



Naples
Community
Health
Awareness

An important Public Health Evaluation is underway under the guidance of the Navy and Marine Corps Public Health Center. The Public Health Evaluation is designed to evaluate the potential short and long-term health risks associated with living in the Naples area as a result of inadequate trash collection, uncontrolled open burning of uncollected trash, and widespread dumping of waste, including chemical and other hazardous waste.

Launched in 2008, the Public Health Evaluation involves the collection of air, water, soil and soil gas samples from throughout the region to identify whether there are potential health risks.

For details and background information, visit the website listed at the bottom of this page.

Your Health: Facts for Navy Families in Naples

About: Nitrate in Tap Water

The U.S. Navy is committed to ensuring our families are safe while serving our country at home or overseas. The following information is provided as part of a wide-ranging effort to understand the health risks of our personnel and families living in Naples, Italy. Currently underway is a comprehensive Public Health Evaluation to assess potential short and long-term health risks associated with living in the Naples area (see sidebar). In line with our commitment to continually share important health information, we encourage you to review the following information.

What is nitrate?

Nitrate (NO_3) is a chemical compound of nitrogen and oxygen and is found in many food items of a person's everyday diet. Generally, the concentration of nitrate in drinking-water is low. Drinking water normally contributes only a small percentage of a person's total nitrate intake. The major intake of nitrate for a human adult is from food rather than from water. Vegetables such as spinach, lettuce, beets and carrots contain significant amounts of nitrate. Although low levels of nitrates may occur naturally in water, sometimes higher levels, which are potentially dangerous to infants, are found. Nitrate contamination of drinking water usually results from runoff of agricultural fertilizers or from human or animal wastes, such as livestock feedlots or faulty septic systems.

What happens to nitrates when they are released to the environment?

Since nitrates are very soluble and do not bind to soils, they have a high potential to migrate to groundwater. Because they do not evaporate, nitrates are likely to remain in water until consumed by plants or other organisms.

How much nitrate is allowed in U.S. drinking water?

The U.S. Environmental Protection Agency (USEPA) sets water quality

standards, called Maximum Contaminant Levels (MCLs), that determine the maximum allowable level of a chemical in drinking water considered to be safe for human health. The MCL for nitrate in drinking water is 10 milligrams per liter. This is the maximum allowable level of nitrate that USEPA allows in drinking water to avoid possible adverse health effects.

What are the health effects of too much nitrate in drinking water?

Below are short-term and long-term health effects from levels of nitrate exceeding the MCL.

Short-term: Excessive levels of nitrate in drinking water may cause serious illness and sometimes death. The illness in infants younger than six months old is due to the body's conversion of nitrate to nitrite by bacteria in the digestive tract. This can interfere with the oxygen-carrying capacity of the child's blood and can be an acute condition in which health deteriorates rapidly over a period of days. Symptoms include shortness of breath and blueness of skin. An infant with bluish skin should be immediately taken to a medical facility for treatment. This condition is known as methemoglobinemia or "blue baby." Healthy adults and older children can consume higher levels of nitrate because of their fully developed

Nitrates and nitrites are nitrogen-oxygen chemical units which combines with various organic and inorganic compounds. Once taken into the body, nitrates are converted into nitrites.



For more information contact:

Environmental Health Information Center

U.S. Naval Hospital Naples, Room 1096
COMM: 39-081-811-6071
DSN: 314-629-6071

Navy and Marine Corps Public Health Center

620 John Paul Jones Circle, Suite 1100 Portsmouth, VA 23708
757-953-0664
Fax: 757-953-0675

Naval Support Activity, Naples

Public Affairs Office PSC 817 Box 40 FPO AE 09622
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digestive system, which kills most of the bacteria that changes nitrate to nitrite.

Long-term: Nitrates have the potential to cause the following effects from a lifetime of exposure above the MCL:

- Diuresis, which is an increased formation of urine by the kidney;
- Increased starch deposits; and
- Hemorrhaging of the spleen.

What if I think I am pregnant or have a medical condition?

Pregnant women, women that are nursing, adults with reduced stomach acidity (people taking antacids or some ulcer medications or people with high stomach pH), and people deficient in the enzyme that changes methemoglobin back to normal hemoglobin are all susceptible to nitrite-induced methemoglobinemia.

Was nitrate measured as part of the Naples Public Health Evaluation?

Yes, the Navy tested for nitrate in tap water samples. Nitrate (as NO₃) was detected at concentrations exceeding the USEPA's MCL at 32 of the 130 off-base rental homes tested during Phase I of the Naples Public Health Evaluation. These exceedances were most often observed in Study Area 8, with a very limited number of exceedances in Study Areas 5, 6 and 7. Refer to the "Phase I Report Summary of Findings" fact sheet located on the Naples Community Health Awareness website for a map of the study areas.

Of the 36 off-base housing residences sampled that obtain their tap water from a private well or unknown source, nitrate (as NO₃) was detected at concentrations exceeding the MCL at 28 of the residences.

Of the 94 off-base rental homes sampled that obtain their tap water from a public drinking water source, nitrate (as NO₃) was detected at concentrations exceeding the MCL at four of the residences.

The Navy also tested for nitrate at Parco Le Ginestre, Carney Park, Capodichino and the Support Site at Gricignano. The testing of tap water samples from the public water supply did not show a presence of nitrate above the MCL or USEPA Regional Screening Level (RSL). RSLs are a different set of standards or guidelines than the MCLs and are used when there is known or suspected contamination.

The testing of water samples from irrigation wells at these sites showed a presence of nitrate exceeding the MCL and RSL. To ensure the safety of those who may potentially drink irrigation water, the Navy is posting signage in irrigated areas to remind the public that irrigation water is non-potable. The Navy is also controlling access to irrigation sprinklers.

What precautions can I take?

- Follow the All Hands Bottled Water Advisory issued by the Commander, Navy Region Europe, Africa, Southwest Asia in 2008 to use only bottled water for drinking, cooking, food preparation, brushing teeth and making ice. Because nitrate does not evaporate the way chlorine does, boiling, freezing or letting water stand does not reduce the nitrate level. In fact, boiling water for more than 10 minutes can make the nitrate more concentrated.
- Ensure that you use only bottled water for all formula, juice and drinks given to children under six months of age.

Note: It is safe to bathe or shower in tap water containing elevated nitrate levels.

Where can I get more information about nitrate in water?

For more information about nitrate in water, visit the USEPA's website, http://www.epa.gov/safewater/contaminants/dw_contamfs/nitrates.html.

For health-related questions, visit the Environmental Health Information Center at U.S. Naval Hospital Naples, Room 1096, or by calling 081-811-6071.