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PCB:

Worse Than DDT, and More Widespread

It's now building up in all living tissues.

Industry balks at cleanup order.

by Laughingbird

PCB, or polychlorinated biphenyl, has been with us since 1881 when it was synthesized in Germany. It didn't see much of the world until 1929, when the Monsanto Industrial Chemicals Company began manufacturing it in the U.S. Monsanto has turned out about 400,000 tons of PCB between 1929 and 1973; the company produces about half of the world's output. PCB has become increasingly popular—it is used in paints, printing inks, soap, and electrical insulation, to name only several of its myriad applications. In 1970, the U.S. produced 38,000 tons of PCB.

PCB is highly toxic to living systems and organisms, and is very difficult to destroy. It is only slightly water soluble, which explains why ocean life as deep as 11,000 feet has been found to contain the chemical. However, it is very soluble in fats and oils; it crept insidiously into a rice oil manufactured in Japan and seriously poisoned thousands of people—but that story comes a little later. PCB does not bio-degrade, and it requires temperatures of 2700 degrees Fahrenheit to burn it. Because of all these properties, it accumulates in the natural world and the creatures which live here.

The Environmental Protection Agency, traditionally a very conservative guesser to put it mildly, estimates that 50 percent of the human population of the U.S. now contains one to three parts per million of PCB accumulated in the fatty tissues of their bodies. The "temporary tolerance" level adopted recently by the FDA is five parts per million. PCB is likened to DDT (what an era of abbreviated realities!) because they are both difficult for organisms to throw off or excrete, and because they interfere with normal sex hormone activities, exert a noxious influence on liver enzymes, and are highly suspected of

causing liver cancer.

I would like to go over parts of the Japanese experience with PCB, because it exists as empirical evidence of PCB's tragically destructive properties and their effect on living form. The Japanese experience, condensed as it is by land mass and population density, gives us some foreboding of what to expect from one poison up until now taken for granted in the ethic of progress and products.

The first real indications of PCB's toxicity came in the U.S. In 1936, when an outbreak of a very severe skin disease called chloracne was reported among workers involved in its manufacture. The outbreak fell into the cracks of industrial progress, however, and few even recalled PCB's ability to destroy until 1953, when Japanese workers in an Osaka factory fell victim to a similar skin disease. Even then, the matter was hushed up until 1968-69 when the matter began to surface in a major way.

First, the residents of Tama no Ura, a tiny fishing village in southern Japan fell so ill that they began to think themselves victims of an inexplicable curse. The village is very isolated; contact with the outside world is limited to television! This rusticity and a native reticence made the villagers' plight even more tragic. They lost their appetites; their bodies broke out in great sweats; they became weakened and could no longer work. Ugly pus-filled boils appeared all over their bodies; their eyes deteriorated, and a viscous discharge glued them shut for hours. These excruciatingly painful diseases the villagers bore in secret from March through October, 1968, hiding from each other and from the outside the symptoms which they conceived as shameful.

In October, 1968, they saw a televised news report on a strange

disease that had struck other communities in their district. The disease, it turned out, originated with PCB which had leaked into a rice oil used for cooking. Within two weeks, 12,000 people appeared for treatment in three southern provinces of Japan. The story of the contaminated rice oil and the manner in which it was discovered is sadly typical of what goes on with industrial pollution much of the time. It was an early victim who later died of PCB poisoning who found what he thought was responsible for his sickness. When he tried to get health and university authorities to examine the Kamen rice oil, however, he was turned away or ignored. Finally, a Tokyo journalist exposed the situation—U.S. journalists could take lessons in ethical concern from the Japanese newspaper reporters, who are very active and socially conscious.

Now, this same story of industrial indifference, government ineptitude and neglect is being acted out in the U.S. Since 1971, fishermen on Lake Michigan have been advised not to eat fish from the lake more than once a week. On May 30, the FDA issued a 124,012 can or canister ban on Lake Michigan because their PCB levels ranged from 7.6 to 10.3 parts per million. Over six thousand pounds of frozen coho and chinook salmon from the lake were also seized. PCB levels in them ranged from 8.2 to 8.2 parts per million. In May 1975, an EPA study group titled Lake Michigan Toxic Substances Committee recommended a near-total ban on PCB, suggesting that its use be restricted to "essentials"—in this case, its use in electrical transformers and capacitors.

According to a 1972 EPA report on environmental health hazards, 1,500 to 2,000 tons of PCB are lost in the air each year; 4,000 to 5,000 tons

are lost to fresh and coastal waters, and 18,000 tons are lost annually to dumps and landfills. "PCB is truly a global contaminant," noted Dr. Gilman Velth of the EPA National Water Quality Laboratory in Duluth, Minnesota. Dr. George Harvey of the Woods Hole Oceanographic Institution on Cape Cod reports that PCB has been found in all organisms examined from the North and South Atlantic Oceans. He says, "Based on available data, it seems safe to conclude that PCB is present in varying concentrations in every species of wildlife on the earth."

Proof that PCB builds up in living organisms came from a study made in 1972 by Cornell University's pesticide research lab. Two scientists there examined lake trout in Cayuga Lake, New York, and discovered that as a general rule, trout larger than 24 inches in length had excessive levels of PCB. The highest reading, 30 parts per million, came from a nine-year-old fish.

PCB has been found in significant concentrations in not only Lake Michigan, but in the upper Mississippi, upper Ohio, and Hudson Rivers. The greatest popular outcry

has focused on the Hudson River, where a group of determined environmental activists headquartered in Poughkeepsie, New York, have organized to try to stop the Hudson's poisoning with PCB. The group is called Hudson River Sloop Restoration/Clearwater, and one of its early organizing figures was folksinger/activist Pete Seeger, who is still very involved with its work. In conjunction with the National Resources Defense Council, the Clearwater circle has asked Russell Train, EPA administrator, to use his emergency powers to halt PCB dumps into the Hudson.

Although the seriousness of the situation emerged only recently, the rumbles of troubled waters became public in August 1975 when the EPA released a study to New York state's commissioner of the Department of Environmental Conservation, Ogden R. Reid, advising Reid to warn the public against eating striped bass from the Hudson and coho salmon from Lake Ontario. Since the initial warning, Reid has broadened his advisory to include small mouth bass, white perch, suckers and eels from the Hudson, and lake and brown trout from Lake

Ontario. Most recently, Reid's department has discovered tainted fish in the St. Lawrence River, the Mohawk River, and Lake Champlain.

Sportsman/activist Robert Boyle wrote a very well-documented and earnest report on PCB for the September issue of *Sports Illustrated*, and the *New York Times* ran two articles on PCB in the Hudson on September 8th. The chemical has actually been dumped regularly into the Hudson since 1942 by General Electric's two riverside factories. Since 1971, G.E. has dumped an average of thirty pounds a day into the river; some days the corporation has dumped as much as ninety pounds. It is the largest continuous PCB dump in the country.

It is unfortunate that the Environmental Conservation Department did not act sooner. According to the Clearwater newsletter, the department conducted 99 sampling tests of Hudson River fish between 1970 and 1975, and found that over fifty percent contained levels of PCB greater than the allowable five parts per million set by the FDA. In an interagency memo originated from EPA offices in Washington in May 1974, Alan W. Eckert used an accepted scientific formula to predict that the level of PCB contamination in the Hudson could be seven times more toxic than FDA guidelines allow, as a result of the G.E. discharge of thirty pounds daily.

Robert Boyle, in his fine article in *Sports Illustrated*, reports that in 1971 he had Hudson River fish analyzed by the Warf Institute in Madison, Wisconsin, and that he wrote to Carl Parker, chief of New York's Bureau of Fisheries with the results of the tests, which indicated unhealthy levels of the contaminant: 11.4 ppm in striped eggs; 4.01 in their bodies. Boyle suggested that the state advise fishermen not to eat striped bass, but according to Boyle, Parker's reply was "derivative." Environmental Conservation Commissioner Reid was also upset when he "learned that his department, long deplored by conservationists as a sick joke, had known of PCB contamination since 1972 and possibly as early as 1970."

Now, the EPA is trying to get G.E. to stop dumping PCB altogether by September 30, 1976. Predictably, the corporation's response has not been enthusiastic;

EPA to Host PCB Conference

Environmental Protection Agency Administrator Russell E. Train has called a national conference to discuss environmental contamination by polychlorinated biphenyls (PCBs), a group of industrial chemicals, November 19-21 at the Pick Congress Hotel in Chicago, Illinois.

The Department of Health, Education and Welfare will moderate a special session the first day of the conference devoted to recent information about health aspects of exposure to PCBs.

"PCBs have long been a grave matter of concern for EPA and all people who work for a clean environment," Train said. "Action taken in 1972 was expected to reduce PCB discharges to the environment, but recent evidence indicates the con-

tinued presence of high concentrations of these chemicals in fish in several of our nation's waterways. This conference will help EPA clarify the feasibility of further steps to help reduce PCB contamination of the environment."

Representatives from industry, conservation groups, the scientific community, local and State governments, and the Federal government will be invited to participate. The conference is free and open to the public. Dr. John Buckley of EPA will serve as general chairman. Persons who want to participate and those who want to attend should contact the administrative coordinator for the conference, Mr. Franklin A. Ayer, Research Triangle Institute, P.O. Box 12194, Research Triangle Park, North Carolina 27709. Telephone: (919) 549-8311.

the company has indicated that it does not feel as if it will be able to comply. In one recent report from the *New York Times*, a General Electric spokesman (like many other industrial spokespeople, he/she remains nameless) said that "the grade of PCB found to be predominant in the fish samples is not the same grade used exclusively by General Electric for the past four years."

So it goes. In the abstract realities of economics and industrial progress, where human responsibility is often at an all-time low. Currently, hearings are being held to determine whether the EPA will even be allowed to insist that G.E. stop dumping PCB. According to a Clearwater member, "not much happened" at the October 6 hearing, and another is scheduled for November 3. The Clearwater people seem convinced that General Electric is working to drag out the proceedings as long as possible. Meanwhile, four communities' drinking water on the Hudson is being poisoned daily, and the rising levels of PCB in the river is seriously threatening the life of every creature who comes in contact with the water.

PCB is also contaminating the drinking water of two major metropolitan areas—Chicago and Milwaukee. It has also been found in milk, chickens, turkeys and eggs, and in cattle. In 1971, 140,000 chickens contaminated by PCB in their feed were slaughtered and buried in New York. Later that year, PCB leaked into chicken feed in a fish meal pasteurization plant in North Carolina. Twelve thousand tons of feed, 124,000 eggs, and 68,000 broilers were contaminated. Recently, the Detroit Free Press told the unhappy story of a family of farmers whose Holstein herd was being eaten away by PBB contamination (PCB has many variations; in all, it has 240 possible structures and isomers.)

Since 1973, according to the article, 80 of the Partaka family's 200 Holsteins have died and another 60 have been left stunted or deformed by a disease that no one has seen enough of yet to identify. John Partaka, Sr. believes that it comes from PBB contamination. Two years ago, a cattle feed supplement sold to Michigan farm-

ers was accidentally mixed with PBB; samples of the chemical have shown up in the tissues of the Partaka cattle. They have shown up too in the body of the youngest Partaka—a baby named Jennifer, now nine months old. After generations on the land, the Partakas are grim and sad. "You know, this stuff never leaves. It's in the dirt, the concrete, the wood, the feeders. We buy new cows, bring 'em in here and they'll turn out like these," said John Partaka, Sr.

Like millions of other inhabitants of industrial culture, the Partakas feel that they are victims of an irreversible syndrome. This widespread hopelessness is a big problem in dealing with environmental pollutions. The hopelessness seems to have two heads, and one is saying, "You can't get industry to stop doing that," and the other chimes in, "And even if you do, it's gone so far, there's no getting out of it." These attitudes are so much an accepted part of our cultural qundry, that they are often ignored even by environmentalists and activists working to transform the environment.

But how realistic are these attitudes? In the case of PCB contamination, there are obvious places to begin. Even from this article, which is a simple start, one can see two responsible parties—Monsanto and General Electric. It seems like it would be the healthiest of energy reversals for Monsanto and General Electric not only to stop using PCB, and to stop manufacturing it, but to take the technology that has been used to endanger and poison the world, and use it to discover ways to dissolve or transform the poison. Well now, does that seem far-out or "unrealistic" to you? In fact, it seems that if homo sapiens is ever going to get to the heart of the matter, it will have to expand its vision considerably, and soon, too. In the spirit of healthy cooperation to solve this problem which affects us all, do you have any ideas? Strategies? Know of any groups working on the problem regionally? Have contact with scientists with knowledge that could lead to transforming or dissolving this pollutant? If you do, let's get together on it. Send your communications to EAB, and we'll go on from here.

The Domino Theory of PCBs

If citizens don't want PCBs, how long before they don't want nuclear wastes, vinyl chloride, acrylonitrile . . .

"Persistent PCBs—They Ling-ger Longer and Are Toxic at Lower Levels Than Had Been Thought" said the headline in the *Wall Street Journal* for October 10, 1975. The article, by Jeffrey Tannenbaum pointed up the fact that businessmen are beginning to face a massive public concern with the industrial chemicals—PCBs and thousands more—that sustain the corporate manufacturing machine.

"Hazardous Wastes Endanger Human Life" was the headline in the EPA's recent Solid Waste Report. The story details direct industrial waste pollution of wells in Illinois—where drinking water contained high levels of lead, mercury and cadmium. How many unchecked wells are similarly contaminated? Add this to the announcement last spring that most cities' water supplies, taken from rivers, contain many of the industrial chemicals dumped into those rivers upstream.

If you want to find out exactly what the government is doing about the 50 most prevalent and toxic chemicals, write for EPA-560/4-75-001, Feb., 1975, EPA, Office of Toxic Substances, Washington, D.C. 20460.

Our goods and services no more have to be produced with health-destroying chemicals than does our food. Businessmen with their heads on straight see that pollutants will no longer be dumped in the future. When used at all, they will be recycled, contained and monitored.