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'Garbage' chemical TCP threatens Valley water

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Memo shows Dow knew TCP was useless but used it anyway.

By Mark Grossi — The Fresno Bee

A 1974 memo from Dow Chemical describes several chemicals in a widely used farm fumigant as "garbage." Today, one of those useless chemicals threatens drinking water for more than 1 million people across the San Joaquin Valley.

Now linked to cancer, the toxin was waste from a plastic-making process. Chemical companies often mix such leftovers to create other products to avoid the cost of disposal, says one long-time chemical engineer.

The fumigant manufacturers, Dow and Shell Oil Co., discovered decades ago that 1,2,3-trichloropropane, or TCP, was not effective against worms called nematodes, according to documents in lawsuits filed by a dozen Valley cities against the companies. But they apparently left it in a fumigant anyway.

"TCP was a hazardous waste, not a pesticide," said lawyer Todd Robins, who represents several Valley cities and water agencies. "It did nothing for farmers, but Shell and Dow knowingly used their fumigants as a way to dispose of it."

A Dow representative disputes the lawyer's statement, saying TCP never was intentionally put into the fumigant, called Telone. Nor did the company intentionally allow TCP to remain in the fumigant, he said.

"Rather, from the outset Dow took steps to purify the product through a distillation process," said Randy Fischback of Dow. "Historically, TCP was only occasionally detected in Telone and at extremely low, trace levels."

Shell declined comment, but said it would vigorously defend claims made against it in the TCP lawsuits.

The manufacturers already have agreed to a \$13 million TCP settlement for Livingston in Merced County. The city of Clovis is next up in the series of lawsuits. Other cities waiting in line with lawsuits include Stockton, Fresno, Bakersfield, Visalia, Delano and Lamont.

Dow's "garbage" memo is among many documents discovered in the legal action against the chemical companies and distributors. The lawsuits are aimed at forcing the companies to pay for cleaning up the contamination.

Memos and other documents paint a picture of large businesses trying to register the fumigants with the federal government. There is little indication that the companies analyzed possible health hazards in TCP and other so-called inert ingredients.

Today, both state and federal water authorities are moving to regulate TCP. In California, the public health goal is to keep this chemical below one part per trillion -- equal to one drop in 20 Olympic-sized swimming pools.

TCP has been detected at much higher levels in more than 200 Valley drinking water wells. Many small communities and water systems cannot afford the tests to detect the contaminant, so there may be many more tainted wells.

The state is far ahead of the federal government in regulating TCP, which was discovered at a Superfund site in Southern California in the 1990s.

But TCP has the attention of the U.S. Environmental Protection Agency, which expects to have national regulations in the next four to five years.

"It is a carcinogen," said toxicologist Bruce Macler of the EPA drinking water program. "I'm more than just concerned."

For Dow and Shell, it is the second time they have been connected with a hazardous chemical from a fumigant in the Valley's water. In the 1990s, the companies were sued by several cities over a different fumigant called dibromochloropropane or DBCP, which is believed to cause human sterility.

Fresno's DBCP settlement included a payout of \$21 million, along with a \$2 million trust fund to reimburse the city for maintaining carbon filters on many wells.

Experts say hefty, additional carbon filters -- a considerable expense for hundreds of wells across the Valley -- could be used to clean up wells tainted with TCP.

The chemical has been connected with several kinds of cancer in animal tests, including stomach, kidney, liver and pancreatic.

The chemical also is known as an industrial solvent, as well as a cleaning and degreasing agent.

In the 1940s, TCP became part of Shell's fumigant, called D-D. In the 1950s, it became part of Dow's Telone. TCP and several other chemicals in the fumigants were byproducts or impurities from the process of making allyl chloride, which is used in manufacturing plastics.

Dow and Shell were following common business practices by processing such waste into another product for sale, says a retired chemical engineer who worked and researched for 40 years in the field.

There are few options for disposal of the waste stream -- burn it, bury it or illegally dump it somewhere, like a river.

To avoid disposal expense, chemical companies regularly look for legitimate ways to incorporate the waste in other products, said Robert H. Schwaar, an expert witness in the cases. Schwaar is a retired chemical engineer and researcher from the nonprofit SRI International, which originated as Stanford Research Institute in the 1940s.

"The disposing of waste is not inexpensive," he said. "But if you can recover some costs by using the waste in another product, then it's all to the good."

The fumigant worked well because of the ingredient 1,3-dichloropropene. Chemical companies found a market in Western states.

A Shell memo in 1983 said D-D sales averaged 3.5 million gallons annually. Most farmers were using it to eliminate pests for potatoes, sugar beets, trees, vines and vegetables.

In 1981, Shell made about \$6.3 million from D-D sales, the memo said. The company also avoided a \$3.2 million cost for disposal of the leftover chemicals from its allyl chloride operation, the memo said.

The "garbage" memo from Dow was a brief analysis of the most effective ingredient in Telone -- 1,3-dichloropropene. It hints that the company's experts did not consider TCP and the other ineffective waste chemicals dangerous.

Instead, they were weighing the costs of leaving small amounts of these chemicals in the fumigant and fully explaining them to EPA.

"It's not that we are particularly concerned about their safety, but rather we can't justify the costs of their

toxicological studies," the memo said.

The companies could not support their early claims that all the ingredients of the fumigant were effective in killing nematodes. One memo suggests that lowering the amount of unproven chemicals might protect the ground water.

Shell took D-D off the market in 1984. By the 1990s, Dow changed the formula for Telone II to take most of the garbage chemicals out. It is still in use but not considered a threat.

The TCP already in the Valley's ground water, however, probably will not degrade much over time, Schwaar said.

Should Dow and Shell have known that TCP could have posed a threat to human health? Schwaar said Dow and Shell should have at least suspected it because there are health hazards in products created with chlorine, which was used in making TCP.

Said Schwaar: "It's hard to think of very many chlorinated organic compounds that are really safe."

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