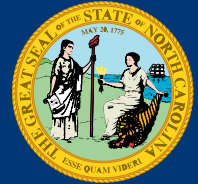




Activities in North Carolina



ATSDR in Partnership With North Carolina

The Agency for Toxic Substances and Disease Registry (ATSDR) is the lead public health agency responsible for implementing the health-related provisions of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). ATSDR is an Atlanta-based federal agency with more than 400 employees and an annual budget for 2003 of approximately \$82 million. ATSDR is responsible for assessing the presence and nature of health hazards at specific Superfund sites, helping to prevent or reduce further exposure and illnesses resulting from those hazards, and expanding the knowledge base about the health effects of exposure to hazardous substances.

ATSDR works closely with state agencies to carry out its mission to serve the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and disease related to toxic substances. ATSDR provides funding and technical assistance to states and other partners through cooperative agreements and grants to identify and evaluate environmental health threats to communities. These resources enable state and local health departments and other grantees to further investigate environmental health concerns and to educate communities. From **fiscal years 1989 through 2003**, ATSDR awarded more than **\$4.5 million**—more than **\$415,000** in the last 2 years—in direct funds and services to **North Carolina** for comprehensive support of its environmental health unit. In addition to direct funds and services, ATSDR staff provides technical and administrative guidance for state-conducted site activities.

ATSDR Site-Specific Activities Public Health Assessment-Related Activities

One of the agency's important mandates is to conduct **public health assessments** of all National Priorities List (NPL) sites and of other sites where a significant threat to public health might exist. **Thirty-one** sites

have been designated to the NPL in **North Carolina**.

A **public health assessment** is a written, comprehensive evaluation of available data and information on the release of hazardous substances into the environment in a specific geographic area. Such releases are assessed for current or future impact on public health. ATSDR, in collaboration with public health and environmental officials from **North Carolina**, has conducted **32** public health assessments in the state, including the following recent examples.

- **Barber Orchard**—Barber Orchard, west of **Waynesville**, is a former commercial apple orchard. The site is now being developed as a residential community.

During the orchard operation, pesticide mixtures were used to control insects and rodents.

These mixtures were delivered to trees using a pressurized underground piping system. Product application, leakage of the piping system, and spills during product mixing are thought to have led to contamination of the groundwater and soil. Pesticides, arsenic, and lead have been detected in site soils and in private drinking wells on the site.

In a public health assessment released in July 2002, ATSDR concluded that current exposures to site contaminants are not likely to result in adverse health effects. Residents are filtering their water to remove contaminants, and connections to the municipal water supply will be available within 2 years. In addition, frequently used areas of residential lots with high arsenic and lead soil levels have been cleaned up to safe levels.

ATSDR also did an exposure investigation at this site to look at lead and arsenic levels in children and adults. No levels of health concern were found.

ATSDR awarded more than \$415,000 in the last 2 years in direct funds and services to North Carolina.

- **Davis Park Road Trichloroethene (TCE)**—The Davis Park Road TCE site is in the southwestern part of **Gastonia**. Groundwater at the site was contaminated with volatile organic compounds (VOCs), including TCE and tetrachloroethene (PCE). These compounds reportedly originated from contaminated soil behind a local auto repair shop. Groundwater contamination was detected in private wells in the area, so residents have been provided with filters for their private wells or have been connected to the municipal water system.

In a public health assessment released in April 2002, ATSDR concluded that the Davis Park Road TCE site does not pose a public health hazard at this time. Residents are no longer drinking contaminated water, and levels of contaminants in soil are too low to cause health effects. ATSDR considers the site a past public health hazard: in the past, the maximum levels of TCE detected in well water exceeded regulatory standards and could have increased the risk for adverse health effects if that water was used for drinking for many years. ATSDR provided the public with information on the potential health concerns associated with their past exposure. Arsenic and lead detected in site soils were present at levels too low to result in health effects.

A **health consultation** is a written or oral response from ATSDR to a specific request for information about health risks related to a specific site, chemical release, or hazardous material. A health consultation is a more limited response than a public health assessment is. To date, **61** documented health consultations have been conducted at **41** sites in **North Carolina**, including the following recent examples.

- **Sigmon's Septic Tank Service Facility/Sigmon Environmental Services**—In June 2001, ATSDR received a request from the U.S. Environmental Protection Agency to determine the public health impact of Sigmon's Septic Tank Service Facility in **Statesville** on private wells near it. In 2002, ATSDR released two health consultations on this site.

In the health consultation released in March 2002, ATSDR reviewed groundwater data. ATSDR concluded that the chemicals identified in seven of the private wells surrounding the facility pose no apparent public health hazard to area residents using them.

In the health consultation released in July 2002, ATSDR reviewed the surface water data for the site. The surface water pathway is of concern because tributaries near the site flow into two major recreational fishing waters, the **Catawba River** and **Lake Norman**. Furthermore, analytical results of surface water and sediment samples collected by the **North Carolina Superfund Section** indicate chemical releases into the surface water bodies near the site. These analytical results may imply a potential for contamination of the biota within the recreational fished waters.

The July 2002 health consultation concluded that the chemicals identified in the nearby surface water features surrounding the facility pose no apparent public health hazard to area residents because levels of chemical exposures in the soil/sediment and surface water near the facility are well below exposure levels known to cause adverse health effects. In addition, chemical levels estimated in the edible tissue of sport fish assumed to exist in surface water features near the facility do not pose a potential impact to public health.

- **Weyerhaeuser Company**—The **North Carolina Department of Health and Human Services (NCDHHS)** modeled air emissions of hydrogen sulfide from the Weyerhaeuser Company's pulp and paper mill in **Plymouth**. NCDHHS provided ATSDR with the summary results of the modeled results and asked ATSDR whether the data indicated a potential public health hazard to residents in the communities surrounding the facility.

In a health consultation released in October 2003, ATSDR concluded that residents living around the Weyerhaeuser paper pulp mill may be exposed to ambient air concentrations of hydrogen sulfide that exceed health-protective levels recommended by NCDHHS and the **North Carolina Scientific Advisory Board**. Modeled 24-hour hydrogen sulfide concentrations also exceed ATSDR's acute minimal risk level for hydrogen sulfide.

Because no actual ambient air monitoring data were available, the Weyerhaeuser pulp and paper mill was classified as an indeterminate public health hazard. ATSDR recommended air monitoring in residential areas near the facility to better define the ambient air concentrations of hydrogen sulfide to which people are being exposed. ATSDR also recommended a review of

available information on potential releases of other site-related chemicals from nonprocess sources at the facility (e.g., the wastewater treatment plant) to determine whether off-site ambient air monitoring for other site-related chemicals is indicated.

- **Salisbury**—ATSDR is involved with two petition sites in **Salisbury**: APAC Carolina Inc. Hot Mix Asphalt and Associated Asphalt, a liquid asphalt storage and distribution facility. These sites have emissions of hydrogen sulfide; benzene, toluene, ethylbenzene, and xylene; VOCs; and polycyclic aromatic hydrocarbons. In addition, local residents have odor complaints about the sites, and groundwater at the sites is contaminated.

ATSDR has agreed to write a health consultation on these sites and is working with local residents and state and county health officials.

Health Education and Community Activities

As part of its ongoing outreach activities in affected communities, ATSDR takes proactive steps to involve communities in identifying their health concerns and developing actions to address them. An example of this type of involvement in **North Carolina** follows.

- Through a national cooperative agreement with the Migrant Clinicians Network (MCN), ATSDR provides assistance to health care providers working with migrant and seasonal farm workers. MCN, the second-largest clinical network in the nation, brings together clinicians from various professions to meet the needs of migrant and seasonal farm workers. MCN members in North Carolina are Blue Ridge Community Health Services, Inc. (**Hendersonville**); Goshen Medical Center, Inc. (**Faison**); Kinston Community Health Center (**Kinston**); Piedmont Health Services, Inc. (**Chapel Hill**); Tri-County Community Health Center (**Newton Grove**); and North Carolina Primary Health Care Association (**Cary**).

Health Studies

Health studies are investigations conducted to determine the relations between exposures to hazardous substances and adverse health effects. Health studies also define health problems that require further investigation through, for example, health surveillance or an epidemiologic study. Following are examples of health studies or investigations that ATSDR conducted or supported in **North Carolina**.

- **Hazardous Substances Emergency Events Surveillance System (HSEES)**—HSEES was established by ATSDR in 1990 to collect and analyze information about releases of hazardous substances that need to be cleaned up or neutralized according to federal, state, or local law, as well as threatened releases that result in a public health action, such as an evacuation. The goal of HSEES is to reduce the morbidity and mortality of first responders, employees, and the general public resulting from hazardous substances emergencies. Fifteen state health departments, including **North Carolina**, currently participate in HSEES. HSEES captures data on more than 8,000 events annually. Of these events, 80% occur at fixed facilities, and 20% are transportation-related events. Most events occur between 8:00 AM and 5:00 PM, Monday through Friday. People most often injured are employees.
- **Exposure to VOCs in Drinking Water and Specific Birth Defects and Childhood Cancers**—The overall objective of this study is to examine the associations between 1) maternal exposures within a 1-year period before the child's birth to TCE and PCE in drinking water at **Camp Lejeune** during 1968–1985 and 2) risk for specific birth defects and childhood leukemia in offspring. These birth defects include neural tube defects (e.g., anencephaly and spina bifida) and oral clefts (e.g., cleft lip with and without cleft palate and cleft palate). The results of the planned study will address the recommendation made in ATSDR's 1997 health assessment of the U.S. Marine Corps Base Camp Lejeune that an epidemiologic study be considered to determine whether mothers exposed to VOCs in drinking water during their pregnancies were at higher risk for giving birth to a child with health problems such as a birth defect or a childhood cancer. ATSDR will publish a final report of the study, and it will be distributed to the general public. Because of the geographic dispersion of participants, results of the study will be distributed via the Web and may include a Web broadcast.

In response to the public health assessment recommendation, ATSDR began the multistep process of determining the appropriateness of conducting an epidemiologic study of specific childhood cancers and birth defects at Camp

Lejeune. ATSDR surveyed by telephone the parents of 12,598 eligible children born to women who were pregnant with them while living on the base during 1968–1985. The number of parents surveyed was about 80% of the estimated total number who were pregnant while living on base during this time. The year 1968 is the starting point, because that year North Carolina began computerizing its birth records. The end point is 1985, because the tainted wells were shut down that year. Parents were asked whether the child had a birth defect or had developed a childhood cancer. ATSDR has finished the survey and is now confirming the cases. All of the participants who took part in the Camp Lejeune survey in 1999–2002 gave permission to be contacted for future studies.

- **Environmental Exposure to Diisocyanate**—The **North Carolina Division of Public Health's Occupational and Environmental Epidemiology Branch**, through a cooperative agreement with ATSDR, is studying the possibility of diisocyanate exposures in communities residing near facilities that use these compounds. The study involves a stepwise approach of air monitoring and sampling, questionnaire administration, and blood testing for diisocyanate antibodies in people living within a quarter mile of a facility. If air monitoring does not indicate the presence of diisocyanate in residential air, another community near another facility will be selected. Four communities near facilities, along with four comparison communities, will be tested. Comparison communities are selected on the basis of socioeconomic, race, and percent homeownership factors. North Carolina and ATSDR are working cooperatively with county health departments, the facility, and the American Chemical Society's Diisocyanate Panel. Air monitoring began around the first facility in early November 2003.



State employee setting up a continuous real-time air monitor at a residential location as part of the diisocyanate study.

Research

In 1997, ATSDR awarded cooperative agreement funds to five universities to conduct research to assess health risk after exposure to mixtures of environmental chemicals. Results of this research will enable ATSDR to conduct toxicity assessments of chemical mixtures that affect public health; study the behavior of chemical mixtures; identify various end points that would be affected; evaluate target organs that could

be affected; study the mechanisms of action, initiation, progression, and repair of injury; identify biomarkers to determine the health of an organism; and develop qualitative and quantitative methods to assess multiple health effects.

The purpose of the research of **North Carolina State University**, one of the awardees, was to develop an experimental, computational approach to assess the absorption of toxic chemicals through the skin after topical exposures to complex chemical mixtures. This study investigated the influence of various components of a mixture that can alter their rate and extent of penetration and absorption through the skin.

Association of Occupational and Environmental Clinics

Through a national cooperative agreement with the Association of Occupational and Environmental Clinics (AOEC), ATSDR supports one occupational and environmental health programs in **North Carolina**. This support is provided to improve education and communication related to surveillance, diagnosis, treatment, and prevention of illness or injury related to exposure to hazardous substances. The member institution in **North Carolina** is the **Duke University Medical Center Division of Occupational and Environmental Medicine**.

For more information, contact ATSDR toll-free at 1-888-42ATSDR (1-888-422-8737) or visit the ATSDR Web site at www.atsdr.cdc.gov.