Nepean Pollution Probe -

PCB pollution of biosphere presents serious threat

DANGER PCB'S

(This article is by Gregory Lawson, a Probe member, and is reprinted from "Probe", Vol. 4, No. 5 July/August, 1973).

Polychlorinated byphenols (PCB'S) could very easily pose one of the greatest threats to our continued existance on this planet.

PCB's are prepared commercially by the Monsanto Company ("Serving Industry...Which Serves Mankind") in North America under the trade name Arochlor, although they are also produced in Japan, France and Germany under other names. PCB's of varying chlorine content are denoted by 12 for Arocilor followed by the percentage of chlorine. Thus Arochlor 1254 would contain 54% chlorine. The PCB's that show up most frequently as pollutants are Arochlors 1242, 1254, and 1260.

As industry sees it, the most desirable properties of PCB's are their high dielectric constants and their thermal and chemical stability. Some uses and suggested uses are: dielectric fluids in capacitors and transformers; industrial fluids for hydraulic, gas turbine and vacuum pump purposes; heat transfer fluids; plasticizers; adhesives, particularly self adhering films; textile coatings; sealers for concrete of asphalt; CARBONLESS COPY PAPER; combined insecticide and bactericide formulations.

PCB's, like their cousin DDT, tend to accumulate in human milk, fatty tissues, and the brain and liver of small children. The only known case of their toxic effects occurred in Japan in 1966. An epidemic poisoning was caused by the ingestion of rice oil contaminated by a comme cial brand of PCB's. The initial symptoms of the 1,057 reported cases were: swelling of upper eyelids, increased eye discharge; Acne-form eruption and follicular accentuation; swelling of limbs; loss of vitality; disturbances in the digestive canal; numbness and other neurological signs; and/or pigmentation of the skin. Babies born to women who ingested the contaminated oil during pregnancy, had unusually dark-brown stained skin and increased eye discharge. Schoolboys showed a significant decrease of gains of height and weight after the poisoning, although girls seemed unaffected in this regard. More than three years after the poisoning, many of the patients were still tortured with the sickness and at least ten per cent were worsening.

The scope of PCB pollution of the biosphere has become global. PCB's have been detected in Swedish wildlife; Atlantic herring and salmon; seals from the North Atlantic, the polar bears of the Hudson's Bay region; Arctic freshwater fish; birds of prey in Britain both terrestrial and marine species of wildlife in western North America; fish species in California coastal waters; sea bass from Tokyo Bay; fish species in Peruvian coastal waters; New Zealand and Australian seabirds; bird species found north of the Antarctic Convergance, and Antarctic wildlife.

Now, with some view of the wider implication of PCB pollution, what can we say about Ontario and specifically Ottawa?

A recent survey of PCB levels in sewage sludge showed that the majority of the 55 centres tested in southern and eastern Ontario ranged between 1 and 10 p.p.m. although samples from industrialized areas were as high as 50 p.p.m. Ottawa Sewage ranged from 2 to 5 p.p.m. of PCB's. Most of these determinations were based on Arochlor 1254 but in some regions Arochlor 1242 and 1260 were present. Identification of Arochlor 1242 was hampered by contamination from sewage. Chlorination of some samples of dexachlorobiphenyl (DCB) showed levels of as much as 20 times the detected levels based on Arochlor 1254. Thus for one sample of Ottawa sludge we have an increase from 2 p.p.m. (1254) to 25 p.p.m. (1242 and 1254).

It is believed that Arochlors 1254 and 1260 enter the environment from industrial sources and the incineration of plastics, not that of Arochlor 1242.

The major source of Arochlor 1242 is carbonless copy paper. A Japanese study determined that a certain amount of PCB remains on the fingers after handling paper treated with carbonless copy paper. Of this, as much as 75% of this is still present after the hands have been washed with soap and water. The suggestion was made that PCB absorption through the skin from the handling of this paper would cause concentration in fatty tissues. Aside from this, the major problem with carbonless copy paper is its disposal. Incineration causes vaporization of the stable PCB's and these are later precipitated in rain. Recycling allows the PCB's to become attached to particulate matter in the effluent from the paper plant. The Monsanto Company claims to have voluntarily restricted the use of PCB's to closed systems, but NCR continues to produce carbonless copy paper. Either Monsanto is lying or NCR is buying its PCB's from a foreign producer. The next time you "press hard to make five copies" check to see if there is any carbon paper, if there isn't you've just been in contact with Arochlor 1242!

One idea that has been suggested to cut down on river pollution is the use of sewage as fertilizer. Growth studies using such a fertilizer, Milorganite, 5.24 p.p.m. 56.7 p.p.m. as DCB), demonstrated the absorption of PCB's by leafy crops rather than by root crops. Such a fertilizer used in a grazing field would cause PCB's to be found in the milk and fat of cows and sheep. Since PCB's have similar translocative and storage characteristics to DDT, the suggestion has been made that earthworms as well as other invertebrates concentrate these compounds. What then of the birds that prey upon these creatures? More than 500 000 chickens in Japan died from the effects of PCB's. Something to think about the next time you fertilize your lawn with Scotts or weed & feed.

DDT is metabolized, since its partial ban in 1969 levels in the environment have decreased significantly. PCB's are at best partially metabolized, meaning that these contaminants are good for at least another 500 years. Replacements for industrial uses must be found, research into the extraction of PCB's from sewage sludge (an invaluable resource to agriculture) must be carried out, and there must be a complete and total ban on carbonless copy paper (whatever happened to good old fashioned carbon paper?)

Joyous Bells

(Con't. from page 39)

well established before bells became an important part of the celebration. The first large bell for a Christian church is said to have originated with a bishop in Italy in the fifth century A.D.

Church bells have called people to worship, they have told the time of day, they peal for weddings and toll for deaths, they have been rung in warn of enemies and disaster, and to celebrate happy events of many varieties. But the high point of every year has been the ringing of church bells during the Christmas season. In England, especially, this became a tradition. During the Middle Ages, the joyful clangor started at vespers on the first Sunday in Advent, and repeated on the following Advent Sundays. On the three mornings before Christmas Day, hand peals were rung as a reminder.



NOTICE

TO RESIDENTS OF THE TOWNSHIP OF RIDEAU

Nominations and applications are invited from residents and Community Associations of Rideau Township for 1975 appointments to the following Committees and Boards of the Municipality:

Planning Advisory Committee
Committee of Adjustment
Recreation and Community Centres Board
History and Heritage Committee

Submissions should be in writing, and include a resume of experience of the nominee or applicant. Please forward same, marked as to content, to the undersigned by December 30, 1974.

James McNiece, Clerk
Township of Rideau
North Gower, Ontario.

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