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Important for camping families to understand PCBs



Camp Sights

By Bess Pierce

Well over half of all camping families either fish or hunt during part of their vacations. In the past few years, there has been a growing concern over whether it is safe to eat the fish and small game taken in certain popular areas, due to the high concentrations of PCBs found in wildlife.

For families like ours that spend several weeks each year in any of these locales, it is important to understand PCBs.

Thus is the designation for polychlorinated biphenyls. These chemicals are chlorinated hydrocarbons in which chlorine replaces hydrogen in the molecular structure. There are well over 100 varieties of PCBs.

In general, they are colorless, odorless liquids about the consistency of molasses. They have a high boiling point, are not easily dissolved in water, are extremely fire resistant and thus poor conductors of both heat and electricity. Because of this low conductivity and their chemical stability, PCBs are valuable as industrial chemicals, especially as coolant insulation fluids in electrical transformers and capacitors.

Discovered in 1881, they were not used industrially until the late 1920s. Monsanto is the sole U.S. manufacturer.

When they were recognized as a problem, the company voluntarily restricted the sale of these compounds for use only in closed electrical systems where the PCBs could not easily escape into the environment. However, before the EPA became disturbed by the dangers of PCBs, they were used as additives to adhesives, plastics, paints, sealants, surface coatings, varnishes and in carbonless carbon papers.

The EPA estimates that U.S. industry is importing hundreds of thousands of pounds of these chemicals each year and using them in an unknown number of PCB-contaminated products, since foreign companies produce and sell them without restriction. Of the one-and-a-half billion pounds of PCBs that have been produced in the U.S. during the past four decades, over half already has entered the environment through discharges in the water, land and air.

The overwhelming percentage of all discarded PCBs end up in our city dumps in junk plastic, paint and electrical capacitors and transformers. The PCBs slowly leak out and are washed by rain and the melting snow into the waterways. Since our rivers and lakes traditionally are used as sewers for industrial waste products, an unknown number of PCBs have undoubtedly been dumped raw into water everywhere.

PCBs toxic to all life

These chemical compounds are highly toxic to all life forms. Small particles of PCBs in the water are absorbed through the lower forms of aquatic life and then pass through the food chain to fish, fish-eating birds and mammals. In addition, fish absorb them through their gills, fins and skin.

In some locations, fish contain concentrations a million times greater than the concentration found in the water itself. And there is evidence that the danger of airborne PCB fallout is greater than first thought. Humans can absorb these chemicals through the skin, as well as through the food chain.

Thus, PCB contamination from the vaporization of heated casting waxes and from the incineration of discarded materials such as old paint, plastic or copy paper pose environmental problems.

In 1973, the *FDA* set tolerance levels for PCBs in food at five parts per million (ppm) for fish, shellfish and poultry and two-and-a-half *ppm* for *milk* and dairy products. It currently is estimated that about half of the U.S. population contains one to three *ppm* of PCBs in their adipose (fat) tissue.

In Japan, where the problem first was acute, some persons had as high as 75 ppm, with contamination found not only in the fat, but in the blood and vital organs, too.

The symptoms of PCB poisoning include acne-like eruptions of the skin, nausea, vomiting, abdominal pain, swelling, jaundice and fatigue. In addition, there is the concern that PCBs will inhibit the body's ability to recover from other illnesses, affect human reproduction and cause fetal abnormalities.

In view of all this, should campers stop eating fish and small game from areas where there is a known PCB concentration? Most authorities emphatically say no. Since PCBs are stored in the fatty tissue, you can eliminate almost all PCBs from fish and game by cutting away the fat.

When cleaning a fish, dispose of all the fatty belly flap, cut away the fat along the lateral line as well as any along the dorsal line. When cooking these fish, get rid of any hidden body fat by broiling, barbecuing, baking or broiling it. Always cook it on a rack so the juices fall away, and, when boiling, pour away all the liquid before removing the fish from the pot.

When cleaning birds and small game, observe the same prodecures. Cut away all fatty tissue, cook on a rack and dispose of all organs such as the heart and liver. The FDA advises only that persons living in areas of high concentration limit local fish or game meals to once a week.

Mississippi heavy in PCBs

Unfortunately, though, recognizing the problem does not quickly correct it. PCBs occur geographically in all industrial nations. In the United States, their highest concentrations are in the sediments of the St. Lawrence, the North Atlantic drainage basin and the waters of the southeastern coastal states.

However, the Mississippi River and the Great Lakes are heavily contaminated in some places. The Milwaukee River has a three-and-a-half ppm concentration and Superior Harbor a nine ppm.

This contamination at best will be with us for at least the next three decades, and it may become worse before it gets better. These molecules do not break down readily.

They do not dissolve quickly in the water, are so heat-resistant that they are not necessarily destroyed in fire, and, since they store in the fatty tissues, they tend to accumulate in fish and mammals. While life forms are quick to pick up PCBs, they are slow to eliminate them.

Ecological recovery from PCB contamination is a slow process because so many industrial products have service lives of one to two decades. Contamination from these items will not even be released into our environment until after they are discarded and begin decomposing sometime in the future.

In the early '70s, the PCB problem became so acute in both Wisconsin and Michigan that commercial sale of salmon and trout had to be banned and/or restricted.

There are alternatives to PCBs and restrictions on both the use and disposal of these chemicals could help to control their environmental impact. Campers, outdoorsmen, conservationists and citizens everywhere are going to have to demand industrial change in the use of PCBs so that wild life and human life are safer.

In the meantime, remember, if you enjoy fishing and hunting on your camping trips, you can eat what you catch providing you clean and cook it properly.

Like any other things that are a present and constant danger, PCBs are a lot easier to deal with when you know how, what, why, when and where. /

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