



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY NEW ENGLAND REGION

Centredale Manor Restoration Project

WOONASQUATUCKET RIVER

SITE UPDATE ON FISHING ADVISORY

August 2003

The U.S. Environmental Protection Agency (EPA) and Rhode Island Department of Environmental Management (RIDEM) are continuing to address contamination at the Centredale Manor Restoration Project located along the Woonasquatucket River in North Providence, Rhode Island. This is an update on recent EPA activities to assess the nature and extent of contaminants present in fish collected in the river and its associated water bodies.

What's the latest on the assessment studies for the Woonasquatucket River?

Since 2001, EPA has conducted environmental studies to assess the contamination in and along the river. Hundreds of samples including fish, eels, turtles, crayfish, worms, insects, tree swallows, sediments, floodplain soils, and water have been collected for chemical and toxicological testing. EPA is evaluating these test results to determine strategies for future cleanup actions that will protect public health and the environment.

This fact sheet presents information about the studies being performed to assess the risk to the public from eating fish, eels, or turtles caught from the Woonasquatucket River. In addition, a short description of actions undertaken at the site to protect the public and a brief overview of the ongoing site assessment activities are provided.

What is the EPA doing to assess the site and protect the public?

EPA is evaluating the results from the testing in and around the river to assess:

- Long-term impacts on public health and the local environment.
- Strategies for future cleanup actions that will protect public health and wildlife.

Actions that EPA has already taken to protect public health and the environment include:

- Fencing and capping affected areas.
- Posting warning signs and providing a grant to the Northern Rhode Island Conservation District for public outreach to elementary schools to teach children about responsible uses of the Woonasquatucket River.
- Informing individual residents about precautions for enjoying the river.
- Reconstructing Allendale Dam and restoring Allendale Pond.
- Removing contaminated soil from residential properties abutting Allendale and Lyman Mill Ponds.



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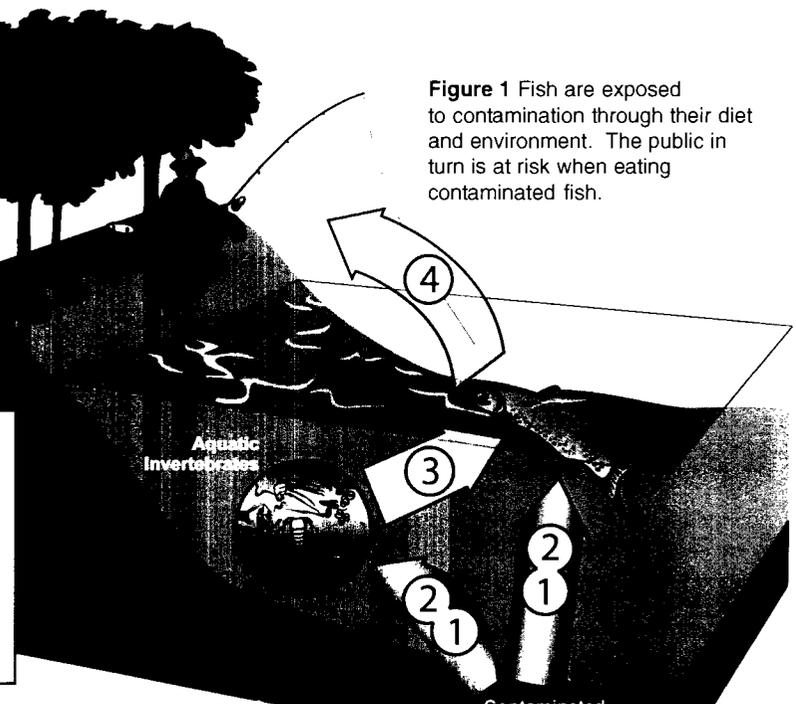
Woonasquatucket River Fish and Human Health Exposure Study

EPA has created this update to tell you more about fish testing performed to assess the risk to the public from eating fish caught from the Woonasquatucket River. Potentially dangerous chemicals are present in the Woonasquatucket River and can accumulate in the river sediments and creatures (Figure 1). These chemicals can then be passed along to humans who eat fish, eels, or turtles caught from the river.

Figure 1 Fish are exposed to contamination through their diet and environment. The public in turn is at risk when eating contaminated fish.

Process Depicted:

1. Direct (contact) exposure of aquatic insects and fish with sediment
2. Indirect (bioaccumulation) exposure of aquatic insects and fish
3. Fish consume insects
4. People eat contaminated fish



Fish Testing

EPA has conducted a study since the summer of 2001 to evaluate the extent to which dioxins and other chemicals are present in the fish. EPA collected samples of fish from six study areas along the river. Four sites (Allendale, Lyman Mill, Manton, and Dyerville Ponds) are located downstream of the former industrial operations near Centredale Manor. Testing has shown that the sediments in Allendale Pond, which is closest to the former industrial operations near Centredale Manor, contain more chemicals compared with sediments tested from other areas along the Woonasquatucket River (see Figure 2 for a map of the area). Two other sites in the Woonasquatucket River region were sampled as reference areas (Greystone Mill and Assapumpset Ponds), which are unaffected by the Centredale Manor site contamination.

Where found, samples of three different species of fish were collected at each of six sampling locations. They include:

- American eel (*Anguilla rostrata*),
- ✧ White sucker (*Catostomus commersoni*), and
- ◊ Largemouth bass (*Micropterus salmoides*).

These fish species were selected to evaluate chemicals present in fish with different feeding habits, as well as fish that are generally eaten by the public.

Samples of largemouth bass were chemically analyzed as fillet and whole body. White sucker and American eel were chemically analyzed as whole body samples since these types of fish are not generally consumed as fillet.

Despite attempts, the following fish species could not be found at all six locations:

- Largemouth bass could not be found at Allendale or Dyerville Ponds.
- White sucker could not be found at Manton, Dyerville, or Assapumpset Ponds.
- American eel could not be found at Manton Pond.

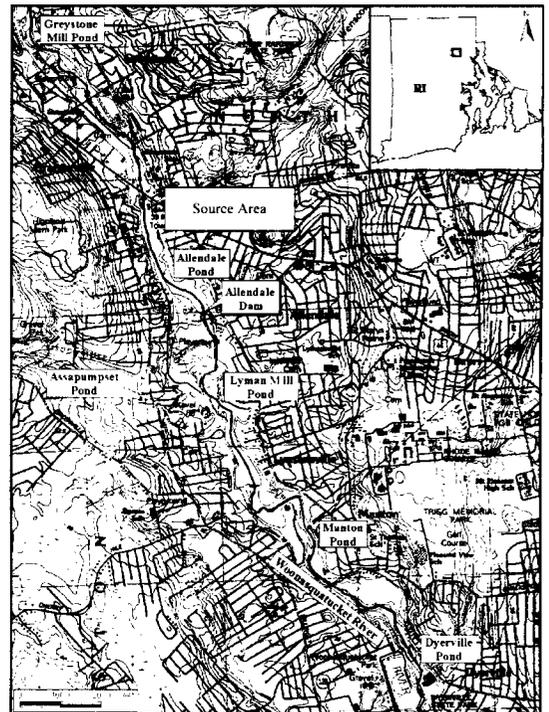


Figure 2 Centredale Manor Restoration Project, the Woonasquatucket River, and its associated waterbodies, including Greystone Mill Pond and Assapumpset Pond (the reference areas) and Allendale, Lyman Mill, Manton, and Dyerville Ponds located downstream of the Centredale Manor Restoration Project.

Fish Testing, continued

Fish tissue samples were analyzed for a variety of chemical contaminants; and impacts of all these chemicals, including dioxin, polychlorinated biphenyls (PCBs), metals, and pesticides, are being evaluated in the public health and environmental risk assessments. This fact sheet focuses on dioxin, since this chemical appears to present the greatest risk to public health.

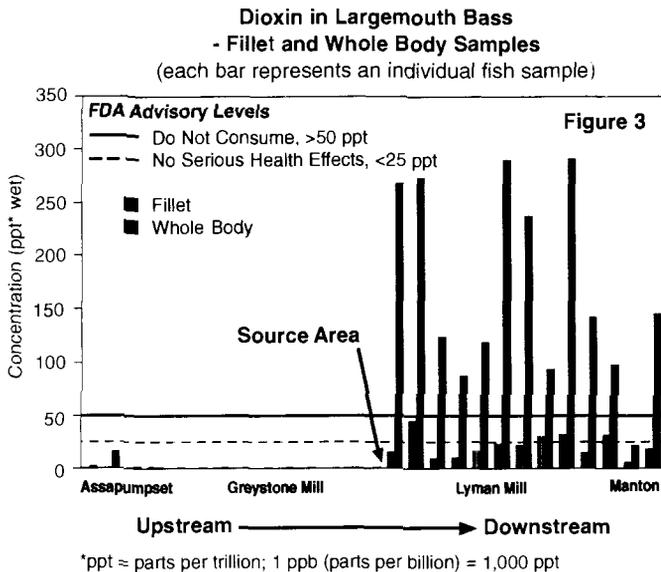
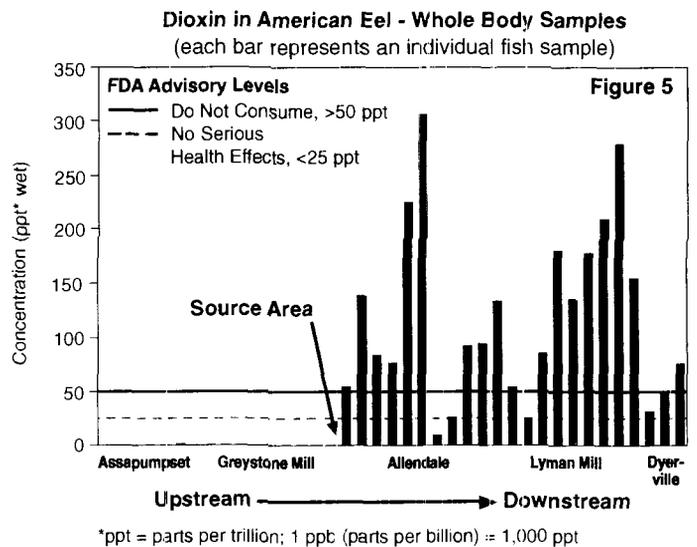
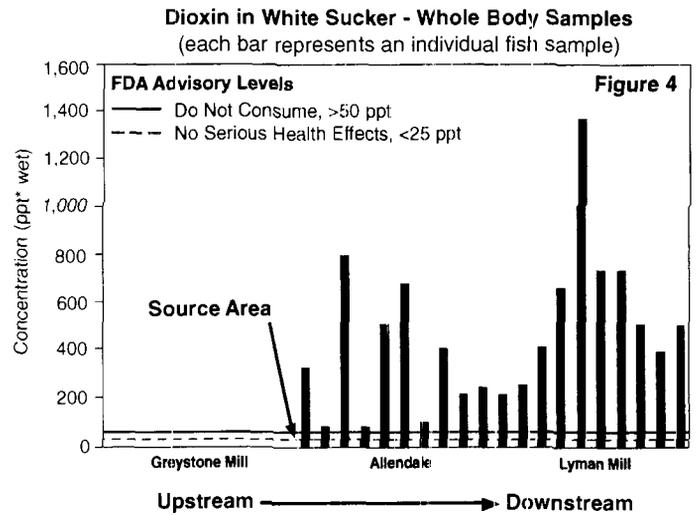


Figure 3 Concentrations of dioxin in the fillet tissues of largemouth bass were below the U. S. Food and Drug Administration (FDA) "Do Not Consume" levels at all sampling locations. In contrast, concentrations of dioxin were higher in the whole body samples of largemouth bass and frequently exceeded the FDA "Do Not Consume" levels in areas downstream of the project. Dioxin was either not detected or found at very small concentrations in fish caught at the reference locations.

Fish Testing Conclusions

- The fish population tested in areas immediately downstream of the Centredale Manor Restoration Project (i.e., Allendale and Lyman Mill areas) generally contain higher levels of chemical contamination than fish collected at reference areas (Greystone Mill and Assapumpset Ponds) or areas further downstream of the project (e.g., Manton and Dyerville areas) (Figures 3, 4, and 5).
- White sucker fish generally contained the highest concentrations of dioxin and other chemicals compared with American eel and largemouth bass, suggesting that the white sucker fish have greater and longer exposure to contaminants in the river system. This is not unusual given that white sucker is considered a "residential" fish, whereas American eel is a migratory species and largemouth bass is not a bottom-feeding species.
- Concentrations of dioxin in fish collected at Allendale and Lyman Mill frequently approached or exceeded the U. S. Food and Drug Administration's (FDA's) "Do Not Consume" levels, indicating that the public should not eat fish from these areas.
- PCBs in fish had few exceedances of the FDA Tolerance Levels in Allendale and Lyman Mill. Other chemicals, including metals (mercury, lead) and pesticides (dieldrin, DDT), did not exceed FDA safety levels in all fish.
- These study findings reinforce the fish consumption advisory issued by the Rhode Island Department of Health, which recommends that the public not eat fish caught from the Woonasquatucket below the Johnston/Smithfield town line.



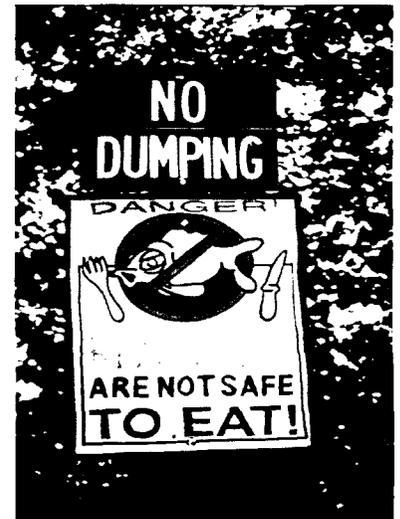
Figures 4 and 5 Concentrations of dioxin in white sucker (Figure 4) and American eel (Figure 5) frequently exceeded the FDA "Do Not Consume" levels in areas immediately downstream of the project. Dioxin was either not detected or found at very small concentrations in fish caught at the reference locations.

Next Steps

EPA is continuing to conduct environmental studies to assess the risk to public health from eating fish caught from the Woonasquatucket River. The draft ecological and human health risk reports, which thoroughly present the assessments mentioned in this fact sheet, are expected to be available for public review in fall 2003. These reports will be followed by the feasibility study, which evaluates cleanup options for the river.

Please Act Responsibly Along Allendale Pond and the Woonasquatucket River:

- Please do not eat fish, turtles, eels, or plants from the Woonasquatucket River.
- Please do not swim or boat in Allendale Pond or play on the newly restored Allendale Dam.
- Please do not wade in the shallow water or swim in the river.
- Obey the warning signs posted along the river.
- Walking, jogging, or bike riding along the river are acceptable activities.
- Remember to wash thoroughly after any contact with the river water or sediment.



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Or visit the Centredale Manor Restoration Project Web sites:

www.epa.gov/region01/superfund/sites/centredale
www.epa.gov/superfund/