PCBs:

FRONT PAGE

Pervasive, persistent . . . . . perilous?

By James Gray
Register staff writer

About 25 times a year, a clear, oily substance leaks or sprays from the rectangular metal boxes perched high on many Orange County telephone poles.

For the Southern California Edison Co., such an event is cause for alarm. Cleanup crews in protective plastic coveralls hurry to the scene. When necessary, soaked pavement is scrubbed with a special solvent, soil is dug up, contaminated trees are uprooted. The fluid, the ruptured metal container and other wastes are shipped off to Arkansas to be burned in a special incinerator.

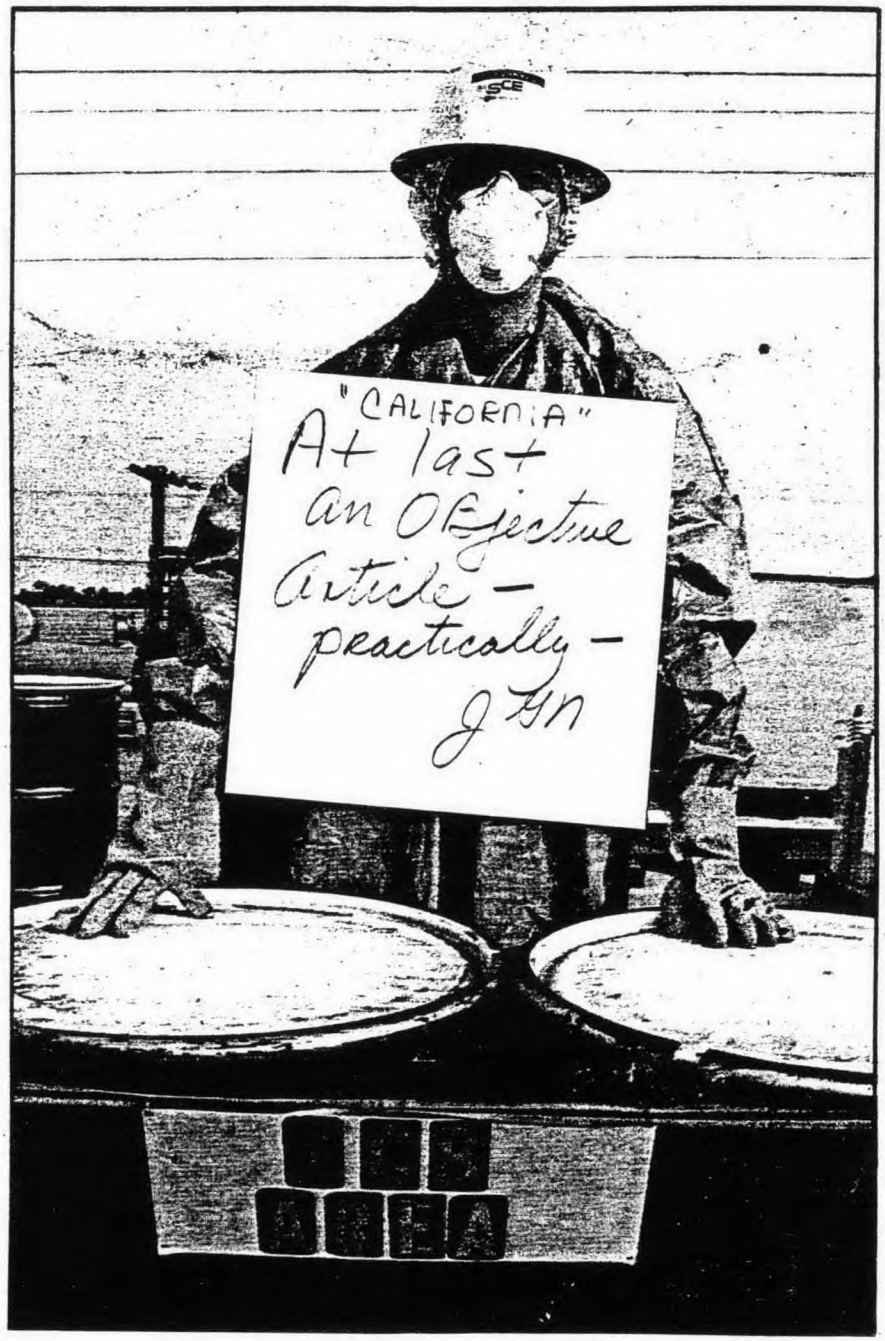
The oily fluid is composed of PCBs, or polychlorinated biphenyls, chemical compounds that have been shown to cause cancer in laboratory animals and are suspected human carcinogens. They are among the most widespread and long-lived pollutants in the environment.

"Once they are in the environment," said Dr. Alex Kelter, of the U.S. Center for Disease Control in Atlanta, "they are there for good — or for bad."

Small amounts of PCBs have been detected in fish from Scotland to Canada, in polar bears and in Antarctic ice floes. They are found in soil, water, red meat, dairy products and animal feed throughout the world. All human beings are presumed to have traces in their blood.

The same chemical properties that make PCBs useful for industrial purposes — especially as coolants and flame retardants in electric capacitors and transformers, — enable them to persist in the environment for decades or even hundreds of years. They are resistant to heat, slow to react, and all but immune to decomposition by bacteria or other means.

Please see PCB/A5



Pat Tehan/The Register

Southern California Edison groundsman Daniel K. Sorrell demonstrates the protective clothing worn by crews cleaning up PCB leaks from equipment on telephone poles.

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PCB

FROM A1

PCBs collect in the fatty tissue of human beings and other living organisms, and are regarded by the U.S. Food and Drug Administration as "unavoidable contaminants in the food chain."

Since 1979, it has been illegal to manufacture or sell PCBs for commercial use in the United States though they are still produced and sold in many foreign countries. Federal regulations prohibit their disposal in even the most secure landfills, except in low concentrations.

But for nearly 50 years, beginning in 1929, PCBs were used widely in a variety of industrial products, including hydraulic brake systems and dust control agents. Until 1977, when it voluntarily ceased production, Monsanto Corp., the major American manufacturer of PCBs, produced an estimated 1.4 billion pounds of the substance.

Despite current efforts by Southern California Edison and other utilities to contain PCB spills and to replace electric equipment containing PCBs, millions of pounds have escaped into the American environment during decades of unrestricted use and disposal.

In Orange County, the residual effect of PCBs is still apparent. Water quality officials said small amounts of PCBs detected in Santa Ana River sunfish during 1980 probably came either from sewage treatment plants located on the river outside the county or from chemical spills that may be decades old.

Tests have shown that PCBs cause cancer, low birth rates, liver malfunction and other disorders in laboratory animals. It has never been proved, however, that PCBs cause cancer in human beings. Studies on the long-term effects of exposure to small amounts of PCBs continue, but to date the chief documented effects include a temporary skin rash known as chloracne and impairment of the function of the liver.

The possible health effects of PCBs were first dramatized in the so-called Yusho (literally, rice oil) incident in Japan in 1968. PCBs leaking from a heat exchanger contaminated rice oil used for cooking by more than 1,300 people. The victims developed skin rashes and discoloration, nervous disorders, fatigue, abdominal pain, menstrual irregularity and other ailments.

But Dr. Cathleen Kreiss, a PCB authority with the Center for Disease Control, said the Yusho victims appear not to have suffered permanent health problems. She said the evidence also now suggests that the problems may have been caused by chlordibenzofurans contained as impurities in PCBs rather than the PCBs themselves.

Eugent Clark, chief engineer for Southern California Edison's customer services department, said the company stopped installing PCB capacitors after the EPA ban in 1979 and began replacing them the next year. Today, he said, PCBs are used in 51,000 capactors located on 7,000 telephone poles located in business, industrial and residential areas throughout Southern California.

The capacitors (devices that maximize the efficiency of the power system) are contained in rectangular metal boxes marked by yellow stickers. Clark said Edison never has used PCBs to cool transformers, the round metal containers on telephone poles.

Ronald Wheichel, vice president of Edison's Orange County division, said Edison has reduced the number of telephone poles with capacitors containing PCBs in Orange County from 1,300 in 1980 to about 980 last year. This year, he said, PCB-filled capacitors on another 360 poles in the county will be removed from service or fitted with a new device that senses when the capacitor is about to fail.

Capacitors on about 350 county poles already have been fitted with the device, Wheichel said. He said the company has averaged about 25 PCB spills a year among its total of 6,000 capacitors in Orange County but expects the new sensing device to reduce that number by 90 percent.

The failure rate for Edison's PCB capacitors in Orange County works out to about 0.4 percent. That's four times the ratio for the Pacific Gas and Electric Co. throughout its service area in northern and central California, said PG&E spokesman Chris Piper.

The U.S. Environmental Protection Agency requires PCBs in concentrations above 500 parts per million to be burned rather than deposited in landfills. Materials cotaminated with PCBs at levels between 50 and 500 parts per million may be dumped only in designated Class 1 landfills. The only such landfill in California equipped to handle PCBs is located at Casmalia, near Santa Maria, but Clark said Edison also uses a similar landfill in Beatty, Nev.

Incineration of PCBs requires a special high-temperature system to prevent air pollution, and the EPA has licensed only two such incinerators in the country — one in Texas and one in El Dorado, Ark.

Clark said it costs about $100 to remove and dispose of a single one of Edison's 51,000 PCB capacitors and ship it to Arkansas — about the same amount it cost to buy a capacitor 30 years ago. A capacitor normally lasts about 30 years before it fails, unless damaged by lightning or some other sudden occurrence, he said.

The EPA rule requiring PCBs in concentrations of 50 to 500 parts per million to be sent to Class 1 landfills may not be justified, Clark contended, in view of the lack of solid scientific proof of health impairment due to PCBs.

The California Department of Health Services is considering a state regulation that would lower that limit to 7 parts per million. Clark said such a rule would involve major expense to the company and would burden Edison ratepayers.

But Gary Davis, a chemical engineer for the state Office of Appropriate Technology, said the new standard is needed because of the pervasivness and toxicity of PCBs, even at low levels.

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