

Community Discussion Series: United Heckathorn Superfund Site Update

June 26, 2025 6:30 to 8:00 pm PT

Reminders

- Join audio if you have not already.
- Live Spanish language translation is available.
- You are automatically muted.
- You will be able to ask questions verbally and in writing.
- Slides will be shared after the meeting.

Welcome! The live event will start shortly

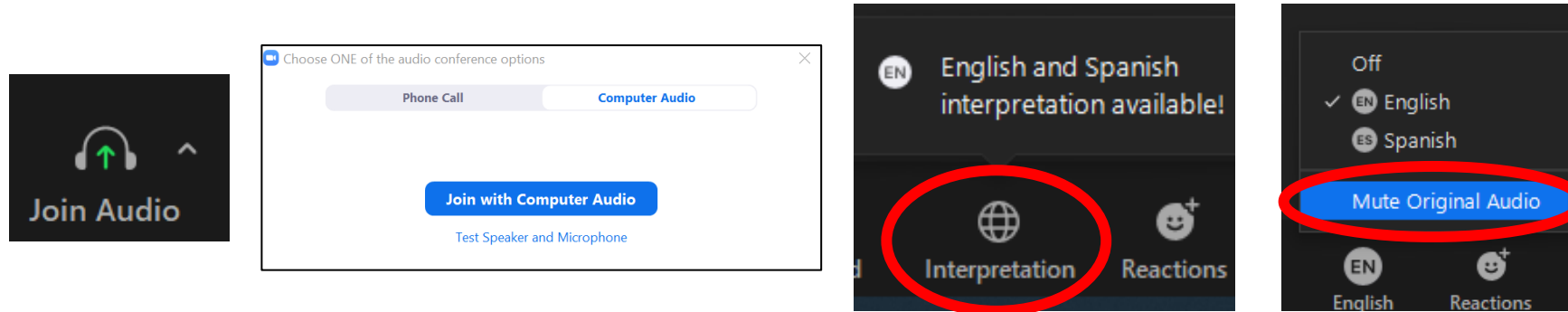
¡Bienvenido! El evento en vivo comenzará en breve.



Audio and Interpretation Instructions

Please use controls to connect to audio as desired.

Utilice los controles para conectarse al audio como desee.



You **MUST** select your preferred language under “Interpretation.”

Spanish listeners, it is recommended to “Mute Original Audio.”

Debe seleccionar su idioma preferido en "Interpretación". Se recomienda "Silenciar audio original".

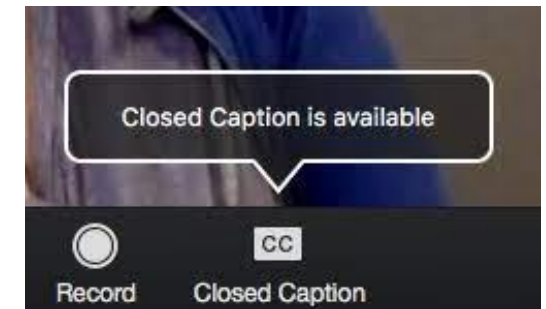


Participation Instructions

Audio is available online with your device or by telephone.

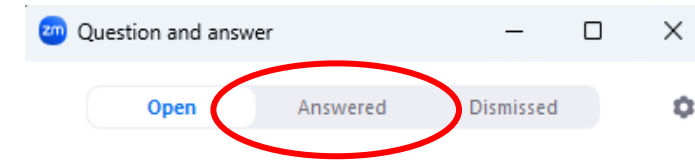
Optional dial in **669-254-5252** Meeting ID **160 822 3891**

Closed captioning/Live transcription is available.



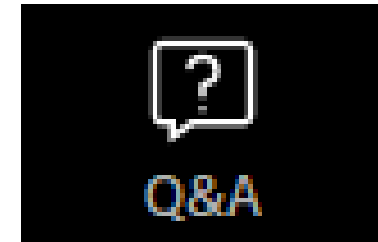
Questions or technical problems?

- Participants may enter questions in the Q&A box at any time.
- See answered questions in "Answered" tab.
- Questions in the *chat* may not be answered. Please put questions in the Q&A box.
- We will have a longer Q&A session where we will take raised hands after the presentation.



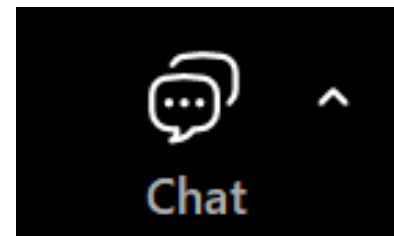
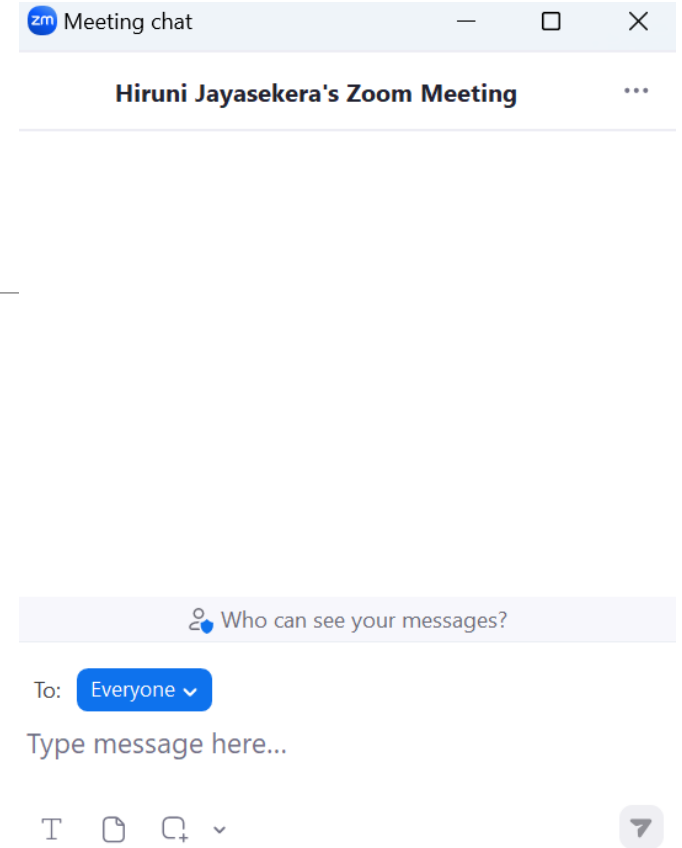
No open questions

Everyone in this meeting can see open questions



Chat function

- Questions in the *chat* may not be answered. Please put questions in the Q&A box.
- The chat function is available during the meeting for community discussion and resource sharing.



In the chat:

Please introduce yourself!
What brought you to tonight's
meeting?



Community facilitation support:
Janet Johnson, Richmond Shoreline Alliance



Meet EPA

Dr. Jocylin Pierro: Toxicologist / Risk Assessor

Grace Beery: Project Manager

Karen Jurist: Project Manager

Hiruni Jayasekera: Community Involvement Coordinator

Omer Shalev: Superfund Section Supervisor



Special guest!

Tran Pham, MPH

Research Scientist

California State Office of Environmental Health Hazard
Assessment (OEHHA)





Community Discussion Series #3: United Heckathorn Superfund Site

Ecological and Human Health Risk Assessments

June 26, 2025

U.S. EPA Region 9



Presentation Overview

Site Background Review

Risk Assessment

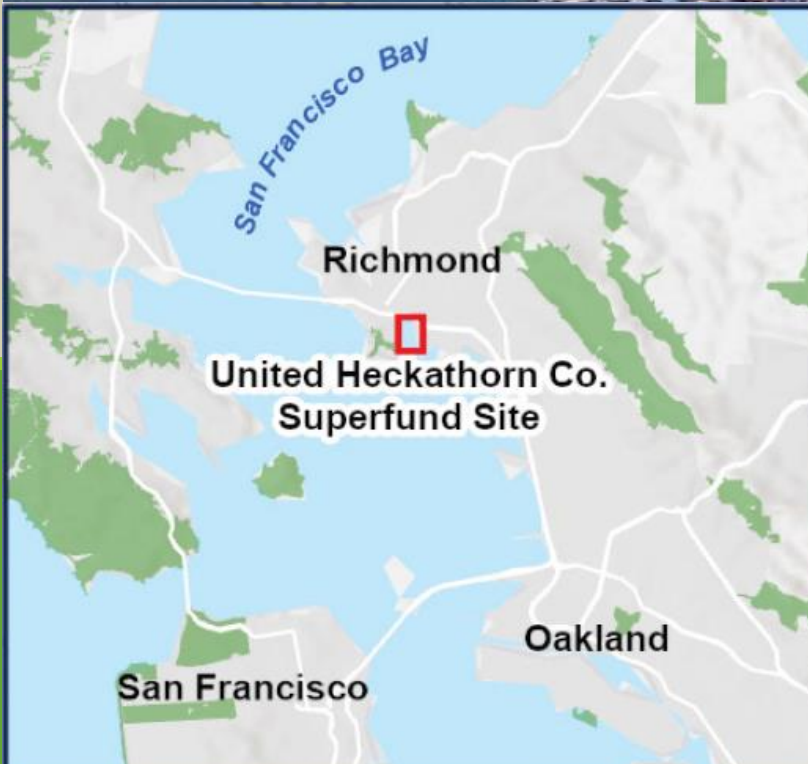
Contaminants of Concern

Ecological and Human Health Risk Assessments

Bottom Line

Fish Advisories - OEHHA





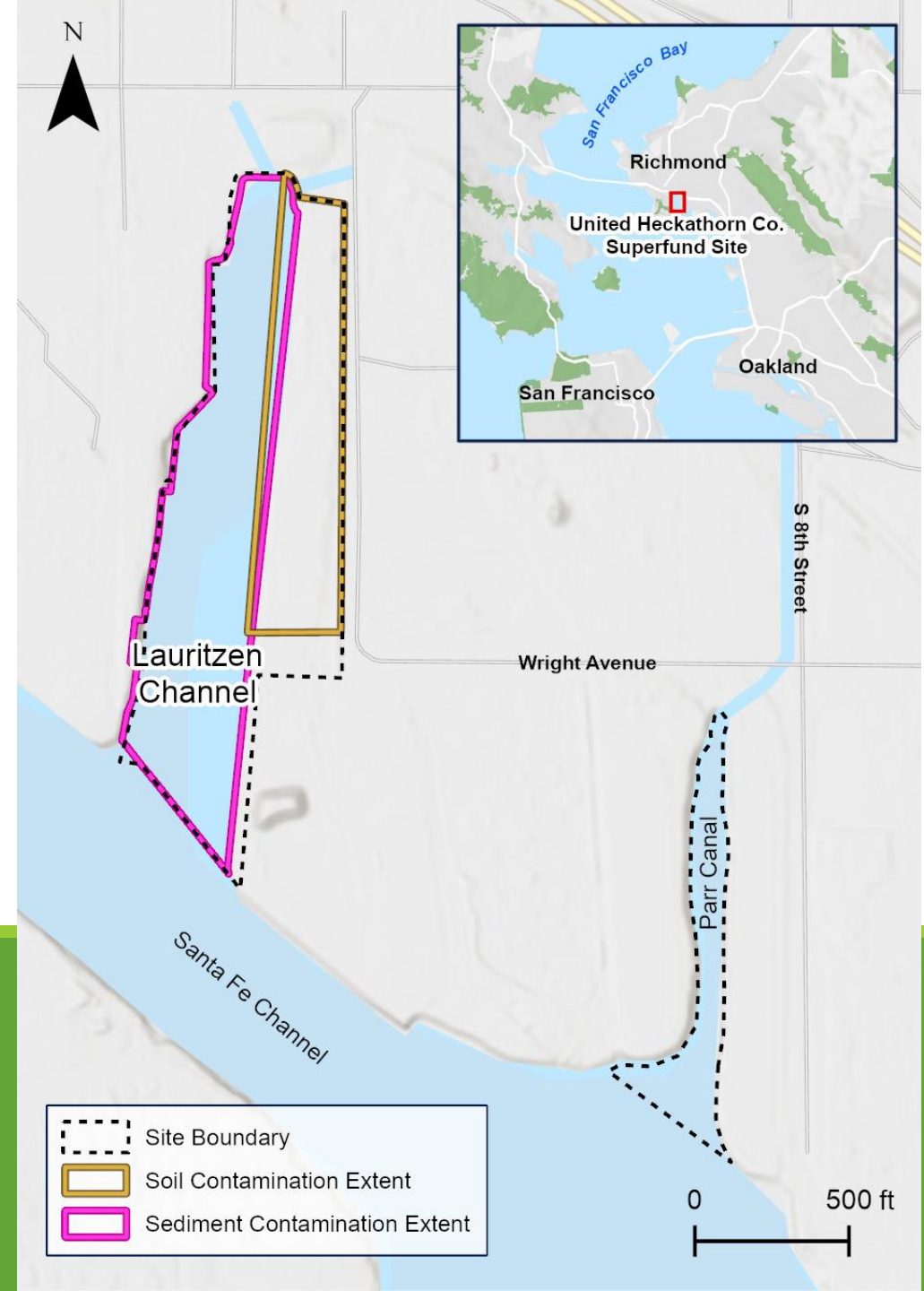
United Heckathorn site present day use



Photo: SF Baykeeper

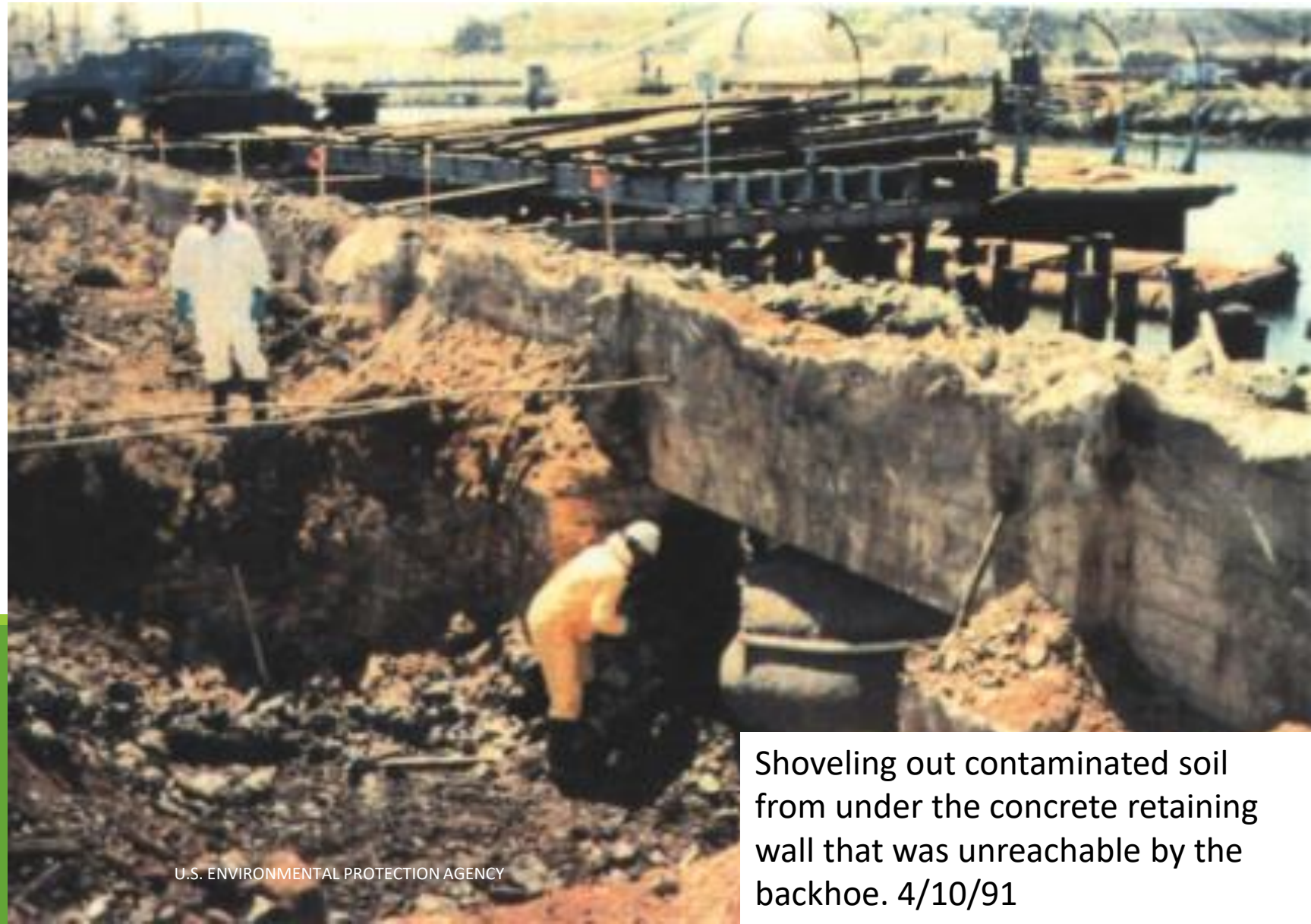
- Historically a pesticide processing facility from 1940s-1960s
 - DDT and dieldrin
- Currently operates as dry bulk cargo shipping terminal

- **Upland area:**
contaminated soils on land
- **Marine area:**
contaminated underwater sediments in the Lauritzen Channel



Initial EPA Response – Upland Soil Removal

- 1990: 1500 yd³ of soil and visible pesticide residue excavated and removed
- 1991: An additional 1800 yd³ of contaminated soil removed
- 1993: Excavated soil stockpiles removed



Shoveling out contaminated soil from under the concrete retaining wall that was unreachable by the backhoe. 4/10/91

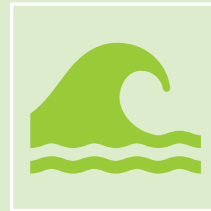


1997-1999 Cleanup



Upland Area:

Excavated and disposed contaminated soils offsite. Capped former United Heckathorn plant site with concrete and asphalt.



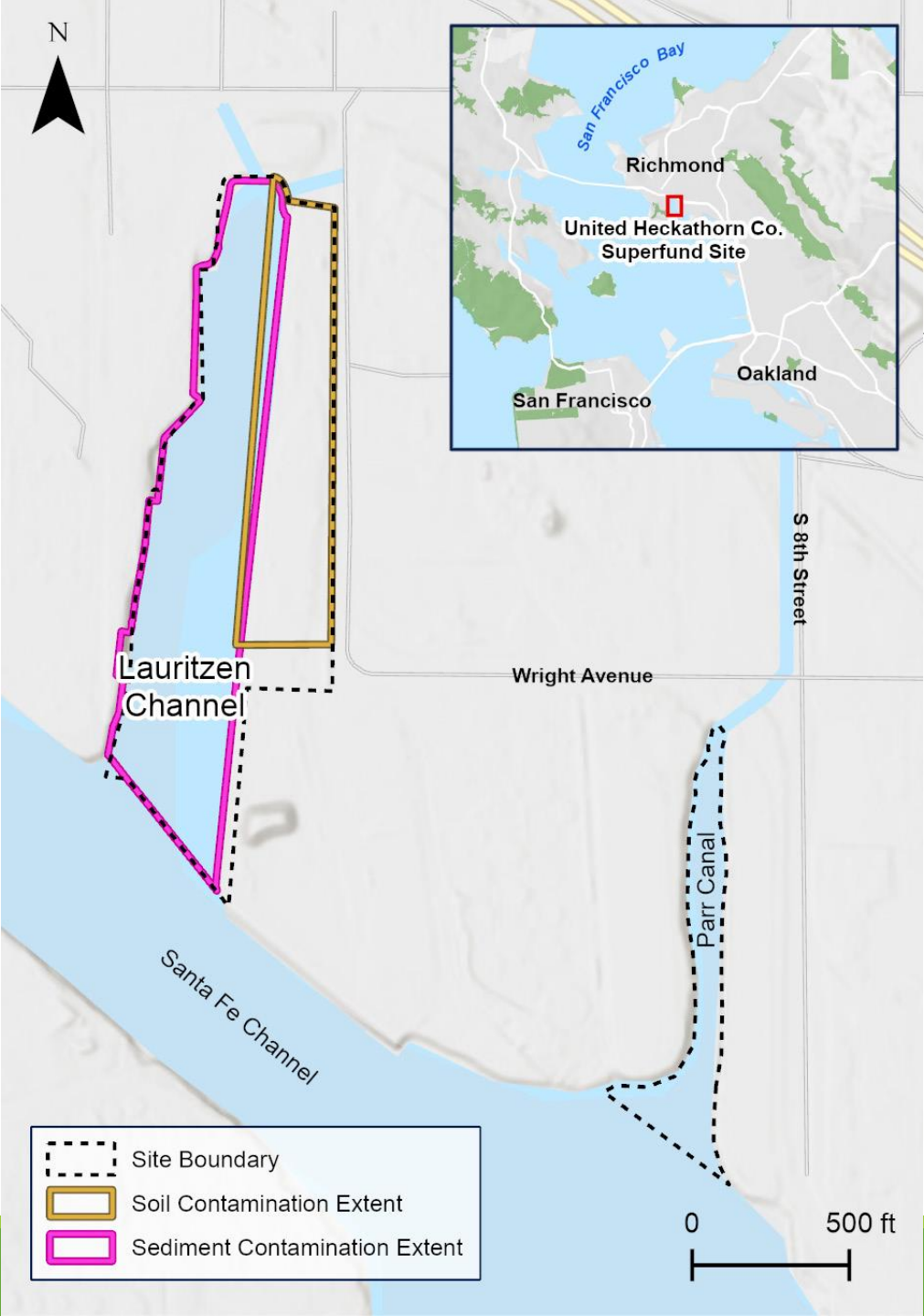
Marine Area:

Sediments from Lauritzen Channel and Parr Canal dredged and transported offsite for disposal.

Santa Fe Channel

(CH2M[a], 2014)





1997-1999 Cleanup: Marine Sediments

Parr Canal:

Dredging and removal of contaminated soils was successful. DDT and dieldrin levels remained below cleanup goals.

Lauritzen Channel:

DDT and dieldrin increased above cleanup goals after initial dredging and removal of contaminated soils. *Lauritzen Channel cleanup was not as effective as it was intended to be.*



Ecological and Human Health Risk Assessments



4 Steps to Risk Assessment

Planning: Data Collection and Evaluation

- Which contaminants are present,
- Where are they on the site, and
- At what concentrations?

Exposure Assessment

- How are people exposed to them?

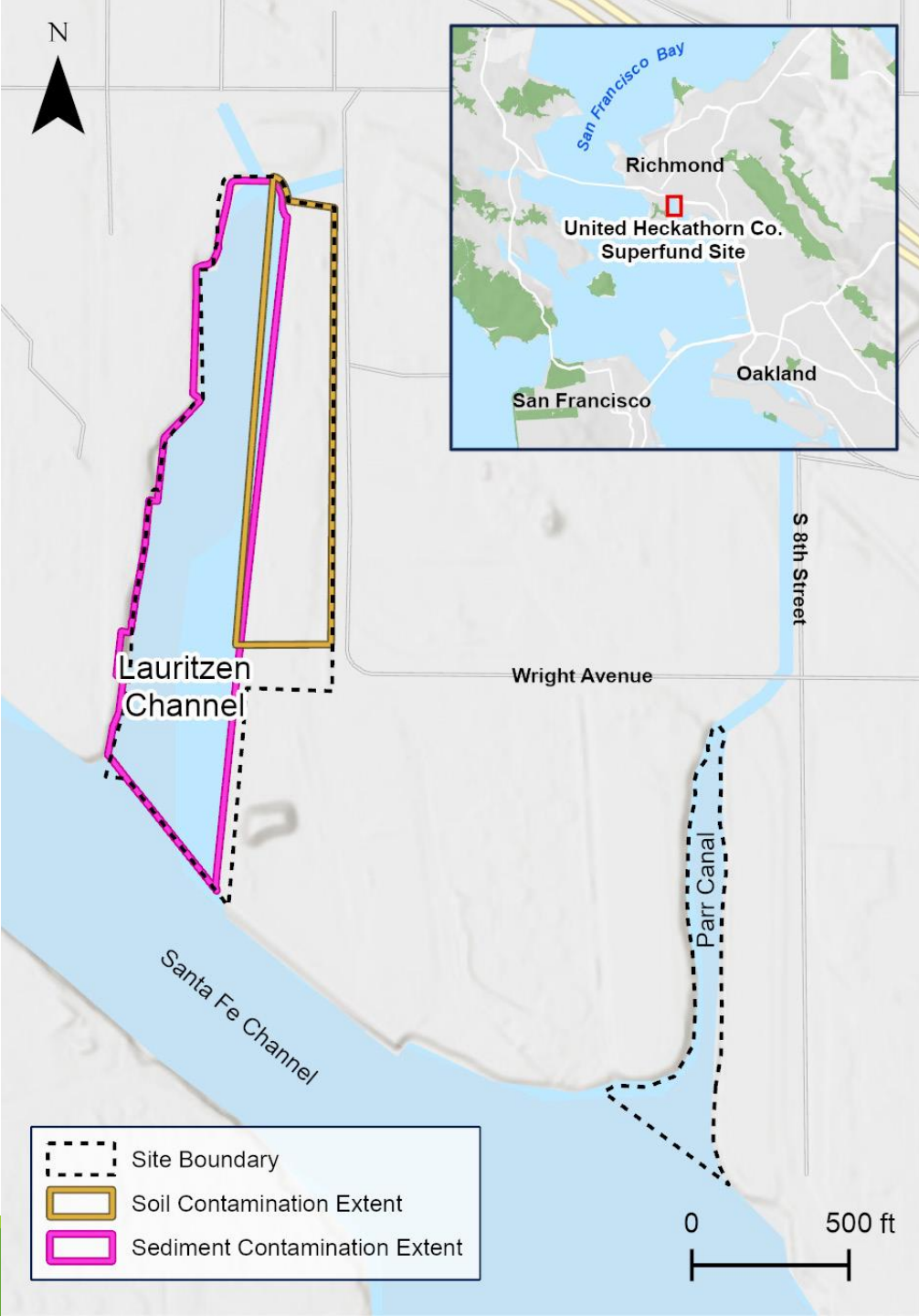
Toxicity Assessment

- How are they toxic and
- At what levels of exposure?

Risk Characterization

- How much risk do they pose?





United Heckathorn History

- Pesticide industry operated from 1947-1966
- Pesticides released:
 - Dichlorodiphenyltrichloroethane (Total DDT)
 - Dieldrin

Legislation & Ban of DDT



Historical DDT spraying in Long Island, New York, 1945



- Due to concerns about its environmental and health impacts, dieldrin was banned in many countries in the 1970s and 1980s
- DDT was banned for general use in the United States on June 14, 1972
- DDT is permitted for certain specific uses, such as controlling malaria-carrying mosquitoes in some countries
- DDT and dieldrin are persistent in the environment and continue to pose a threat to ecological systems and human health



Adverse Human Health Effects of DDT and dieldrin

DDT

- Nervous system problems
- Adversely affecting reproductive health
- Potentially increasing the risk of certain cancers
- Considered an endocrine-disrupting chemical
- May have transgenerational effects

Dieldrin

- Acute exposure can lead to convulsions, nausea, vomiting, and neurological issues like headaches, dizziness, and muscle twitching.
- Chronic exposure is linked to:
 - An increased risk of certain cancers (especially liver)
 - Adversely affects the reproductive system
 - Negatively impacting immune function



DDT & Dieldrin's Adverse Ecological Effects



Ecological Impact:

- Bioaccumulation and biomagnification can lead to population declines in sensitive species, particularly top predators.

Aquatic Ecosystems:

- Can accumulate in fish and other aquatic organisms, leading to high concentrations in piscivorous birds and mammals.

Terrestrial Ecosystems:

- Can contaminate soil and plants, leading to accumulation in herbivores and then in carnivores that consume them.



What did the risk assessments find?

Health risks due to the site

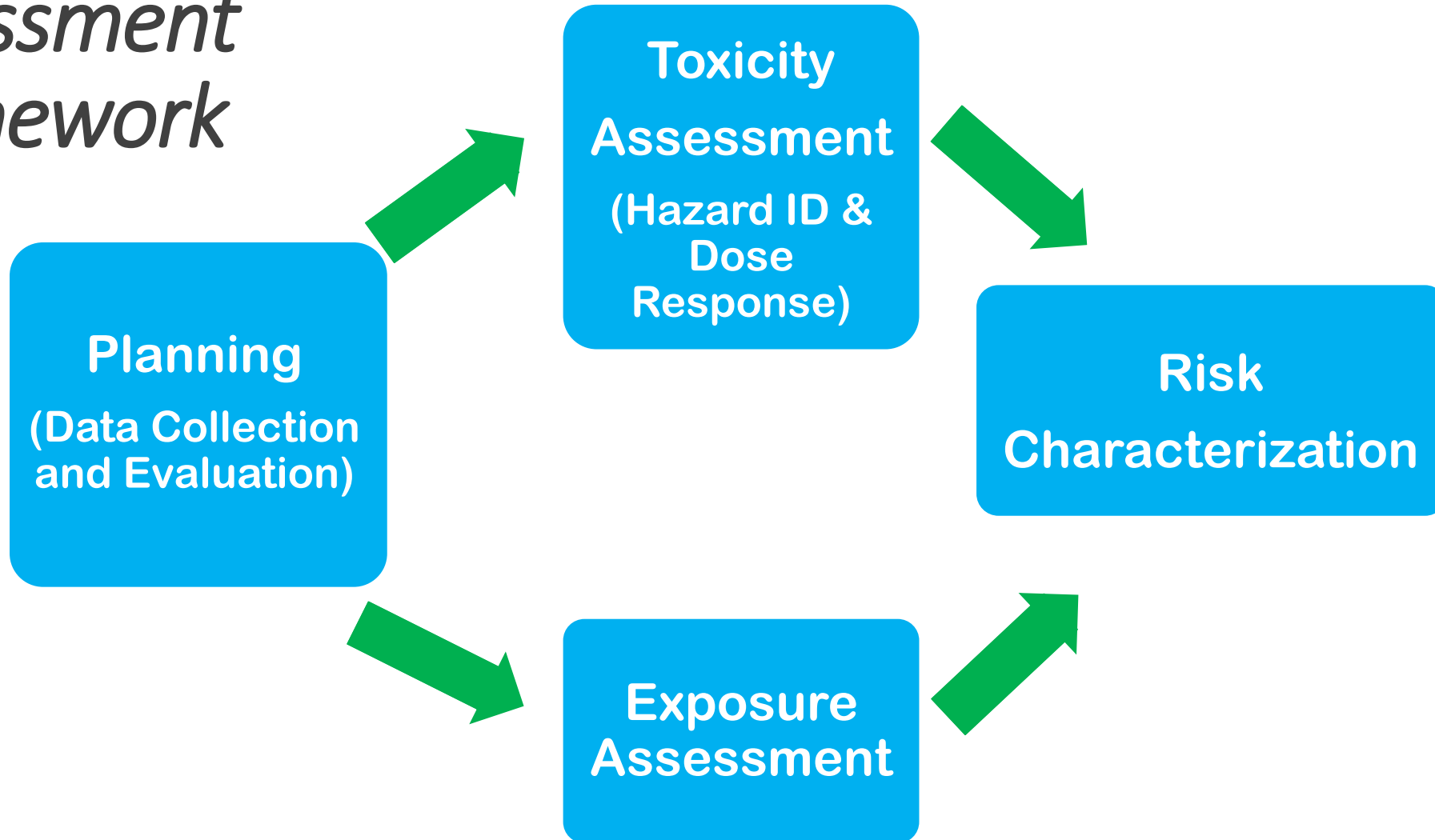
- Consuming fish from the Lauritzen Channel presents a human health risk



Ecological risks due to the site

- Unacceptable risk and toxicity to **benthic (bottom-dwelling) organisms like shrimp, water column organisms, and sensitive fish-eating birds** (Lee et al., 1994).
- Bioaccumulation and biomagnification may affect local ecosystem
- DDT and dieldrin at elevated levels consistently measured in Site sediment and biota in the years after completion of remedial actions in 1999:
 - Shows ongoing presence of unacceptable ecological risk

Basic Risk Assessment Framework



Step 1: Data Collection & Evaluation

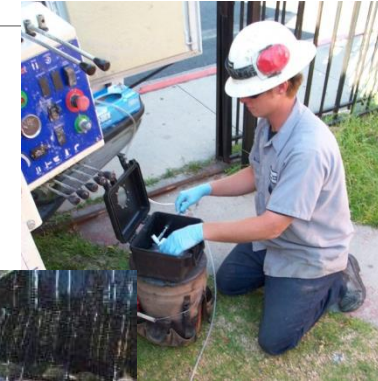
Which contaminants are present?

Where are the contaminants?

How much of each?

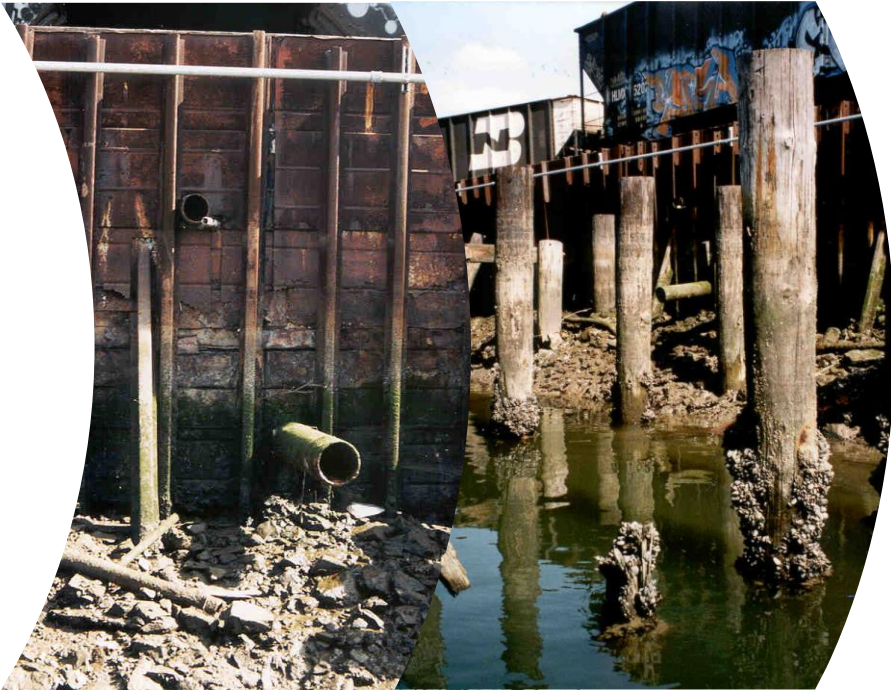
Remedial Investigation:

- Sample contaminated media
- Analyze for identity and concentrations



Contaminant Sources

Major and Minor sources identified



- Embankments
- Areas Not Previously Dredged
- Groundwater Seepage
- Wood Pilings
- Stormwater Outfalls
- Source Material Outside of the Lauritzen Channel

Step 2: Exposure Assessment

Who is exposed and how many?

- Adults, children, special populations?

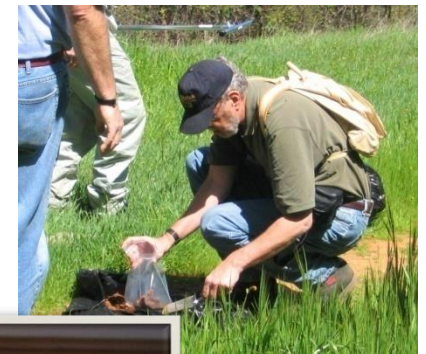
How are they exposed?

- **Ingestion**, inhalation, skin contact, other?

How often are they exposed?



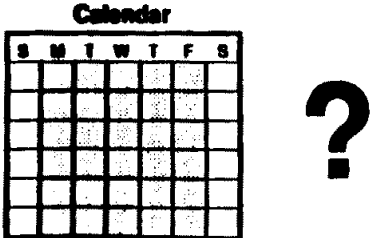
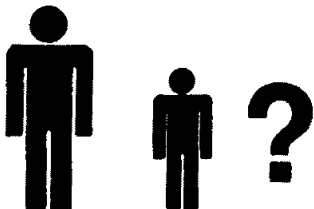
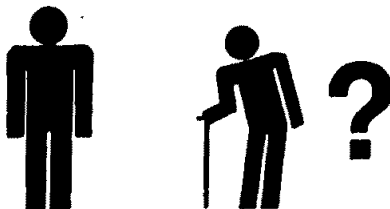
- Days per year, number of years

What is the concentration to which they are exposed?



Exposure Variables

Five Basic Variables Used to Estimate Intake

- Exposure Point Concentrations: 
- Contact Rate: 
- Exposure Frequency/Duration: 
- Body Weight: 
- Exposure Averaging Time: 

Step 3: Toxicity Assessment



What adverse health effects are the contaminants capable of producing (at even high doses)?



What is the relationship between the magnitude of exposure (“dose”) and the production of adverse health effects (how much exposure does it take to produce an effect)?



"The dose makes the poison."

Step 4: Risk Characterization

Integrate

- Data Collection and Evaluation
- Exposure Assessment
- Toxicity Assessment

Develop risk estimates

- Quantify risks

Establish framework to define the significance of risks



Risk Characterization:

The last phase of the risk assessment process that estimates the potential for adverse health or ecological effects to occur from exposure to a stressor and evaluates the uncertainty involved.

(EPA's Terms of Environment)

Addresses the questions:

- *Which contaminants are causing the health risk?*
 - DDT and dieldrin
- *Which exposure pathways are creating the risk?*
 - Ingestion of contaminated fish



How EPA measures risk at United Heckathorn:

Default exposure variables - scenarios

- Residential use
- **Recreational use**
- **Commercial / Industrial use**

Cancer risk and non-cancer hazard index

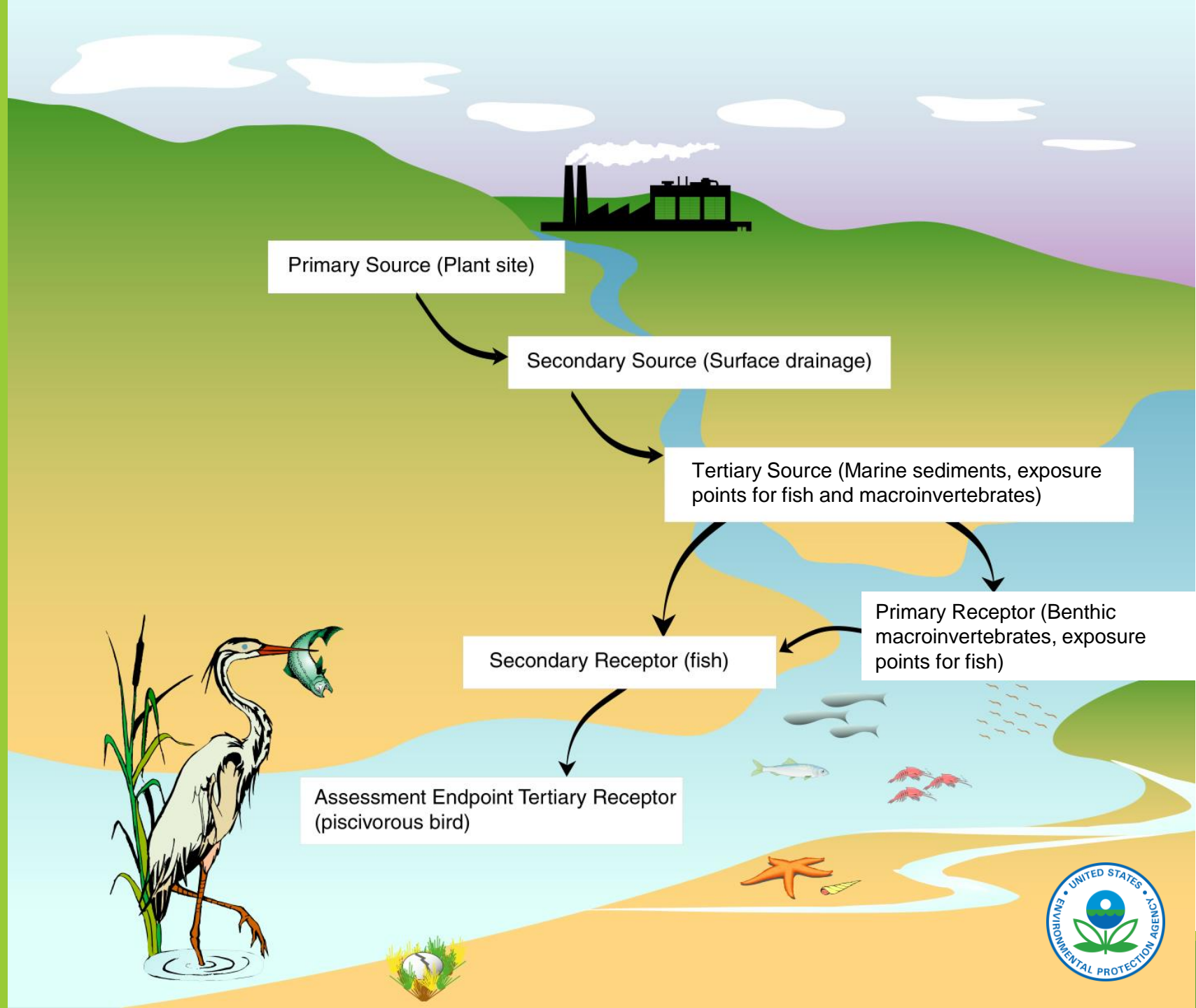
- Measure additional cancer risk due to contaminants from the site
- Hazard index > 1 signifies a risk of adverse non-cancer effects

Media evaluated

- Soils (Residential & Commercial / Industrial)
- Air (Residential & Commercial / Industrial)
- Marine sediments



EcoRisk: Conceptual Site Models



EcoRisk: Assessment and Measurement Endpoints

ASSESSMENT ENDPOINTS

“Hypotheses”

Spatial and temporal extent of harm or risk

Ecological relevance

Susceptibility to stressors

Relevance to management goals

- Threatened & Endangered (T&E) species
- Other special status species
- Cultural importance
- Economic importance

MEASUREMENT ENDPOINTS

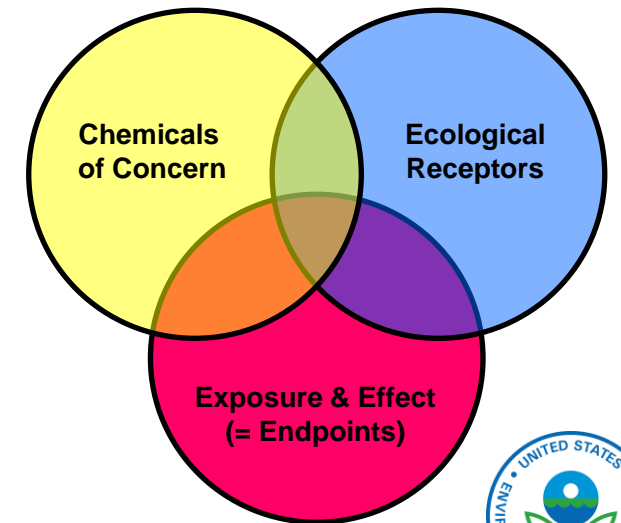
Data gathering

Exposure

Overt Effects, e.g., toxicity or bioaccumulation

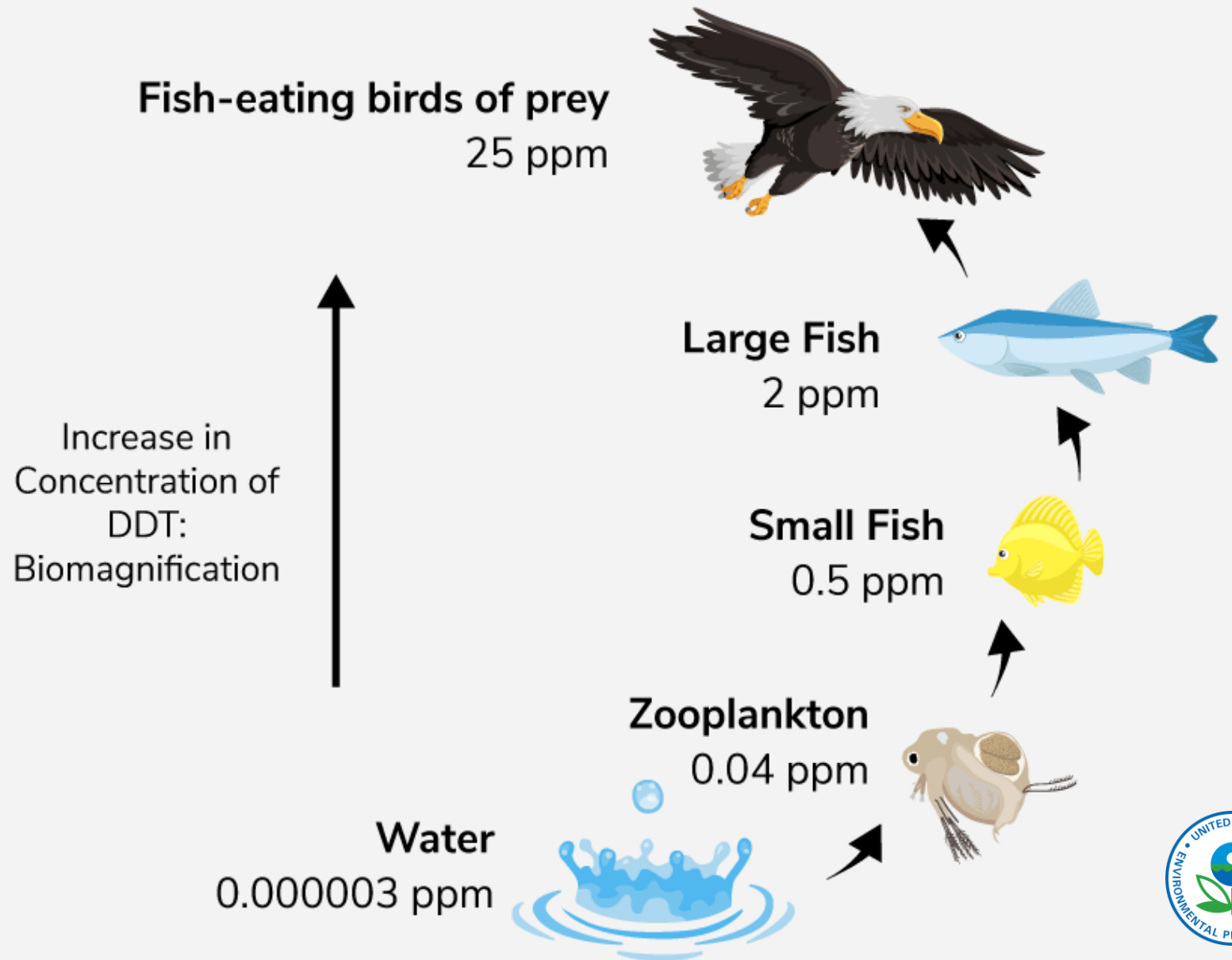
Ecosystem Effects, e.g., changes in population biology

Acute vs Chronic Effects, length and timing of COC exposure compared to life span or life stage of receptor

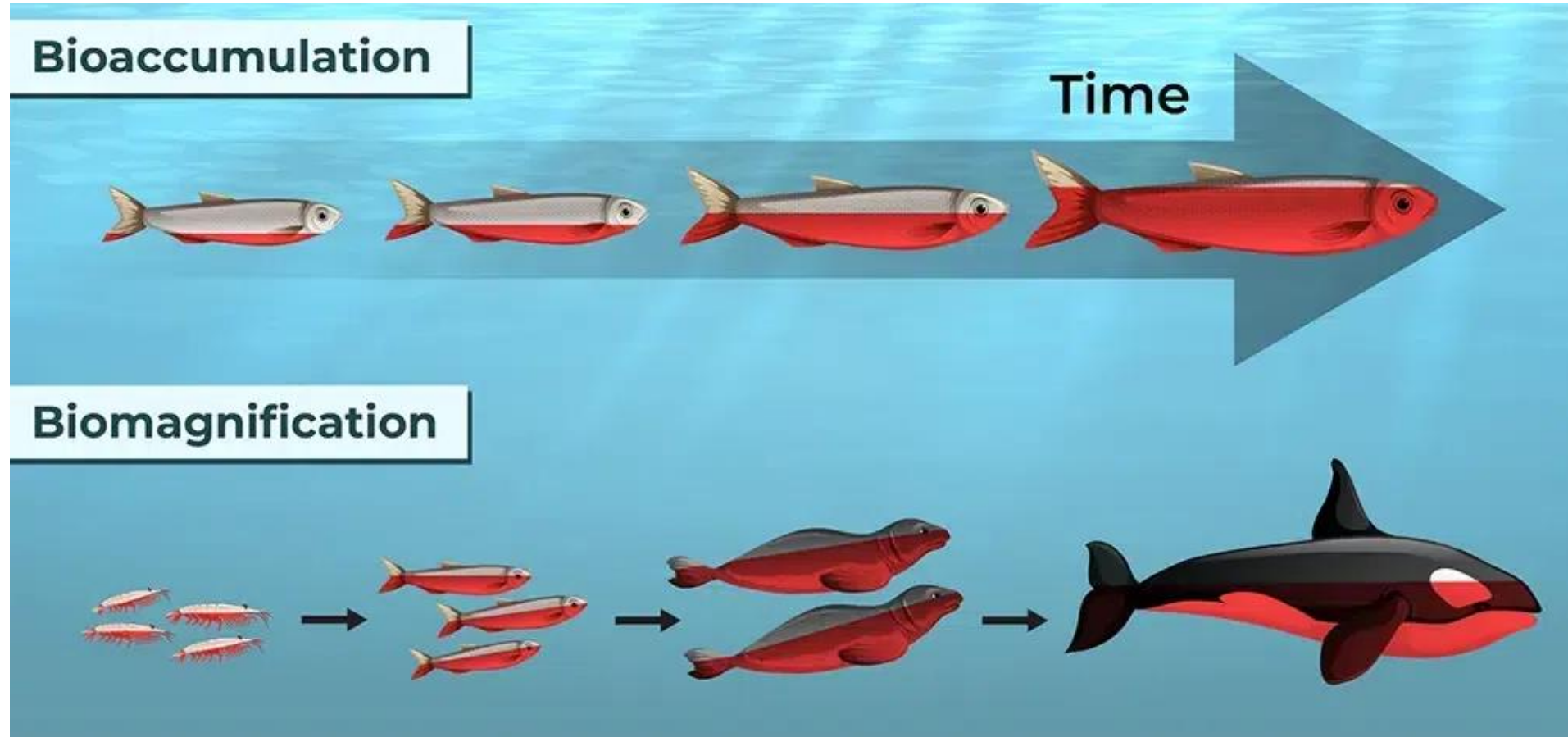


DDT & Dieldrin Biomagnification

Biomagnification



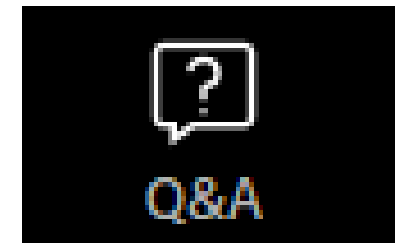
DDT and dieldrin Biomagnification & Bioaccumulation



Question break – please put q's in the Q&A box

WE WILL HAVE AN EXTENSIVE Q&A AT THE END OF T
PRESENTATION AS WELL!

No open questions
Everyone in this meeting can see open
questions

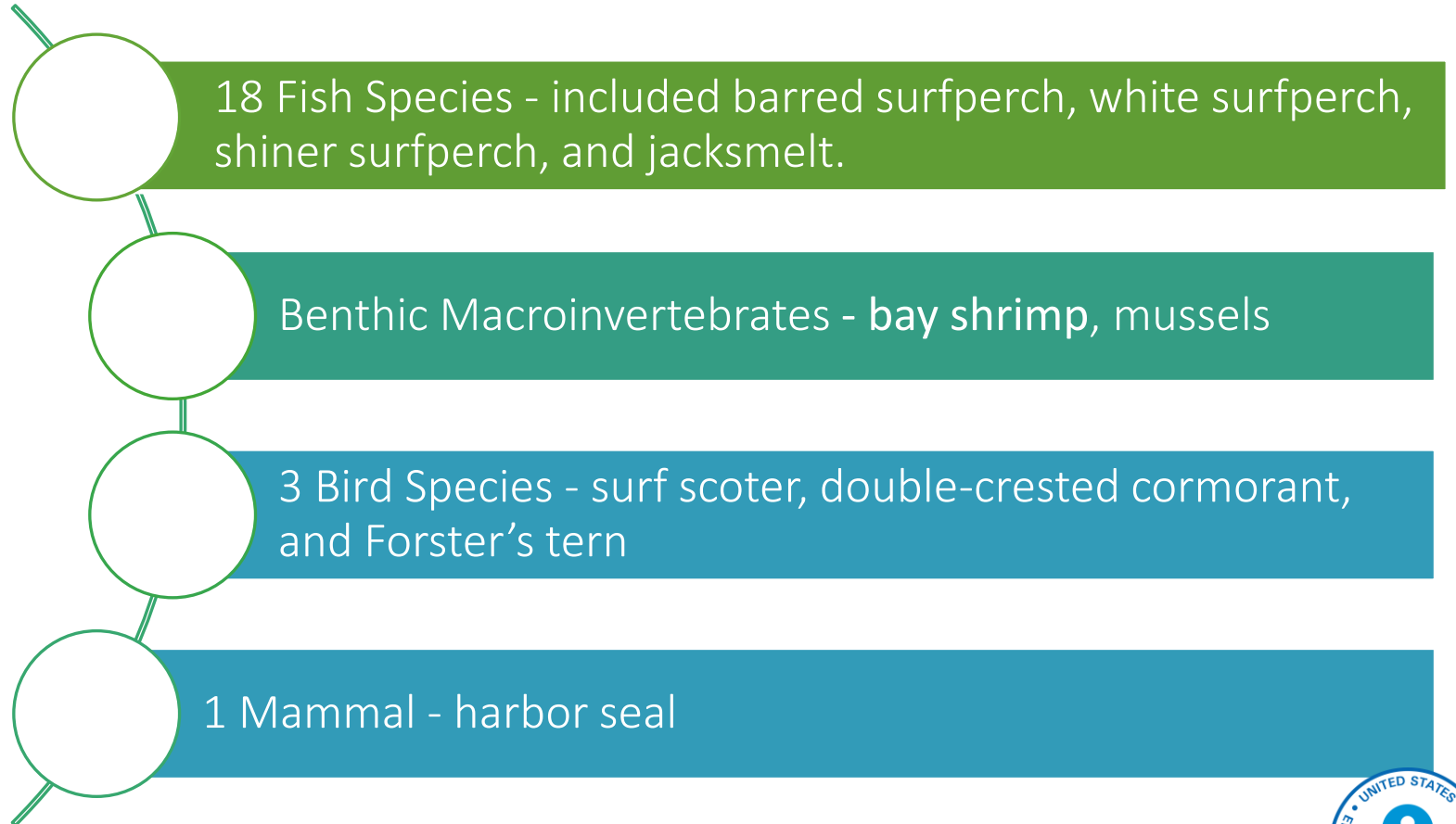


Ecological receptors

What did EPA evaluate in the ecological risk assessment?

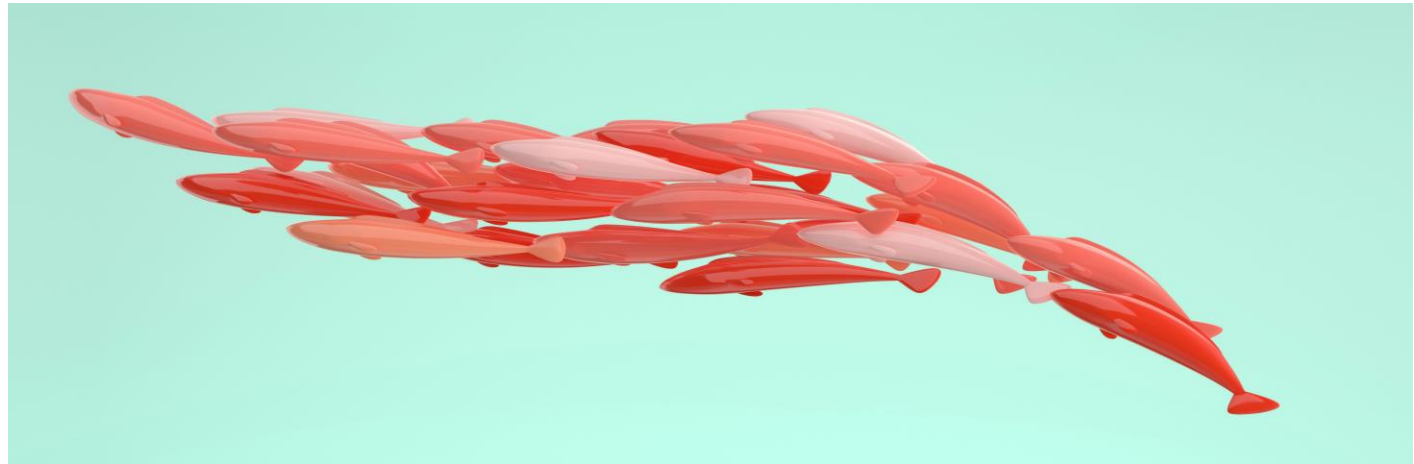
Objective:

Identified and measured sources of contamination that are still active in the Lauritzen Channel.

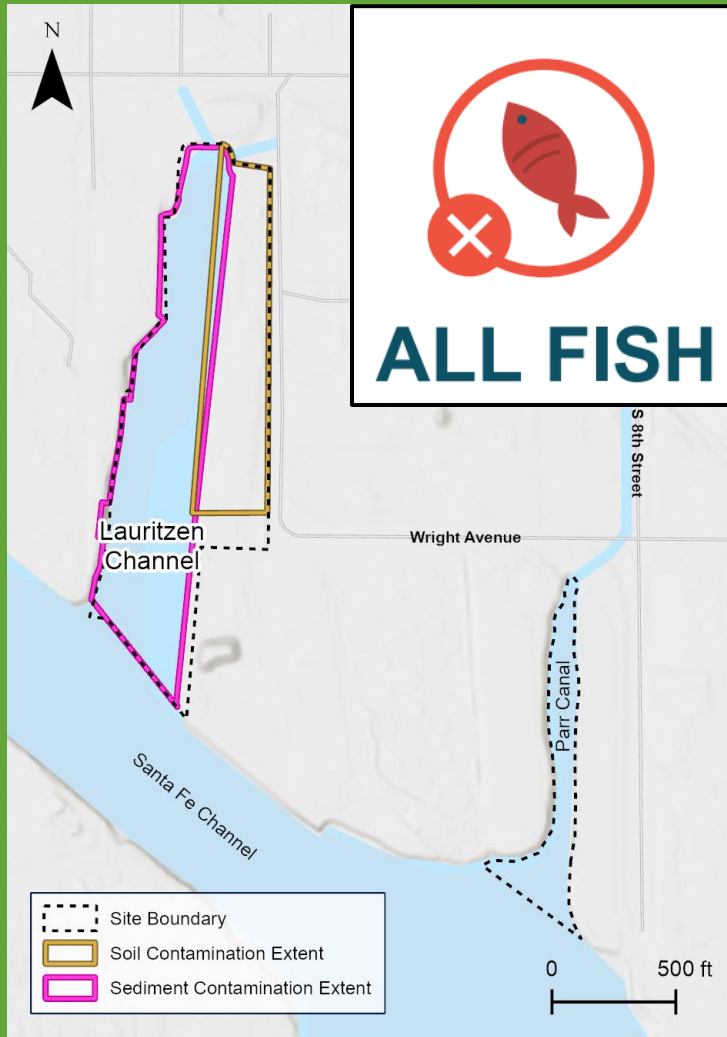


Current Ecological Risks Lauritzen Channel

- Ecological Risk Assessment concluded:
- DDT and dieldrin at the Site posed an unacceptable risk to **benthic (bottom-dwelling) organisms, water column organisms, and sensitive fish-eating birds** (Lee et al., 1994).
 - DDT found in channel sediments was biologically available and contributed to benthic toxicity (Lotufo and Burgess (2012)).
 - Elevated levels of total DDT and dieldrin consistently measured in Site sediment and biota in the years after completion of remedial actions in 1999:
 - Demonstrated toxicity
 - Shows ongoing presence of unacceptable ecological risk



Current Human Health Risks Lauritzen Channel



- Consuming fish from the Lauritzen Channel presents a human health risk
- The state of California has an advisory to not eat **any** fish from the Lauritzen Channel
- Human Health Risk Assessment and evaluations of risk found that the consumption of whole fish or fish filets contaminated with DDT and dieldrin posed an unacceptable risk in 1994 and 2010 (ICF Technology, 1994; CH2M, 2010a).



Human Health Risks Evaluated

Lauritzen Channel

- Inhalation and ingestion of DDT and dieldrin from soils were evaluated as potential health risks
 - Found that they do not pose an unacceptable risk to human health
- DDT and dieldrin contaminated soils are capped and unlikely to pose an inhalation hazard

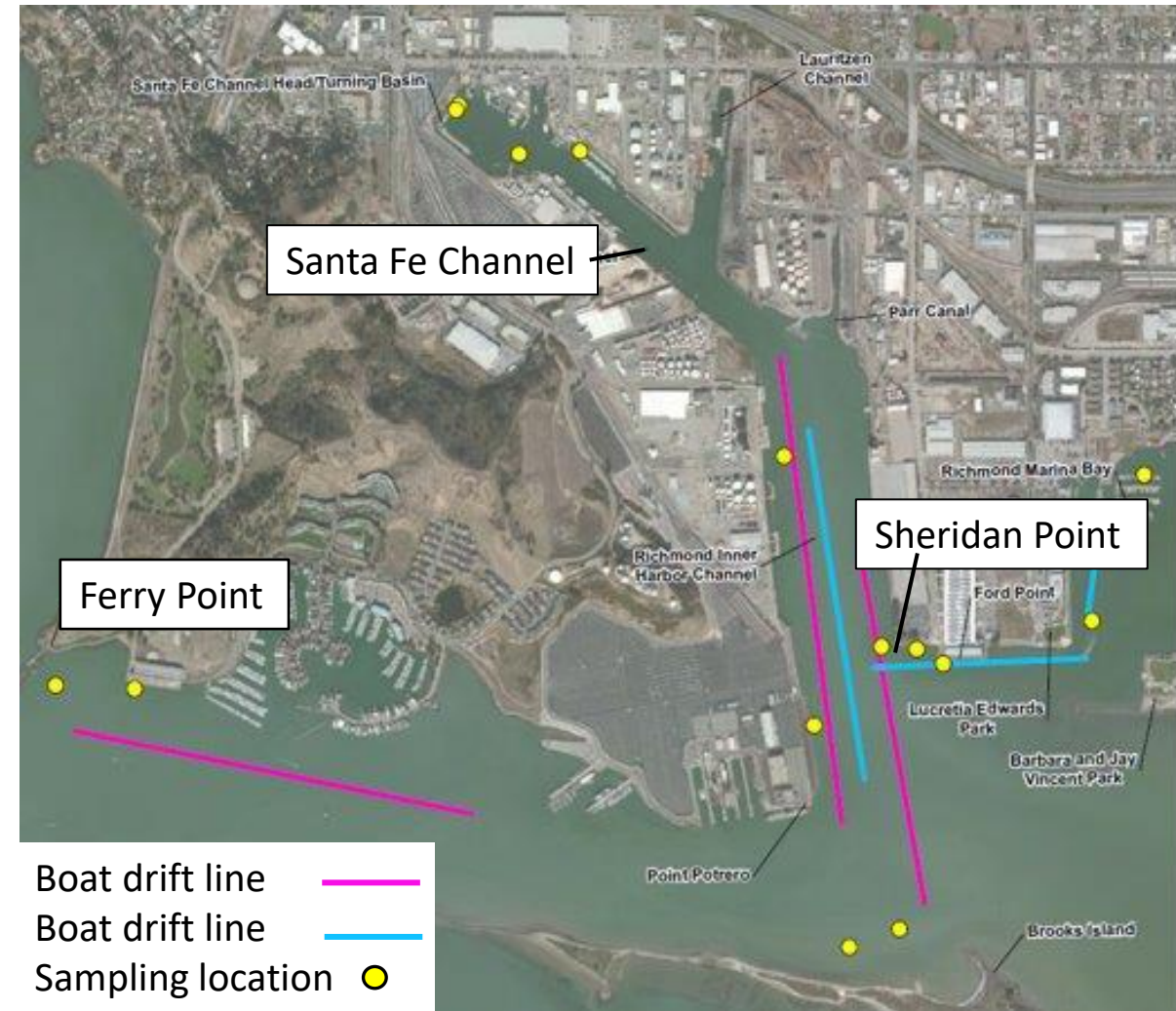


Most recent fish sampling

- The community requested this sampling because the fish advisory for DDT is limited to the Lauritzen Channel, but there was speculation that fish migrating near the Site could also contain DDT.
- In November 2013, Fish were collected from the **Santa Fe Channel, Ferry Point, and Sheridan Point**

All 45 tissue samples were below the “Do not eat” advisory levels for DDT and dieldrin

- San Francisco Bay Fish Advisory still applies outside of the Lauritzen Channel



Results from fish sampling

- Lauritzen Channel
- Santa Fe Channel

- **Lauritzen Channel**
 - Do not eat any fish
- **Santa Fe Channel Head**
 - SF Bay fish advisory applies
 - 8 fish tissue samples DDT concentrations at or below 789.36 ng/g or
 - 14 samples with dieldrin concentrations at or below 36.61 ng/g
- **Santa Fe Channel**
 - SF Bay fish advisory applies
 - 1 fish tissue sample had DDT concentrations at or below 435.33 ng/g



How Can Risk be Reduced?

Execute an
effective cleanup



EPA's goals:

- Execute an effective clean up
 - Ongoing sources of contamination are present at the Site.
 - Ongoing discharges could lead to recontamination of channel sediments, surface water, and biota in the future if not controlled or cleaned up.
 - Since the initial marine remedy conducted from 1996 through 1997 did not include substantive shoreline remedy, source control, or complete removal of contaminated sediment...

The cleanup strategies developed as part of the new Feasibility Study include both shoreline and source control measures.

What can you do?

Limit exposure – limiting fish consumption according to advisories

Comment on Proposed cleanup Plan when released in 2026



Office of Environmental Health Hazards (OEHHA) Presentation

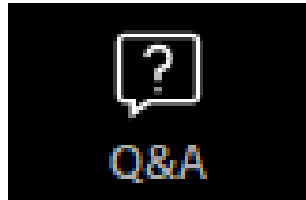
5 minute break before q&a



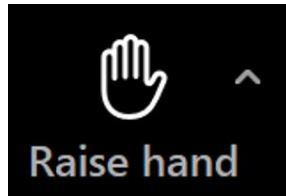
Questions and Discussion



Participants may enter questions in the Q&A box at any time.



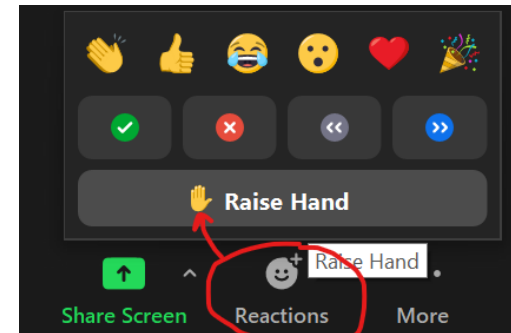
Participants may raise hands via Zoom to ask questions verbally.



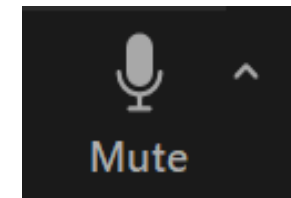
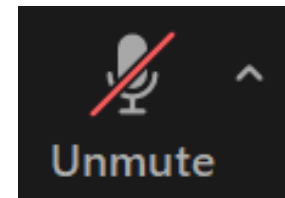
Speak slowly and clearly to assist with interpretation.



Questions will be read out loud to speakers.



Press *9 on telephone keypad



Press *6 on telephone keypad



Contact Us

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415-947-4307

Dr. Jocylin Pierro – Toxicologist / Risk Assessor

pierro.jocylin@epa.gov

415-972-3690



Upcoming meetings

- Tuesday, July 29: Cleanup Technologies
- Wednesday, August 27: The Superfund Process
- Wednesday, September 24: TBD

All meetings will be on zoom and start at 6:30pm





San Francisco Bay and Lauritzen Channel Fish Advisories

TRAN PHAM, MPH | RESEARCH SCIENTIST

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT | CAL EPA

JUNE 26, 2025 | UNITED HECKATHORN COMMUNITY DISCUSSION #3



Fish advisories issued by the Office of Environmental Health Hazard Assessment (OEHHA):

- Recommend how often you can safely eat fish that you catch from California water bodies
- Balance the *risks* with the *benefits* of eating fish
- Provide advice ranging from no consumption to 7 meals per week
- Are based on persistent chemical contaminants only, such as mercury or PCBs (polychlorinated biphenyls)
- Apply only to non-commercially caught fish - only the fish *you* catch

OEHHA Fish Advisories provide “advice”

- More than 150 site-specific advisories
- 4 statewide advisories for areas without site-specific advice (lakes, rivers, coast, migratory species)
- Provide two sets of guidelines, typically based on mercury and/or PCBs:



*Women 18-49 years and
children 1-17 years*



*Women 50 years and older
and men 18 years and older*

- One serving is 8 ounces uncooked fish fillet or shellfish “meat”
- OEHHA considers updating an existing advisory when
 - New data are available & meet OEHHA quality standards, and
 - Could potentially change existing advice, or
 - Adds new species to an advisory.

Fish advisories are issued based on levels of persistent chemicals



Natural elements

- **Mercury (Hg)** – a global contaminant and legacy of California's gold and mercury mining
- **Selenium (Se)** – a micro-nutrient that can be redistributed and concentrated as a result of human activity



Industrial chemicals

- **Polychlorinated biphenyls (PCBs)** – banned in the 1970s; still pervasive in some areas
- **Polybrominated diphenyl ethers (PBDEs)** – flame retardants; some forms are no longer produced



Pesticides

- **DDTs** – banned in the 1970s; still present in some environments
- **Dieldrin** – banned in the 1970s; still present in some environments
- **Chlordane** – banned in the 1970s
- **Toxaphene** – banned in 1988

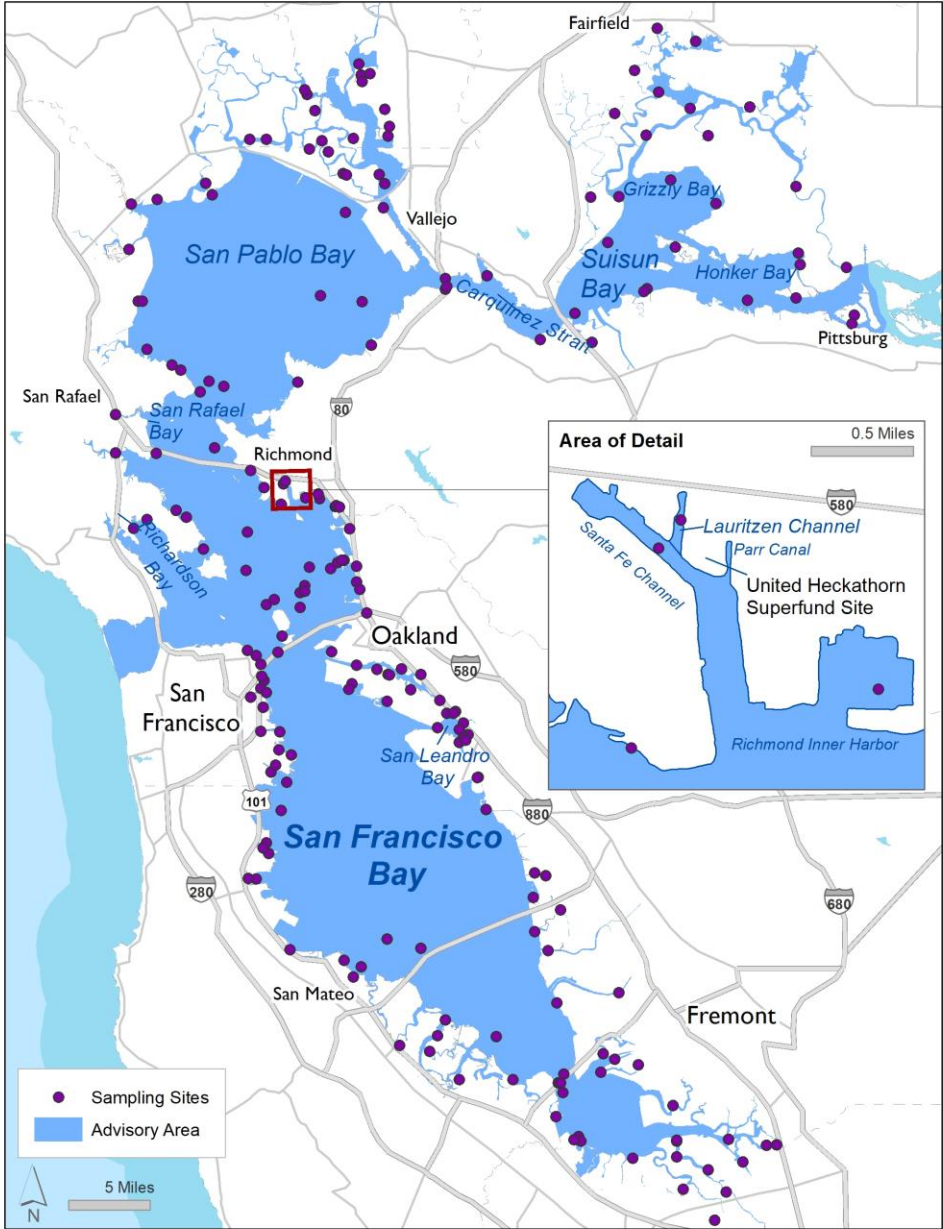
Current Fish Consumption Advisories



Risk Driver*	Percent of Advisories
Mercury	97
PCBs	40
Selenium	8
DDTs	5
Dieldrin	4
PBDEs	1

*Consumption advice is based on the chemical (risk driver) with the lowest recommended number of servings per week. More than one risk driver may affect advice in a single advisory, depending on the human population group and the type of fish.

Sampling Sites for San Francisco Bay and Lauritzen Channel advisories



SF Bay Advisory offered in multiple languages

San Francisco Bay Fish Advisories

A GUIDE TO EATING FISH FROM SAN FRANCISCO BAY

(Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties)

Women
(18 – 49 Years)

Children
(1 – 17 Years)


Choose the Good Fish
Fish are a good source of vitamins, protein, and omega-3s. Eating fish low in harmful chemicals may provide important health benefits.

Avoid the Bad Fish
Eating fish with higher levels of mercury and PCBs can harm the brain and nervous system, especially in fetuses, babies, and children.


2 TOTAL SERVINGS A WEEK

OR


1 TOTAL SERVING A WEEK




American Shad
♥ high in omega-3s




Chinook (King) Salmon
♥ high in omega-3s




California Halibut




Jacksmelt




Barred Surfperch




Black Perch




Walleye Surfperch




Northern Anchovy
♥ high in omega-3s



Rubberlip Surfperch




White Surfperch




White Croaker


Do Not Eat Any Fish from Lauritzen Channel




Mississippi Silverside




Shark species




Pacific Sardine




Shiner Perch



Striped Bass



Topsmelt




White Sturgeon
(If harvest is permitted per CDFW)


California Office of Environmental Health Hazard Assessment
www.oehha.ca.gov/fish
fish@oehha.ca.gov
(916) 324-7572

Children
One Serving
Less than 8 ounces


Adults
One Serving
8 ounces

Cook fish and shellfish thoroughly to destroy harmful parasites

Eat only the skinless fillet 

Eat only the meat 

Some chemicals are higher in the skin, fat, and guts



SCAN ME

A GUIDE TO EATING FISH FROM SAN FRANCISCO BAY

(Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties)

Women
(50+ Years)

Men
(18+ Years)

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Fish are a good source of vitamins, protein, and omega-3s. Eating fish low in harmful chemicals may provide important health benefits.

Avoid the Bad Fish
Eating fish with higher levels of mercury and PCBs can harm the brain and nervous system, especially in fetuses, babies, and children.

7 TOTAL SERVINGS A WEEK

OR

5 TOTAL SERVINGS A WEEK

OR

3 TOTAL SERVINGS A WEEK

OR


2 TOTAL SERVINGS A WEEK

OR


1 TOTAL SERVING A WEEK

OR


0 DO NOT EAT




American Shad
♥ high in omega-3s




Chinook (King) Salmon
♥ high in omega-3s




Barred Surfperch




Black Perch




Rubberlip Surfperch




White Surfperch




California Halibut




Jacksmelt




Northern Anchovy
♥ high in omega-3s




Shark species




Striped Bass
♥ high in omega-3s



Walleye Surfperch




White Croaker




White Sturgeon
(If harvest is permitted per CDFW)


Do Not Eat Any Fish from Lauritzen Channel




Mississippi Silverside



Pacific Sardine



Shiner Perch




Topsmelt


California Office of Environmental Health Hazard Assessment
www.oehha.ca.gov/fish
fish@oehha.ca.gov
(916) 324-7572

Children
One Serving
Less than 8 ounces


Adults
One Serving
8 ounces

Cook fish and shellfish thoroughly to destroy harmful parasites

Eat only the skinless fillet 

Eat only the meat 

Some chemicals are higher in the skin, fat, and guts



SCAN ME

Lauritzen Channel Fish Advisory

Women
(18 – 49 Years)

Children
(1 – 17 Years)

Women
(50+ Years)

Men
(18+ Years)

DO NOT EAT

DO NOT EAT

A GUIDE TO EATING FISH
from the
LAURITZEN CHANNEL
IN RICHMOND INNER HARBOR
(CONTRA COSTA COUNTY)

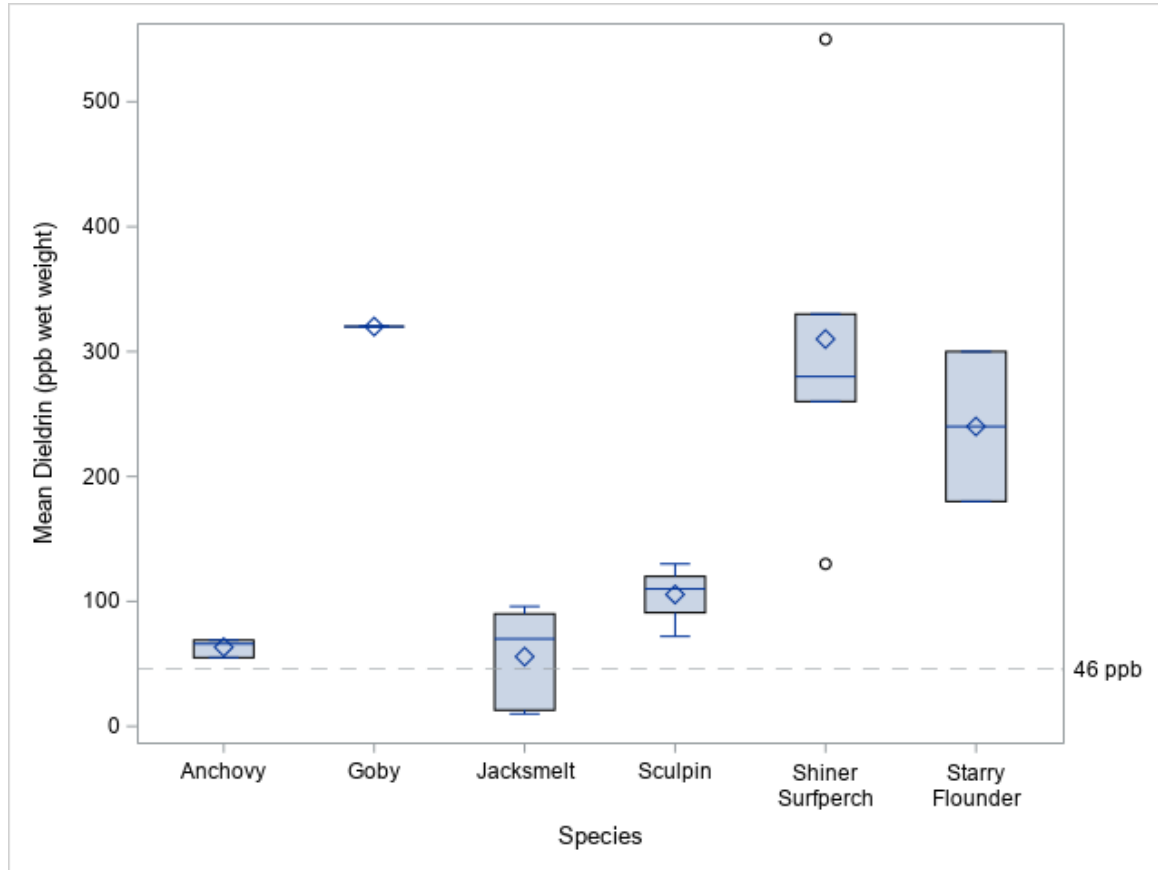
Eat the Good Fish
Eating fish that are low in chemicals may provide health benefits to children and adults.

Avoid the Bad Fish
Eating fish with higher levels of chemicals like mercury or PCBs may cause health problems in children and adults.

Choose the Right Fish
Chemicals may be more harmful to unborn babies and children.

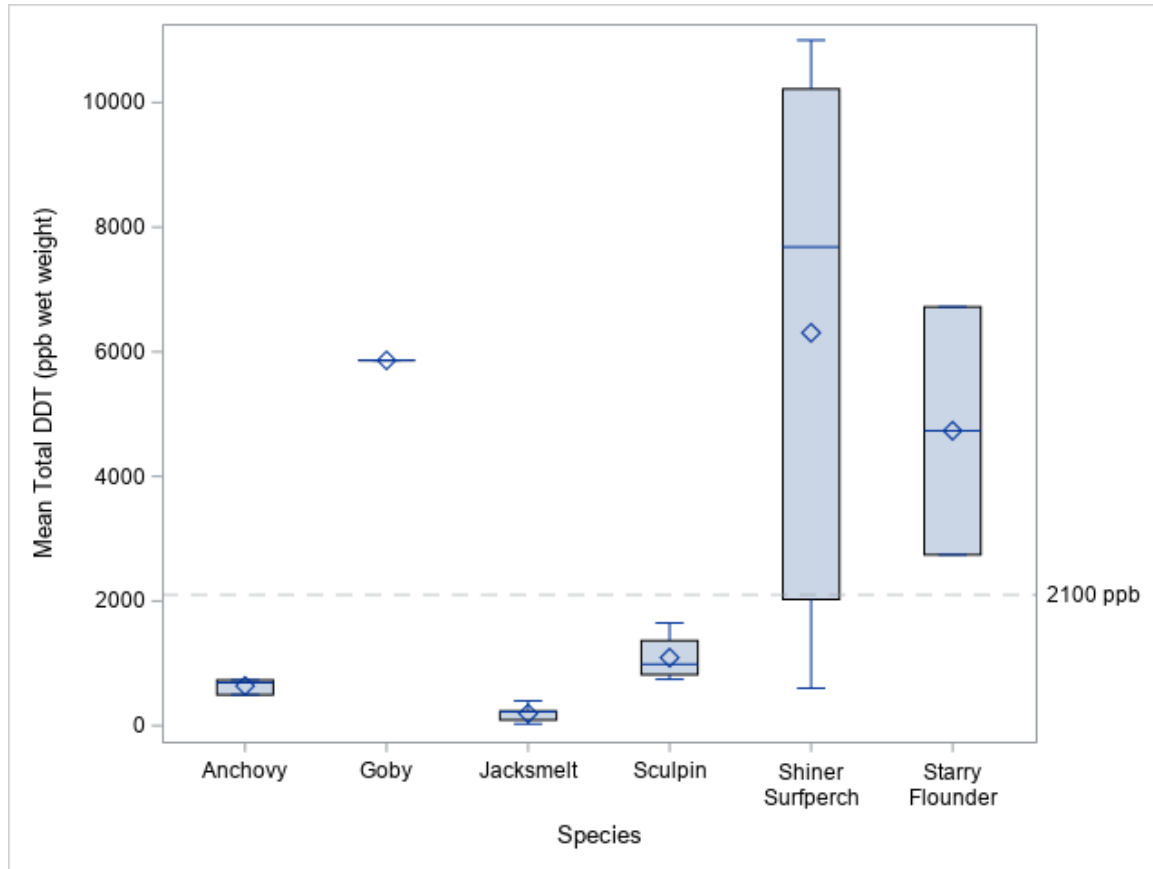
ALL FISH

All species tested in Lauritzen Channel in 2008 exceeded the do-not-consume level for Dieldrin



Mean dieldrin levels for all species tested exceeded levels that would result in do-not-eat advice

Some species tested in Lauritzen Channel in 2008 exceeded the do-not-consume level for DDT



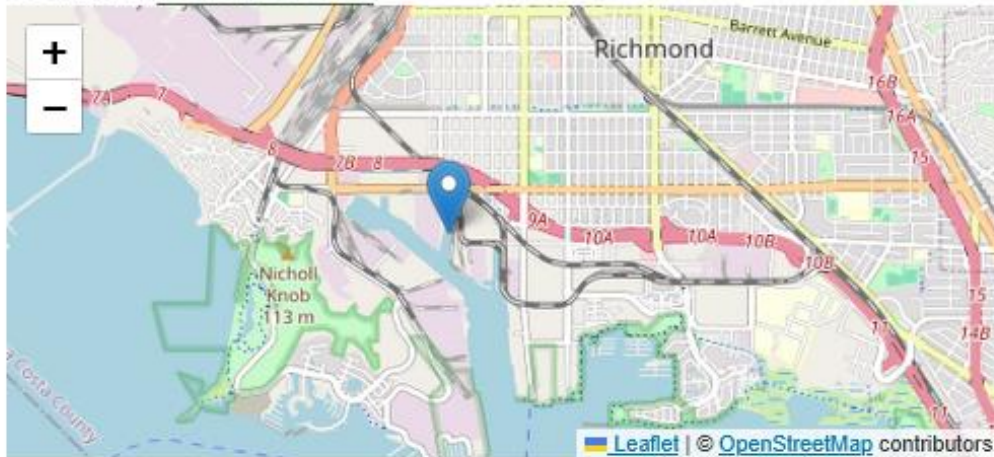
Mean DDT levels for Goby, shiner surfperch, and starry flounder exceeded levels that would result in do-not-eat advice

Lauritzen Channel – Recommend Do Not Eat Any Fish or Shellfish

Waterbody

Lauritzen Channel

County: Contra Costa



- “Do Not Consume All Fish” advisory in effect since 2011
- Based on data from species tested in 2008 for Dichlorodiphenyltrichloroethane and its byproducts (DDTs) and dieldrin
- All species tested in Lauritzen Channel exceeded the “do-not-consume” cutoff level for dieldrin
- 3 out of 6 species tested exceeded the “do-not-consume” cutoff level for DDTs

Eating Fish Safely

- Chemical contaminants like mercury, PCBs, DDTs, and dieldrin can build up in fish or shellfish
- Reduce your exposure by
 - Checking site-specific advisories (SF Bay Advisory)
 - Checking statewide advisory for coastal areas without site-specific advice
 - Choosing low contaminant species (“green category species”)
 - Eating smaller fish

Preparing and Cooking Fish Safely

1. For finfish, eat only the fillet
2. For crabs, lobsters, crayfish, eat only the meat
3. Grill, broil, or bake fish so juices drain away
4. Cook fish and shellfish thoroughly to destroy parasites



Eat the fillet, trim the fat and remove guts

Additional Resources

1. OEHHA Fish Advisory [Program](#)
2. San Francisco Bay [Fish Advisory](#), including Santa Fe Channel
3. Lauritzen Channel [Fish Advisory](#)
4. Advisory Tissue levels for Common Fish Contaminants Technical Reports [2008](#) and [2011](#)
5. [Benefits and Risks](#) of Eating Fish
6. Chemicals in Fish [Fact Sheets](#)
7. Sport Fish Sampling and Analysis [Technical Report](#)
8. Monitoring Prioritization for Water Bodies [Technical Report](#)
9. Fish Advisory Prioritization Process [Technical Report](#)

Thank you!



For SF Bay Advisory



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www.oehha.ca.gov/fish



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