Department of the Navy
Base Realignment and Closure (BRAC)

HPNS Hunters Point Naval Shipyard

Poster Session Meeting

Welcome to the Navy's Poster Session on radiological cleanup at Hunters Point Naval Shipyard (HPNS).

Subject matter experts are available at each poster station to answer your questions regarding the Navy's radiological cleanup activities at HPNS.

Aerial View of Hunters Point Naval Shipyard

TONIGHT'S GOALS

- To hear your concerns and comments and answer questions
- To present information on radiation and answer your questions about radiological cleanup activities at HPNS
- To present information on historical radiological findings at HPNS
- To describe how the Navy cleans up and disposes of radiological contamination
- To provide current information on the HPNS Radiological Cleanup Program
- To explain how the Navy ensures public safety during the cleanup process

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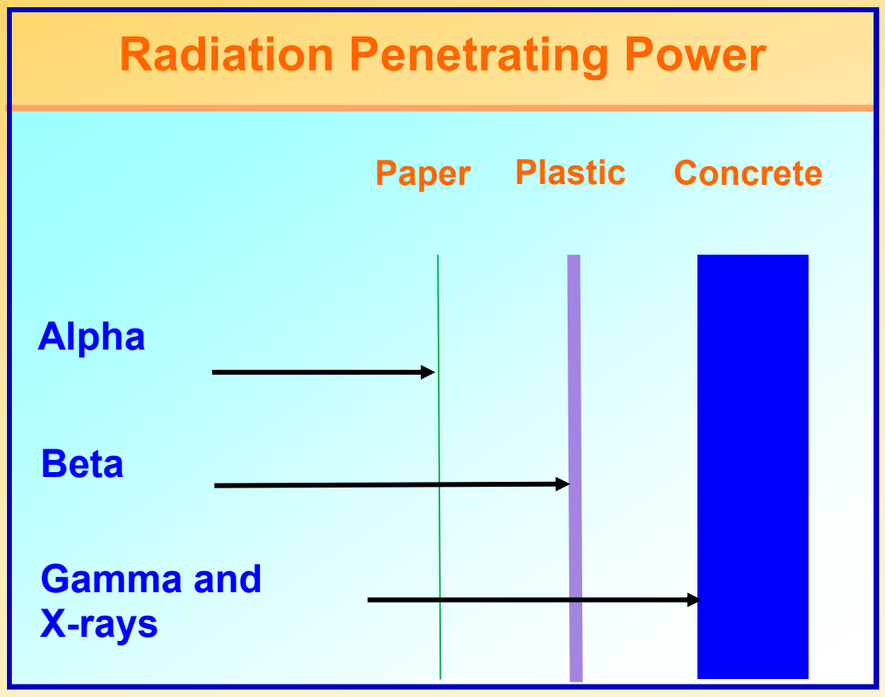
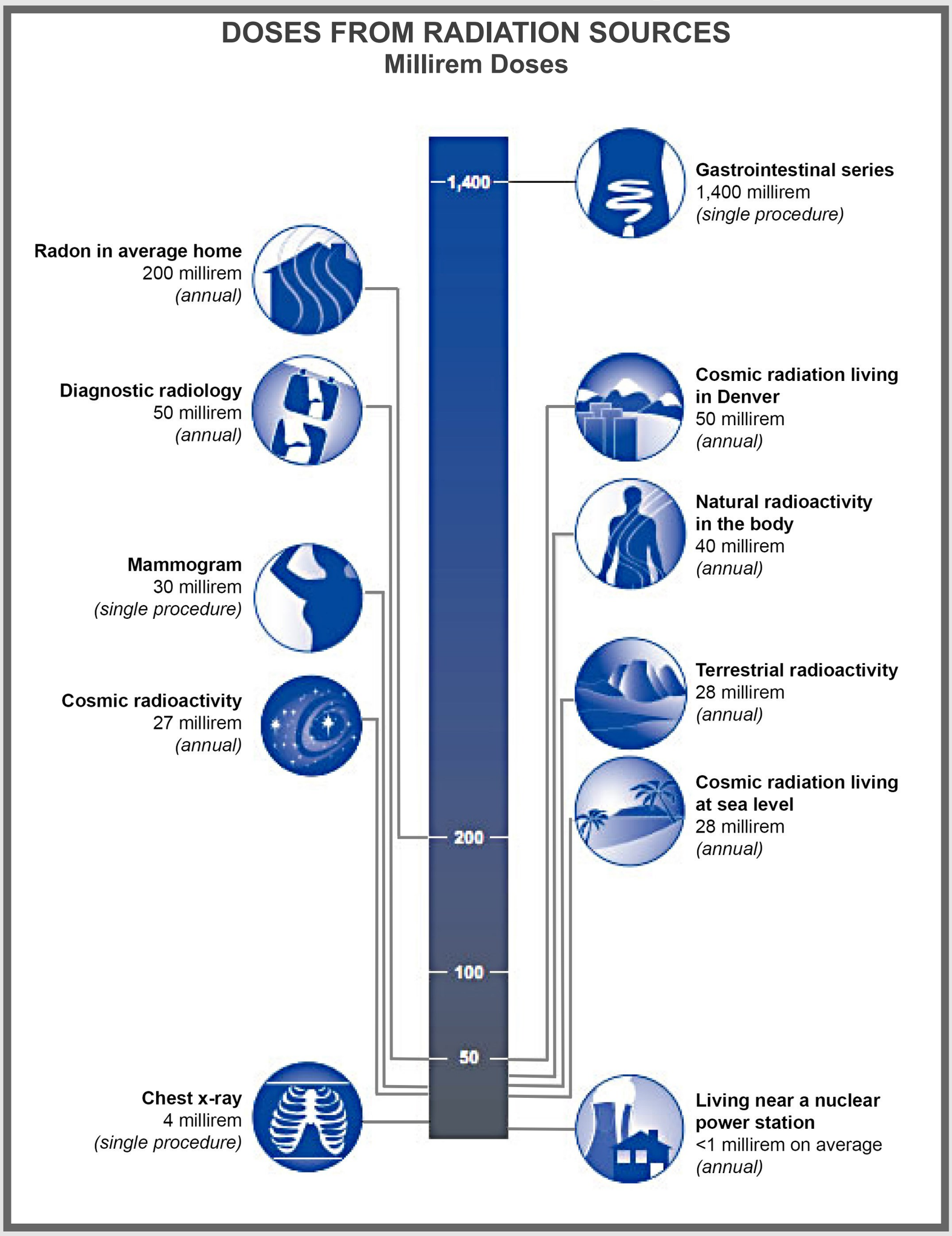
Understanding Radiation

What is radiation?

- Radiation is energy given off by atoms
- You cannot see, smell, or taste radiation
- Everyone is exposed to radiation every day from natural and man-made sources (like medical X-rays or smoke detectors)
- There are three types of radiation
  - ⇒Alpha
  - ⇒Beta
  - ⇒Gamma



How are we exposed to radiation?



Radiation is naturally present all around us.

The Earth contains radioactive materials naturally occurring in soils (uranium and thorium), rock formations (radon gas), and potassium.

The foods we eat contain radioactive materials. Potassium is present in bananas, sea salt, red meat, and beer. Brazil nuts contain potassium, thorium and uranium.

Radiation is also present in some of the man-made sources listed below: cigarettes, ceramics and granite materials, medical procedures, and microwave ovens.

HPNS Radiation Sources and Locations

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Hunters Point Naval Shipyard (HPNS) provided critical ship maintenance to the Pacific Fleet during both World War I and World War II. Services included ship repair, maintenance, decontamination, and disposal of radioactive equipment, which included items like radioluminescent (glow-in-the-dark) deck markers, dials or paint, and gauges.

The Naval Radiological Defense Laboratory (NRDL) conducted research at HPNS on the effects of radiation from 1948 to 1969. The NRDL's mission was to study the potential hazards of radiation and develop the means of preventing or minimizing its harmful effects.

Historical Sources of Radiation

- Radium was used to cause items to glow in the dark and accounts for 99% of the radiological contamination found at HPNS
- Strontium and Cesium were used at HPNS in the decontamination of ships that participated in OPERATION CROSSROADS weapons tests and during research performed by the NRDL
- Strontium and radium were used in radioluminescent deck markers that glow in the dark

Concrete, soil, and sediment at HPNS have been tested for radiation

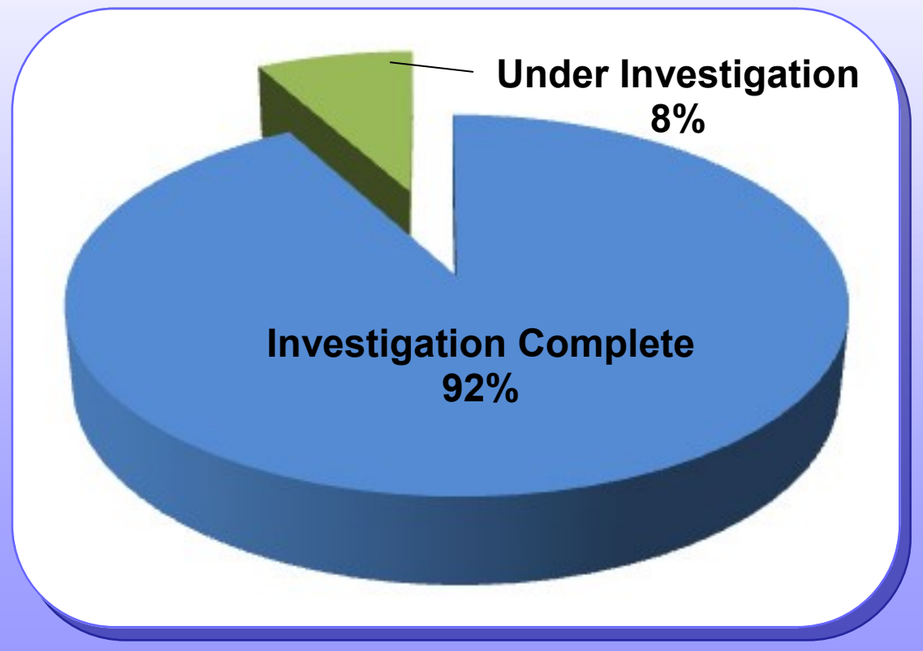
Sanitary sewer and storm drain pipelines and trenches have been investigated for radiation

Buildings have been scanned for radiation

A **Historical Radiological Assessment (HRA)** was issued in 2004 and provides a thorough evaluation of historical radiological operations and activities at HPNS. The HRA identified 91 sites/areas with potential radiological contamination.

Some of the largest areas identified as being impacted with radiological materials include:

- Buildings associated with the NRDL activities or buildings associated with radium paint application
- Sanitary sewer and storm drain lines
- Former disposal or burial areas
- Piers or ship berths used after OPERATION CROSSROADS



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Radiological Cleanup Process

Soil Sampling

Sanitary Sewer/Storm Drain Line Removal

Confirmation Scans in Buildings

INVESTIGATE

Scoping or Characterization Surveys	♦ Surface scans of soil, building surfaces, and cement/asphalt using hand-held instruments and monitors ♦ Soil sampling (both random and biased) ♦ Swipes to identify loose contamination on surfaces (dust)

REMEDIATE

Excavation / Off-site Disposal and/or Soil Cover	♦ The majority of sanitary sewer and storm drain lines and surrounding soil are being excavated and disposed of off-site ♦ Surface contamination on concrete floors and walls inside buildings is removed by mechanical scraping and/or excavation and taken off-site for disposal ♦ Contain in-place is required in a limited number of areas where low levels of contamination will remain after cleanup; these areas will be covered by several feet of clean soil and/or land use controls to prevent future contact

CONFIRM

Confirmation Sampling / Surveying Results and Development of Reports Documenting the Findings	♦ Resampling/surveys to confirm removal of contamination ♦ Review/confirmation of field data and procedures by the Navy ♦ Concurrence with State Regulatory Agencies throughout the process, including collection of independent confirmation samples

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Extent of Radiological Cleanup

The Navy continues to conduct thorough investigations of areas that were identified in the Historical Radiological Assessment (HRA) as being potentially contaminated with radiological compounds.

Building Investigations

- 420 units (investigation areas) surveyed
- 33 of the 420 units required remediation

8% (about 80 square feet) of surveyed units required remediation

Sanitary Sewer and Storm Drain Line Investigations

- 28 miles of pipe have been removed

2% of piping required disposal as radioactive waste

Soil Investigations

- Approximately 300,000 cubic yards of soil has been excavated and tested from around the sewer and storm drain lines

5% of soil required disposal as radioactive waste

A clean soil cover was installed and planted at IR-7/18 as a contain in-place remedy

Contain in-Place

In some cases, the Navy uses radiological controls such as covers (containment) and/or land use controls to prevent people from coming into contact with low-level radiological contamination that cannot be removed.

The contain in-place site remedy has been selected at Installation Restoration (IR) Sites 01/21, IR-02, and IR-7/18 and includes a clean soil cover which will be managed long-term. These sites will obtain "Restricted Release," which means that certain land uses (e.g., residential) and activities (e.g., digging below certain depths) will be restricted at the site to ensure the contain in-place remedy remains protective.

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Radiation Management and Disposal

Radiological waste is sealed in hard top-covered, water-tight steel bins

- Bins are prepared for storage and transportation to disposal sites outside of California* that are licensed to accept this waste
- Bins are properly marked and labeled stating they contain radioactive material
- Strict U.S. Department of Transportation (DOT) regulations for transportation of radioactive material are followed

- More than 4,300 bins of low-level radiological waste (soil, piping, and construction debris) have been removed from Hunters Point Naval Shipyard

**State policy does not allow radiological waste to be disposed of in California.*

Standard Protocol for Radiation Management and Disposal

Following removal of sanitary sewer and storm drain lines, piping is inspected for radioactive contamination and, if found, placed in sealed bins for disposal.

Buildings are scanned for radiation contamination. Impacted areas are remediated and radioactive waste is stored in sealed bins until they are transported off-site.

Soil in identified areas is tested for radioactive contamination. Radiologically contaminated soil is excavated and disposed of in properly marked disposal bins.

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Protecting the Public

The Navy has several on-site controls and procedures in place at Hunters Point Naval Shipyard (HPNS) to ensure public safety.

Establishing Radiologically Controlled Areas

Public access to all work areas is restricted and only specially trained personnel are permitted to access radiological controlled work areas

Utilization of a Portal Monitor to Screen Trucks for Radiation

Trucks entering and leaving HPNS must pass through a portal monitor which screens for radiation

Conducting Air Monitoring

The Navy monitors for both particulates and radiological contamination with on-site air monitors

Implementation of Dust Control Measures

Dust is controlled to contain contamination within the restricted areas

Comprehensive Evaluation

The Navy follows a carefully designed plan at HPNS that ensures effective cleanup in a time-sensitive manner with public safety as a priority.

The California Department of Public Health collects its own confirmation samples from radiological cleanup sites for independent verification.

Multiple agencies participate in the radiological investigations and remediation at HPNS.

United States Navy
Naval Facilities
Engineering Command
Base Realignment
and Closure (BRAC)

United States Navy
Radiological Affairs
Support Office (RASO)

United States Environmental Protection Agency (USEPA)

United States Nuclear Regulatory Commission (USNRC)

California Department of Public Health (CDPH)

California Department of Toxic Substances Control (DTSC)