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HEALTH THREAT HARD TO GAUGE

How Great a Danger Is There From PCBs?

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Until recently, few people were aware of PCBs—a family of industrial compounds whose chemical structure resembles that of DDT. Then reports began circulating that PCBs had found their way into eggs, poultry and other foods.

It now has become apparent that polychlorinated biphenyls have permeated much of the environment and *may* pose a significant threat to human and animal health.

In their 40-odd-year history, over a billion pounds of PCBs have been produced in the United States alone. Although the chemicals were intended to go no farther than such products as electrical transformers, paints and printing inks, trace levels have been detected in everything from mother's milk and shredded wheat to the flesh of Arctic-dwelling polar bears and ocean fish at depths of a half-mile.

The Danger Is Unclear

As is so often the case with pollutants, no one is quite sure how serious a hazard PBCs really are. Two of the many reasons are that results of small doses over long periods are hard to evaluate, and PCBs may be less to blame than their impurities for whatever *injuries that occur.*

Nevertheless, it already is clear that PCB pollution has caused accumulations of the compounds in certain food fish and has had adverse effects on fish-eating birds, such as ospreys and brown pelicans. With the advent of a standardized and sensitive detection method for the chemicals in 1968, animal *testing* under precise laboratory conditions has begun.

There also has been one incident of acute poisoning following an industrial accident in Japan in 1968, which has given scientists some direct leads about what PCBs are capable of doing to the human body. And although no one yet knows its significance, an ongoing study of cadavers from 17 states and the District of Columbia shows that about half have at least one part PCBs per million in their tissues, no matter what the apparent cause of death.

International Parley

Earlier this week, the National Institute of Environmental Health Sciences, the newest of the National Institutes of Health, assembled an international group of scientists in Rougemont, N.C. for what was probably the most comprehensive consideration of the problem to date.

If the meeting came to no hard and fast conclusions, it at least worked out the dimensions of current ignorance and laid the groundwork for filling in the knowledge gaps.

The Japanese incident was caused by the leakage of PCBs from a factory pipe into a batch of rice oil being prepared for sale. About 1,000 people ate food cooked in the heavily tainted product and developed liver damage, swelling and inflammation of the eyelids and severe acne, together with headaches and generalized weakness.

Some Have Improved

Three year later, some of them have been helped, but not cured, by medical treatment, but most have not and a few have grown worse. Small wonder, then, for the concern that chronic exposure to even small doses of PCBs gradually might inflict health damage on large groups of people before doctors could reliably identify the cause.

Indeed, some observers feel the PCB concentrations ingested by the Japanese victims and the levels found in human milk samples in Sweden and the United States are close enough to merit scrutiny, although not close enough to warrant alarm.

In addition, babies born to Japanese mothers, affected by the incident have tended to have a peculiar brown cast to their skin and nails. Although not permanent, it suggests that since PCBs are capable of crossing the placental barrier between mother and fetus, they may also be capable of causing more serious birth defects.

Infants Are Smaller

Some of these infants have been born smaller than would have been expected. It may be, therefore, as seems to be true with birds, that there is a subtle but definite relationship between prenatal exposure to given levels of PCBs and abnormal embryonic development, and although there is as yet no evidence to link PCBs to cancer, scientists at the recent meeting felt the case is by no means closed.

The Monsanto Corp., the sole manufacturer of PCBs in this country, recently halved its annual production of 36,500 tons and is taking steps to inform its known customers of the need to prevent leaks and to take precautions when disposing of PCB-laden wastes.

Unfortunately, his would by no means end the problem, even if Monsanto knew who all the ultimate users of the products were or if foreign manufacturers were not also involved.

Of the 210 "isomers" (varieties) of PCBs, only about 100 have been produced in commercially significant quantities. But no one yet knows how long each may remain in the environment, and some are thought to last for 20 years or more. Thus prospects for an immediate clean-up of the air and water are dim. When, for instance, PCB-tainted milk was found recently in the Midwest, it was traced to cattle feed that had been stored in silos painted with PCB-containing paints many years ago.

There also is experimental evidence that the more persistent PCBs are less toxic than ones of shorter lifespan, but that these less poisonous chemicals at the same time greatly enhance the lethal effects of DDT already present in the environment.

Indeed, some pesticide manufacturers have deliberately added PCBs to their formulations, despite warnings not to. Given this situation, it is hard to know which varieties of the compound should be manufactured from now on, should Monsanto be willing to limit production.

Fire-Resistant

PCBs as a group endow whatever they are added to with fire-resistant properties and also are used as "plasticizers" to prevent materials from becoming brittle and drying out. They are therefore — among other things — a component of virtually every electrical transformer, the "starters" that activate fluorescent lamps and the window sealants of many air-conditioned buildings.

With bureaucracy's ever more avid appetite for documentation, moreover, they became ingredients of the "carbonless carbon paper" manifolds popular in offices and computer centers for multiple copies and read-outs. (The federal government has been the largest of many large customers).

Although Monsanto no longer sells PCBs for this purpose, and has introduced an allegedly safe substitute chemical for copying, the recycling of billions of pounds of paper is likely to maintain the pollutant in the environment indefinitely.

Already, for example, levels exceeding the Food and Drug Administration limit of a half-part per million have been found in some food products packaged in cartons made from recycled paper containing PCBs.

This particular problem is being handled by providing the food in such packages with protective wrappers, but as soon as one PCB difficulty is solved, others seem to arise to take its place.