The Urban Strategist/Jack Hope

THERE'S A CATCH TO EATING LOCAL FISH

"...Concentrations of dangerous PCB compounds in some Hudson fish far exceed the amounts considered safe for human intake..."

Traditionally, the ides of March have ushered in tides of fishermen to the Hudson River and, soon after, a steady supply of shad, striped bass, herring, eels, and other species to markets and restaurants in New York. But last week, Ogden Reid, state commissioner of environmental conservation, ended all that. He announced plans to ban commercial fishing in the Hudson—except, possibly, fishing for shad, crabs, or sturgeon—because of the high concentration of dangerous industrial chemicals in the fish. This ban will curtail the operations of commercial fishermen, for Commissioner Reid intends to keep surveillance on the river as well as on markets. Yet, despite these precautions, New Yorkers will eat many thousands of pounds of Hudson River fish this year.

The Hudson's commercial fishermen usually take about 1 million pounds of fish from the river each year. Some of their catch is sold to customers within a few miles of the fishermen's docks. Some is shipped to Europe. And some, especially shad and striped bass, is sold to wholesale outlets such as the Fulton Fish Market and thence to stores and restaurants within the city. About two-thirds of the total catch is eaten by consumers within the metropolitan area.

In addition, the Hudson is one of the nation's most popular sport-fishing rivers; all together, sportsmen may catch as much as 50,000 pounds a year. While commercial fishing takes place in the lower Hudson—south of the Albany/Troy area—sport fishing is done along most of the river's 315-mile length. Commissioner Reid does not intend to ban sport fishing, but he has warned against eating any Hudson fish because of their possible contamination.

Pollution of the Hudson is nothing new. Manhattan sewage empties into the river in at least twenty major West Side locations. But while human sewage doesn't help the river's looks, it has no effect upon the hygienic qualities of river fish that we eat. It does not contaminate them. It does not even affect their taste. Rather, the pollutants that render certain fish dangerous for human consumption are a class of industrial hydrocarbon, polychlorinated biphenyls (PCBs), released into the Hudson largely by two General Electric plants, at Fort Edward and at Hudson Falls, New York, about 200 miles upriver from New York City.



Weighing in: *A fisherman near Piermont, New York, checks his haul of striped bass.*

Ironically, the Hudson is measurably cleaner than it was a decade ago. Since 1965, more than 350 of the 480 major municipal and industrial polluters of the river and of its primary tributary, the Mohawk, have complied with state law, either by installing pollution-treatment facilities or by shutting down their operations. As a result, water samples along most stretches of the river show significant declines in coliform bacteria, a primary biological indicator of pollution. Hudson water can be drunk safely in many locations between New York and Albany. And there are more fish in the river. Ocean or offshore species such as bluefish, spot (or Lafayette), and fluke, almost unknown in the Hudson a few years ago, are now regularly found in river fishermen's shad nets. Blue-claw crabs have returned to riverside marshes. Marine biologist William Dovel, of the Boyce Thompson Institute, even believes that a sturgeon and caviar industry could be developed in the river.

But the Hudson's cleanup program does not clean up all forms of pollution. The technology for total removal of contaminants is complex, often expensive. Thus, many pollutants continue to enter the river. Of these, the only ones known to be present in toxic concentrations are the polychlorinated biphenyls. In the Hudson they are ingested by small plant and animal life, by minnows and larger fish, then by riverside mammals, waterfowl, and eventually humans. Like DDT, PCBs are persistent compounds that collect in fatty tissue—including mammalian milk—and remain in the animal body indefinitely. In sufficient concentration and/or over a sufficient period of time, they have a damaging effect upon human beings, causing nausea, eye and nasal irritation, skin discoloration and dermatitis, uterine ulcers, and even, it appears, miscarriages and stillbirths. In 1968 in Japan, some people who had ingested rice oil containing high PCB concentrations (2,000 parts per million) suffered all these symptoms. More recently, up the Hudson, sixteen employees at GE's riverside plants complained of nausea, dizziness, eye and nasal irritation, dermatitis, and fungus infections. Since 1970, measurements made by the state and by the federal government showed PCB concentrations in some Hudson fish far in excess of the five parts per million that the Food and Drug Administration considers "safe" for repeated human intake.

PCBs have been found in fish caught in many of the nation's major rivers and lakes, as well as in coastal waters. Nevertheless, GE's release of PCBs—between 2 and 30 pounds per day in the past year—is the largest known release into any American waterway.

GE's discharge into the Hudson will probably be terminated—voluntarily or by court order—within the next two years. But since PCBs are persistent compounds, and since GE has been pouring them into the river for over 30 years, and since many riverside dumps

Jack Hope's book on the Hudson, A River for the Living, *was published in 1975.*

Photographed by Robert Perron

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"...All Hudson species have some PCB content and many fish caught off Long Island or farther away are contaminated..."

contain PCB-laden rubbish which leaches into the water, it is expected that PCBs will remain in the Hudson and in its fish for years.

In the meantime, what are the risks for the individual who chooses to eat Hudson River fish?

The ban on commercial fishing will significantly reduce consumption of Hudson fish, but it will not halt it. Sport fishermen who eat their catch will undoubtedly take in some PCBs. So will those who buy shad, crabs, or sturgeon, unless they too are banned from sale later in the spring. So will those of us who eat certain ocean-caught fish, such as herring and striped bass, that have spent a portion of their life within the Hudson.

In general, contamination of fish is far greater within 30 or 40 miles downriver from the GE plants than it is either upriver from the plants or in the lower Hudson, south of the Troy dam. Yellow perch sampled from the lower Hudson, for example, averaged 6.5 ppm of PCBs while those close to the GE plants averaged 171 parts per million. Since our knowledge of PCB toxicity is still very limited, and since PCB levels in some species are relatively low, there is as yet no clear evidence that people who eat fish from the lower Hudson are risking calamity. But bearing in mind that the FDA warns against an intake of more than five parts per million of PCBs on a repeated basis, fish lovers can use this information about Hudson fish to determine what and how much to eat.

Since PCBs collect in fatty tissue and since they are almost insoluble compounds that sink to the river bottom, they are generally found in greatest concentration in fatty, bottom-feeding fish. Also, PCB levels tend to be higher in fish that spend their lifetime in the river, instead of those that visit the river only to spawn.

Eels are fatty and are bottom feeders; thus they have the highest PCB levels and should be avoided. In the lower Hudson they have averaged 81.5 parts per million, with a range from 26 ppm to 240 ppm.

Striped bass average 18 ppm of PCBs, with some having none at all and others having as many as 60 ppm. The Hudson is the Northeast's primary source of these fish, and there is a better than 50 percent chance that any striper eaten in the New York area has spent part of its life in the river. Some may spend their entire lifetime within the Hudson while others may visit the river only to spawn, and then return to sea, dispersing along the Atlantic Coast. This would explain the variation in PCB levels measured in these fish. More than 100,000 pounds of stripers are caught within the Hudson each year, but it has been estimated that the river annually yields as many as 20 million pounds of striped bass, most of which are caught at sea, from Maine to New Jersey. Since recent tests show that a fish exposed to PCB-laden water can pick up these compounds in only 20 to 30 days, it is likely that many coastal stripers will contain PCBs from the Hudson.



Pulling in: *South of Hudson, New York, fishermen extricate shad from their nets.*

Shad average 2.5 ppm of PCBs. This level is lower than in most other species, probably because shad are ocean fish that visit the Hudson only briefly to spawn. Shad seen in stores and restaurants between mid-April and mid-May are mainly from the Hudson. Curiously, shad roe—the fatty cluster of eggs from the female—measure lower in PCBs than the fish itself. This may be because egg fat develops too rapidly to absorb foreign compounds such as PCBs.

Atlantic sturgeon are essentially ocean fish but spend the first years of their life in the Hudson, ample time to pick up PCBs; sturgeon sampled from the lower Hudson averaged 16 ppm.

Blue-claw crabs average only 2 to 3 ppm of PCBs. Crabs are bottom feeders, but they visit the Hudson only to breed and do not get far enough upriver to be near the sources of PCB input. Most Hudson crabs are marketed in the Nyack area.

Other Hudson species for which PCB measurements have been made include **blueback herring** (3 ppm), **yellow perch** (6.5 ppm), **white perch** (16 ppm), and **brown bullhead** (3.6 ppm—but only one was tested). The state has not yet sampled whitefish, sunfish, carp, and short-nosed sturgeon, though it is likely that they will prove relatively high in PCBs, since most are bottom feeders and spend their entire life in the river.

The primary conclusion to be drawn from this information is that all Hudson River species have some PCB content, and that many fish caught in Long Island Sound or even farther from the Hudson are contaminated. This does not mean that we must avoid all Hudson fish. Dr. Albert C. Kolbye Jr., the FDA's PCB expert, suggests that we gauge our PCB intake according to a lifetime quota. Kolbye and the FDA have come up with a formula that indicates that a 132-pound person can safely, indefinitely, eat every week seven ounces of fish (the typical restaurant portion) with a 5-ppm PCB level. If levels are higher, the amount and/or frequency of fish consumption should be reduced proportionately. A heavier person can eat somewhat more fish; a lighter person, less.

This means, roughly, that the 132-pounder can safely eat fourteen ounces of Hudson shad per week, since this fish averages only 2.5 ppm of PCBs. He or she can eat two ounces of striped bass every week, or eight ounces every four weeks. The formula also dictates that a 60 pound child should eat a restaurant-sized portion of striped bass no more than once every two months, that the 132-pound adult should eat a seven-ounce portion of eel no more than once every 112 days, and that neither child nor adult should eat any other possibly PCB-laden seafood in the meantime. This formula may seem restrictive, but in fact, the FDA is now considering drastically lowering its estimate of safe PCB-intake levels. This would further reduce the amounts of fish one may safely consume.

Obviously, there is a certain fuzziness surrounding the best guidelines we have for regulating our fish-eating habits. Perhaps the best conclusion is that *some* Hudson River fish can be safely eaten, provided we do not eat too many of them. The problem is, at this point we do not really know what "too many" is. ■

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