U.S. House of Representatives
Committee on Science & Technology
Subcommittee on Investigations & Oversight

HEARING CHARTER

Camp Lejeune: Contamination and Compensation, Looking Back, Moving Forward

September 16, 2010 – 10:00 a.m. to 12:00 p.m.
2318 Rayburn House Office Building

The Investigations and Oversight Subcommittee of the House Committee on Science and Technology will convene a hearing at 10:00 a.m. on Thursday, September 16, 2010, to examine the toxic legacy of drinking water contamination at Marine Corps Base Camp Lejeune in North Carolina. The hearing will examine the Department of the Navy and U.S. Marine Corps' knowledge of past contamination at Camp Lejeune, as well as prior and current analyses by the Agency for Toxic Substances and Disease Registry (ATSDR), a sister agency of the Centers for Disease Control and Prevention (CDC), regarding toxic exposures at Camp Lejeune. The hearing will also review current cooperative efforts by the U.S. Navy and ATSDR concerning the identification and access to records required to complete these studies. In addition, the hearing will examine the process by which veterans have been compensated for illnesses due to environmental exposures at Camp Lejeune and what steps the Department of Veterans Affairs (VA) and U.S. Navy are currently taking to ensure that Camp Lejeune veterans and their dependents are quickly and appropriately compensated for any illnesses or health issues related to toxic exposures while serving at the Camp Lejeune Marine Corps Base.

Key Issues.

1. **U.S. Marine Corps (USMC).** For thirty years, Marines and their dependents serving at Camp LeJeune were exposed to toxic chemicals in their drinking water. It took the USMC more than four years to shut down drinking water wells they knew to be contaminated with toxic chemicals and another 24 years and an act of Congress to force them to inform veterans about this contamination of potential health problems. For two decades the U.S. Marine Corps prevented full disclosure regarding the true extent of contamination at Camp Lejeune. In the past, ATSDR has struggled to obtain complete cooperation and support from the Navy in providing them with records necessary to conduct accurate and comprehensive public health assessments of Camp Lejeune's toxic hazards. The U.S. Marine Corps continue to view past environmental contamination at Camp Lejeune as a public relations battle rather than a public health hazard. In July 2010, for instance, they released a glossy booklet on Camp Lejeune's Historic Drinking Water which excludes critical information and misrepresents scientific conclusions about the health impact of past toxic exposures on Camp Lejeune residents.

2. **Agency for Toxic Substances and Disease Registry (ATSDR).** In 1997 ATSDR published a Public Health Assessment (PHA) on Camp Lejeune that concluded exposures to volatile organic compounds (VOCs) in the tap water, including trichloroethylene (TCE), tetrachloroethylene (PCE), and 1,2-dichloroethylene (DCE), were a past public health hazard. But ATSDR failed to adequately investigate exposures to another toxic contaminant found in the Camp Lejeune water supply: benzene. The final PHA included a single reference to benzene in an appendix despite the fact the agency had records indicating high levels of benzene contamination in wells on the base. Last year ATSDR withdrew that Public Health Assessment, partly because they claimed that in the intervening years since it was published in 1997 they discovered additional records about the extent of toxic contamination at Camp Lejeune. Indeed, the recent discovery of Navy records drastically alters previous conclusions about the extent of benzene contamination at Camp Lejeune. However, even the information ATSDR had in 1997 should have sparked a much more aggressive investigation of the benzene exposures at the time.

3. **Department of Veterans Affairs (VA).** The VA currently has 191 claims from Camp Lejeune veterans. They have reviewed 15-16 of those cases and granted claims to 5-6 veterans determining that their illnesses are 'more likely than not' tied to toxic chemical exposures from Camp Lejeune's drinking water. Two of those six veterans who received claims will be testifying at the Subcommittee's hearing. Currently the VA handles disability claims based on exposure to contaminated water at Camp Lejeune on a case-by-case basis. However, the Secretary of the VA is currently weighing a decision regarding the establishment of specific presumptive health conditions tied to environmental exposures at Camp Lejeune. Subcommittee Chairman Miller introduced a bill last year called the *Janey Ensminger Act* that would have the VA provide health care services to both veterans and their family members who have experienced adverse health effects as a result of exposures to contaminated drinking water at Camp Lejeune.

Background

Marine Corps Base (MCB) Camp Lejeune covers approximately 233 square miles in Onslow County, North Carolina. The base and surrounding area is home to an active duty, dependant, retiree and civilian population of approximately 170,000. Camp Lejeune's mission is to maintain combat ready units for expeditionary deployment. Since MCB Camp Lejeune began operations in 1941, environmental contamination has occurred in many areas due to the use, handling, and disposal of hazardous chemicals. Contaminated areas are scattered within the industrial, training and residential areas on the base. As many as one million individuals have been exposed to these contaminants.

Warnings of the base's contaminated drinking water problems first surfaced in 1980. The laboratory of the U.S. Army Environmental Hygiene Agency collected water samples at Camp Lejeune on October 21, 1980, and ran tests on those samples ten days later. A handwritten surveillance report form noted:

> WATER IS HIGHLY CONTAMINATED WITH LOW MOLECULAR WEIGHT HALO-GENERATED HYDROCARBONS.[1]

The Army ran follow-up tests in January, February and March 1981. Both the January and February 1981 surveillance report forms said:

> YOU NEED TO ANALYZE FOR CHLORINATED ORGANICS….[2]

Each report carried similar warnings about contamination and showed there was strong interference in getting accurate test results due to unidentified chemicals. The Chief of Laboratory Services again offered warnings on his remarks regarding the results of the March 1981 test data:

> WATER HIGHLY CONTAMINATED WITH OTHER CHLORINATED HYDROCARBONS (SOLVENTS)![3]

On August 10, 1982, Bruce A. Babson, a chemist at Grainger Laboratories who had been contracted by the Marine Corps to conduct environmental sampling at Camp Lejeune wrote to the Commanding General of the Camp Lejeune Marine Corps Base:

> Interferences which were thought to be chlorinated hydrocarbons hindered the quantitation (sic) of certain Trihalomethanes. These appeared to be at high levels and hence more important from a health standpoint than the total Trihalomethane content. For these reasons we called the situation to the attention of Camp Lejeune personnel.[4]

Nine days later, Elizabeth A. Betz, the Supervisory Chemist in the Quality Control Lab at Camp Lejeune wrote a memorandum to one of her colleagues regarding the August 10, 1982 letter from Grainger Labs chemist Bruce Babson and previous conversations she had had with Grainger Lab co-owner Mike Hargett. The lab had identified the chemicals that had been interfering with previous test results. In the Tarawa Terrace water treatment plant and system the

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[1] William C. Neal, Jr., Chief, Laboratory Services, TTHM (trihalomethane) Surveillance Report Form, Installation: MCB – LA JEUNE (sic) – HADNOT POINT, Date Collected: 21 Oct. 1980, Date Received: 30 Oct. 1980, Data Analyzed: 31 Oct. 1980.

[2] William C. Neal, Jr., Chief, Laboratory Services, TTHM (trihalomethane) Surveillance Report Form, Installation: CAMP LA JEUNE (sic) HADNOT POINT, Date Collected: 29 Jan., 1981, Date Received: 30 Jan., 1981, Data Analyzed: 9 Feb. 1981.

[3] William C. Neal, Jr., Chief, Laboratory Services, TTHM (trihalomethane) Surveillance Report Form, Installation: CAMP LA JEUNE (sic) HADNOT POINT, Date Collected: 26 Feb. 1981, Date Received: 9 Mar. 1981, Data Analyzed: 9 Mar. 1981.

[4] Bruce A. Babson, Chemist, Grainger Laboratories to Commanding General, Marine Corps Base, Camp Lejeune, NC, Attention: AC/S Facilities, August 10, 1982, Subject: Analyses of samples 206 and 207 from site coded "TT" and samples 208 and 209 from site coded "HP". Samples received July 29, 1982.

interfering chlorinated hydrocarbon was determined to be tetrachloroethylene, otherwise known as perchloroethylene, wrote Betz. An analysis of the Hadnot Point water treatment plant and system showed trichloroethylene and low levels of tetrachloroethylene. Betz indicated that neither of these chemicals were regulated under the Safe Drinking Water Act at the time. Nevertheless, Betz noted that they were still harmful to humans:

> Trichloroethylene, like tetrachloroethylene and other halogenated hydrocarbons (ie Trihalomethanes), at high levels, has been reported to produce liver and kidney damage and central nervous system disturbances in humans.[5]

Despite these warnings it took more than two more years, and the discovery of another more sinister contaminant, benzene, before Department of the Navy or the U.S. Marine Corps took steps to actually close the contaminated wells. In July 1984 test data from another contractor indicated that well #602 in the Hadnot Point Industrial Area had a benzene level of 380-parts per billion (ppb). The current maximum contaminant limit for benzene exposure set by the Environmental Protection Agency (EPA) is 5-ppb.

The Marine Corps claim they did not receive this disturbing test data until November 1984 and took immediate actions to shut down the well. One record from Camp Lejeune's supervisory chemist, Elizabeth Betz, in April 1989 suggests that base officials were not informed of the benzene contamination in Well #602 at the Hadnot Point Fuel Farm until November 30, 1984, when they received a call about the test results from the Naval Facilities Engineering Command, Atlantic Division (LANTDIV) based in Norfolk, Virginia. It has remained unclear, however, when Navy officials at LANTDIV were made aware of the July 1984 benzene test results. Finally, however, after more than four years after Camp Lejeune officials first learned of toxic contamination in some of the base's drinking water wells they took action to shut these wells down. Between November 1984 and February 1985, ten potable water wells at Camp Lejeune, including Hadnot Point's well #602 were finally shut down and taken out of service due to contamination with volatile organic chemicals (VOCs).

ATSDR Steps In.

In December 1988, the Department of the Navy issued a letter to ATSDR requesting that the agency perform a health assessment at Camp Lejeune. In October 1989, Camp Lejeune was placed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL). In 1991 ATSDR began a Public Health Assessment (PHA) of toxic contamination at Camp Lejeune. In October 1994 ATSDR published an "Initial Release" version of its assessment and in 1997 it released the final version of the report.

The ATSDR assessment found three past public health hazards: 1) exposure to lead in the tap water in on-base buildings containing lead plumbing; 2) past exposure to VOCs in three

[5] Memorandum, Subj: Grainger Laboratories Letter of 10 August 1982, From: Ms. Betz, Quality Control Lab., Environmental Section, NREAB, BMaintDiv; To: Mr. Sharpe, Supervisory Ecologist, Environmental Section, NREAB, BMaintDiv, Date: 19 August 1982.

drinking water systems on base (Tarawa Terrace, Hadnot Point, and Holcombe Boulevard); and 3) past exposure to pesticides in the soil at a former day-care center. It also considered three issues to be of no apparent hazard: 1) groundwater contamination on base; 2) exposure from eating fish from Wallace Creek, Bear Head Creek, Cogdels Creek, Orde Pond, Everett Creek, and the New River near Sites 28, 69, and 48 and; 3) Soil Contamination at Site 69.

The 1997 Public Health Assessment stated:

> "Volatile organic compound (VOC) levels in three base drinking water systems (Tarawa Terrace, Hadnot Point, and Holcombe Boulevard) were a health concern until 1985 when use of contaminated wells stopped. Well contamination was caused from leaks in off-base and on-base underground tanks that were installed in the 1940s and 1950s. Human exposure to trichloroethylene (TCE), tetrachloroethylene (PCE), and 1,2-dichloroethylene (DCE) in drinking water systems at MCB Camp Lejeune have been documented over a period of 34 months, but likely occurred for a longer period of time, perhaps as long as 30 years."[6]

But the ATSDR Public Health Assessment (PHA) had a critical omission. It failed to address the issue of known benzene contamination in Camp Lejeune's drinking water supply. The report contained a single reference to benzene in a chart in the appendix of the publication regarding well 602 at the Hadnot Point Industrial Area Tank Farm. "Groundwater contamination (benzene, etc.) was detected in base drinking water supply well 602," said the assessment. "That well has not been used since 1984." Yet, references in the final 1997 and the previous two drafts of the document released by ATSDR in 1994 and 1995 all contained references to a May 1988 "confirmation study" by Environmental Science and Engineering, Inc. that highlighted extremely elevated levels of benzene in the water supply wells at Camp Lejeune.

ATSDR scientists involved in the PHA say they did not pursue the benzene issue further at the time because there was no evidence benzene was detected "at the tap." This justification for not evaluating the likelihood of benzene exposure at the base was cited in a 1994 draft of ATSDR's Public Health Assessment, but was removed from the final version. However, an August 1998 publication by ATSDR on "Adverse Pregnancy Outcomes" at Camp Lejeune says that while benzene was not detected in the "Hadnot Point tap water," "Nonetheless, low level exposure (an estimated 35 ppb) would have been expected among women receiving Hadnot Point water before December 1984." The contaminated well was shut down in November 1984, four months after the benzene was first discovered in well #602 in July 1984.

In addition, at some point between 1995 and the publication of the final ATSDR Public Health Assessment on Camp Lejeune in 1997, the agency's *entire* file on Camp Lejeune was mistakenly thrown out – tossed in the trash – by a contractor. It is still unclear how ATSDR published a final version of the Public Health Assessment without the supporting documents, but

[6] "Public Health Assessment for U.S. Marine Corps Camp LeJeune Military Reservation Camp LeJeune, Onslow County, North Carolina, August 4, 1997, Agency for Toxic Substances and Disease Registry (ATSDR), U.S. Department of Health and Human Services, p.2.

ATSDR says they knew where to go to retrieve the scientific references in the 1997 Public Health Assessment even if they did not actually have the data on hand.

Last year ATSDR withdrew its 1997 PHA, partly because they claimed that in the intervening years since its publication new material was discovered about the extent of toxic benzene contamination at Camp Lejeune. It is true that new data ATSDR has obtained from a Department of Navy database in the past year regarding the degree of benzene contamination at Camp Lejeune significantly alters the evaluation of the public health impact of exposures to this toxic chemical at Camp Lejeune. ATSDR did, however, acknowledge the flaws in the 1997 assessment when they publicly removed it from their web-site. "Also, at the Camp Lejeune site, benzene was present in one drinking-water supply well in the Hadnot Point drinking water system," ATSDR said. "That well was shut down sometime prior to 1985. This information should have been included in the PHA but was not. The PHA should have mentioned the contamination and stated that the extent of exposure to benzene from that well was unknown."

ATSDR has struggled to obtain full access to U.S. Marine Corps and Department of Navy records regarding Camp Lejeune's environmental contamination for years. As early as 1994 ATSDR began writing letters to the U.S. Marine Corps complaining that they were not receiving the cooperation or access to vital records regarding the full extent of toxic contamination on Camp Lejeune or the potential health impact. These issues have flared up sporadically ever since. In 2005 ATSDR informed investigators at the Government Accountability Office (GAO) that it had learned there were a "substantial number of additional documents that had not been previously provided to them by Camp Lejeune officials."

It is difficult to provide clear scientific analyses when you cannot be certain that the records you are relying on for that analysis are complete. In the past most estimates assumed between 20,000 to 30,000 gallons of fuel had leaked from the underground storage tanks at Camp Lejeune, for instance. The newly discovered Navy documents, however, estimate that between 1988 and 1991 there was as much as 1.1 million gallons of gasoline floating on top of the groundwater table at Camp Lejeune. The report noted: "While this estimated volume seems incredibly large, it must be remembered that this took place over 50 years, yielding an average loss of over 21,200 gallons/year (or 58 gallons/day.)" Benzene is a key component of gasoline. ATSDR officials say they had never been informed of these records previously and stumbled upon them without any direction from the U.S. Marine Corps or Department of the Navy.

Despite this, it is also clear from the Subcommittee's review of records that ATSDR had significant information about benzene contamination at Camp Lejeune when they conducted their health assessment in 1997 and should have been more diligent in investigating the public health implications of the benzene contamination at the time. To help resolve issues regarding identification and access to Camp Lejeune environmental documents necessary for ATSDR to complete its ongoing health studies and analyses regarding toxic exposures at the base ATSDR and the Department of the Navy have formed a datamining work group that is attempting to resolve these access issues quickly.

ATSDR currently has five separate health investigations regarding Camp Lejeune in the works. Some of these projects have been ongoing for years and four of the five studies will not

be completed until at least spring 2012. The last one is expected in 2013. Considering these studies have taken years already to complete ATSDR should make every effort to finalize them as soon as possible without jeopardizing the scientific integrity of the products they deliver.

National Research Council (NRC) report.

In 2009 the National Research Council (NRC) of the National Academies published *Contaminated Water Supplies at Camp Lejeune – Assessing the Potential Health Effects.* The NRC study was mandated at the direction of Congress in the National Defense Authorization Act for Fiscal Year 2007 (Public Law 109-364, 109th Congress). The legislation specifically called for the Secretary of the Navy to enter into an agreement with the National Academy of Sciences to conduct a comprehensive review and evaluation of the available scientific and medical evidence regarding associations of human exposure to drinking water contaminated with trichloroethylene (TCE) and tetrachloroethylene (PCE) at Camp Lejeune, North Carolina. The legislation never directed the NRC to evaluate exposures to benzene and they did not do so.

The committee divided its review into two major categories: (1) evaluating the exposures of former residents and workers to the contamination of the Tarawa Terrace and Hadnot Point water-supply systems, and (2) evaluating the potential health effects associated with the water contaminants TCE and PCE. The assessments were then considered together to ascertain whether conclusions could be drawn about whether any adverse health outcomes could be attributed to the water contaminants. The report's main conclusion:

> It cannot be determined reliably whether diseases and disorders experienced by former residents and workers at Camp Lejeune are associated with their exposure to contaminants in the water supply because of data shortcomings and methodological limitations, and these limitations cannot be overcome with additional study. Thus, the committee concludes that there is no scientific justification for the Navy and Marine Corps to wait for the results of additional health studies before making decisions about how to follow up on the evident solvent exposures on the base and their possible health consequences. The services should undertake the assessments they deem appropriate to determine how to respond in light of the available information.[1]

[1] NRC report, page 13

"Camp Lejeune: Historic Drinking Water, Questions and Answers,"
U.S. Marine Corps, July 2010

The U.S. Marine Corps has attempted to mischaracterize the National Research Council (NRC) report as well as ATSDR's past health studies in their most recent public relations document regarding contaminated drinking water at Camp Lejeune. In July, the U.S. Marine Corps published a glossy booklet that sought to provide "questions and answers" regarding Camp Lejeune's drinking water history. But the booklet is misleading in several regards.

The Marine Corps booklet asserts:

> Since 1991, several health initiatives have been conducted to identify the possible effects of exposure to contaminated water at Camp Lejeune. The studies conducted to date have not shown any causal link between exposure to contaminated water at Camp Lejeune and illnesses.[7]

In fact, in at least three separate places in the short Marine Corps booklet they claim that no studies have shown an "association between exposure to the contaminated water and health conditions reported by former residents of Camp Lejeune." However, ATSDR informed the Marine Corps on September 10, 2010, that these statements are incorrect and said the only completed health study at Camp Lejeune which was conducted by ATSDR did, in fact, find an association between adverse health effects and exposures to PCE on the base.

ATSDR reminded the Marine Corps that in their report "associations were found with Small for Gestational Age (SGA) and specific sub-groupings of PCE-exposed mothers. SGA was not a health condition "reported by former residents" but instead was an adverse outcome that has been found in other studies at other sites to be associated with environmental exposures including exposures to chemical drinking water contaminants," wrote ATSDR. "Evidence exists, based mostly on occupational studies, of associations between these chemical contaminants and cancers and other adverse health outcomes." ATSDR recommended that the Marine Corps "booklet should report these findings and state that research on other illnesses is still underway."

In addition, the Marine Corps booklet uses several arguments to explain why they did not immediately shut down water wells they knew were contaminated with toxic chemicals. They have argued that they immediately shut down the wells once they identified the "source" of the contamination. But this response fails to answer the question why they did not shut the wells down once they first learned that they were contaminated with hazardous chemicals.

The Marine pamphlet suggests that the chemicals in the drinking water, at the time, were not regulated by the Safe Drinking Water Act so they had no obligation or legal responsibility to close them. "In 1982, the interfering chemicals in the base water system were identified as

[7] "Camp Lejeune: Historic Drinking Water, Questions and Answers," U.S. Marine Corps, July 2010, p. 10.

trichloroethylene (TCE) and perchloroethylene (PCE), which were not regulated by the Safe Drinking Water Act at the time," the Marine Corps booklet states. "When contaminants were subsequently discovered in certain wells, these wells were promptly removed from service."

But back in 1982 when Navy chemist Elizabeth Betz wrote her memorandum on Grainger Laboratories' discovery of high levels of trichloroethylene (TCE) in the Camp Lejeune water supply she also noted that it was not regulated by the Safe Drinking Water Act at the time. Still, this did not obscure her knowledge that it was still hazardous to human health in spite of the lack of regulations governing human exposures to it. Even before TCE, PCE and benzene were added to the list of chemicals that were regulated by the Safe Drinking Water Act between 1989 and 1992, it was well established these chemicals were hazardous. It is important to remember that in 1982 when Betz wrote that memo warning of the health implications of exposures to these chemicals they were not regulated by the Safe Drinking Water Act, but were clearly dangerous to human health nonetheless. Betz warned:

> Trichloroethylene, like tetrachloroethylene and other halogenated hyudrocarbons (ie Trihalomethands), at high levels, has been reported to produce liver and kidney damage and central nervous system disturbances in humans.[8]

Today, the Department of Veterans Affairs is beginning to provide benefits to Camp Lejeune veterans who were exposed to TCE, for instance, and developed kidney cancer as a result. One of the witnesses at the Subcommittee hearing, Jim Watters, is a Camp Lejeune vet who developed kidney cancer from his exposures to these chemicals at Camp Lejeune and received a 100-percent disability award from the VA last year.

The unofficial motto of the U.S. Marine Corps is to "never leave a Marine behind." This should be applied not just to the brave Marines that have fought for our nation around the world but for those at home as well. And Camp Lejeune veterans should be no exception.

[8] Memorandum, Subj: Grainger Laboratories Letter of 10 August 1982, From: Ms. Betz, Quality Control Lab., Environmental Section, NREAB, BMaintDiv; To: Mr. Sharpe, Supervisory Ecologist, Environmental Section, NREAB, BMaintDiv, Date: 19 August 1982.

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Witnesses:

Panel I

Dr. Richard Clapp, *Professor Emeritus, Department of Environmental Health, Boston University School of Public Health, environmental health policy consultant and member of the ATSDR Camp Lejeune Community Assistance Panel (CAP)*

Mr. Mike Partain, *Member, ATSDR Camp Lejeune Community Assistance Panel (CAP) and breast cancer survivor born on Camp Lejeune*

Mr. Peter Devereaux, *Former Marine Corps Corporal and Camp Lejeune veteran diagnosed with breast cancer*

Mr. Jim Watters, *Director, Graduate Medical Education, Texas Tech University Health Sciences Center, former Navy Lieutenant, retired Commander, Navy Reserve, Medical Service Corps and Camp Lejeune veteran diagnosed with kidney cancer*

Mr. Michael Hargett, General Director, Anchimeric Associates and former co-owner of Grainger Laboratories

Panel II

Dr. Chris Portier, *Director, Agency for Toxic Substances and Disease Registry (ATSDR)*

Mr. Thomas J. Pamperin, *Associate Deputy Under Secretary for Policy and Program Management, Veterans Benefits Administration, U.S. Department of Veterans Affairs*

Major General Eugene G. Payne, Jr., *Assistant Deputy Commandant for Installations and Logistics (Facilities), Headquarters, United States Marine Corps*

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2318 Rayburn House Office Building (WEBCAST)