

## CHEMICALS USED TO FIGHT TERMITES CAN EXACT HUMAN TOLL

By Michael Weisskopf

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When Christine Carpenter discovered termites swarming behind her living room curtains in April 1985, the manager of her Annandale condominium called a local exterminator.

The pests were driven out, but so was Carpenter. Suffering from fatigue, nausea, blurred vision, spasms, choking and depression, Carpenter fled the \$85,000 town house 5 1/2 months after it was treated with chlordane, a termite killer regarded by environmentalists and some doctors as a far more serious threat to public health and property than the wood-eating insects.

Chlordane and three chemically related poisons were banned as agricultural pesticides by the Environmental Protection Agency in 1978 after studies linked them to cancer in mice. Later studies showed they cause neurological, reproductive and blood disorders.

The agency permitted their use for termite control, saying that people were not normally exposed to termiticides, which are supposed to be injected underground where the insects nest.

Experiences like Carpenter's have fueled a national campaign to ban use of the chemicals against termites, amid allegations -- denied by manufacturers -- that they represent the nation's least known but most dangerous source of indoor air pollution. The EPA is reviewing its regulations.

Among specific problems attributed to the chemicals in recent years are a fatal cancer in Connecticut; miscarriages in Virginia, the District of Columbia and South Carolina; bone-marrow diseases in Michigan, and the bulldozing of a New York house so contaminated that cleanup costs were estimated at nearly triple its appraised value.

The chemicals are blamed for contaminating a substantial portion of the 1.5 million U.S. homes treated every year, sometimes making the risk of cancer an estimated thousands of times higher than the federal government considers acceptable.

Joan Dine, 46, and her husband, Tom, 47, whose Chevy Chase home once registered chlordane levels 10 times higher than guidelines from the National Academy of Sciences, sold it last month for \$105,000 less than its appraised value after informing the buyers of its contamination problems.

The Dines estimate that they suffered hundreds of thousands of dollars in losses, including antique furniture and art contaminated by the termiticide, the expenses of moving to two rental apartments, rent and cleanup, air testing and medical costs.

The Dines abandoned the \$430,000 six-bedroom house in September 1985 after Joan had a miscarriage and went into premature menopause, Tom's diabetes worsened, one daughter had severe migraines and another developed learning problems.

"Very probably, we are dealing with potent carcinogenic and toxic agents to which tens of millions of Americans are unknowingly exposed over long periods of time in the so-called safety of their homes," said Dr. Samuel Epstein, an international authority on adverse health effects of toxic chemicals.

In the last two years, New York and Massachusetts banned chlordane and its three sister chemicals -- heptachlor, aldrin, dieldrin -- and the EPA is reviewing the regulatory status of the four substances that together accounted for 95 percent of U.S. termite treatments in 1985.

Alternative chemicals are considered less dangerous but are more expensive and thus less attractive to exterminators in controlling pests said to be responsible for about \$750 million in property damage annually.

A spokesman for Velsicol Chemical Corp., which manufactures chlordane and heptachlor, said both are safe if properly applied by exterminators and do not cause serious health problems for which they have been blamed.

Shell Chemical Co. said the same about aldrin and dieldrin, which it manufactured until the mid-1970s and which were imported by an affiliated firm until 1985. Remaining U.S. stocks of the chemicals are said to be small.

The chemicals are marketed under such brand names as Termide, Orkill and Aldrex.

Homeowners most often become involved with termiticides during property turnovers because mortgage lenders require termite-free guarantees as a condition of loans. Since sellers are generally responsible for control of the pest, the buyer usually plays little role in selecting chemicals or supervising exterminators.

"You take it for granted that, if it's required by mortgage companies, the stuff won't hurt you," Joan Dine said.

Once popular as pesticides for farms and home lawns, the four chemicals under review were labeled an "imminent hazard" by the EPA in 1975 and banned in 1978 for agricultural use after they were shown to generate tumors in mice, increase toxic residues in sediment, fish and wildlife and accumulate in human body fat, tissues and breast milk.

Evidence suggesting that the chemicals could adversely affect residences surfaced years earlier in Air Force monitoring of chlordane, long the most popular U.S. termiticide and used in 60 percent of household treatments. The Air Force first tested for chlordane residue in 1972 after occupants of military-base housing in Dayton, Ohio, complained of unusual odors.

Chlordane was found in air samples of 80 percent of the 1,500 housing units tested in the mid-1970s, prompting an Air Force request to the National Academy of Sciences to assess health risks of the chemical and its three sister termiticides.

The academy responded in August 1979. A toxicology panel said it could not determine "a level of exposure to any of the termiticides below which there would be no biological effect under conditions of prolonged exposure."

Unable to set safety standards, the panel recommended guidelines for evacuating homes where termiticide vapors exceed certain levels.

Industry officials dispute the guidelines' validity saying that, if properly injected into the soil away from houses, termiticide vapors do not reach dangerous levels indoors.

Studies of chlordane, however, suggest that it is either more mobile than Velsicol states or commonly misapplied.

In 1982, the Air Force evacuated 200 housing units contaminated at levels exceeding the academy guideline of 5 micrograms per cubic meter of air. Beginning the next year, a New York state survey of 515 homes treated by the termiticide showed excess levels in 6.4 percent of them.

Charles H. Frommer, Velsicol's vice president for regulatory, government and public affairs, said that, even at 5 microgram levels, company studies show that chlordane poses no health problem.

"Doses people are exposed to in their homes are much lower than the maximum tolerated dose that animals have been exposed to where we've seen any kind of health effect at all," he said of the chemical. "Toxicologists tell us that, maybe if it exceeds 50, something ought to be done about it."

The New York state health department projected chlordane's cancer risk at between 1.6 and 5 additional cases of cancer among every 1,000 adults breathing 5 micrograms of the vapors over a lifetime -- from 1,600 to 5,000 times higher than the federal agency's standard of acceptability.

Epstein, professor of occupational and environmental medicine at the University of Illinois Medical Center, said the New York study "grossly underestimates" chlordane's cancer risk by not considering certain cancer-causing ingredients. He estimated that exposure to 5 micrograms produces as many as two additional cases of cancer for every 100 persons.

With studies and case histories linking chlordane to a range of other diseases -- including leukemia, aplastic anemia, central nervous system symptoms ranging from behavioral changes to convulsions and miscarriages -- the EPA is widely criticized for lax regulation.

"If EPA doesn't have enough information to ban this chemical, then they'll never have enough information to ban a chemical," said Diane Baxter, a toxicologist at the National Coalition Against the Misuse of Pesticides. "EPA has demonstrated an extraordinary lack of will to fulfill its mandate of regulating these chemicals and protecting the public health," she said.

Carpenter, 63, retired in 1985 after 25 years as a secretary and recalls being "happy as a lark" then in what she called "my sanctuary": her three-story, four-bedroom condominium town house bought seven years earlier for \$41,000.

On April 6, 1985, she noticed thousands of termites behind the living room curtains in what became a plague of biblical proportions.

Two weeks later, exterminators bored holes in the brick base fronting the house and injected chlordane, she said. They also inserted it in holes in the cement-slab foundation close to air ducts in the basement floor, she said.

Termiticides are to be injected "My life disintegrated . . . . The rage inside me won't go away."

-- Christine Carpenter

directly underground around a house where bugs nest. They are not to be applied near people or heat or air-conditioning ducts that circulate air throughout a house.

A few hours after the exterminators finished, Carpenter said, she discovered white fluid covering most of the basement utility-room floor.

She threw out a soaked rug and newspapers and mopped the floor, becoming unusually tired. For five months, her once-robust health steadily deteriorated. Small tasks exhausted her. Her spinal column became numb. Her joints hurt. She suffered headaches, nausea, depression, disorientation, memory loss, anxiety, irritability, breathing difficulty and muscle spasms.

"I thought I was falling apart from old age," she said. "The way I was feeling, I knew I was going to end up in a wheelchair, and I cried."

After watching a television report about chlordane in May, she began doing research on the termiticide. The National Capital Poison Center read her a list of symptoms linked to chlordane exposure, and "it started to strike home," she said.

An air sample of her condominium, taken in May, registered chlordane levels of 43 micrograms, more than eight times the academy guideline.

A Velsicol official assured her that there was no problem. Local and federal officials were unavailable or unresponsive, she said. Exterminators returned for a cursory cleanup. Decontamination specialists tore out part of the basement ceiling and closets without substantially decreasing chlordane levels. Another consultant offered to detoxify the house for \$41,000, its original price. And, Carpenter was becoming sicker.

Finally, she abandoned her "sanctuary" in late September and rented a two-bedroom apartment off the Beltway in Annandale for \$565 a month.

Faced with rent and mortgage payments and medical bills, Carpenter was forced out of retirement and works as secretary for temporary services agencies. She began regaining her health about nine months after leaving the house but still complains of lingering physical and emotional problems.

"My life disintegrated," she said. "When you lose everything you worked for, and the people who took it treat you with indifference, and you pay taxes to those glorified agencies that do nothing, you carry around a lot of bitterness. The rage inside of me won't go away."

Carpenter said she does not plan to return to her condominium. But she pays the monthly mortgage for fear that her lender will foreclose and resell the property.

"I know the agony and anguish I went through," she said. "I would never let anybody else be hurt by that house."

Even at heavy exposures, Velsicol's Frommer said, corporate health studies of chlordane show no evidence of the kind of health problems suffered by the Dines and Carpenter. "I won't argue the fact that they have symptoms," he said. "But I'd certainly argue that they got them from chlordane. The symptoms that are being alleged could come from anywhere or anything."

The burden of proving specific health problems caused by chlordane has stymied court suits for years. Ben DiMuro, a lawyer representing Carpenter and four other families alleging chlordane contamination, said Velsicol has been named in more than 150 complaints involving chlordane in the last eight years and has won all but a few cases that the firm decided to settle out of court.

Although the company has never lost a jury trial, he said, medical evidence has been strong enough in the last year that juries in Illinois and Georgia awarded large verdicts against

exterminators in chlordane cases. An attorney for Velsicol refused to discuss the company's litigation.