

Naval Base San Diego: Steward of the Seas and Environment

As the U.S. Navy's primary surface force installation in the Pacific, Naval Base San Diego (NBSD) is the largest employer in the sixth largest city in the United States (NAVFAC Environmental Team). Spanning 1,600 land acres and 326 water acres, NBSD is homeport to more than 60 ships (Popaditch). The facility has been operational since 1922 and mainly serves to maintain vessels and train sailors (Popaditch). With over 38,000 personnel walking through its doors every day, the base is like a small city in itself, complete with a federal fire department, public works department, and utilities department (Popaditch). Prominent among all the working pieces of the base is the Environmental Management System. Its work shows that Naval Base San Diego is not just a protector of the motherland; it is a protector of Mother Earth.

The national security industry as a whole has often struggled with protecting the environment through pollution prevention (P2). Statistics on lead pollution are evidence of this.

Lead, a neurotoxin, is regulated by the Environmental Protection Agency (EPA) through the Clean Air Act and the Resource Conservation and Recovery Act ("Lead Laws"). Lead pollution is reported to the EPA through the Toxics Release Inventory (TRI), which was created by Section 313 of the Emergency Planning and Community Right-to-Know Act ("Toxics Release"). The TRI has four categories to classify P2: Released, Treated, Energy Recovery, and Recycled. Recycled is the most environmentally friendly, while Released is the least environmentally friendly.

In 2021, the national security industry as a whole recycled only 33.11% of its lead waste while releasing 66.89% of it (Production Related). This is a cause for concern given that the total amount of lead waste coming from the industry is 1.39 million pounds (Production Related).

In contrast, NBSD recycled 99.9% of its lead in 2021 (Production Related). Since 2018, the base has steadily decreased the proportion of lead waste that it releases. NBSD released 6.35% of its lead waste in 2018, 3.73% of its lead waste in 2019, 0.41% of its lead waste in 2020, and 0.1% of its lead waste in 2021 (Production Related).

So how did NBSD get here? Its main source of lead waste was lead-acid batteries, which are used in naval aircraft to perform engine starts and provide emergency power (Popaditch). Instead of being disposed of, these batteries are now sent to 29 Palms, the largest United States marine corps base, where they are recycled (Popaditch).

Another source of lead pollution was the indoor shooting range at the base (Popaditch). Shooting firearms with lead bullets creates airborne lead in the gun smoke (Popaditch). Lead bullet fragmentation can also cause exposure to the neurotoxin (*Protecting Workers*). After an unsafe lead exposure was reported at a shooting range in nearby Naval Amphibious Base Coronado, NBSD leadership prioritized protecting the personnel at their own range (Kastner). They updated the HVAC (heating, ventilation, and air conditioning) system to adequately remove airborne lead particles (Popaditch). Additionally, they now use HEPA (high-efficiency particulate absorbing) filters in the ventilation exhaust system to prevent lead from entering the outside environment (Popaditch).

One of the most common sources of lead is dust and chips from old paint (“Sources of Lead”). A single naval carrier needs about 4 million gallons of paint to be completely covered (McCabe). To reduce the amount of lead coming from old paint, NBSD has reduced the amount of paint needed to cover a ship. More and more of the ships docked in the last few years are tri-hull ships, ships with the traditional “V” hull and additional outside hulls (Popaditch). Over time, this type of ship requires fewer coats of paint (Popaditch).

The positive impact of lead pollution prevention efforts can't be overstated. One program that NBSD takes a lot of pride in is its Child Development Center, which offers free childcare for military children between the ages of 6 weeks and 5 months ("Child Development"). Childhood lead exposure is particularly dangerous as early exposure to lead can cause permanent damage to the brain, slowed growth, and long-lasting behavioral problems ("Prevent Children's"). NBSD's environmental team checks every single faucet in each of their child development centers every five years to make sure that their lead abatement efforts are successful in keeping the next generation safe (Popaditch).

When it comes to keeping children away from lead, NBSD is even ahead of California public schools. While NBSD has been regularly checking its faucets since before 2016, a state law requiring schools across California to have their faucets tested for lead wasn't passed until 2017 (Fensterwald).

NBSD doesn't just stop at lead pollution prevention, however. They have taken significant steps to reduce air pollution as well.

At the forefront of its strategies to improve air quality is cold ironing, the practice of providing shoreside electrical power to a docked ship while its engines are turned off (Popaditch). Even when they are docked at a port, naval ships continue to use a significant amount of power; their energy needs are roughly equivalent to the energy consumption of 18,000 residential homes (Scorza). Historically, that power has come from keeping ship engines, which run on diesel, on.

This is a problem considering that diesel fuel emits nitrogen dioxide (NO₂). After nitrogen dioxide is released into the atmosphere, sunlight breaks it into nitrogen monoxide (NO) and an oxygen atom (O) ("Ground-level Ozone"). The free oxygen atom is very reactive and

wants to bind with something, so it binds with an oxygen molecule (O₂) and forms ozone (O₃) (“Ground-level Ozone”). Although ozone is needed in the stratosphere to protect us from ultraviolet radiation, it is dangerous in the troposphere, the layer of the atmosphere closest to us (“Ground-level Ozone”). Ozone is a respiratory irritant for humans as it worsens bronchitis and asthma and can lead to Chronic Obstructive Pulmonary Disease (“Health Effects”). This is why ozone and nitrogen dioxide are regulated as “criteria” pollutants under the Clean Air Act (“Criteria Pollutants”).

NBSD has significantly reduced the amount of NO₂ emissions by connecting the ships to the San Diego electric grid, which derives 40% of its power from renewable sources and most of the rest of its power from natural gas, which produces NO₂ at much lower levels than diesel (“Environment: Our Commitment”).

Air pollution is something NBSD takes very seriously because of the impact it has on neighboring communities. The residential areas next to the base are collectively known as the Portside Community (“Portside Environmental”). They include Barrio Logan, Logan Heights, Sherman Heights, and National City (Popaditch). California State Assembly Bill 617, an act to amend the California Health and Safety Code, identifies “disadvantaged communities,” areas with high pollutant exposures and health risks (California State, Legislature, Assembly). One of the “disadvantaged communities” is Barrio Logan (Popaditch). Barrio Logan's rate of asthma-related hospital visits is higher than 92.9 percent of census tracts throughout the state, with about 81 visits per 10,000 people (“Portside Environmental”).

As a good neighbor, NBSD is currently working on building an air monitoring station in its facility to detect pollution in neighboring communities (Popaditch). Harbor Drive splits the wet and dry sides of the main base (Popaditch). NBSD is looking to install the station right along

Harbor Drive because prevailing winds push towards National City and the rest of the Portside Community where the ocean meets land (Popaditch). If there is any toxic air coming from the base or another source, the air monitoring station will be able to get a good snapshot of it (Popaditch).

The primary task of the U.S. Navy is to keep the waters safe, and by no means has the importance of water been lost when it comes to pollution prevention efforts.

Bilge water is the water found low in the machinery spaces of most ships and is generated by the various activities that keep a ship running while at sea ("Bilge Water"). Oils, lubricants, coolants, and fuels from the ship's equipment can end up suspended in the bilge water ("Bilge Water"). If dumped into the ocean, the oil from the bilge water can be a threat to the organisms in a marine ecosystem ("How Does"). Naval Base San Diego prevents its ships from dumping oily water into the ocean by offering the services of its Bilge Oily Waste Treatment System (Popaditch). The system separates the oil from the water, tests the water for any lead, and then sends the safe water to the San Diego sewer system (Popaditch). But where does the oil that is taken out go? NBSD has found a way to recycle that as well. In previous years, the Bilge Oily Waste Treatment System has processed nearly 10 million gallons of bilge water and recovered 528,000 gallons of oil, which are used to make NBSD completely self-sufficient (NAVFAC Environmental Team).

Chollas Creek is a creek that runs through the city of San Diego and empties into San Diego Bay. NBSD has set up trash capture booms at the mouth of the creek to remove the significant amount of city trash that accumulates there (NAVFAC Environmental Team). In January of 2023 alone, they removed 162,000 pounds of trash from the creek (Popaditch). Despite not being obligated to do so, NBSD prevents ocean pollution.

Lead, air, and water pollution prevention efforts all culminate in wide-ranging positive impacts. Lead pollution prevention keeps the military community safe by prioritizing the health of those practicing on shooting ranges and protecting the children that very well may be future Navy sailors. Air pollution prevention efforts keep the nearby Portside Community safe by mitigating the risk of asthma and improving the quality of life of the thousands of people who live there. Water pollution prevention benefits the larger San Diego population as it keeps the San Diego Bay, which is used for recreational purposes like fishing and boating, clean.

Because of the service it has done to its community through P2 efforts, NBSD earned the Secretary of the Navy's Environmental Award in 2021 (Jackson).

Yet, despite the accolades it has received, Naval Base San Diego has a bad reputation among many in the Portside Community because they believe emissions from vessels are polluting their home. At a Día de los Muertos event in National City last year, a man walked up to an NBSD booth manned by the environmental team and said, "What's the Navy messing up now?" (Popaditch).

However, after the environmental team explained NBSD's efforts to reduce lead, water, and air pollution, the man was pleased and said he was proud to be living in the vicinity of such a responsible institution (Popaditch).

Over time, the environmental team at NBSD has found that residents of the Portside Community have a negative perception of the base simply because they are not aware of its environmental strides. In order to mitigate misconceptions, NBSD has increased environmentally-focused outreach events. The "Green Team" hosts an environmental booth at community events providing displays highlighting NBSD's positive impact on the environment (NAVFAC Environmental Team). In recent years, their exhibits have been seen at the USS

Midway Museum, the Miramar Air Show, the San Diego County Fair, the Balboa Park EarthFair, and many other prominent public gatherings in San Diego (NAVFAC Environmental Team).

Successful pollution prevention at Naval Base San Diego can be attributed to the drive of the hardworking members of the environmental team. They include Environmental Compliance Branch Manager Mr. Nick Popadich, Air Quality Program Manager Ms. Samantha Lui, and Public Affairs Officer Ms. Krishna Jackson. Mr. Mark Edson, the NBSD Environmental Program Manager, said, “I was always impressed with my staff stepping up to do what needed to be done to support this mission. If it required 24-hour support or weekends, the staff was always there to support” (Jackson).

The key to NBSD’s motivation to prevent pollution is how they treat protecting the environment as a duty. A duty comparable to their duty of keeping the country safe. Retired Admiral Jonathan Greenert, the former Chief of Naval Operations, put it best when he said, “Stewardship...means the trust of citizens - the voters - and the people that we’re supposed to be providing security for...to be sure that they know that their Department of Defense, and in this case the Navy, is supporting the environment” (NAVFAC Environmental Team).

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