SPECTRUM

PCBs (polychlorinated biphenyls), a group of industrial chemicals, have been found in tissues of wildlife in many parts of the world (Environment, January/February 1970). Like DDT they have been implicated in the decline of some bird populations. Now, a group of scientists in the Netherlands has identified two highly toxic contaminants in each of two PCB preparations, but failed to find them in a third. The contaminants may cause birth defects in man, and are chemically similar to the dioxins, contaminants found in the weed-killers 2,4-D and 2,4,5-T. The two compounds most heavily contaminated, Phenoclor DP6 and Clophen A60, are produced in France and Germany, respectively, while the third, Aroclor 1260, the uncontaminated compound, is formulated in the United States by Monsanto Chemical Company.

The contaminant compounds, chlorinated dibenzofurans, were isolated from the two European PCB compounds and injected into the air cells of chicken eggs at a calculated maximum dose of 0.2 microgram per egg. All of the embryos died within the first four days of incubation. Earlier studies of these compounds confirm their extreme toxicity. Single oral doses as low as 0.5 to 1.0 milligram per kilogram of body weight have produced severe and often fatal liver damage in rabbits.

A spokesman for the Monsanto Chemical Company, the sole producer of PCB compounds in this country, told Environment that because of differences in the manufacturing process, chlorinated dibenzofurans are not part of the company's final PCB product.

The potential hazard of PCB was underlined by an action of the New York State Department of Agriculture, which condemned 130,000 spent laying chickens in Sullivan, Orange, and Holsten counties when the department found that PCBs in the fat of the birds ranged from five to twenty parts per million. The chickens were to be used in food products. The source of the PCBs was traced to wafer-meal feed, a diet composed of stale bakery products. So far New York State officials have been unable to explain how the contaminant got into the feed, but they are continuing their investigation.

A spokesman for the Food and Drug Administration told Environment that the FDA is now conducting toxicity tests on PCB compounds in order to set guidelines for levels in food products. Until levels are set, the FDA will handle each case individually.

DDT MAY BE AFFECTING fertility in women, according to Drs. W.L. Heinrichs and R.J. Gellert, of the University of Washington Medical School. In a paper delivered at an American Cancer Society seminar, April 4, Heinrichs and Gellert explained that because DDT is known to produce effects similar to those caused by the hormone estrogen, they treated newborn rats with fairly high levels of DDT on the second, third, and fourth days of life to see if reproduction would be impaired. The rats seemed to develop normally, were fertile for a time, and then all of the treated rats became prematurely infertile. The scientists felt that the DDT affected the brain of the newborn in such a way as to produce a permanent defect in the secretion of hormones that regulate fertility. Because DDT has been shown to be capable of entering the fetus in humans, Heinrichs and Gellert warned that "the possibility exists that some forms of infertility or menstrual irregularity in adults are associated with the presence of this ubiquitous chemical."

NITROGEN, not phosphates, is the limiting factor in eutrophication (overgrowth of algae) in the coastal marine environment, according to John H. Ryther and William M. Dunstan of the Woods Hole Oceanographic Institution, Woods Hole, Massachusetts (Science, March 12). Ryther and Dunstan found that in the surface waters of the ocean there is always a small, ubiquitous excess of phosphate, relative to the amount of nitrogen available for nutrient use by algae. Normally, the nutrient most quickly consumed by a system is the one that limits the growth of that system. Ryther and Dunstan noted that although phosphates are the critical nutrient in many freshwater lakes, in coastal waters and estuaries, "it is unquestionably nitrogen that

SPECTRUM

limits and controls algal growth and eutrophication." They further note that removing phosphates from detergents would at best be useless to the coastal waters that receive roughly half of the country's sewage. At worst, replacing phosphates with a nitrogen-containing compound (such as NTA) would probably increase eutrophication along the nation's coastlines. The situation in freshwater lakes and streams may be quite different, however.

THE FEDERAL Environmental Protection Agency (EPA) announced at a press conference March 18 that it was initiating an administrative review of three pesticides--aldrin, dieldrin, and mirex. EPA also disclosed that it was continuing its review of DDT and the herbicide 2,4,5-T; not having found these substances to present an imminent hazard to public health, EPA has not suspended the use of the chemicals. Aldrin, dieldrin, and mirex may still be sold during the review process. Aldrin is used as an insecticide for corn and citrus, and both aldrin and dieldrin are used for seed treatment and for termite control. Dieldrin is a persistent chemical in the environment. (Aldrin quickly breaks down to dieldrin.) Dieldrin has been shown to be concentrated in the fatty tissues of a number of animals, including man, and at low doses is more toxic to warm-blooded animals than is DDT. Mirex, a persistent chemical known to be toxic to a variety of animals, is used primarily by the U.S. Department of Agriculture to control the fire ant (see "Ant War," Environment, December 1970). Following the administrative review, EPA may cancel the registrations of the chemicals under consideration, or it may continue their present registrations. More likely, though, a limitation will be placed on the use of the chemicals. William D. Ruckelshaus, administrator of EPA, noted in this regard, "We are considerably strictured by existing laws. We have asked Congress for a change in the law to permit us to exercise finer judgments regarding the use of pesticides."

MEASUREMENTS made by Dr. Robert W. Risebrough, of the University of California at Berkeley, show that PCB and DDT compounds in urban sewage outfalls in California range from none detected to 220 pounds per day for PCBs and from none detected to 213 pounds per day for DDT. The highest figures, for both PCBs and DDT, were found at the White Point Sewage Treatment Plant, located in the Los Angeles area. The PCB outflow there was 50 times more than at any of the other nine sampling stations; and the DDT outflow was more than one thousand times greater than that at any of the other stations. The White Point plant is downstream from the Montrose Chemical Corporation, against whom the Environmental Defense Fund has filed a suit for discharging DDT into the Los Angeles sewer system. Although the White Point plant discharges a larger total quantity of PCBs than any of the other sampling stations, the concentration of PCBs in the effluent was found to be greatest at the Hyperion sludge plant (also in the Los Angeles area). The source of PCB compounds in the sewage is not known.

TESTS FOR the presence of seven metals in the nation's surface waters have revealed that although most of the water surveyed met U.S. Public Health Service (PHS) drinking water standards, some localized areas contained excessive amounts of arsenic, cadmium, chromium (hexavalent), cobalt, lead, zinc, or mercury. The U.S. Geological Survey, which conducted the testing, reported in a news release (March 31) that 4 percent of the 720 samples taken contained cadmium in excess of the PHS standards. Two percent of the samples exceeded the PHS standard for arsenic. A few samples contained excess lead or mercury. No sample exceeded the PHS standard for chromium, and no standard has yet been set for either cobalt or zinc in drinking water. Dr. William T. Pecora, director of the Geological Survey, noted that values obtained for individual samples may not be typical of the sampling sites because concentrations of contaminants may vary significantly. Pecora also pointed out that background levels of the seven metals in