

# PCB controversy continues to mount over health and environmental hazards

By HENRY KRUK

It has been estimated that every year about 30,000 different chemicals are manufactured in quantities larger than one metric ton. There is no doubt society has derived many economic and cultural benefits from this activity. However the synthesis of so many chemicals and the possible danger to human health and the environment may make one suspicious and thus question their value. as polychlorinated biphenyls (PCBs) have received much attention in the news recently, let us take a closer look at them.

PCBs are a family of over 200 chlorinated aromatic hydrocarbons. Over one billion lbs. of PCBs were produced between the 1930's and the 1970's in the US alone. PCBs are present in a number of products, includ-

ing plastics, lubricants, wax polishes and sealing compounds. When mixed with chlorinated benzenes they are used as fire resistant liquid coolants. In areas where mineral oil transformers are not satisfactory (due to fire hazard) PCBs, because of their stability, are used instead. Unfortunately, this stability means that PCBs also decompose very slowly. Since PCBs are insoluble in water but are soluble in lipids, such as body fats, they accumulate in the food chain. This environmental unacceptability of PCBs has resulted in a ban, in Canada, of the use of new transformers of this type. Existing transformers containing PCBs are still in use because it is considered unlikely that PCBs will escape from such closed systems. As well, proper disposal facilities are limited or non-

existent and PCBs contained in transformers are more easily supervised than stored PCBs. Some replacement fluids are available but further research is in progress to develop even safer alternatives. When existing transformers reach the end of their usefulness these substitutes will take their place.

There is much controversy as to the exact adverse health effects—if any—that PCBs cause. The possible danger of PCBs exposure was dramatically illustrated in 1968 when 1,057 people on the island of Kyushu, Japan were affected by Yusho (rice oil) poisoning. Their symptoms included chloracne, headaches and diarrhea. The cause of this epidemic was traced to contaminants in the cooking oil. The oil contained over 2000 ppm PCBs. However, there were

other contaminants in the oil more toxic than PCBs. Studies of industrial electrical workers who have had low-level long time exposure to PCBs both by inhalation and skin contact seem to indicate that besides skin irritations that disappear when exposure stopped, there are no adverse health effects cause by PCBs. This may mean that the Yusho effects were due to the other contaminants in the rice oil and not PCBs at all.



An artist's rendition of a con-strained PCB.

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