



CALIFORNIA DEPARTMENT OF PUBLIC HEALTH
Division of Radiation Safety and Environmental Management
Radiologic Health Branch
Radiological Assessment Unit
P. O. Box 997414, MS 7610
Sacramento, California 95899-7414

**HUNTERS POINT NAVAL SHIPYARD
RESIDENTIAL DUST SURVEY
AUGUST 6, 2019**



Disclaimer

This report was prepared as an account of work sponsored by an agency of the California State Government. Neither the California State Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference to any specific commercial product, process or service by trade name, trademark, manufacturer, or otherwise, in this publication is for illustration purposes and does not constitute or imply endorsement or recommendation for use by the State of California.

All maps and some graphs and graphics in this report are intended for multi-color presentation, evaluation and interpretation. Black and white printing and/or photocopying may lead to a misinterpretation of the data presented.



Contents

Cover Sheet	1
Disclaimer	2
Report Summary	4
Introduction.....	4
Purpose	4
Survey Location	4
Survey Units	5
Swipe Survey Procedure.....	5
Survey Technique	5
Counting Technique	6
Results	6
Dust Swipe Results	6
Reporting and Understanding the Results	7

Report Summary

The Radiological Health Branch (RHB) of the California Department of Public Health (CDPH) conducted a dust survey of some residences and art studios on Parcel A-1 of Hunters Point early this year. The survey did not find dust particles contaminated with alpha or beta radiation and did not find any radiation or health and safety risk to the residents and artists. In the 77 survey units that CDPH completed, none of the dust swipe results were above the trigger level (MDA) for either alpha or beta radiation that would require additional investigation.

Introduction

Purpose

The RHB was requested by some of the residents of Hunters Point to perform a dust survey of their homes and of the art studios. These residents and artists have concern that dust contaminated from previous radiological work performed by the Navy at Hunters Point Naval Shipyard may have been blown into their homes or the art studios. To ensure the health and safety of the residents at Hunters Point, RHB performed dust surveys for alpha and beta radiation in the homes and studios in areas where outside dust would most likely collect (i.e., window sills, HVAC Vents).

Survey Location

Hunters Point is located in South San Francisco, California (see figure 1). Parcel A was transferred from the Department of the Navy to the city of San Francisco in 2004. It is approximately 75 acres in size and has been divided into two parcels: A-1 and A-2. Parcel A-1 was then developed for residential use that included townhomes and condominiums. The residences and artist studios surveyed in this report are in parcel A-1 (see figure 2).



Figure 1: Location of Hunters Point in San Francisco



Figure 2: Aerial view of Parcel A1 with buildings surveyed

Survey Units

Each home or artist studio was classified as a survey unit. Three 100 square centimeter (cm) swipes were performed in each unit. The swipes were normally on the window sills, but other areas could be used at the resident/artist request.

Swipe Survey Procedure

Survey Technique

RHB, in coordination with the Hunters Point Shipyard Home Owners Association (HOA), provided the residents and artists of Hunters Point Parcel A-1 a sign-up list where they could register to have their homes or studios surveyed for radiological contamination in dust. From this list, a time schedule was established for the date and time RHB would survey the home or studio in agreement with the resident or artist. At the designated time, the survey team would perform three dust swipe surveys on the window sills or other areas selected by the resident. The survey period ran from February 27 to April 4, 2019.

A template measuring 4 cm x 25 cm was used for the swipe survey. The template was placed on the window sill and the open area of the template was then swiped with a filter paper (Whatman 41 or equivalent). The swipe was then placed in a glassine envelope and then in a plastic bag for the survey unit (resident). The survey process was then repeated for the remaining swipes. After each resident or studio block was completed, a chain of custody form was attached to the collected bags of samples.

The trigger level established to determine swipe results was the Minimum Detectable Activity (MDA) for the 3030P counter for each day.



Counting Technique

Swipe counting was performed with a Ludlum Model 3030P Alpha/Beta Sample Counter. The 3030P counter uses a solid-state silicon detector. The 3030P has a digital readout in both alpha counts and beta counts. (Note that there was no need to perform scanning for gamma radiation in these dust wipes, because any dust containing gamma radiation would have been identified through the health and safety scan performed outdoors.)

Prior to any daily swipe counting, a one minute response check was performed to ensure the detector was responding within expected values. After the response check, a thirty-minute background count was performed.

Each swipe was counted for ten minutes and the results were recorded in counts per minute (cpm). The background counts were then subtracted from the sample counts to obtain net counts of the swipe. To obtain the net activity of the swipe in disintegrations per minute (DPM), the net counts of the swipe were divided by the efficiency of the 3030P for the particular type of radiation (0.40 for alpha activity and 0.15 for beta activity). Typical efficiencies as stated by the manufacturer are: 35% for Pu²³⁹ (alpha efficiency), 15% for Tc⁹⁹ (beta efficiency). The efficiencies from the last calibration (February 2019) were 40% Pu²³⁹ and 15% Tc⁹⁹, so these values were used for this survey.

Additional detail on the procedures used, and some frequently asked questions about the procedures, are posted on the [CDPH Hunters Point Naval Shipyard Parcel A website](https://www.cdph.ca.gov/Programs/CEH/DRSEM/Pages/RHB-Environment/Hunters-Point-Naval-Shipyard-Parcel-A-1-Survey.aspx) at <https://www.cdph.ca.gov/Programs/CEH/DRSEM/Pages/RHB-Environment/Hunters-Point-Naval-Shipyard-Parcel-A-1-Survey.aspx>.

Results

Dust Swipe Results

CDPH, over the survey period, conducted surveys in 46 residences and 31 art studios at Hunters Point Parcel A-1. In these 77 survey units, a total of 229 dust swipes were taken. None of the dust swipe results were above the trigger level (MDA) for either alpha or beta radiation that would require additional investigation. Note that, while the majority of readings were zero, there were some values above zero but below the MDA – these values are not statistically different than zero readings and do not represent presence of alpha or beta radiation. Lastly, all results were far below readings that would have indicated any cancer risk from the dust (more details below).



Reporting and Understanding the Results

The CDPH directly mailed a letter to each survey participant reporting their individual swipe results. The information described in each letter included a table with the unit address, the area surveyed within the unit, and both gross alpha and gross beta test results. A sample table is included below (Sample Table 1) to depict the information.

The table also included an EPA risk value (as measured in DPM), showing the minimum alpha and beta value that must be present (on the dust wipe) in order to result in a cancer risk of one in a million (1×10^{-6}). This risk value is calculated by multiplying the risk coefficients¹ with a known alpha/beta activity, which is then used to calculate the minimum risk presented in the federal OSWER² 9285.6-20 guidance³. A minimum cancer risk of 1×10^{-6} was selected in accordance with the OSWER guidance. Using the above calculation method, the lowest number alpha and beta radionuclides that must be present for which anyone in the survey unit area could be exposed with a cancer risk of 1×10^{-6} is 40 dpm for alpha and 5,208 for beta. In other words, test results of 40 dpm for alpha and/or 5,208 for beta would have been necessary to reach a cancer risk of one in a million.

¹Federal Guidance Report No 13: Cancer Risk Coefficients for Environmental Exposure to Radionuclides, EPA 402-R-99-001, September 1999.

²OSWER (Office of Solid Waste and Emergency Response) is renamed to Office of Land and Emergency Management, effective December 15, 2015

³OSWER 9285.6-20, Memorandum: Distribution of the "Radiation Risk Assessment at CERCLA Sites: Q&A"



Sample Table 1:

Sample Date: 3/1/2019

Dust Wipe Test Receipt: 3/4/2019

Survey Unit	Test	Area Surveyed	Test Result (DPM ⁴)	EPA Risk Value ⁵ (DPM)	Risk Interpretation ⁶
Unit address	Gross Alpha	Kitchen Window	0	40	NHSR
		Living Room Window	0.2	40	NHSR
		Bedroom Window	0	40	NHSR
	Gross Beta	Kitchen Window	1	5208	NHSR
		Living Room Window	0	5208	NHSR
		Bedroom Window	9	5208	NHSR

⁴ DPM= Disintegrations per minute. It is a measure of radioactivity. It is the number of atoms in a given quantity of radioactive material that decay in one minute.

⁵ EPA Risk Value = US Environmental Protection Agency's threshold for health and safety (1×10^{-6}) cancer risk. All test results were at least 40 to 100 times lower than that threshold.

⁶ NHSR= means that no health and safety risk from alpha or beta radiation was found at your location

Lastly, the final column on each table showed an interpretation of risk, such as "No Health and Safety Risk" (NHSR). Since there were no swipe results that exceeded the MDA nor any that approached the two values of 40 dpm (alpha) or 5,208 dpm (beta), neither the presence of alpha or beta radiation nor any cancer risk/concern were identified in the dust.