Fish-eaters have them but fish haven't

What really killed the birds? Has DDT taken the blame for PCB?

By THOMAS CLARKSON

Polychlorinated biphenyls have been blamed for the deaths of thousands of birds in the Irish Sea, the Baltic and on the Great Lakes, but so little is known of the industrial pollutant that scientists are unable to confirm the reports.

PCBs are chlorinated aromatic hydrocarbons that, because of their chemical change, are widely used by certain industries. They have polluted areas virtually untouched by man and scientists theorize that they travel widely through the atmosphere, possibly through evaporation or co-distillation with water.

But western specialists are concerned that PCBs may in some way interfere with the reproduction processes in animals.

"Since they are chemically very similar to the DDT group, we must know whether they have the same physiological activity," Anthony Knill, head of the Canadian Wildlife Service's pesticides section, said in an interview.

Scientists have established that DDE, a metabolite of DDT, is responsible for a reduced thickness in the eggshells of several types of eagles, hawks and falcons. A probable reason is the weakening of an enzyme change in the parent form.

"The DDT group is a very good enzyme stimulator, even at very low levels," Mr. Knill said. "In stimulating to break down Dieldrin it also breaks down other large molecules including sex hormones, and one of the sex hormones in birds is known to be involved with eggshell formation.

"So, since applied formation was a problem we were associating with DDE and since you could show DDE had this enzyme effect, the next question, the questions was, could we do the same thing with PCB?

"The short answer was yes. PCBs have to very similar. It was a matter of fact of how enzymes than the DDT group."

However, when PCBs were applied to bird populations there was no appreciable reduction in shell thickness. "The result was instant confusion," Mr. Knill said.

Another consensus is that PCB levels may remain the point where wader, lizard or air hormones tends to remain forever life.

Mr. Keith is slightly skeptical about the report that PCBs were responsible for bird deaths in the Irish Sea. "We've only seen the very thinnest reports based on only reported high PCB levels in the birds."

The discovery of PCB in about a dozen dead herring gulls collected this year by Ontario Department of Lands and Forests employees has done little more than add to the confusion.

Analysis of the birds by Dr. Richard Frank, head of the Provincial Pesticides Laboratory in Guelph, showed PCB levels in some of the birds of several hundred parts per million. Dr. Frank immediately concluded that PCB was a factor in the gulls' death but more samples in Ottawa for further analysis.

Using a mass spectrometer, Dr. Robert Lee of the federal air pollution control services confirmed the presence of PCBs but found that in some le-

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Chemical is newly identified as a pollutant, yet found everywhere

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shimmer the levels had been overestimated.

R. G. Rumbold of the provincial fish and wildlife service in Ripple said the conclusion grew with the discovery that while most healthy gulls have lower levels of DDT and PCBs some healthy ones have levels as high or higher.

"So trying to interpret this is very difficult," he said, adding that the cause of the gulls' deaths is being tested as contaminated.

Another mystery is that while fish-eating birds often have high levels of PCBs there has been little success in finding measurable amounts of PCBs in fish.

"We really don't know where the PCBs are coming from," Mr. Rumbold said. "All we can do now is to continue our surveys and make sure every dead gull is tested."

Although PCBs have been produced for almost 40 years, it is only recently that scientists have tried to establish toxicity levels for a region's flora and fauna.

One of the first papers published on the subject appeared recently in the Bulletin of Environmental Contamination and Toxicology, published in New York. In it, three scientists attached to the U.S. Bureau of Commercial Fisheries reported that while juvenile pink shrimp and oysters were killed within 48 hours by 300 parts per billion of a common PCB, Aroclor 1254, juvenile grass shrimp were unaffected.

The tests were conducted at Gulf Breeze, Fla. The scientists also held offloading 250 parts per billion of Aroclor 1254 in an enclosed in the nearby Escambia River.

Mr. Keith said that even if studies do determine that PCBs are fairly toxic to some species the problem will not be so serious as an interference in the reproductive processes.

"The point is that although the DDT group are not involved in direct mortality, it's the effect on indicators of reproductive deficiencies that poses the real threat. This is far more important biologically."

He said any population of vertebrates or invertebrates can adjust to sharp variations in adult mortality by a variety of techniques.

"But when you put something into the environment that acts as a true inhibitor of reproduction you've got something which is an evolutionary enemy there is no defense against. Populations can't cope with that sort of thing."

Another scientist who became interested in PCBs through work with pesticides is Dr. Harry Hardy, a research coordinator in the Canada Department of Agriculture, who feels the DDT family may have been taking the rap for harm actually done by PCBs.

Dr. Hardy said analysis of pesticides collected a specimen on the brink of extinction because of eggshell problems shows the birds have high levels of DDT, mercury and PCBs.

"So you have three things which are all mixed up in the pesticide problem and it is unfair to say that DDT is to blame for harm actually done by PCBs.

Dr. Hardy said analysis of peregrine falcons, a specimen on the brink of extinction because of eggshell problems,