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Seals show high chemical levels

By MEREDITH GOAD, Portland Press Herald Writer

Harbor seals in the Gulf of Maine are contaminated with high levels of PCBs, dioxins, DDT, mercury and other pollutants, according to two new studies by a Maine researcher.

In some cases, the level of contaminants in the seals' blubber appears to be high enough to affect their immune systems, leaving them potentially vulnerable to disease outbreaks.

The new studies, which tested 60 stranded and captured seals, are the most extensive that have been done in the Gulf of Maine in 25 years, and show that some chemicals that were banned three decades ago are still lingering in the environment.

"We expected the levels to be much lower than they were," said **Susan Shaw, founder and executive director of the Marine Environmental Research Institute** in Blue Hill. "I think what it says is the levels have come down (since the 1970s), but they're not as low as you would expect. It tells us that these persistent compounds are still cycling in the food chain to an extent."

There is already scientific evidence suggesting that environmental contaminants have affected reproduction, growth and development, and immunity in seals living along the world's industrial coasts.

In 1988, a distemper virus swept through harbor seals in the North Sea, Baltic Sea and other parts of northwestern Europe, killing 20,000 of the animals. Many scientists say it's likely that PCB contamination contributed to the deaths by weakening the seals' immune systems.



Some of the 15 harbor seals released by The Marine Animal Lifeline make their way to the ocean at Dyer Cove in Cape Elizabeth on Friday. Two new studies, which tested 60 seals, show high levels of some chemicals that were banned three decades ago.



Volunteers with The Marine Animal Lifeline release 15 rehabilitated harbor seals into the ocean in Cape Elizabeth on Friday. Recent tests for pollutants in seals show that seal pups were the most contaminated, followed by yearlings and then adults.

Shaw said her tests of harbor seals from the Gulf of Maine down to Cape Cod and Long Island Sound have found levels of PCBs and pesticides that are similar to the North Sea and other polluted areas of Europe.

But seals here are not as contaminated as those living in the Baltic Sea, which has the highest contamination levels in the world.

"We're in the same range as the harbor seals in the Gulf of St. Lawrence, which is considered fairly polluted," Shaw said.

The tests showed that seal pups were the most contaminated, followed by yearlings and then adults.

"The reason for that is (pups) have been exposed to high levels in mother's milk, so there's maternal transfer in the womb but particularly during lactation," Shaw said. "It's a significant source of exposure during the lifetime of a mammal, just like for people."

Shaw emphasized that her results are preliminary. She presented her work earlier this month at an international scientific conference in Berlin, and has been invited to publish her complete findings in a peer-reviewed scientific journal.

James Gilbert, a professor of wildlife resources at the University of Maine who studies seals, said he saw a presentation of Shaw's work at a conference last year. He said the contamination she's found is "something we want to watch and keep track of, definitely."

Gilbert said that just before the Marine Mammal Protection Act was passed in 1972, tissue from harbor seals and harbor porpoises was collected in Maine and analyzed by Canadian scientists.

"They had high levels of PCBs and DDT, but it wasn't as high as the Baltic area," he said. "The question is whether that's gone down or gone up or stayed about the same. Our seals range all over the gulf and go clear down past Cape Cod into the New Jersey area, too. So there's potential for that sort of (contamination), I would think."

Shaw's work shows that Maine seals are carrying loads of environmental contaminants that are high enough to affect their immune systems.

There have already been two outbreaks of viruses in northwestern Atlantic seals, Shaw said. An outbreak of Type A influenza that occurred in 1979 and 1980 spread northward from Cape Cod into the Gulf of Maine and killed more than 500 seals.

Shaw worries the same thing could happen again. The population of harp seals in Canada is exploding, she noted, and they are moving farther south. They are carriers of the same distemper virus that has killed so many seals in Europe.

"You do have the threat of infections as you see the harp seals coming south and interacting with harbor seals," Shaw said.

MARINE ENVIRONMENTAL RESEARCH INSTITUTE (MERI)

Founded in 1990, the Marine Environmental Research Institute is a nonprofit organization based in Blue Hill that focuses on the impacts of global pollution on marine life. In addition to studying the effects of environmental pollutants on marine mammals, the institute sponsors lectures and conferences, and holds educational programs such as an ocean story hour for pre-schoolers and an ocean video night for families.

For more information, go to www.meriresearch.org.

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Copper turned up in hair samples from Penobscot Bay harbor seals - probably a remnant of old copper mines in the area - and their livers were loaded with mercury.

"Mercury was shocking," Shaw said. "The mercury in the seals in Penobscot Bay was really, really high."

Shaw thinks those seals picked up a pulse of mercury from the defunct HoltraChem chemical plant in Orrington.

Scientists are still debating just how dangerous mercury is to seals, Shaw said. Adult seals have a protective mechanism in their body that may shield them from some of the effects, "but in a nursing seal pup you would have some of the same neurological effects you would see in humans," she said.

Next, Shaw hopes to do some testing on Gulf of Maine seals for flame retardants, chemicals widely used in upholstery, carpets, electronics and other consumer products. Flame retardants are persistent in the environment and have begun showing up in house dust, breast milk and wildlife, including harbor seals in San Francisco.