Pollution by industrial chemical cut in Saginaw River

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LANSING — Identification of 10 major contributors of polychlorinated biphenyls (PCBs) to the Saginaw River has led to a decided reduction of this serious industrial pollutant in the river in less than two years.

This is the gist of a report made to the Water Resources Commission (WRC) Friday by John L. Hesse, biologist in the Water Quality Appraisal Section of the state Bureau of Water Management. The bureau is part of the Michigan Department of Natural Resources.

When 30 Michigan streams were tested for PCBs in 1971 and 1972, Hesse said, the Saginaw was found to be the most polluted of the group. Fish in the river contained PCB concentrations as high as 185 parts per million (ppm), more than 30 times the permissible federal level of 5 ppm.

Major polluters of the river were found to be: The Chevrolet Bay City Parts Plant, the Bay City waste water treatment plant, the General Motors Grey Iron and Nodular Iron foundries at Saginaw, the Saginaw waste water treatment plant, Buick at Flint, the Chevrolet V-8 Engine Plant at Flint, the Flint waste water treatment plant, the Dow Corning Co., at Midland and a Dow plant at Hemlock.

The chemical PCB has a variety of industrial uses.

Voluntary conversion by the industrial plants at an average cost of $250,000 per plant has proved to be very effective in lowering the PCB concentrations in the Saginaw River, Hesse said.

He explained that the PCBs found in effluent from municipal waste water treatment plants come from industries that route their waste through city plants.

Where water samples taken in 1971 showed PCBs in the Saginaw to range from .65 to 2.9 parts per billion (ppb), Hesse said, they ranged only from .02 to .09 in 1972. There was an unexplained increase ranging from .1 to .3 ppb in samples taken this year.

The most substantial drop in PCBs was detected in effluent from the Bay City waste water treatment plant. It contained as high as 340 ppb in 1971. This dropped to as low as 5.7 in 1972.

Hesse said more than 1 ppb from a municipal plant is cause for concern. But he added that the PCB level must be reduced much lower than that if the consent of state waters is to be reduced to acceptable levels.

Although the Flint treatment plant was cited as a PCB polluter, it makes a better showing that the Bay City plant. Its effluent contained as much as 1.3 ppb in 1971, but as little as .10 in 1972.

Hesse reported that about 60 per cent of the streams sampled in 1971 and 1972 contained more PCBs than the .01 ppb maximum set by the federal Environmental Protection Agency. The Saginaw had a high concentration of 2.9 ppb.

Four other streams had 10 times the maximum. They are the Tittabawassee, Clinton, Raisin and Rouge Rivers. The Grand and Kalamazoo rivers had consistently high concentrations of .04 and .08, respectively, Hesse's report shows.

In May the same 30 streams were tested and only eight exceeded the federal guideline for PCB content, Hesse said. Although they did not get a clean bill of health, the Saginaw, Tittabawassee and Raisin rivers showed improvements, Hesse said.

The Flint river had been listed among those having unsafe levels in 1971, but it was not so listed in the latest report.

Sampling of municipal waste water treatment plants in 1971 and 1972, Hesse said, indicated that many of them represented major sources of PCB pollution in state surface waters. The average PCB concentration in samples of effluents from 60 plants, he said, was 2.55 ppb — well over the federal guideline.

But he pointed out that only seven exceeded 1 ppb. The high average was caused by the Bay City plant, which had an average of 120 ppb in its effluent. Although the PCB level in the Bay City plant's effluent still is high, the report says, it has been reduced greatly.

While industrial usage of PCBs appears to be reduced, the report said, a sampling of 58 municipal plants in 1973 shows high concentrations of PCBs in the effluent. The average of the 1973 samples (including the Bay City plant) was 52 ppb.

Hesse's report blames the paper industry at Kalamazoo for sharp increases in PCBs in fish in the Kalamazoo River watershed below Kalamazoo and Battle Creek. Some sediment is an impoundment on Portage Creek at Kalamazoo was found to have concentrations exceeding 330 ppm, the report says.

Leaching of PCBs from such sediment increases the PCB content of the streams, the report points out. Hesse said high content of PCBs in some sewage plant sludge raises problems in its disposal. He pointed to the sludge from the Bay City plant in particular which contained 252 ppm when sampled this spring.

He said the concentration of PCBs in fish in Saginaw Bay has placed severe limitations on commercial fishing for catfish. The legal limit is 15 inches, he explained, and anglers dare not take fish more than 18 inches in length because the PCB content exceeds permissible levels.

Although he cited progress in reducing the contamination from PCBs, Hesse said it does not look as though they are going to disappear as quickly as his agency would like because of the slow transition from their use to safe substitutes.

Nearly half of the industrial discharges sampled have contained more than 1 ppb, with many in excess of 1 ppb, he said. One discharge contained 7,200 ppb, he said, and this was discovered just recently.

Automotive plants, chemical companies and paper product manufacturers are among those having highest concentrations in wastes, Hesse said. Although the Monsanto Chemical Co., the only manufacturer of PCBs, has stopped the sale for general industrial use, many industries apparently have large stock piles they intend to use up, Hesse's report indicates.

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