Updating Recommended Contaminants to Monitor for Fish and Shellfish Advisories

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October 9, 2024

What will be covered today?

- List of contaminants to monitor in fish and shellfish
  - What it is, process to update it, what's new
- Analysis methods for new additions
- Toxicity values for new additions and how they can be used in advisories
- Updating the fish advisory guidance

What is the Contaminant List? How is it Used?

- List of contaminants that EPA recommends fish and shellfish advisory programs in states, Tribes, and territories monitor and analyze.
- When contaminants occur in high enough concentrations to potentially affect the health of people eating fish and shellfish, those programs issue consumption advisories for those waterbodies.

Why did EPA update the list?

- Part of larger effort to update fish advisory guidance for states and Tribes (from 2000)
- Adding contaminants found to accumulate in fish at levels that could be problematic for human health
- Part of EPA's PFAS Strategic Roadmap
- Released on July 11; can be found at https://www.epa.gov/choose-fish-and-shellfish-wisely/epa-guidance-developing-fish-advisories

What was the process for updating the list?

1. Searched Literature

Searched databases using specified terms. Removed articles containing non-U.S. species or lab dosing studies.

2. Extracted Data

Compiled concentrations in fish and shellfish from articles and toxicity information from U.S. government sources.

3. Performed Analyses

Calculated if the concentrations in fish or shellfish would exceed thresholds for safely eating 8 oz/week or 5 oz/day.

4. Compiled Lists

Created two lists of contaminants that have been found in fish and shellfish at concentrations that may be of concern for human health.

5. Sent Through Peer Review

Submitted the process and results to independent subject matter experts in toxicology and human health risk assessment.

6. Revised After Peer Review

Made revisions to incorporate peer reviewers' suggestions.

Why are there two lists of contaminants?

1. **Contaminants to monitor for advisories** (existing list)
   - These have measures of oral toxicity in humans (e.g., RfD).
   - Recommended for issuing advisories
2. **Contaminants to monitor to watch** (new list)
   - Federal agencies have not released a toxicity measure.
   - Recommended for monitoring to see if accumulating in fish.
   - If so, state or Tribe could wait for federal value or determine toxicity value on their own and issue advisory.

Which contaminants were added to "Monitor For Advisories" and "Monitor to Watch" lists?

Contaminant Group	Monitor for Advisories List: Contaminant	Monitor to Watch List: Contaminant	
Cyanotoxins	Microcystins	BMAA DABA	
Flame retardants	BDE-47		
Metals	Lead		
PFAS	PFDA PFHxS PFNA PFOA PFOS	PFDS PFDoA PFHpS PFOSA	PFTeDA PFTrDA PFUnDA
Pharmaceuticals	Amphetamine		

Which EPA methods can be used to analyze the new contaminants?

Contaminant Group	Contaminant			EPA Method
Cyanotoxins	Microcystins BMAA DABA			For MC: method using the 2-methoxy-3-methyl-4-phenylbutyric acid (MMPB) procedure is under development
Flame retardants	BDE-47			EPA Method 1614A
Metals	Lead			EPA Method 200.8, Rev. 5.4, with sample preparation by SW-846 Method 3050B or other suitable strong acid digestion procedure applicable to tissues
PFAS	PFDA PFHxS PFNA PFOA	PFOS PFDS PFDoA PFHpS	PFOSA PFTeDA PFTrDA PFUnDA	EPA Method 1633
Pharmaceuticals	Amphetamine			EPA Method 1694

Which toxicity values is EPA using for PFAS?

PFAS	Non-cancer Toxicity Value (mg/kg BW-day)	Cancer Slope Factor $(mg/kg/day)^{-1}$
PFDA	2E-09	N/A
PFHxS	2E-06 (IRIS draft: 4E-10)	N/A
PFNA	3E-06	N/A
PFOS	1E-07	39.5
PFOA	3E-08	29,300

Which toxicity values is EPA using for the new non-PFAS contaminants?

Contaminant	Non-cancer Toxicity Value (mg/kg BW-day)	Cancer Slope Factor $(mg/kg/day)^{-1}$
Microcystins	5E-5	N/A
BDE-47	1E-4	N/A
Amphetamine	8.3E-06	N/A

Equations for Calculating Fish Consumption Rates for Advisories (single contaminant)

Carcinogenic effects

$$\mathrm{CR}_{\mathrm{daily}}\left(\frac{kg}{d}\right) = \frac{\text{Cancer Risk Level} \times \text{Body Weight } (kg)}{\text{Cancer Slope Factor } \left(\frac{mg}{kg-day}\right)^{-1} \times \text{Concentration in fish } \left(\frac{mg}{kg}\right)}$$

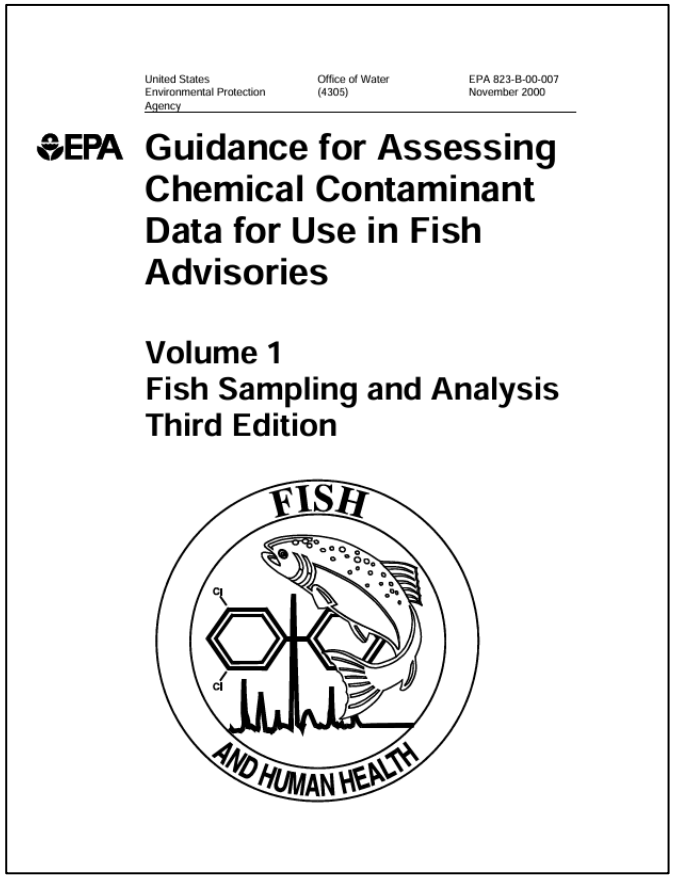
Non-carcinogenic effects

$$\mathrm{CR}_{\mathrm{daily}}\left(\frac{kg}{d}\right) = \frac{\text{Reference Dose } \left(\frac{mg}{kg-d}\right) \times \text{Body Weight } (kg)}{Concentration\ in\ fish\ \left(\frac{mg}{kg}\right)}$$

Fish and Shellfish Consumption Advisory Guidance

October 9, 2024

What are we updating?


United States Environmental Protection Agency | Office of Water (4305) | EPA 823-B-00-007 November 2000

EPA **Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories**

Volume 1
Fish Sampling and Analysis
Third Edition

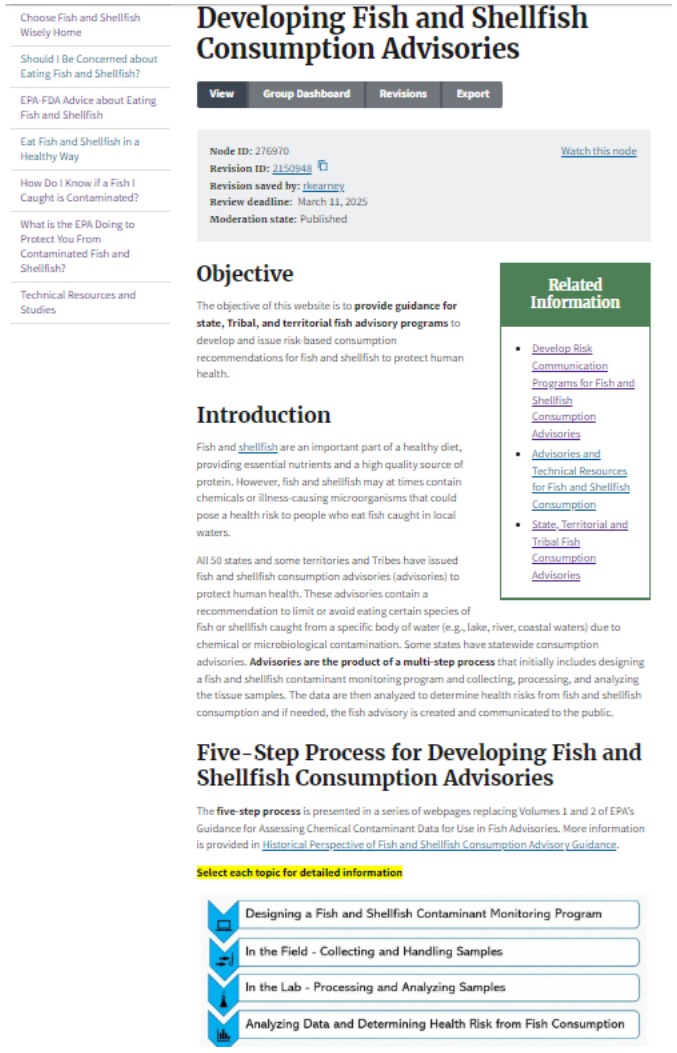
FISH AND HUMAN HEALTH

- *Fish Sampling and Analysis* (Volume 1) and *Risk Assessment and Fish Consumption Limits* (Volume 2)
  - Moving from document to web-based format
  - Updating list of target analytes to monitor in fish and shellfish
  - Creating a dashboard (interactive map) for target species
  - Revising equations for multiple contaminants
  - Changing recommendations based on recent foil rinsate and holding time limit studies
- *Develop Risk Communication Programs for Fish and Shellfish Consumption Advisories* (web version of former Volume 4)
  - Adding new “what parts are safe to eat?” fish infographic, available in 20 languages

Guidance Website: Topics and Progress

- Developing Fish and Shellfish Consumption Advisories (landing page)
  - Historical Perspective of Guidance
- Designing a Fish and Shellfish Contaminant Monitoring Program
  - Monitoring Objectives and Strategies
  - Sampling Sites
  - Target Species and Size Classes
  - Target Contaminants
  - Sampling Times and Frequency
  - Sample Types: Fish and Shellfish
  - Quality Assurance and Quality Control
  - Sample Analysis
- In the Field – Collecting and Handling Samples
  - Sample Collection
  - Sample Handling
- In the Lab – Processing and Analyzing Samples
  - Receiving Samples
  - Processing Samples (Fish Fillet, Whole Fish, Shellfish, Fish Plug)
  - Analytical Methods
  - Quality Assurance and Quality Control
  - Data Reporting
- Analyzing Data and Calculating Consumption Limits
  - Equations/Calculator for Developing Limits
- Developing a Fish and/or Shellfish Advisory
- Developing Risk Communication Programs for Advisories

Draft Webpages



Choose Fish and Shellfish Wisely Home

Should I Be Concerned about Eating Fish and Shellfish?

EPA-FDA Advice about Eating Fish and Shellfish

Eat Fish and Shellfish in a Healthy Way

How Do I Know if a Fish I Caught is Contaminated?

What is the EPA Doing to Protect You From Contaminated Fish and Shellfish?

Technical Resources and Studies

Developing Fish and Shellfish Consumption Advisories

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Node ID: 276970
Revision ID: 2150948
Revision saved by: rkearney
Review deadline: March 11, 2025
Moderation state: Published

Watch this node

Objective

The objective of this website is to **provide guidance for state, Tribal, and territorial fish advisory programs** to develop and issue risk-based consumption recommendations for fish and shellfish to protect human health.

Related Information

- Develop Risk Communication Programs for Fish and Shellfish Consumption Advisories
- Advisories and Technical Resources for Fish and Shellfish Consumption
- State, Territorial and Tribal Fish Consumption Advisories

Introduction

Fish and shellfish are an important part of a healthy diet, providing essential nutrients and a high quality source of protein. However, fish and shellfish may at times contain chemicals or illness-causing microorganisms that could pose a health risk to people who eat fish caught in local waters.

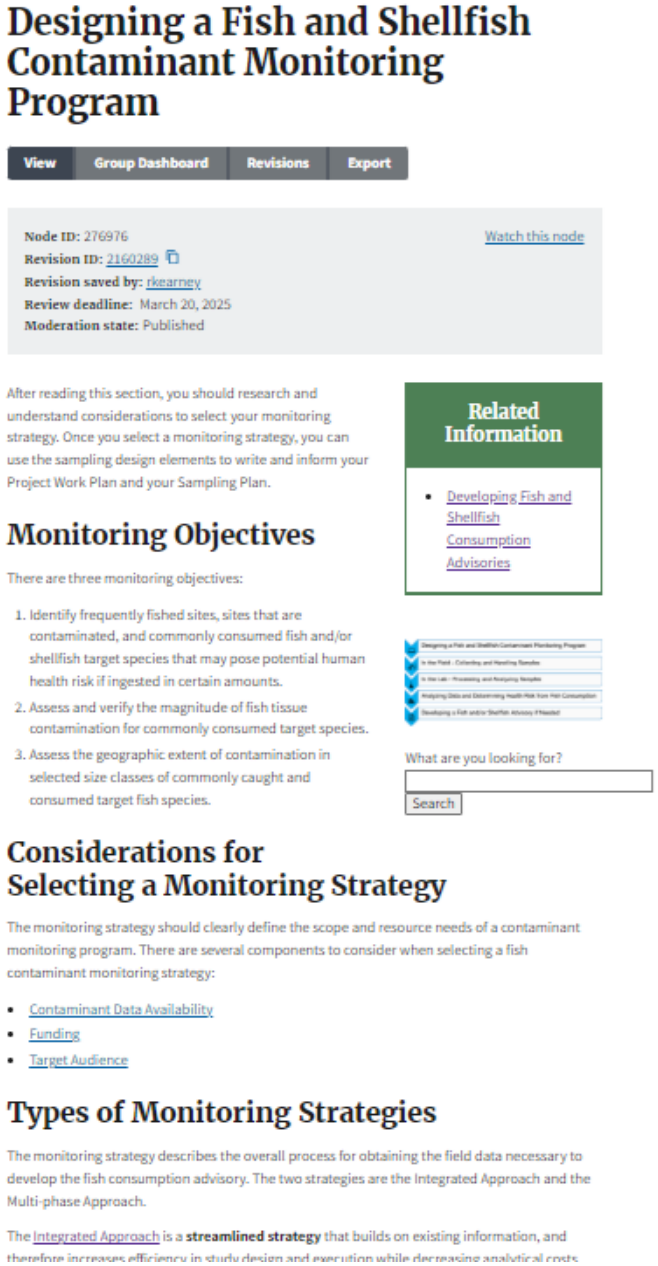
All 50 states and some territories and Tribes have issued fish and shellfish consumption advisories (advisories) to protect human health. These advisories contain a recommendation to limit or avoid eating certain species of fish or shellfish caught from a specific body of water (e.g., lake, river, coastal waters) due to chemical or microbiological contamination. Some states have statewide consumption advisories. **Advisories are the product of a multi-step process** that initially includes designing a fish and shellfish contaminant monitoring program and collecting, processing, and analyzing the tissue samples. The data are then analyzed to determine health risks from fish and shellfish consumption and if needed, the fish advisory is created and communicated to the public.

Five-Step Process for Developing Fish and Shellfish Consumption Advisories

The **five-step process** is presented in a series of webpages replacing Volumes 1 and 2 of EPA's Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories. More information is provided in Historical Perspective of Fish and Shellfish Consumption Advisory Guidance.

Select each topic for detailed information

- Designing a Fish and Shellfish Contaminant Monitoring Program
- In the Field - Collecting and Handling Samples
- In the Lab - Processing and Analyzing Samples
- Analyzing Data and Determining Health Risk from Fish Consumption



Designing a Fish and Shellfish Contaminant Monitoring Program

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Node ID: 276976
Revision ID: 2160289
Revision saved by: rkearney
Review deadline: March 20, 2025
Moderation state: Published

Watch this node

After reading this section, you should research and understand considerations to select your monitoring strategy. Once you select a monitoring strategy, you can use the sampling design elements to write and inform your Project Work Plan and your Sampling Plan.

Related Information

- Developing Fish and Shellfish Consumption Advisories

Monitoring Objectives

There are three monitoring objectives:

1. Identify frequently fished sites, sites that are contaminated, and commonly consumed fish and/or shellfish target species that may pose potential human health risk if ingested in certain amounts.
2. Assess and verify the magnitude of fish tissue contamination for commonly consumed target species.
3. Assess the geographic extent of contamination in selected size classes of commonly caught and consumed target fish species.

What are you looking for?

Search

Considerations for Selecting a Monitoring Strategy

The monitoring strategy should clearly define the scope and resource needs of a contaminant monitoring program. There are several components to consider when selecting a fish contaminant monitoring strategy:

- Contaminant Data Availability
- Funding
- Target Audience

Types of Monitoring Strategies

The monitoring strategy describes the overall process for obtaining the field data necessary to develop the fish consumption advisory. The two strategies are the Integrated Approach and the Multi-phase Approach.

The Integrated Approach is a **streamlined strategy** that builds on existing information, and therefore increases efficiency in study design and execution while decreasing analytical costs

Any questions?
Thank you!

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