EPA United States Environmental Protection Agency

Portland Harbor Human Health Risk Assessment Summary

Portland, Oregon

The **Final Human Health Risk Assessment** report for the Portland Harbor Superfund Site is available for review. This fact sheet provides a summary of information in the report. EPA has determined that risks posed by the Portland Harbor site are high enough to take action under the Superfund Law.

How are people exposed to contaminants?

Eating resident fish and shellfish

Infant consumption of breast milk from mothers who eat resident fish

Direct contact with sediment

What is a Human Health Risk Assessment?

There are many chemical contaminants in the sediments, fish and shellfish at Portland Harbor, including PCBs and pesticides. People may be exposed to these contaminants found in and along the river shoreline in various ways such as: recreational activities or working on the docks or shore, eating resident fish caught from the river, or indirectly exposed through consuming breast milk from mothers who may have been exposed to contaminants from Portland Harbor.

The human health risk assessment is a report that evaluates the ways which people may come into contact with contaminants at Portland Harbor, and estimates the amount of exposure to the contaminants. These estimated exposure levels are then compared to those that EPA considers would not cause adverse health effects, including cancer. For those contaminants known or suspected to cause cancer, EPA estimates the chance, or "risk" of getting cancer based on the exposure levels.

How are people exposed to contaminants?

Specifically, the exposure pathways evaluated in the Portland Harbor Human Health Risk Assessment include:

- ***Consumption of resident fish and shellfish taken from Portland Harbor***. For many people, fish caught from the river represent a supplemental food source, either because they simply like to eat the fish they catch, or for cultural or economic reasons. The assessment considered recreational, subsistence, and tribal fishers who supplement their diet with resident fish caught in Portland Harbor. Subsistence fishing refers to fishing that provides a substantial source of food for the fisher and/or family of the person doing the fishing, although fish may not be an exclusive source of protein in their diet. Fish accumulate contaminants such as polychlorinated biphenyls (PCBs) in their tissue. Although fish species such as salmon and steelhead migrate through Portland Harbor and the Willamette River, **resident fish**, such as bass, catfish and carp, may spend their entire life cycle in Portland Harbor. The risk assessment focused on consumption of these resident fish.
- ***Infant consumption of human breast milk from mothers who are exposed to contaminants from Portland Harbor.*** Many of the contaminants found in Portland Harbor, such as PCBs, accumulate in human fatty tissue and milk fat. As a result, breast fed infants can be indirectly exposed to these contaminants if their mothers have been exposed to contamination from Portland Harbor.
- ***Direct contact with in-water or shoreline sediment.*** Direct exposure to Portland Harbor contaminants occurs when a person comes into contact with contaminated shoreline or river sediment while engaged in recreational activities, living or working along the harbor or drinking untreated river water. In some cases, these exposures are of greater concern for children than for adults.

Portland Harbor background

In 2000, Portland Harbor was named a Superfund Site. The Portland Harbor study area consists of the Lower Willamette River from Sauvie Island (approximately river mile 2) to the Broadway Bridge in downtown Portland (approximately river mile 12). Over the past century, many different contaminants have been released into the river and adjacent upland properties. The contaminants of concern at the site include:

- **polychlorinated biphenyls (**PCBs), a banned coolant fluid and also found in certain building materials and ink.
- **dioxins and furans** by-products of burning, either in natural or industrial settings, chemical manufacturing and metal processing.
- **polycyclic aromatic hydrocarbons** (PAHs), formed during the burning of substances such as coal, oil, gas, and wood.
- **pesticides** such as DDT, an insecticide banned in 1972.
- various **heavy metals** including lead, zinc, copper, arsenic, chromium and cadmium.

The Lower Willamette Group is responsible for preparing the remedial investigation, human health and ecological risk assessments, and the feasibility study for EPA review and approval. These are key documents that will be used by EPA to determine a cleanup strategy for Portland Harbor.

How Are People Exposed to Contaminants?

⇨*Continued*

In order to avoid underestimating the possible exposure and thus the health risks, EPA identifies a "Reasonable Maximum Exposure" when conducting a risk assessment. This represents the highest exposure that could reasonably be expected to occur, and is greater than an 'average' person's risk. This way, cleanup and other actions to reduce risk will also be protective for groups such as tribal members, who are likely to eat more fish and shellfish. In addition, the health-protective exposure levels are intended to account for those persons who may be particularly sensitive to the health effects associated with the contamination, including children, the elderly, and pregnant women.

What does the human health risk assessment tell us?

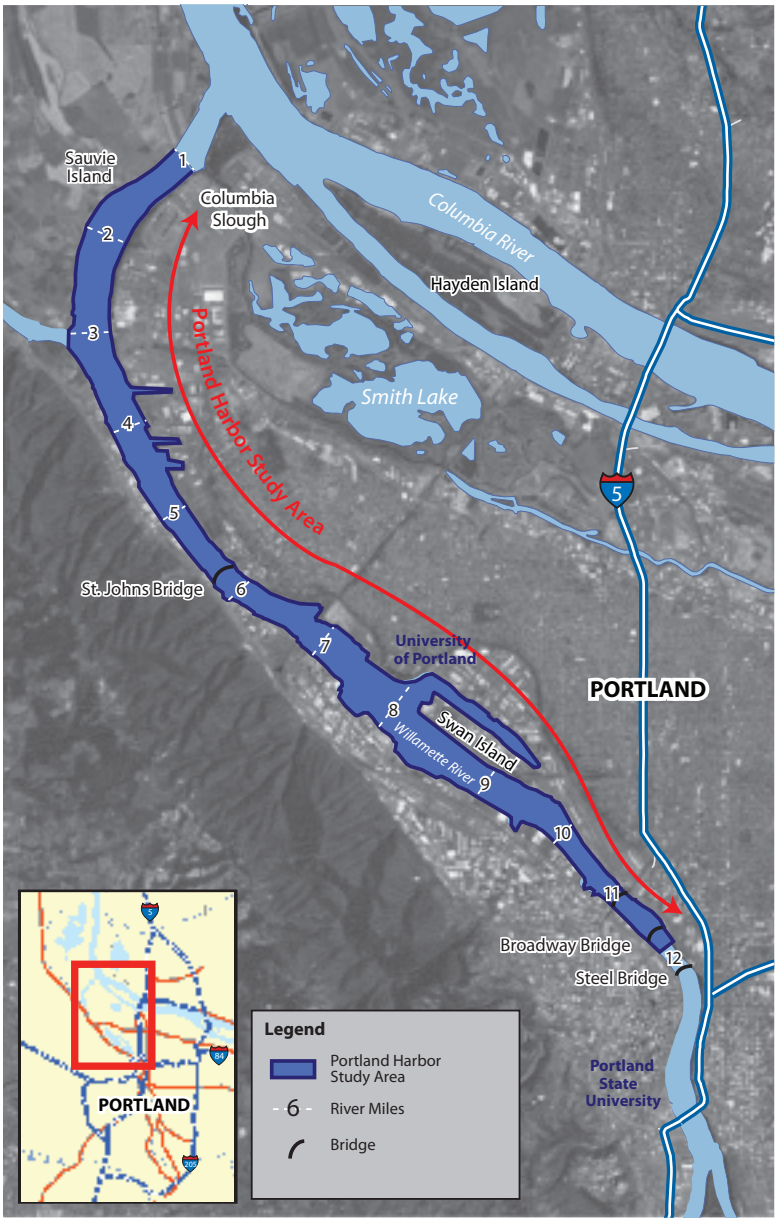
The EPA has determined the greatest health risk is from eating resident fish from Portland Harbor and to infants that are breast-fed by mothers who eat resident fish on a regular basis. In addition, direct contact exposure by tribal fishers to contaminated in-water sediment may pose an unacceptable risk. The area of unacceptable risk for direct contact with sediment is located along the west side of the river, approximately between river miles 6 (St. John's Bridge) and 7 (Railroad Bridge). For non-tribal fishers, direct contact exposure to in-water sediments is below the unacceptable risk level.

Health risks from consumption of resident fish are 100 times or more greater than any other exposures evaluated at Portland Harbor. The majority of these risks are due to PCBs, but dioxins, DDT, and PAHs also represent significant health concerns. Cancer risk is described as the increased likelihood of getting cancer as a result of exposure to contaminants at the site, and is typically described in terms like 1 in one million.

A cancer risk greater than 1 in 10,000 is the level at which EPA generally requires that steps be taken to reduce the possible risks to human health. The estimated cancer risks at Portland Harbor due to resident fish consumption are as high as 1 in 100, nearly 100 times higher than EPA's action level. Non-cancer health effects are described by comparing the estimated exposure to those known to be safe. Exposure estimates for infants who consume breast milk from mothers exposed to contaminants are as much as 10,000 times greater than what is considered safe.

What's next?

EPA is working with the Lower Willamette Group to finalize the ecological risk assessment, the remedial investigation (a thorough study of contamination at the site including sampling to determine contaminant concentrations in sediment, water, and aquatic life), and the feasibility study (an evaluation of cleanup alternatives for Portland Harbor). Based on the final remedial investigation and feasibility study, EPA will develop a proposed cleanup plan which is anticipated in 2014. There will be a series of public information sessions to discuss the proposed plan and an opportunity for formal public comments. Until then, EPA will continue to meet with the public to provide updates, answer questions, and listen to community concerns.



Portland Harbor Study Area

How can I get involved?

One way people can get involved is by participating with the Portland Harbor community advisory group (CAG). The CAG is designed to serve as the focal point for the exchange of information about Portland Harbor cleanup activities between EPA and the community. CAG meetings are held on the second Wednesday of every month at 6:00 p.m. For more information contact Jim Robison at www.portlandharborcag.info or 503-285-4805.

EPA is available to attend your meetings to discuss the cleanup process, answer questions, and hear ideas or concerns. Please contact us at the numbers listed in the *EPA Contacts* box below.

Where can I get more information?

Sign up to receive news, updates, and public meetings notices: http://bit.ly/ptlndhrbr

For copies of the assessment, visit:

EPA website
www.epa.gov/region10/portlandharbor
Contact Alanna Conley for CD-ROM copies.

Multnomah County Central Library
(Government Documents)
801 SW 10th Avenue
Portland, OR 97205
503-988-5234

EPA Region 10 Oregon Operations Office
805 SW Broadway St., Suite 500
Portland, Oregon 97205
503-326-3250 (call for an appointment)

EPA Contacts

***Alanna Conley**, Community Involvement Coordinator*
conley.alanna@epa.gov
503-326-6831

***Chip Humphrey**, Project Manager*
humphrey.chip@epa.gov
503-326-2678

***Elizabeth Allen**, Human Health Risk Assessor*
allen.elizabeth@epa.gov
206-553-1807

***Kristine Koch**, Project Manager*
koch.kristine@epa.gov
206-553-6705

TTY users please call the Federal Relay Service: (800) 877-8339 and ask for Alanna Conley at the above phone number

United States Environmental Protection Agency

Region 10

1200 Sixth Avenue, Suite 900, ETPA-086
Seattle, Washington 98101-3140

August 2013

Pre-Sorted Standard
Postage and Fees Paid
U.S. EPA
Permit No. G-35
Seattle, WA