

PCBs in Sport Fish: Information for Fish Consumers

Polychlorinated biphenyls (PCBs) are a large group of structurally related industrial chemicals known individually as congeners. They are oily liquids or solids, clear to light yellow in color, and have no smell or taste. PCBs are found in some California sport fish, particularly near urban and industrial areas such as San Francisco, Santa Monica and San Pedro bays. They are also common contaminants in fish in many parts of the world. High levels of PCBs in fish may pose a health threat to frequent fish consumers. The Office of Environmental Health Hazard Assessment (OEHHA) has issued health advisories to fishers and their families with recommendations on how much fish can be eaten safely in areas where PCBs are found.

WHERE DO PCBs COME FROM?

PCBs were manufactured in the United States beginning around 1930 for use as coolants in electrical transformers and capacitors, and as hydraulic fluids, lubricating and cutting oils, and plasticizers. They were banned for most uses by the Toxic Substances Control Act of 1976. Although they are no longer manufactured in significant quantities in the United States, PCBs still occur in the environment as a result of accidental spills and leaks, improper disposal, or runoff from PCB-contaminated soil. Once released to the environment, PCBs cycle freely throughout air, soil, and water and may be transported thousands of miles from their original source.

HOW MIGHT I BE EXPOSED TO PCBs?

In the environment, PCBs are found primarily in soil, sediment, and fatty tissues of animal origin, including fish, meats, and dairy products. Fish and shellfish usually contain the highest PCB levels of any food source. In general, the highest PCB levels are found in fish at the top of the aquatic food chain, have the highest fat content, or were caught near urban or industrial areas. People may also be exposed to small amounts of PCBs if they use older fluorescent light fixtures or electrical appliances, work with PCB transformers or other PCB-containing devices, breathe the air near hazardous waste sites, or drink water from a PCB-contaminated well. Babies may be exposed to PCBs through the placenta during pregnancy or through breast milk after they are born. PCB exposure has declined since its ban in 1977.

AT WHAT LOCATIONS IN CALIFORNIA HAVE ELEVATED LEVELS OF PCBs BEEN FOUND IN FISH?

Elevated levels of PCBs have been found in some species of fish in or near San Francisco Bay, Santa Monica Bay, the Palos Verdes Peninsula, San Pedro Bay, and Long Beach Harbor. Fish consumption advisories based on PCB levels in certain fish species have been issued at these sites. These advisories provide guidance on how much fish you can safely eat of each species at each site and are printed in the California Sport Fishing Regulations booklets. The highest PCB levels have been found in fatty fish, particularly white croaker. Although PCB levels in fish

have been declining, other areas of the state may also be found to have elevated levels of PCBs as new monitoring data become available.

HOW CAN PCBs AFFECT HEALTH?

People exposed to very high levels of PCBs, as has occurred in the workplace and some accidental poisoning incidents, have shown various adverse health effects, particularly to the skin, eyes and nervous system. However, simultaneous exposure to other chemicals makes it difficult to tell whether these health effects were caused by PCBs. Because of this, scientists have used experimental studies with animals to determine the likely health effects of PCB exposure. These animal studies show that exposure to high levels of PCBs can harm the liver, the gastrointestinal tract, and the immune, nervous, and reproductive systems. The most sensitive effects of PCB toxicity – those occurring at the lowest experimental doses – have been shown in monkeys. These include distorted growth of fingernails and toenails, eye discharge, and decreased response of the immune system. These effects occurred at experimental doses far higher than would be expected to occur from eating fish.

More recent studies have tried to find whether lower levels of PCB exposure (such as those that could occur from frequent consumption of fish containing high levels of PCBs) may subtly affect development of the fetal nervous system during pregnancy. Some studies have suggested that PCBs might cause small decreases in children's I.Q. or affect their memory, especially if exposures occur during pregnancy. Other studies have not confirmed these effects. While human studies have not been consistent, there is enough evidence in humans and animals to justify concern. PCBs have also been found to cause cancer in some laboratory animals. The U.S. EPA considers PCBs to be probable human carcinogens.

CAN PCB POISONING OCCUR FROM EATING SPORT FISH IN CALIFORNIA?

No cases of PCB poisoning have been reported from eating California sport fish. Eating California sport fish is not expected to result in obvious signs of toxicity from exposure to PCBs. Fish consumption advisories are designed to prevent PCBs from building up in your body to levels that could cause subtle adverse effects or increase the risk of cancer.

IS THERE A WAY TO REDUCE PCBs IN FISH TO MAKE THEM SAFER TO EAT?

A significant percent of PCBs found in fish can be removed by specific cooking and cleaning techniques. OEHHA recommends that you clean and gut the fish you catch before cooking it because PCBs and some other chemicals tend to concentrate in the organs, particularly in the liver. OEHHA also recommends consuming only the meat or fillet of the fish. For shellfish such as crabs and lobster, do not eat the soft "green stuff" (called "crab butter," mustard, tomalley, liver, or hepatopancreas) in the body section of these shellfish.

PCBs are mainly stored in fat and can be reduced by getting rid of the fat. Trim the fat, remove the skin, and fillet the fish before cooking. Fat is located along the back and the belly, and in the dark meat along the lateral line running along the side of the fish. Skinning fish will remove the thin layer of fat under the skin. Use a cooking method such as baking or grilling that allows the

juices to drain away, and then discard the cooking juices. Do not use the fat, skin, organs, juices, or whole fish in soups or stews.

These methods may eliminate half or more of the PCBs in fish. OEHHA also recommends fishing in different locations in case the location where you usually fish is highly contaminated. Eating a variety of fish species is likely to reduce your exposure to a species that has high contamination. Eating smaller fish of a species may also reduce your exposure because smaller younger fish tend to contain fewer PCBs than larger older fish.

WHERE CAN I GET MORE INFORMATION?

Health advisories for sport fish in all parts of California are printed in the California Sport Fishing Regulations booklets, which are available wherever fishing licenses are sold. Health advisories and safe eating guidelines are also available from the Office of Environmental Health Hazard Assessment, including new updates. OEHHA has educational materials and reports on fish contamination in the state at www.oehha.ca.gov/fish.html. Further information about PCBs is also available at <http://www.atsdr.cdc.gov/toxprofiles/tp17.html>.