

Glynn County Superfund Sites

Superfund Site Seafood Contamination

Technical Assistance Report

October 2012

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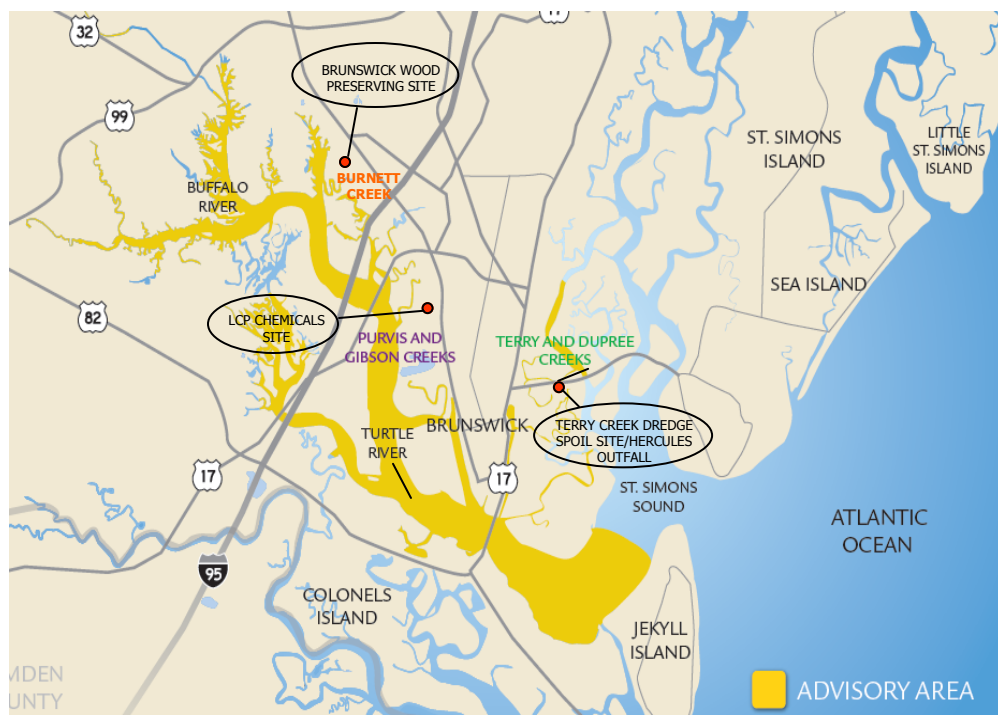
This update and more information about the Glynn County Superfund Sites can be accessed at:

www.glynnenvironmental.org

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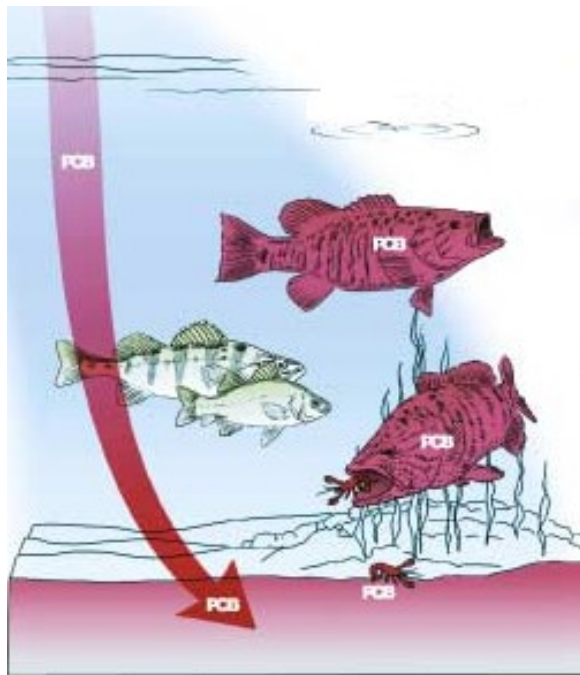


Seafood Contamination

The problem of fish, shrimp, clams and other seafood that is contaminated with toxic chemicals is not new to the Brunswick area of Georgia. The state of Georgia and the US Environmental Protection Agency have been concerned about contaminated seafood for some time.

The state of Georgia does sample seafood to find out if toxic chemicals are present and if they are a threat to the health of people eating fish, especially women and children. Seafood, much of it fish, is sampled in the areas where there are known to be toxic chemicals present. The chemicals that are often a problem in this area include toxaphene, dioxins, polychlorinated biphenyls (PCBs), and methyl mercury because these chemicals are easily taken up and stored by fish and either do not break down (for example: mercury) or breakdown slowly.

Fish and other animals in the water become contaminated with toxic chemicals, such as dioxins, polychlorinated biphenyls (PCBs), toxaphene and other chemicals because the animals take up the chemicals from the water, the sediment, or from eating other living things. One of the most common ways that fish become contaminated is by eating worms and other animals that are contaminated. The process is pictured on the next page, showing polychlorinated biphenyls (PCBs) as a chemical that can build up in the water, sediment, and wildlife.



Chemicals released from a factory or a processing plant get into the waterway in one or more ways.

Chemicals may be:

1. In the waste water pipe that exits the plant
2. Possibly carried off in dirt into the water when it rains
3. Seep into the ground and then into the creek
4. Exit from a smokestack and then fall onto the ground and water out of the air

Once the chemicals enter the water, they do not stay in the water but settle to the bottom and stick to the mud. Fish and other seafood that live on the bottom of creeks and bays can take up the chemicals from the mud because they eat the mud. Some animals eat mud by accident, like manatee or fish; others take in the mud or sand to filter out the small bits of food found in the mud. Worms, clams and other small animals that live in the mud also become contaminated and are food for larger animals, such as fish and crabs. As one animal eats the smaller creatures and then a still larger animal eats that one, the chemicals are passed from one to the next to the next and the chemicals build up in tissues.

Toxic chemicals from three Superfund sites in Brunswick are getting into the local waters and the seafood that lives there. These toxic chemicals are the ones that the agencies measure in seafood, but the seafood sampling is not perfect and all the chemicals have to be taken into account. A fish or crab or shrimp may have more than one toxic chemical in its body and

these different chemicals often act together to cause more harm than a single chemical alone.

Dioxin, polychlorinated biphenyls (PCBs), toxaphene and mercury all may be health threats for people who eat seafood from the Brunswick area. Dioxins, PCBs and mercury are seafood contaminants in many other waters of the US too. Any explanation of health threats from contaminants in seafood has to take into account all the chemicals because they may present a problem as a combination. Some of the chemicals actually act in the same way, toxicologically, or may affect the same part of the body, in this case, children's brain growth. Seafood is sampled in the vicinity of the LCP Chemical plant, the Hercules Plant on Terry Creek, and on Burnett Creek, near the Brunswick Wood Preserving site that is closed and has been covered. At each site, chemicals are in the mud near the plant, and may be seeping into the creeks from underground, that is, from groundwater.

Overall, fish from the Brunswick region have some problems with chemical contamination that present health risks, but the information is not complete. More information is needed. A proper seafood sampling effort will collect all kinds of seafood that people eat, including fish, crabs, shrimp, clams, oysters and more. A proper seafood sampling effort must also collect seafood that is the actual size that people eat, that is, not minnows and bait fish. And because dioxins and polychlorinated biphenyls are found together in the sediments at these sites, they should both be tested for in the seafood and these results should be factored into the seafood advisories.

Terry Creek/Hercules Outfall Superfund Site

Terry Creek

Seafood caught here has very high levels of toxaphene. The collection of fish on Terry Creek, near the Hercules Plant, took place in September 2011. However, no other type of seafood, (like shrimp and blue crab) was collected for chemical testing. Also, the fish tissues were tested for metals, PCBs, and pesticides, but results are only available for the chemical toxaphene.

In comparing the amount of toxaphene found in the fish to the levels that are safe for people, some of the

fish have levels that are much higher. The EPA recommends that fish not be consumed if the fish has an amount of toxaphene greater than 180 parts per billion. Some of the samples ranged from about 2 to 16 times that amount. Many of the samples were at the lowest level of toxaphene that the lab could test for in the fish sample, which was still higher than the EPA recommended number. Dioxins should also be tested for in the fish because earlier studies of the site sediment indicate that both dioxins and polychlorinated biphenyls (PCBs) were found in the same place.

Brunswick Wood Preserving Superfund Site

Burnett Creek



At Burnett Creek, near the Brunswick Wood Preserving site, fish were collected twice to measure contaminants, once in 2000 and again in 2011. From the fish collection in 2011, only 16 fish tissue samples were tested for chemicals, which is a very small number of samples to test. Also, the sizes of the fish themselves were more the size of bait fish than the size of fish that people eat.

The difference in fish contamination between the two sampling events is not large and shows that fish contamination has not changed. The EPA recommends that fish not be consumed if the fish has a concentration of dioxin greater than 1.2 parts per trillion TEQ. Out of 16 fish tissue samples, half were close to or greater than the EPA fish consumption limit. The sample with the most dioxin was 3 times greater than the EPA limit and, out of all the samples, one quarter of them were twice the EPA limit.

The fish tissue was only tested for dioxins and furans, but not for other chemicals that have been found at the site. The testing should also include other chemicals that have been found at the site like polyaromatic hydrocarbons (PAHs) and copper chromium arsenate (CCA). The site should also be tested for polychlorinated biphenyls (PCBs) and metals, which can also affect a child's developing brain along with dioxin. Because these other chemicals have not been tested for, the fish may be more contaminated than is suggested by the current fish consumption advisories for this creek.

LCP Chemicals Superfund Site

Turtle River

Seafood sampling from the Turtle River near the LCP Chemical site took place in October and December of 2011. They collected six different kinds of fish, blue crab and a type of shrimp. They tested the tissues for polychlorinated biphenyls (PCBs) and metals. Mercury was found in all the samples and polychlorinated biphenyls (PCBs) were found in all but one sample. There is generally more contaminated seafood closer to the LCP Chemical site than there are further away from it on Turtle River.

Dioxins should also be tested for in the fish because earlier studies of site soils and sediment indicate that both dioxins and polychlorinated biphenyls (PCBs) were found in the same place and in high amounts. In another study on the nearby pulp mill, sampled fish had high levels of dioxin. Turtle River and the creeks that feed into it consistently have high amounts of chemicals, such as PCBs, dioxin, and mercury, and have for a long time.





Glynn Environmental Coalition

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Glynn County Advisory Area for Fish You Catch and Eat

Consumption Guidelines for Advisory Area

NO LIMIT – EAT AS OFTEN AS YOU LIKE



Shrimp*

EAT ONLY ONCE PER WEEK



Red Drum (Red Fish)



Blue Crab



Spotted Seatrout



Flounder

EAT ONLY ONCE PER MONTH



Spot*



Black Drum



Striped Mullet*



Whiting



Atlantic Croaker*



Sheepshead

***Purvis and Gibson Creeks** and the adjoining area of **Turtle River**: Eat Shrimp only once per month; Do not eat Atlantic Croaker, Spot, or Striped Mullet. **Terry and Dupree Creeks**: Do not eat Spot. **Buffalo River**: Do not eat Striped Mullet.

Fish Age & Size

Generally, older and larger fish may be more contaminated than younger, smaller fish.



Cooking Methods to Reduce Risk

GOOD

Broiling
Baking
Grilling

OKAY

Deep-fat frying
(do not reuse oil)

POOR

Pan frying

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