INTERNATIONAL PRESS-CUTTING BUREAU
184, STRAND, LONDON, W.C.2

Extract from
Ottawa Citizen, Ontario, Canada

- 1 AUG 1970

And after DDT . . .

Yet another pollutant lurks

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Peter Calamai of the Ottawa bureau of the Southam News Services each week writes on the "Science scene" and how it affects Canadians. This week he deals with the continuing debate on cigarette smoking.

Before the summer is over, Canadian scientists should have a good grasp on the seriousness of our nation's newest chemical contaminant — PCBs.

Already some government researchers are privately predicting that environmental damage from PCBs will be equal in some areas to that caused by DDT.

There's some cause for their concern because of the similarities between the two chemicals.

Like DDT, polychlorinated biphenyls — PCBs — contain chlorine, hydrogen and carbon. Both are relatively insoluble in water; both soluble in animal fat and both are extremely persistent.

And recent U.S. evidence from Dr. David Peakall of Cornell University confirms that both chemicals play havoc with the natural balance of sex hormones controlling the reproductive processes in birds and other animals.

Health studies

DDT — because it was added deliberately to the environment as a pesticide — has been regulated almost from the beginning in Canada. The most crucial control is that imposed by federal health officials on the maximum amounts of DDT or its byproducts allowed in food-stuffs.

But PCBs, because they are an industrial chemical not meant to escape into the environment, are not covered by most government controls. Most importantly, there are no tolerances set by the food and drug directorate for the amounts of PCBs which may be present in human foods.

The directorate began a special research project late last year to measure the toxicity of the chemical in lab animals, and determine the extent of PCB contamination in freshwater fish.

The federal scientists had been spurred to this action by reports of significant PCB concentrations in predatory birds, polar bears, fish-eating sea birds and even cashew nuts.

As with DDT, the polychlorinated biphenyls appear to be turning up everywhere. In Fulmars from Alaska, in Shortbilled Shearwaters from Australia, in Sooty Shearwaters from New Zealand and Pinkfooted Shearwaters from Chile.

When the PCBs disrupt the sex hormone production in birds, the birds either lay thin-shelled eggs which crack or nest so late that their young starve.

There is some reason to suspect that repeated ingestion of high PCB doses by humans could have similar unbalancing effects on man's hormones.

Scientific identification of the PCB problem has been stymied on two fronts. First, the chemical similarities between PCBs and DDT often meant that the polychlorinated biphenyls went undetected in DDT-ridden animal samples. Secondly, although PCBs are now being positively identified in wide-spread locales, there is no consistent explanation for how the chemical becomes so widely dispersed.

The Monsanto Chemical Company is the major North American manufacturer of PCBs, under the trade name Aroclor. A company spokesman says the main uses for the insulating, fire-resistent chemical are electrical transformers, capacitors in heat transfer systems, plasticizers in chlorine-based rubbers, caulking materials and some hydraulic fluids.

Expensive outlay

The company rejects claims by some ecology groups that PCBs are used in plastic food wraps, house paints, cellophane, asphalt and tires. But Monsanto also refuses to release any production figures for Aroclor and a company spokesman — asked to account for the claimed $1,000,000 outlay by the company for verifying PCB reports — said no such accounting existed.

Canadian-born Dr. Robert Risebrough, a PCB expert now at the University of California at Berkeley, suspects the chemical is loosed from manufacturing plants, from leaks and wastes of hydraulic systems, from the wear of PCB-containing materials such as asphalt and from the incineration of other PCB-containing products in city dumps.

Dr. Risebrough will be looking for PCBs for six weeks this summer in the Canadian North in a study funded by the Canadian Wildlife Service.

His findings, combined with the directorate research, should answer the questions of how widespread and how dangerous PCBs are here.

But neither study can tackle the problem raised in a recent editorial of The Canadian Field Naturalist magazine.

"There exists no effective mechanism for preventing . . . resource degradations by toxic chemicals now or in the future," the magazine said.

MONS 033702