

## ATSDR Timeline of Public Health Activities at Camp Lejeune, North Carolina

### 1989 - Camp Lejeune and ABC One-Hour Cleaners – Superfund Sites

The US Environmental Protection Agency lists US Marine Corps Base Camp Lejeune and ABC One-Hour Cleaners as Superfund sites and adds both sites to the [National Priority List](#).

### 1990 - ABC One-Hour Cleaners public health assessment

ATSDR's public health assessment of ABC One-Hour Cleaners finds that PCE is the main contaminant of concern detected in the Tarawa Terrace drinking water system. Although contaminated wells have been removed from the Tarawa Terrace water system, on and off-site groundwater is contaminated. Groundwater and subsurface soils remain a public health concern.

### 1997 - Camp Lejeune public health assessment

ATSDR identifies a past health hazard from exposures to contaminated water in Tarawa Terrace and Hadnot Point water systems. ATSDR scientists also identify a short time frame when the Holcomb Boulevard system was contaminated. ATSDR recommends a health study to assess risk to children from maternal exposure during pregnancy.

### 1998 - Reproductive health study released

ATSDR completes its [first study on health of children born from 1968-1985](#) whose mothers were exposed to contaminated drinking water during pregnancy. This study is published in 2001 in the American Journal of Epidemiology. In 2007, ATSDR reports an error in the exposure assessment and declares its intention to re-evaluate the results.

### 1999-2002 - ATSDR conducts parent phone survey

ATSDR conducts a [telephone survey](#) of 12,598 parents of children born to women who were pregnant while living at Camp Lejeune from 1968-1985. Survey is designed to identify and confirm all reported cases of selected birth defects and childhood cancers in children exposed in utero to VOC-contaminated drinking water.

### 2003 - Telephone survey results released

ATSDR's 2002 [telephone survey](#) finds 106 children with specific birth defects and some types of childhood cancer. ATSDR begins confirming cases with medical records.

## 2004-2005 - Water contamination reconstruction begins

Past Camp Lejeune water-quality sampling data are very limited. ATSDR begins [historical reconstruction](#) of Tarawa Terrace and Hadnot Point water treatment plant service areas to determine where and when certain areas at Camp Lejeune received VOC-contaminated drinking water.

## 2005 - Panels review health studies, water modeling

In February, ATSDR convenes an [expert panel](#) [PDF, 75 KB] to explore the need for and feasibility of conducting additional health studies of people exposed to contaminated drinking water at Camp Lejeune. In March, an [expert panel](#) evaluates the agency's field data gathering activities at Camp Lejeune and water modeling approach. ATSDR technical staff considers the panel recommendations and implements them as appropriate.

## 2005 - Birth defects/childhood cancer parent interviews

ATSDR begins study entitled [Exposure to Volatile Organic Compounds in Drinking Water and Specific Birth Defects and Childhood Cancer](#). The study evaluates groups of children with and without health effects. Telephone interviews gather information about residence, other health factors, and amount of water mothers drank during pregnancy. Study includes use of water modeling data to determine which mothers received contaminated water.

## 2006 - Camp Lejeune Community Assistance Panel begins

ATSDR holds the first [Community Assistance Panel \(CAP\)](#) meeting with community members and non-government scientific experts. The CAP will help identify feasible studies for the future and prioritize them.

## 2007 - Tarawa Terrace water analysis released

ATSDR's analysis of [Tarawa Terrace](#) water treatment plant service area reveals that from November 1957 through February 1987, residents of Tarawa Terrace family housing and other facilities received PCE-contaminated drinking water above EPA's maximum contaminant level.

## 2007-2008 - Further Camp Lejeune studies feasible

ATSDR determines that additional studies of mortality and cancer incidence among persons living and working at Camp Lejeune are [feasible](#) [PDF, 542 KB] and would be scientifically useful and helpful to people exposed to contaminated water.

## 2008 - National Defense Authorization Act

In January, President George W. Bush signs the 2008 National Defense Authorization Act. This act includes a requirement that the Department of the Navy, working with ATSDR, conduct a health survey of persons possibly exposed to contaminated drinking water at Camp Lejeune.

## 2009 - Expert panel reviews water modeling

ATSDR convenes an [expert panel to assess water-modeling](#) and data analyses for Hadnot Point-Holcomb Boulevard study area. ATSDR agrees to evaluate the applicability of simplified approaches for determining historical concentrations at water-supply wells. The panel also encourages the Department of the Navy to ensure that ATSDR has all data and documentation necessary to complete water-modeling activities.

## 2009 - Reevaluation of VOC exposure warranted

ATSDR discovers additional information about VOCs in finished water at Camp Lejeune. ATSDR learns that people serviced by the Holcomb Boulevard water-distribution system occasionally have been exposed to contaminated water. ATSDR also recognizes that benzene present in the water-supply wells before 1985 should be moved from the appendix to the body of its public health assessment. Consequently, ATSDR removes the 1997 Public Health Assessment from its web site.

## 2010-2012 - DON/ATSDR work together to complete data gathering

From 2010-2012, the [DON/ATSDR Camp Lejeune Data Mining Technical Workgroup](#) (DON, USMC and ATSDR) conducts nine meetings to complete data gathering for water modeling and the epidemiologic studies. ATSDR is currently collecting additional data for vapor intrusion.

## 2010 - ATSDR begins mortality study

ATSDR begins a [mortality study](#) looking at all causes of death for military and civilian personnel who lived/worked at Camp Lejeune between specific dates in the 1970s and 1980s. The study seeks to determine if these deaths are linked to exposure to contaminated water at Camp Lejeune. The study includes an unexposed sample from Camp Pendleton.

## 2010 - Hadnot Point-Holcomb Blvd. report released

ATSDR releases Hadnot Point-Holcomb Boulevard [Chapter C Report](#). The report describes the occurrence of PCE, TCE, benzene, and vinyl chloride in groundwater at Navy Installation Restoration Program (CERCLA) sites. The sites are located within the Hadnot Point and Holcomb Boulevard water treatment plants service areas and vicinities at Camp Lejeune.

## 2011 - ATSDR expert panel considers survey issues

ATSDR expert panel reviews process of confirming self-reported disease and survey evaluation bias and agrees to move forward with confirmation.

## 2011 - ATSDR mails health surveys

ATSDR [mails ATSDR Health Survey of Former Marine Corps Personnel and Civilians](#) to persons who lived or worked at Camp Lejeune when drinking water was contaminated and to persons living or working at Camp Pendleton during the same time period. The survey asks about more than 20 different cancers and diseases and provides opportunity to report diseases not mentioned.

## **2011 - ATSDR holds public information session**

ATSDR holds a [public information forum for Camp Lejeune](#) at the University of North Carolina Wilmington. The forum includes an update on ATSDR's health survey and other activities, an open house, one-on-one question and answer sessions, and an update from the CAP.

## **2012 - ATSDR releases report on geohydrologic framework**

ATSDR releases Hadnot Point-Holcomb Boulevard [Chapter B](#). The report includes information and data on the layers of sediment and groundwater beneath Camp Lejeune. This information provides a foundation for understanding groundwater flow and conducting water modeling.

## **2012 - ATSDR/DON Data Mining Workgroup Final Report**

The Data Mining Workgroup, established in 2010, assures that ATSDR has a complete accounting of DON document locations that contain potentially relevant data and information for water modeling. The documents identified by the workgroup provide more information on how the Camp Lejeune Drinking Water Systems were operated. [Read the close-out report](#) [PDF, 2.5 MB].

## **2012 - Report on contamination at RCRA areas released**

ATSDR releases Hadnot Point-Holcomb Boulevard [Chapter D](#) [PDF, 6.6 MB]. This report summarizes investigations at 64 [Resource Conservation and Recovery Act \(RCRA\)](#) study areas. The report emphasizes the occurrence and distribution of refined petroleum products such as benzene, toluene, ethylbenzene, xylene and chlorinated solvents of PCE and TCE within areas served by the Hadnot Point and Holcomb Boulevard water treatment plants.

## **2013 - Hadnot Point-Holcomb Blvd. reconstruction report**

ATSDR releases Hadnot Point-Holcomb Boulevard [Chapter A](#) and supplements. This report summarizes previous analyses and investigations—Chapters B, C, and D—and results of detailed water modeling analyses.