



FACT SHEET Hunters Point Naval Shipyard

Strontium-90 Method at HPNS

August 2024



Introduction

In late 2017, the Navy found past radiological data to be unreliable and had to revisit and retest several areas. Learn more about Hunters Point Naval Shipyard (HPNS) radiological retesting on the Radiological pages of the Navy’s website:

www.bracpmo.navy.mil/hpns.

Since 2020, the Navy has been collecting new radiological data to ensure cleanup is protective of public health and the environment. This included soil samples from trench excavations, soil borings, and within, around, and under former building areas. The soil investigation at Parcel G faced particular challenges in testing for strontium-90 (Sr-90).

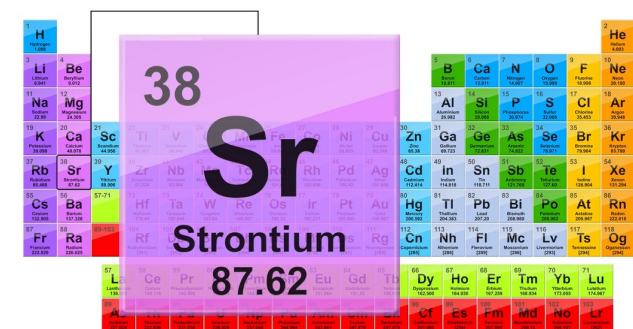
In this fact sheet and an upcoming video, we will share how the Navy investigated the issue and worked with regulatory agencies to ensure health protectiveness for the people who work on and live near HPNS.

What is strontium?

Strontium (Sr) is a naturally occurring element with several radioactive forms. The most familiar is Sr-90. It comes from nuclear fission, a process that occurs in both nuclear reactors and nuclear weapons.

Identifying Sr-90 is challenging, especially in complex samples such as soil. In soil, radiation from naturally occurring radioactive atoms can look very similar to those found in Sr-90.

Sr-90 is one of the radionuclides the Navy is measuring as part of the radiological retesting at HPNS. Sr concentration levels at HPNS are very low – within the Bay Area’s “background” levels or general radioactivity that is present across the region and not due to Navy activities.



Key Events in Sr-90 Testing at HPNS

1950s-1960s: Atmospheric Nuclear Testing and Ship Maintenance

- Nuclear weapons testing dispersed Sr-90 in the environment
- Maintenance and cleaning at HPNS of ships exposed to atomic weapons testing
- Operation of Naval Radiological Defense Laboratory (1948-1969)

1970’s-2000’s

- Navy ceases operations (1974)
- After leasing space to a private company for several years, Navy closes all property operations; HPNS added to Navy Base Realignment and Closure (BRAC) Program (1986)
- Environmental investigations and cleanup begin

2009: HPNS Parcel G Record of Decision (ROD)

- Established Sr-90 cleanup level at 0.331 picocuries per gram (pCi/g)

2017: Evaluation of Past Radiological Data

- Navy and EPA found past radiological data unreliable; agreed to collect new samples

2020: Collection and Testing of New Data

- Navy soil sample collection began at Parcel G using EPA Method 905 (Sep 2020); agencies began collecting independent samples

2021: Discovery and Investigation of Elevated Sr-90 Levels

- Navy observed elevated Sr-90 results using EPA Method 905; results were inconsistent and could not be reproduced; identified a high potential for false positive results
- Analyzed 950 samples using Eichrom Method for Sr-90 (Nov 2021 to Mar 2022); discussed alternatives with regulatory agencies
- Identified interference from natural elements affecting Sr-90 results; informed agencies

2022: Additional Investigation, Validation Studies

- Reanalyzed more than 1,000 samples using Eichrom Method for Total Beta Strontium (TBS): includes Sr-90 and other Sr isotopes (Mar 2022—Jul 2022)
- Conducted validation studies on Eichrom Method; shared results with agencies

2023: Method Verification Studies and Approval

- Conducted laboratory method verification studies on all methods; confirmed Eichrom Method for TBS reliability and accuracy; continued communication with regulatory agencies

Ensuring Accurate Testing for Sr-90

Addressing Inconsistent Test Results

Beginning in 2021, Navy chemists observed inconsistent results when testing Parcel G soil samples for Sr-90 using the initial standard laboratory method, EPA Method 905. This method failed to produce consistent results upon reanalysis of the same sample.

Collaborative Efforts with Regulatory Agencies

Due to concerns about accuracy, the Navy collaborated with the United States Environmental Protection Agency, California Department of Toxic Substances Control, and California Department of Public Health to identify an alternate method to detect Sr-90 at very low levels with the precision required for decision-making. The Eichrom Method for TBS analyzes for all Sr in in soil samples. It has been shown to be reliable and accurate for the low Sr-90 concentration levels established for remedial goals (RGs) at HPNS.

Comparing Test Results to Safety Standards

The Parcel G ROD several radionuclides of concern (ROCs) at HPNS. The RG for Sr-90 at 0.331 pCi/g. This goal is more than 10 times lower than the typical regulatory standard, and when combined with other ROCs, it ensures protectiveness of human health and the environment.

Using the validated and verified Eichrom Method for TBS, the Navy is able to accurately and reliably detect low levels of Sr-90 in soil samples. By following this standard, the Navy ensures that the cleanup at HPNS goes beyond regulatory requirements, offering extra protection to human health and the environment.

Commitment to Environmental Cleanup

The Navy is dedicated to the environmental cleanup at HPNS. Scientific testing helps identify areas of contamination that could pose a risk to public health or the environment. Using the Eichrom Method for TBS, no Sr-90 levels above the RG have been detected in more than 1,000 soil samples from Parcel G. The Navy's findings will be verified against independent samples analyzed by federal and state regulatory agencies, ensuring accuracy and transparency in the cleanup process.

Ongoing Efforts and Community Updates

The Navy continues methodical and detailed cleanup and retesting on Parcel G and throughout HPNS to address all contamination, both radiological and chemical. The Navy will continue to keep the community informed about ongoing environmental cleanup and retesting efforts. Information and updates are available at www.bracpmo.navy.mil/hpns.

Evaluation of Sr-90 Methods for Soil Sample Analysis

| Feature | EPA Method 905 | Eichrom Method for TBS |
|---|---|---|
| Rationale for Choice | Well-established, commonly used method with historical reliability and accuracy | Offers more accurate and consistent results; lower uncertainty and better for decision-making |
| Accuracy & Reliability | High, but with issues of variability and false positives at very low concentrations | Very high; consistent results and low uncertainty at very low concentrations |
| Results of Laboratory Validation Analysis | Generally not reliable for either TBS or Sr-90 at very low concentrations | Reliable; selected as preferred method for very low concentrations |

Scan the QR code for HPNS resources



- Join the mailing list
- Link to the Navy website
- Register for guided bus tours

有关海军在猎人角海军造船厂的清理活动方案的更多信息，请拨打 (833) 350-6222 并留言。

Para más información sobre el programa de limpieza de la Marina en Hunters Point Naval Shipyard, favor de dejar un mensaje en (833) 202-5888.

www.bracpmo.navy.mil/hpns

info@sfhpns.com

(415) 295-4742