

**ACTIONS BASED ON RESULTS**

The Navy will notify each property owner of their personal water results and follow-up actions if needed. We will keep the results private to the greatest extent possible.

The EPA recommends that water containing vinyl chloride, 1,4-dioxane, PFOS, and/or PFOA above their respective action levels not be used for drinking or cooking. If your preliminary results show that your drinking water contains vinyl chloride, 1,4-dioxane, PFOS, and/or PFOA above the action levels, the Navy will provide bottled water or an alternate water supply until a long-term solution is implemented.

**PUBLIC MEETING**

The Navy is hosting a public meeting to provide information on the investigation and remediation activities at Area 6. Representatives from the Navy and its federal, state, and local partners will be at the meeting to share information and answer your questions.

**Please attend at any time during the meeting to have your questions answered.**

Thursday, February 1, 2018  
5–7 p.m.

Chief Petty Officers' Club  
1080 W Ault Field Rd  
Oak Harbor, WA

**HEALTH INFORMATION**

**PFOS and PFOA** – Exposure to PFOS and PFOA appears to be global. Studies have found both compounds in blood samples of the general population. PFOS and PFOA will accumulate in the body until exposure stops. Studies on exposed populations indicate that PFOS and/or PFOA may result in increased cholesterol; changes in growth, learning, and behavior of the developing fetus and child; changes in the immune system; decreased fertility; altered thyroid function; and increased risk of certain types of cancer. In studies conducted using laboratory animals, effects on developmental, reproductive, and liver function were observed, as well as an increased occurrence of cancer. More research is needed to rule out possible links between exposure and health effects. At this time, it is not possible to link exposures to PFOS and/or PFOA to a person's individual health issues. Blood tests are available to measure these chemicals, but they are not routinely done. A blood test will not provide clear answers about existing or future health effects and should be done under the care of a doctor.

**Vinyl chloride** – The health effects in people drinking water or breathing air contaminated with low levels of vinyl chloride are not well understood. Animal studies report effects on liver, reproductive organs, fetal growth/development, and the nervous system. The EPA has classified vinyl chloride as a known human liver carcinogen, to which infants and young children may be more susceptible.

**1,4-Dioxane** – The health effects in people drinking water contaminated with 1,4-dioxane are not well understood. Animal studies report effects on the liver and kidneys, as well as possible effects on fetal growth and development. People breathing low levels of 1,4-dioxane for short periods of time have reported eye and nose irritation. The EPA has classified 1,4-dioxane as "likely to be carcinogenic to humans." Animal studies have shown increased incidences of nasal cavity, liver, and gall bladder tumors after exposure to 1,4-dioxane.

*Based on what is known and still unknown about PFOS, PFOA, vinyl chloride, and 1,4-dioxane, it is recommended that people not drink or cook with water that contains these compounds above the action levels.*

**FOR MORE INFORMATION**

[www.secnav.navy.mil/eie/pages/pfc-pfas.aspx](http://www.secnav.navy.mil/eie/pages/pfc-pfas.aspx)

The Navy has established the following website to keep you updated as more information becomes available:  
<http://go.usa.gov/xkMBc>

You may schedule drinking water sampling for your residence by leaving a voicemail at 360-396-1030 or by sending an email to [PAO\\_feedback@navy.mil](mailto:PAO_feedback@navy.mil).



**Naval Air Station Whidbey Island Area 6**

**Groundwater and Drinking Water Investigation**

The Department of the Navy is conducting a groundwater and drinking water investigation around Naval Air Station Whidbey Island's Ault Field Area 6 Landfill as a precautionary measure to reduce exposure of nearby residents to vinyl chloride, 1,4-dioxane, and per- and polyfluoroalkyl substances (commonly known as PFAS). Additionally, this investigation will help determine the extent of these compounds in groundwater near Area 6.

The Area 6 Landfill was a Navy disposal site from the 1960s to 1990s for industrial (Former Industrial Waste Disposal Area) and household wastes (Navy Municipal Landfill). A remedial investigation performed under the Comprehensive Environmental Response, Compensation, and Liability Act (aka Superfund) determined that past disposal practices resulted in the leaching of contaminants to the groundwater. In 1996, the Navy capped the landfill and installed a groundwater treatment system for volatile organic compounds, such as trichloroethene and vinyl chloride. Due to the potential for the Area 6 contamination to migrate off-base into private drinking water wells, in 1995/1996, the Navy connected nine residences/businesses downgradient from the Area 6 Landfill to the City of Oak Harbor's water system as a protective measure. From 1996 to present, the Navy has continued to monitor contamination and operate the groundwater treatment system.

In 2010, the State of Washington began regulating 1,4-dioxane. Because 1,4-dioxane was not a known or regulated contaminant in the 1990s, the groundwater treatment system was not designed to treat it. The Navy identified 1,4-dioxane in on-base groundwater and expanded its monitoring program to include this chemical. Groundwater monitoring has identified that both 1,4-dioxane and vinyl chloride have migrated off-base (see Figure 2).

To comply with a proactive Navy policy to identify and mitigate the potential for exposure to PFAS, the Navy

Figure 1



sampled for and detected PFAS in on-base groundwater at Area 6 in December 2017.

Since drinking water sources off-base may have been impacted by past disposal practices at the Area 6 Landfill, the Navy's next step is to sample water wells downgradient from Area 6. The Navy is working closely with the Environmental Protection Agency (EPA) Region 10, the Agency for Toxic Substances and Disease Registry Region 10, the Washington State Department of Ecology, the Washington State Department of Health, and Island County Public Health to assess the potential releases and the impact to drinking water near Area 6. The Navy will continue to work with these agencies to protect public health.

**If your preliminary results show that your drinking water contains vinyl chloride, 1,4-dioxane, PFOS, and/or PFOA above the action levels, the Navy will provide bottled water or an alternate water supply until a long-term solution is implemented.**

**BACKGROUND**

PFAS are manufactured chemicals that have been used since the 1950s in many household and industrial products because of their stain- and water-repellant properties (for example, upholstered furniture, carpet, nonstick cookware, floor wax, and the lining of microwave popcorn bags). PFAS are now widespread in the world and in people. Once these compounds are released to the environment, they remain there for a long time.

PFAS are a type of “emerging contaminant,” which is a chemical or material characterized by a perceived, potential, or real threat to human health or the environment, or by a lack of published health standards. PFAS have no Safe Drinking Water Act regulatory standards or routine water quality testing requirements. The EPA continues to study PFAS to determine if regulation is needed.

In May 2016, the EPA announced lifetime health advisory (LHA) levels for two PFAS, specifically perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). Health advisory levels are not regulatory standards; they are health-based concentrations which should offer a margin of protection for all Americans throughout their life from adverse health effects resulting from exposure to PFOS and PFOA in drinking water. The EPA LHA is 70 parts per trillion (ppt) for PFOS and/or 70 ppt for PFOA, individually or combined. The EPA LHA for PFOS/PFOA is the action level the Navy will use for the drinking water investigation for Area 6. The drinking water investigation for Area 6 is focused on PFOS and PFOA because these are the only PFAS for which the EPA has established an LHA level in drinking water; however, other PFAS compounds will also be analyzed for informational purposes.

**Vinyl chloride** is used in the production of polyvinyl chloride (a material used to manufacture a variety of plastic and vinyl products including pipes, wire and cable coatings, and packaging materials); has been used in the past as a refrigerant; has been used in smaller amounts in furniture and automobile upholstery, wall coverings, housewares, and automotive parts; and can be created in the environment when certain chlorinated solvents, such as trichloroethene, break down. The EPA has established an enforceable regulatory standard under the Safe Drinking Water Act – a maximum contaminant level (MCL) of 2 parts per billion (ppb) for vinyl chloride in drinking water, which the Navy will use as the action level for this investigation. An MCL is a legal threshold limit that is selected to balance protection of public health with the ability to analyze small quantities of a substance and technological and economical practicality of treatment.

Figure 2



**Legend**

- Monitoring well
- Vinyl chloride groundwater plume (≥ 0.10 ppb)
- 1,4-Dioxane isoconcentration contour (≥0.44 ppb)
- Approximate groundwater flow direction
- Area 6 boundary
- Base boundary

**Well labels**

Well Name		
Vinyl chloride (ppb)	PFOS (ppt)	
1,4-Dioxane (ppb)	PFOA (ppt)	

Exceedances of the vinyl chloride, 1,4-dioxane, PFOS, and PFOA drinking water action levels are shown in red.

**Notes:**

1. NA = not analyzed
2. ND = non detection
3. Data shown on map is from 2017, with exception of results at 6-S-44 (2014).

**1,4-Dioxane** is used in many products, including paint strippers, dyes, greases, varnishes, and waxes; is found as an impurity in antifreeze and aircraft deicing fluids and in some consumer products (deodorants, shampoos, and cosmetics); is used as a purifying agent in the manufacture of pharmaceuticals; and is a by-product in the manufacture of plastics. 1,4-Dioxane has been used as a stabilizer for certain chlorinated solvents. The EPA has not set an enforceable MCL for 1,4-dioxane. The Navy is adopting an action level of 35 ppb, which is based on an EPA risk-based value for tap water.

**AREA 6 ON-BASE PFAS SAMPLING**

In December 2017, the Navy conducted a limited sampling event at Area 6 to evaluate the presence of PFOS and/or PFOA in the aquifer system. This included collecting/analyzing samples from 13 groundwater monitoring wells and the groundwater treatment system (influent/effluent). The results indicate PFOS was detected at 2 of the 13 groundwater monitoring wells sampled (6-S-26 and 6-S-31; see Figure 2 for well locations and preliminary results) at concentrations below the EPA LHA. PFOA was detected at 10 of the 13 groundwater monitoring wells sampled. Of the detected PFOA results, the concentration at one well (6-S-44, located at the former industrial waste disposal area) was above the EPA LHA. PFOA was also detected in both the groundwater treatment system influent and effluent at concentrations below the EPA LHA. PFOS was not detected in the groundwater treatment system samples.

**NEXT STEPS**

Based on these PFAS results and previous sample results for vinyl chloride and 1,4-dioxane, the Navy is requesting access to sample water wells that may be impacted by vinyl chloride, 1,4-dioxane, PFOS, and/or PFOA. The off-base sampling area includes parcels within ½ mile in the direction of groundwater flow to the south and parcels within ½ mile of the western Area 6 boundary. If you do not have a well on your property and receive water from the City of Oak Harbor, please let us know. The City of Oak Harbor's drinking water supply comes from the Skagit River in Anacortes, Washington, and is not part of this investigation.

The Navy encourages you to schedule sampling of your well by leaving a voicemail at 360-396-1030, or by emailing the Navy's Public Affairs Office at PAO\_feedback@navy.mil. If your property is within the designated sampling area and a water well is not present on your property, we would like you to confirm that information by contacting the Navy at the phone number or email address above.