Eco risk Presentation January 13,2004
Housatonic River Initiative
Tim Gray- Housatonic Riverkeeper

Benthic Organisms

- Stressed benthic community is at the core of the food chain.
- Sets the stage for PCB bio-accumulation throughout the ecosystem

Fish populations

- Risk assessment states a low to moderate risk to fish
- EPA policy- if population is sufficient it doesn't matter if they have abnormalities
- This is contrary to everything we learn as environmental students
  Rachel Carson, canaries in mines
  If the animals are sick then we should be very concerned about us
- Sportsmen continue to report abnormalities - carp

Young or the year fish 1994 Study

- significant bio-accumulation in short periods of time- 6 months
- as high as 58 PPM
- bio-accumulation still occurring decades after direct dumping into the river was stopped

Connecticut fish advisories

- very little attention or data collection in Ct.
- fish are still too contaminated to consume
- PCB levels at dam impoundments are of concern
- low levels in the river compared to upstream levels but has not resulted in lifting of PCB warnings

Mink Data is extremely disturbing

- low levels causing extreme effects
- Otters are rare and probably suffering same fate

no real data on eagle, osprey, or other large birds

- 4 month old Bald eagle on Hudson river 71PPM
- extremely fast bio-accumulation
- New York biologist ..... bird was hazardous waste
- osprey eating huge carp from Woods Pond is a regular site
- Herons / egrets eating a huge amount of fish

- Housatonic Ducks have some of the highest levels of PCBs ever recorded
- Ducks - Hazardous waste category

Combined risk from other chemical constituents in the river

- mercury .. high levels in Ct.
- Dioxins and Furans .... parts per trillion
- interactions and stress from combinations of chemicals might result in greater risk

Risk Assessment only considers risk to Housatonic ecology

- PCBs travel very long distances – Housatonic PCBs impact other areas
- Housatonic River fish migrate into tributaries
- Housatonic PCBs have to impact Long Island Sound
- Housatonic Estuary Oyster beds
- Striped Bass
- World wide transport via volitilization, wildlife migration, bio-accumulation
- PCBs found at Arctic regions impacting orcas, polar bears, seals, endocrine disruption

Future Use of the River

- PCB levels in the river and biota will limit future use of the river
- an organic farmer wanting to farm the floodplain decided it was against his interest : example of loss for Sheffield and the whole county

- Significant numbers of family farms cannot use the floodplain without risk
  I personally cannot use a significant pasture for horses and other livestock

- Signage warning how toxic the river is deters use of the river

Subject: PCB-IPEN: PCBs & Orcas
From: Joe DiGangi <Digangi@ync.net>
Date: Wed, 28 May 2003 09:23:02 -0500
To: PCB-IPEN <pcb-ipen@igc.topica.com>

"A killer whale, named J-18, that washed up dead near Tsawwassen turned out to be so contaminated with toxic PCBs, its body qualified as "pathogenic waste" - which made it illegal to dump it at sea."

http://vancouver.cbc.ca/regional/servlet/View?filename=bc_orcas20030527
CBC
May 27, 2003

Court battle for orca survival

Terry Milewski reports for CBC TV
VANCOUVER - Environmentalists from both sides of the border are going to court in the U.S. in an effort to protect killer whales off the coast of B.C.

The orcas that range from Vancouver Island to Puget Sound in Washington State, are threatened by toxic pollution in the ocean and a lack of salmon.

So the environmental groups want the group of whales, known as the southern residents, listed as an endangered species.

In Canada, they already are. But not in the U.S., where such a designation could trigger a costly cleanup of toxic wastes.

"It will mean the U.S. government will have a responsibility to address the threats which are driving this orca population into extinction," says Gwen Barlee of the Western Canada Wilderness Committee.

LINK: Orca Conservancy

"If the southern residents are not listed, it's our feeling that it's very likely that they're on the road to extinction," says Michael Harris of the Orca Conservancy.

There was dramatic evidence three years ago that the southern resident orcas are being poisoned.

A killer whale, named J-18, that washed up dead near Tsawwassen turned out to be so contaminated with toxic PCBs, its body qualified as "pathogenic waste" - which made it illegal to dump it at sea.

Federal fisheries spokesperson Peter Ross says the number of southern resident orcas has dropped dramatically in the past few years - down to about 80 animals.

"It has declined by 20 per cent over the last six or seven years. They are among the most PCB-contaminated marine mammals anywhere on the planet," says Ross.

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Joe DiGangi

Digangi@ync.net

Subject: [PCBs] Globalized Economy Puts PCBs in Pristine Lakes
From: "Peter Montague" <Peter@rachel.org>
Date: Wed, 2 Apr 2003 16:18:48 -0500
To: <pcbs@rachel.org>

Seattle Post-Intelligencer

1 April 2003

Lakes in NW full of toxic particles

Scientists suspect pollutants from warmer regions

VANCOUVER, B.C. -- Ah, the top of the world -- the high mountains of British Columbia, far from civilization, pure as the driven snow. Where else could a person get farther from the poisons of modern living, right?

Not according to what Environment Canada scientist Pat Shaw told researchers here yesterday.

The weather systems that sweep in from the Pacific each winter and spring appear to be carrying pesticides and other chemicals long ago banned in the United States and Canada but still used overseas, say Shaw and other scientists attending a conference on the health of Puget Sound and its Canadian counterpart, the Georgia Strait.

When Shaw went looking for pollutants in the fish of British Columbia, one of the sites he chose was so far up in remote mountainous country that he had to fly in the measuring equipment. Yet glacier-fed Garibaldi Lake showed some of the highest contamination levels.

Studies are under way to show whether the same thing is happening in Washington and elsewhere across the American West. Scientists are pretty sure the story is the same on the other side of the border.

In the Canadian study, Shaw expected to find contamination in lakes near heavily urbanized Vancouver, and wasn't surprised to find high levels in a lake near a Vancouver Island military base.

"The real shocker was the level in Garibaldi Lake," he said.

It doesn't seem to be a case of isolated dumping, either.

Another equally remote lake, inside the same provincial park as Garibaldi, showed similar results.

The contaminants are polychlorinated biphenyls, fire-retardant chemicals that were banned in the United States in the late 1970s; polybrominated diphenyl ethers, which are still used as fire retardants and are increasing rapidly in Canadian and U.S. women's breast milk; and pesticides including toxaphene, which also was banned in the United States in the '70s.

Shaw and other scientists believe chemicals used in warm regions, such as India, are vaporized by the hot temperatures there. They escape into the atmosphere, then are pushed in their gaseous form for thousands of miles.

United States
Environmental Protection Agency
New England Region

Office of External Programs
JFK Federal Building
Boston, MA 02203

Connecticut Maine Massachusetts New Hampshire Rhode Island Vermont

EPA Region 1, New England

Environmental News

Contact: Peyton Fleming, EPA Press Office (617-918-1008)
Roseanne Pawelec, MDPH (617-624-5006)

For Immediate Release: August 27, 1999

Waterfowl Samples from Housatonic River Show Elevated Levels of PCBs - State Department of Public Health to Issue Duck Consumption Advisory

BOSTON - Waterfowl samples collected last summer on the Housatonic River in western Massachusetts show elevated concentrations of polychlorinated biphenyls (PCBs) - believed to be among the highest levels reported in the country, according to sampling results finalized this week by the U.S. Environmental Protection Agency.

The duck breast tissue samples had average PCB concentrations of 7.1 parts per million. When adjusted for fat content in accordance with U.S. Food and Drug Administration practices, the PCB concentrations averaged 648 ppm. The tolerance level for poultry set by the U.S. FDA is 3 ppm fat content, making these results over 200 times higher than the national tolerance level. The highest PCB levels - 3,700 parts per million adjusted for fat - were found in the breast tissue of a six-month old wood duck.

Concerned by the new sampling results, EPA and the Massachusetts Department of Environmental Protection have asked the Massachusetts Department of Public Health to evaluate the need for a public health advisory on waterfowl consumption. EPA is also working with the U.S. Fish and Wildlife Service to alert other Northeast states in the waterfowl "flyway," or migration route, of the results.

"Given the high PCB levels and upcoming duck hunting season, we are moving as quickly as possible to make the public aware of these results and provide some guidance on the appropriateness of consuming waterfowl," said John P. DeVillars, EPA's New England Administrator.

"These test results are further evidence of the serious damage to the Housatonic River," added Bob Durand, secretary of the Massachusetts Executive Office of Environmental Affairs. "We must expedite cleanup efforts to protect wildlife habitat along the river from further PCB contamination."

"The Massachusetts Department of Public Health has reviewed the U.S. Environmental Protection Agency data and is issuing a provisional waterfowl consumption advisory for Massachusetts. (See attached advisory) The department also reminds residents and local sports license holders of western Massachusetts that MDPH has a toll free hot line, 1-800-240-4266, established two years ago, which offers Housatonic area residents concerned about exposure, interviews and free blood tests to determine exposure levels," said MDPH Commissioner, Dr. Howard Koh. Koh added, "It is important to remind consumers that all duck served and sold in Massachusetts restaurants and food stores is required to come from U.S. Department of Agriculture regulated processing plants."

Last summer, EPA scientists collected 25 waterfowl (wood ducks and mallards) from a PCB-contaminated portion of the Housatonic River, just north of Woods Pond in Lenox. An additional 20 ducks were collected

SEALS

Subject: [PCBs] PCBs Were Our Alarm Clock
Date: Wed, 12 Mar 2003 12:05:26 -0500
From: "Peter Montague" <Peter@rachel.org>
To: <pcbs@rachel.org>

New pollutants threatening seals in the Baltic Sea

By Tommy Grandell, Associated Press

STOCKHOLM, Sweden -- Swedish researchers said Tuesday that the Baltic Sea's population of gray seals is threatened by pollution.

The sea mammals, which can be found along the Baltic Sea coast from Germany to Lithuania, are suffering from intestinal ailments, said Per Bjurholm, a spokesman for Sweden's environmental protection agency.

"All we can say is that the number of gray seals affected by intestinal ulcers has increased dramatically," said Bjurholm. He said the likely culprits are pollutants and other substances that "we do not know very much about today."

Anna Roos, an environmental scientist with the Swedish Museum of Natural History, said researchers are looking at several forms of pollutants. The number of seals infected could put the already small population at risk, Roos said.

About 10,000 gray seals swim wild in the Baltic Sea, down from nearly 100,000 in 1900. In the 1970s, the population fell to just about 4,000 because of PCB, or polychlorinated biphenyl, pollution.

"The seals were our alarm clock," she said. "If we hadn't had the Baltic Sea seals, the use of PCB may have continued to increase until we humans swallowed such concentrations that we, too, had become sterile and suffered intestinal ulceration."

Last month, a Danish government agency said that a virus that killed thousands of harbor seals in northern Europe in 1988 wiped out nearly half the population. Researchers said they were puzzled why the phocine distemper virus only hit harbor seals and not gray seals.

Source: Associated Press

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Polychlorinated Biphenyls in Tributary Fishes of the Housatonic River, Massachusetts, USA

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ABSTRACT

Five species of fishes collected in 1998 from two tributaries of the Housatonic River, Berkshire County, Massachusetts were analyzed for total PCB content. The PCB content was significantly higher in fish in the stations closest to the tributary confluence, although there were no differences between the tributaries. Migration of fish between the mainstream and the tributaries is the most likely explanation for the presence of PCB contamination upstream of the source.

INTRODUCTION

PCBs (Polychlorinated biphenyls) had been a serious environmental concern for decades when the U. S. Environmental Protection Agency (USEPA) restricted their use in 1977, and then banned their general use in 1979 (General Electric 1998). That agency has determined that PCBs are probable human carcinogens.

The General Electric (GE) Corporation in Pittsfield, Massachusetts produced capacitors and transformers from the early 1930s through 1977. PCBs in the form of Pyranol (60 % Aroclor 1254 and/or 1260 by weight) were used as insulating liquids in their manufacture. General Electric released at least several hundred thousand gallons of PCBs into the environment, some lost inadvertently and some which were dumped into the Housatonic River as a means of disposal (Blasland and Bouck Engineers Inc.1990). In 1981, and again in 1990, General Electric and state and federal agencies agreed to assess the extent of the PCB contamination of sediments and the biota of the Housatonic River.

Numerous studies have been done on PCBs in the sediments, flood plain and biota of the Housatonic River (e.g. Academy of Natural Sciences 1995 and 1996, Blasland and Bouck Engineers Inc. 1991, Blasland, Bouck and Lee Inc. 1996a) in both Connecticut and Massachusetts since the early 1980s, and further monitoring of the river proper continues.

The average PCB concentration in sediments between the GE facility and Woods Pond (Fig.1) in 1982 was 29 µg/kg (Blasland, Bouck & Lee Inc. 1996a), and that reach contained over 50% of the PCBs in the river. Between Woods Pond and Rising Pond dam, PCB sediment concentrations averaged 3 µg/kg. Blasland, Bouck and Lee Inc. (1996b) concluded that the area between the GE facility and Rising Pond Dam contained about 90% of the total PCBs in the system, and concentrations of PCBs decreased at each site downstream from the source of the contamination. From Rising Pond Dam to the Connecticut/ Massachusetts border, the concentrations of PCBs in the river sediments averaged less than 1 µg/kg in 1982 (Stewart Laboratories 1982).

Downstream from Woods Pond in 1982, thirty percent of the fish sampled had PCB concentrations over 5 µg/kg and the PCB concentration exceeded 2 µg/kg in all

ORCAS

SEATTLE POST-INTELLIGENCER
http://seattlepi.nwsource.com/local/whal25.shtml

Killer whales are full of toxic chemicals, new study says

PCBs make popular orcas prey to menacing diseases

Monday, October 25, 1999

By M.L. LYKE
SEATTLE POST-INTELLIGENCER REPORTER

The tourist photographs and the scientific text tell different stories.

In the photos, magnificent black-and-white orcas leap from green waters off the San Juan Islands, trailing sunlit diamonds. They are wild, rugged, sleek, the very symbol of the unspoiled beauty of the Northwest.

In the text, those same killer whales are contaminated, laden with toxic chemicals, at risk for disease. They may be the very symbol of a world spoiled by human pollutants.

"These killer whales can now be considered among the most contaminated marine mammals in the world," said Dr. Peter Ross, research scientist with the Institute of Ocean Sciences in Sidney, B.C., and lead author of a new study titled "High PCB Concentrations in Free-Ranging Pacific Killer Whales, Orcinus orca."

Whale researchers, puzzled by recent declines in orca populations, describe the findings as troubling and scary.

"We have very toxic chemicals here. This should be a wake-up call," said Rich Osborne, science curator at the Whale Museum on San Juan Island. "It may take orcas . . . dying for people to finally get it."

Researchers used a pneumatic dart with a stainless steel tip -- 6.4 mm in diameter -- to sample 47 killer whales that swim the inland and coastal waters around Washington and British Columbia. These include the ocean-cruising transient whales that prey on seals and other marine mammals and the southern and northern families of orcas that dine almost exclusively on fish -- preferably the "king" of the salmon, the chinook.

All 47 orcas were known individuals, exhaustively documented through observation and photo catalogs. Analysis of blubber samples revealed what Ross terms "disturbingly" high concentrations of PCBs in all the groups.

Most contaminated were the high-seas transients and the celebrated southern "J," "K" and "L" pods beloved by Washington whale-watchers.

With jaws dropped and cameras clicking, few of the orca lovers have a clue that these celebrities of the cetacean world may be in danger.

PCBs do not cause outright death. But extensive laboratory animal experiments and captive feeding studies of seals show contaminants can weaken immune systems, hamper reproduction and cause skin

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by John W. Dean

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Tuesday, June 18, 2002

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Published on Wednesday, October 2, 2002 by the Independent/UK

Arctic Pollution Causing Polar Bears to Change Sex

by Charles Arthur

Polar bears, Arctic foxes and Inuit peoples are under threat from man-made toxins such as polychlorinated byphenyls (PCBs) that build up in the food chain, new research reveals.

Environmental and animal groups are calling for a global ban on the production of the chemicals to safeguard the future health of those groups. Some scientists believe the PCBs are leading to "gender-bender" polar bears in Norway and Greenland, after the discovery of a number of female bears which had both male and female sexual organs.

The report, produced by the Arctic Monitoring and Assessment Program based in Norway, said the toxins followed air and water currents from as far as Asia to the remote and fragile Arctic environments of North America, Greenland and the Svalbard islands north of Norway.

"Inuit in Greenland and Canada have among the world's highest exposures to certain toxic chemicals as a result of long-range transport," said the report, *Arctic Pollution 2002*.

The toxins, including potentially cancer-causing PCBs, build up in the food chain, especially in fatty tissue such as blubber in whales and seals. Blubber, being high in energy, is a key part of the diet for polar bears and the indigenous people of the Arctic.

Samantha Smith, the director of the International Arctic Program for the World Wildlife Fund, which has endorsed the study, said: "Those at the top of the food chain are hit hardest, and those are polar bears and humans.

"Most of these chemicals come from outside the Arctic, including the southern hemisphere, and are carried by wind and water currents. Without a global ban, we can't protect indigenous peoples and wildlife in the Arctic."

In a separate study, female polar bears with both male and female sexual organs were discovered in 1997 on Norway's Svalbard archipelago, about 300 miles (500km) north of the Norwegian mainland. Researchers at the Norwegian Polar Institute now believe the deformity may be due to PCBs and other toxins.

Ms Smith said similar hermaphrodite bears had also been found on Greenland. Such instances have previously been put down to the effects of accumulated PCBs. Though they are not believed to have the same effect in humans, they are thought to be carcinogenic.

Arctic foxes, seals, killer whales, harbor porpoises and birds also suffer high levels of

The New York Times

NEW YORK, WEDNESDAY, SEPTEMBER 17, 1997

High PCB Level Is Found in a Hudson Bald Eagle

By ANDREW C. REVKIN

The body of a young bald eagle killed along the upper Hudson River contained high concentrations of PCB's, toxic industrial chemicals that are the Hudson's last significant taint, New York State environmental scientists said yesterday.

The finding, although limited to one eagle, is significant, the scientists said, because similar levels of PCB's in eagles or eagle eggs from polluted areas of the Great Lakes have been linked to reproductive problems and deformities in the birds.

The scientists said they were particularly concerned about PCB contamination of eagles because, after nearly a century in which the soaring birds of prey were only rarely seen along the Hudson, eagles have begun nesting on its banks in the last few years. This spring saw the first known successful hatching of an eaglet along the river in 100 years, but state biologists noted many failed mating attempts.

A Federal wildlife biologist and a spokesman for General Electric, whose factories were the source of most of the PCB's in the river, said that more data should be collected before conclusions about the risks of PCB's were drawn.

Pollutants that have been tied to reproductive problems in eagles.

The tested bird was about 16 weeks old when it was apparently struck by a train on the river bank in late June, said Ward Stone, a toxicologist for the State Department of Environmental Conservation.

The elevated PCB levels, mainly in the brain and fat of the eagle, conform with other recent research along the Hudson showing that the compounds are making their way from fish and aquatic insects into birds and other wildlife, Mr. Stone said. "This bird picked up an awful lot of PCB's in a very short period in its life," he said. "This is a very strong new warning that the PCB's are moving through the food chain. It's a warning for people, too, particularly if they do a lot of fishing."

PCB's, polychlorinated biphenyls, are oily compounds that were used for decades to insulate electrical equipment. They have been banned because they may cause cancer in humans and can cause reproductive problems in wildlife. The Hudson River is one of the worst PCB pollution sites in the world, with more than a million pounds of the chemicals released from two General Electric factories during a 30-year period ended in 1977.

The fat of the tested bird contained 71 parts per million of PCB's, Mr. Stone said. That figure was higher than the average level of PCB's found in fat in three deformed fledgling eagles from the Great Lakes that were studied by Federal wildlife biologists in 1993.

David Warshaw, a spokesman for General Electric, said, "It would be wrong to draw any scientific conclusions about the condition of wildlife in the Hudson Valley from a sample of one."