EPA softens PCB potency warnings

Millions of dollars may be saved on cleanup while health concerns still linger

By SARA THURIN ROLLIN

Twenty years after Congress banned manufacture of polychlorinated biphenyls (PCBs), in part due to their cancer threat, new test data and modern risk assessment techniques have triggered the Environmental Protection Agency to reduce its cancer risk estimates for these chemicals.

Downgrading was done not because PCBs were proven to be less hazardous than previously thought. In fact, data from new studies confirmed PCBs' cancer threat, and documented a new area where they might cause problems—the thyroid.

The new test data confirms and strengthens the agency's previous finding that all PCBs pose some cancer threat, including those with low chlorine content, according to Jim Cogliano, the lead EPA scientist for the PCB reassessment project. Nonetheless, the reassessment is expected to lead to a relaxation of PCB cleanup and water pollution standards.

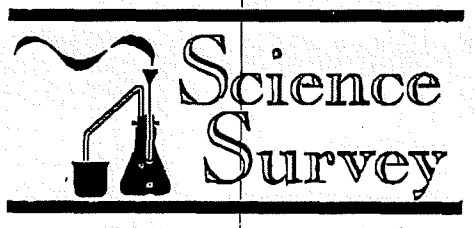
The reduced cancer numbers are the result of modern assessment techniques applied to a large set of data, making it possible to distinguish between types of PCBs, some of which are more dangerous than others. Using three new risk assessment techniques to generate cancer potency estimates, Cogliano said, enabled EPA to generate cancer potency estimates on four PCBs that were sold widely in the United States until their manufacture was banned in 1977.

A cancer potency estimate is a mathematical expression of the cancer-causing potential of a substance. The four new PCB potency estimates adopted by EPA on Oct. 1 were about one-third that of the values set in 1988. Both state and federal agencies consult EPA's cancer assessments when setting standards.

The anticipated regulatory changes, such as a relaxed cleanup standard, may save companies and governments millions of dollars in hazardous waste cleanup costs because 25 percent of all federal superfund sites have PCB contamination, most notably PCBs in soil, according to EPA. Demand for the PCB reassessment came from Congress and the courts. Several companies, including GE, challenged EPA's 1992 so-called national toxics rule, which set water pollution standards for PCBs among other chemicals (American Forest and Paper Association v. EPA, DC, No. 93-0694, partial settlement 11/15/95).

The three risk assessment techniques responsible for the reduction in potency estimates are the use of:

- a modern tumor classification scheme;



- a revised cross-species scaling factor, which is used to estimate a dose in humans based on doses given to rodents;
- a new approach for estimating exposure in the underlying studies.

The new thyroid cancer finding, seen only in male rats, was not unexpected, Cogliano said, explaining that structurally similar dioxins and furans cause this effect. The chemical testing, completed during the summer of 1996, was sponsored by the General Electric Co.

PCBs exist as mixtures of combinations of the 209 different congeners. The commercial mixtures made in the United States are called Aroclors. The Aroclors in the GE studies represent about 90 percent of all U.S. production between 1957-1977, according to the company.

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The new laboratory data and resulting potency estimates allow EPA to make some distinctions about PCBs in the environment, Cogliano said, such as the fact that those in fish cause much more concern than PCBs dissolved in drinking water. EPA will also be able to back up those statements with data.

Because PCBs are widespread in the environment, people are exposed through contamination of air, water, sediment, soil, and certain foods, according to the agency. Due to a lack of data, EPA said it previously treated all PCBs in all environmental settings alike.

The new data will allow government risk assessors to adjust the risk estimates to account for environmental processes that could act to either increase or decrease the chemicals' toxicity, Cogliano said. This is important because the composition of PCB mixtures in the environment changes over time, such as preferential bioaccumulation, where certain PCBs accumulate selectively in living organisms, according to the report.

Cancer risk rises as chlorine content of the PCB increases, according to EPA. Because bioaccumulation through the food chain tends to concentrate PCBs with higher chlorine content, people exposed through the food chain would face the highest cancer risk. Populations of potentially highly exposed people include nursing infants and people whose diet is high in game fish, game animals, or highly contaminated animal products.

At the same time as EPA was relaxing its cancer potency estimates, new data suggesting that PCBs pose a developmental threat to children were being published and concern about their potential to disrupt the hormone systems in humans and wildlife are unresolved. A Sept. 12 *New England Journal of Medicine* article described developmental deficiencies observed in children who had been exposed to PCBs through their mothers' diets and breast feeding.

Among the policy questions EPA must resolve is whether protecting people from PCB's cancer threat also will protect them from possible non-cancer problems, according to Dr. Lynn Goldman, a pediatrician and head of EPA's pesticides and toxic substances office.

EPA scientists said there probably are

not enough data yet to do a quantitative risk assessment for non-cancer effects of PCBs to resolve that question or resolve the endocrine disruption concerns. PCBs, however, seem to make every list of "potential endocrine disruptors" and are the focus of much research. An inventory of ongoing federal endocrine disruption research shows of the 333 substances being studied, 109 are PCBs.

Cogliano suggested that resolution of these non-cancer questions is still a long way off. Copies of the EPA report, "PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures," are available on the internet [http://www.epa.gov/ORD/WebPubs/pcb] and for a fee from the National Technical Information Services (703) 487-4460.

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