

**Testimony of Michael C. Hargett**  
for the  
**U.S. House of Representatives**  
**Committee on Science and Technology**  
September 16, 2010

Subject: Drinking Water Analysis Performed by Grainger Laboratories for the United States Marine Corps Base, Camp Lejeune, North Carolina

I am Michael C. Hargett a former co-owner and vice president of Grainger Laboratories in Raleigh, NC. Grainger Laboratories was founded in 1973 to provide analytical and consulting services to industry, government and commercial customers in the southeastern United States. Our services included drinking water analyses that were certified under the Safe Drinking Water Act (SDWA) otherwise designated as Public Law 92-523.

The SDWA applies to every public water system in the United States. There are currently more than 160,000 public water systems regulated by the SDWA providing water to almost all Americans at some time in their lives. The SDWA and derivative legislation define public water system as an entity that provides "water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year."

The Safe Drinking Water Act was, at the time of our service to the US Marine Corps Base at Camp Lejeune, North Carolina (MCB) administered by the State of North Carolina, Public Water Supply Section of the Dept. of Environmental and Natural Resources, Water Supply Protection Program under a Primacy agreement that is still in place today.

In 1970 Executive Order 11514 for Protection and enhancement of environmental quality directed The Federal Government to provide leadership in protecting and enhancing the quality of the Nation's environment to sustain and enrich human life. As a result, Federal agencies initiated measures to direct their policies, plans and programs so as to meet national environmental goals. The SDWA included clearly established goals that instituted standards for water quality, supply and distribution throughout the United States.

In 1974 Congress enacted the Safe Drinking Water Act (SDWA) (P.L. 93-523, 88 Stat. 1660) to protect the quality of both actual and potential drinking water in the United States. Congress had created the SDWA in response to a nationwide survey that revealed health risks from inadequate public water-supply facilities, polluted supplies, and operating procedures that did not achieve a safe water quality. To achieve its goal the SDWA provides water quality standards for drinking-water suppliers, protects underground drinking-water sources, and directs appropriate deep-well injection of wastes.

The SDWA requires the U.S. Environmental Protection Agency (EPA) to regulate all "public water systems," defined as systems that provide piped water for human consumption for at least sixty days a year to at least fifteen service connections or twenty-five people. The EPA does this through Primary Drinking Water Regulations, by which it first identifies contaminants that may pose a risk to human health and that occur in drinking water at potentially unsafe levels. Then the EPA specifies a Maximum Contaminant Level Goal (MCLG) for each contaminant, which is set at the level below which there is no predicted health risk. Finally the EPA creates a legally enforceable Maximum Contaminant Level (MCL), which is the greatest amount of contaminant that will be allowed in the public water supply. This MCL must be set as close as is feasible to the MCLG after taking into account the best technology, treatment techniques, and costs. Since the 1996 amendments discussed below, the EPA may instead require a Treatment Technique for removing the contaminant if there is neither an economically or technologically feasible MCL, nor an accurate way to measure the contaminant in water.

States generally obtain primary authority to implement the SDWA after proving to the EPA that they will adopt and enforce standards at least as stringent as the national standards. While the states may oversee the program, the public water systems themselves physically ensure the safety of the tap water through treatment, testing, and reporting. In addition to these "at the tap" protections, the SDWA requires states and public water suppliers to protect initial water sources from contamination. In particular, the SDWA provides for an Underground Injection Control (UIC) program to prevent contamination of underground water sources by underground injection of contaminated fluids.

Due to criticism that the original act was an inflexible, unfunded mandate with an unattainable regulatory schedule, the 104th Congress extensively amended the act in 1996 (P.L. 104-182, 110 Stat. 1613). These amendments included new pollution prevention approaches, public information requirements, added flexibility to the regulatory process, and a Drinking Water State Revolving Fund. Pollution prevention took the form primarily of source-water quality assessment programs to determine the current health of water supplies and delineate the area to be protected. In addition, public water suppliers were required to inform their year-round customers about the source and quality of their tap water with an annual consumer confidence report.

The most important element of the amendments was the critically necessary funding mechanism added to the SDWA's stringent water quality requirements. This fund provided federal monetary aid to public water systems to repair and upgrade their facilities, focusing particularly on assisting small and disadvantaged communities that might otherwise find these repairs too expensive. The fund also gave priority to programs using pollution prevention to safeguard their drinking water supply.

US Marine Corps Base personnel at Camp Lejeune, NC initiated discussions with my office in 1982 to determine compliance with the SDWA. Over the months that followed, our team assisted base personnel in defining their compliance with the expectations of the State of North Carolina and the SDWA, identification and quantification of contaminants in the drinking water supply, and discussions on operating practices that could avoid exposure for the Marines, dependants, and base personnel that were consuming this potable water supply.

Copies of our analytical reports and correspondence with base personnel have been provided to this committee and agencies and contractors reviewing the history of water quality at the base and its associated housing units. Additional telephone discussions, trips to the base for meetings with utility personnel, and an attempt to bring to the attention of base utility personnel the implications of the contaminated water were included in our support of base personnel.

The initial requests from the base required a statement of our qualifications as a certified laboratory to perform Trihalomethane (THM) analysis under the SDWA, sampling instructions, a formal price quotation, and special sample containers that were both suitable and compliant with established protocols for sampling, transport and preservation of the samples. The sampling required a sample without bubbles or an air space above the sample to minimize volatilization of the water content. A special technique was needed to apply a septum to the mouth of the sampling container for a full sample and later extraction through the septum without contaminating or releasing the targeted analytes. The sampling method was new to many utility personnel and frequently, training, resampling and discussions were needed to establish a representative sample.

The first set of samples we received from the base were not in compliance with the SDWA and had a significant interference present. This interference was exceptional and after discussions with the analytical chemist, Mr. Bruce Babson and his supervisor, Mr. Paul Brafford, we decided to request additional samples from the base. A second set of samples presented similar results. In discussions with the Grainger Laboratories management team, a decision to define the interference at the expense of our company was made and the chlorinated solvents were identified and the contamination level was established. A decision to visit the base and initiate discussions resulted.

I visited the base with fresh sample bottles and met with the Base Chemist, Ms. Betsy Betz, to obtain a third set of samples and discuss the implications of the contaminated water. Chlorinated solvents in the drinking water was deemed a hazard to consumers at the MCB and warranted delineation, control and mitigation of the risk. The third set of samples taken by myself was also not in compliance with the SDWA and the monthly sampling for THM. A campaign to define the well or wells generating the highest levels of THM and chlorinated solvents was started. From the analytical results you may see that the wells with chlorinated solvents were established.

In a letter of August 10, 1982, Ms. Betz points out the health effects of exposure to the chlorinated solvents present in the drinking water and she appropriately points out that the pollutants were unregulated at that time. Her repeated reference to the toxicity of the chlorinated solvents demonstrates concern and an awareness of the importance of the issue. I must ask why this urgent alarm was unanswered. Exposure to chlorinated solvents included liver, kidney, nervous system, and other disruptions to human physiology. A more precise definition of the toxicological burden of these chemicals can be addressed by experts in this arena.

Another trip to the base was made to meet with the water well operators (maintenance personnel) who were responsible for the wells. We visited the wells with chlorinated solvents and discussed potential sources of the contamination. Information including hydrologic data was not available that could assist in this determination. At the conclusion of the field discussions, I strongly suggested to Ms. Betz and the operator that the well field operation avoid the wells with high chlorinated solvent concentration. It was agreed that it was a good idea to quarantine this source. Afterwards, in discussions with Ms. Betz, the health effects and issues of SDWA compliance were discussed.

A week later, Ms. Betz called my office to request that I come to the base to meet with base utility personnel. I agreed to do so and suggested that an additional sampling of current water quality would be appropriate. A meeting with the Deputy Utilities Manager for the base was set for the next week. This person was a Lt. Col. and after much deliberation I am unable to remember his name but I do remember being ushered into his office, Ms. Betz introducing me as a person that was very familiar with water supplies in eastern North Carolina, compliance with the SDWA and State of NC requirements, and stating that I was present to discuss the water quality issues at Hadnot Point and other residential water supplies. The Lt. Col. responded that this was something he would have to look into and we were dismissed. The total time in the Lt. Col.'s office chair was less than 5 minutes.

Following the meeting, Ms. Betz apologized for the brusque treatment and explained that others would have to know about the problems. We went on to obtain additional samples that showed an improvement in compliance with SDWA and lower

chlorinated solvent concentrations. The operating well field conditions and parameters were unknown at the time of sampling.

Sampling at the MCB continued and a few months later, an engineer with the State of NC, Mr. Mike Bell, asked me if Grainger Laboratories was performing the water analysis for the MCB. I responded yes and he requested a copy of the analysis. I said I could not provide this report since it was the property of the Government and I provided the contact information for Ms. Betz. A few weeks later at a meeting of the American Water Works Association State Chapter, Mr. Chuck Rundgren, Chief of the Water Supply Branch and also Mr. Bell's supervisor, asked me the same question. I gave him the same response and he asked if I had provided any recommendations to the base. I replied, ".....yes, and I hope your new field office in Wilmington is working with them." Mr. Rundgren replied that they were. I further replied that they (MCB) needed assistance and his department would be of great value to them. No further discussion with NC Government personnel concerning the MCB is recalled.

I left the laboratory in 1984 and the company was sold in 1985. Until being contacted by Mr. Mike Partain in 2009, I am unaware of any communications concerning the water quality at the MCB, our analysis, recommendations for water quality improvement, or supplemental discussions directed to myself or any other former employees of Grainger Laboratories.

Subsequent to leaving Grainger Laboratories, I continued an active profile in environmental compliance and consulting work that included discussions with U.S. Navy personnel at the Atlantic Division (LANTDIV) who were responsible for environmental cleanup at the MCB. I remember asking about the contaminated drinking water and being told that there were several problems that were to be addressed at the base. No details were provided except passing reference that a dry cleaning operation near the base was determined to be responsible for some of the contamination.

It is disappointing to know of an absence of response by the MCB to the contaminated water conditions. I attribute this to be a lack of knowledge surrounding the SDWA, conventional water utility operations and an awareness of the toxicological potential of the contaminants.

The Marine Corps explanation in the Camp Lejeune Historic Drinking Water brochure does not account for a director historic perspective of the water quality and the exposure of base personnel. Instead a reactive profile for corrections after the exposure of base personnel is present. There is no question that military personnel, dependents, and base personnel were exposed to the hazard and that corrections were eventually accomplished. The poor interest from the Deputy

Utilities Manager leads me to believe that the corrective actions were slow. I also question what the independent research initiative could accomplish with a literature study and no review of the compliance analysis of the distributed water supply;

Most of the US military bases were established as enclaves that were independent and self-sufficient. These same bases have now been surrounded by municipalities with utility operations that are superior to the independent, underfunded base utilities and with a higher quality set of resources than the Government installation. This deficiency is the responsibility of the US Congress and Department of Defense management.

During the last 15 years the Congress has moved to privatize military base electrical, gas, water, wastewater and other utilities to commercial and utility companies with superior operational knowledge, engineering, system capabilities, and financial resources. It is possible that this transfer of Federal assets will improve the quality of utility operations including water supply to insure reliable, consistent water quality for our base personnel.

With whatever path the utility operation for military facilities is improved, an oversight that assures the well being of military personnel, their dependants, and base personnel must be sustained.

Thank you for this opportunity to address the committee and support its interest in the well being of the US warfighter.