to average soil contaminant concentrations (the likely scenario) for child residents as follows for children attending Judd Elementary School and accessing Veteran's Park, the cumulative LECR is 10 in 1,000,000; and for children attending Judd Elementary School, accessing Veteran's Park, and living within one of the six residences with TCE detected in indoor air, the average LECR is 37 in 1,000,000. The cumulative LECR calculated based on past exposures to average soil contaminant concentrations (the likely scenario) for adults living within the community who have attended Judd Elementary School, attended NBTHS, and accessed Veteran's Park for a 38-year period were 14 in 1,000,000. The average LECR calculated based on average TCE concentrations detected in indoor air (the likely scenario) for adults living within one of the six residences is 21 in 1,000,000. The cumulative LECRs for child and adult residents are considered a very low to low increased risk when compared to the background risk for all or specific cancers.

Past and present exposures to site contaminants for the residential population are considered a **No Apparent Public Health Hazard**. Remediation is necessary to prevent future exposures to contaminants in soil exceeding NJDEP's Residential Direct Contact Soil Cleanup Criteria (RDCSCC). NJDEP is requiring soil removal for lead and arsenic "hot spots" exceeding NJDEP's "Project Removal Criteria" (i.e. arsenic at 200 milligrams per kilogram (mg/kg); lead at 4,000 mg/kg) within Veteran's Park and areas to the south of Roosevelt Avenue. Following the soil removal of the "hot-spots", under NJDEP approved Deed Notices, contaminants remaining above the RDCSCC will be covered by a two-foot soil cap as a control measure to prevent future exposures. The soil cap will be applied to portions of Veteran's Park, the PSE&G easement (NBTHS property), and areas to the south of Roosevelt Avenue, including the northern portion of Block 143, Lots 94.01 and 95.01. The hazard category will be re-evaluated for the above areas once remedial measures have been completed.

In response to cancer cluster concerns expressed by the community, the NJDHSS Cancer Epidemiology Program reviewed cancer incidence data from 1979 through 2001 for North Brunswick Township and Middlesex County. No unusual number or distributions of cancer types were determined for the township or county. A request for an update to cancer incidence data for the New Brunswick High School Site area has been submitted which will be addressed in a follow-up health consultation for this site in the near future.

Recommendations include continued oversight of soil remedial activities for the NBTHS (including PSE&G easement) and Veteran's Park to ensure exposures are reduced to below NJDEP's regulatory cleanup criteria through either soil removal and/or installation of engineering controls; continued oversight of remedial activities regarding TCE contamination in groundwater to reduce concentrations to below the NJDEP's ground water vapor intrusion screening levels or a NJDEP approved alternative to minimize or eliminate the threat of vapor intrusion to the surrounding community; continued oversight of effectiveness of residential vapor

ventilation systems; routine cleaning of hard surfaces (including window-sills) to minimize settled dust levels for the NBTHS; continued enforcement and practice of relevant community awareness actions of the current use restrictions for the eastern portion of Veteran's Park until remediation of this area is completed; and the evaluation for the small arsenic "hot-spot" area to the south of Roosevelt Avenue to verify whether exposure prevention measures are required until the area is remediated in 2008.