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Super-toxic PCB byproduct studied

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SAN FRANCISCO — Pacific Gas & Electric Co. may soon search its electrical equipment for traces of polychlorinated dibenzofurans (PCDFs), a byproduct of PCBs that is 10,000 times more toxic.

PCBs (polychlorinated biphenyls) are an electrical insulating oil in transformers and capacitors. Their use has been controversial for a decade because scientists say they cause cancer in laboratory animals and were suspect as an agent of the disease in humans.

The risk to humans was never proved and now new studies say there may be no serious danger from PCBs. But the byproduct, PCDFs, could be a health risk, a Japanese study indicates.

A memo from PG&E's Environmental Quality Division says the study from Japan published last December in the Archives of Environmental Health may "exonerate" PCBs as a human health risk.

In the study, a team of scientists representing National Taiwan University, the University of Tokyo and the Osaka Institute of Public Health found only an average amount of PCBs remaining in the blood of Japanese patients who ate PCB-contaminated rice oil in 1968 and still have poisoning symptoms.

But the team found a surprisingly high concentration of PCDFs in their livers — 1,000 times higher than expected.

Then the team examined victims of a similar rice oil contamination in Taiwan in 1979 and found PCDFs in their blood.

The doctors said this suggests "a major role of PCDFs" in the illnesses previously attributed to "pure PCB poisoning."

The Japanese study notes,

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however, that PCDF poisoning symptoms were not found in workers exposed to PCBs on the job, but only among those who ate rice oil contaminated with PCBs.

The utility company's March 1 memo says the Japanese research may indicate a need to "discreetly determine if PG&E's PCB and PCB-contaminated equipment and pipeline liquids contain PCDFs."

Although the memo says the company might want to relax its costly PCB environmental protection program, the PG&E workers' union says, "We think this new study may call for more, rather than less, employee protection."

Juliann Sum, a Harvard-educated industrial hygienist studying PCBs for Local 1245 of the International Brotherhood of Electrical Workers, said she "absolutely agrees" with the PG&E memo citing PCDFs as 10,000 times more toxic than its parent chemical PCBs.

"All PCB products such as the PCB fluids used by PG&E are potentially contaminated with PCDFs," she said in an interview with the Oakland Tribune/Eastbay TODAY.

"Heating and incomplete combustion of PCBs, which might occur during use and occasional explosions of transformers and capacitors, produces PCDFs," she said. "The same reaction may be occurring in other PCB equipment."

Asked whether heat might play a role in changing PCBs into PCDFs in electrical equipment, PG&E spokesman Ed Slingland said heat is not a significant factor in the operation of transformers and capacitors.

But IBEW spokesman Ron Fitzsimmons disputed this, saying, "Normally heat is present in capacitors. Voltage produces heat and when a capacitor explodes, that produces more heat. We want the company to investigate this."

The federal Environmental Protection Agency, also considering a relaxation of its PCB rules, is studying how PCBs break down into PCDFs because PCBs "bioaccumulate" and remain in the human body's fatty tissues for years.

"Under stress conditions, they (PCBs) may break down (in the body) into associated dibenzofurans," an EPA biologist reported previously.

The EPA regional office in San Francisco where the biologist works declined Friday to comment on the dibenzofuran theory.

PCBs, which can be inhaled through vapor or dust and absorbed through the skin by direct contact, have been found in the blood of PG&E workers at the utility's PCB storage facility at Decoto Pipe Yard in Union City.

The National Institute of Occupation Safety and Health currently is analyzing the health risks of PCBs in the blood.