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The Nation

## Study Links Weed Killer to Reproductive Problems

*Science: Tests on mice reveal an increase in failed pregnancies, researchers report.*

September 17, 2002 | EMILY GREEN | TIMES STAFF WRITER

A cocktail of the three most common herbicides used by about 29 million American households to kill dandelions may reduce fertility and cause miscarriages, according to a study published today in the toxicology journal *Environmental Health Perspectives*.

The results come as the Environmental Protection Agency prepares to review the licensing of one of the chemicals, now used in more than 1,500 lawn-care and agricultural products.

In the study, researchers at the University of Wisconsin-Madison and the University of Valparaiso in Chile spiked the drinking water of laboratory mice with weed killer, then charted the animals' reproductive rates. They found a 20% increase in failed pregnancies at extremely low doses--seven times lower than the maximum allowable rate for U.S. drinking water.

University of Wisconsin toxicologist Warren Porter said his group deliberately selected the sort of weed killer most commonly employed by American homeowners on their lawns. He would not name the brand, other than to say: "We bought it in a hardware store."

He does, however, name the active ingredients: a mix of three "phenoxy herbicides" called 2,4-D, dicamba and mecoprop. Typically blended together into weed killers and "weed and feed" products, they kill broadleaf plants such as dandelions while sparing grass.

They work by confounding the hormone system of the broadleaf plants, causing them to choke their nutrient and water channels with their own growth.

The Scott and Dow Chemical Cos. were among the first to market 2,4-D in a host of weed killers and weed-and-feed formulations immediately after World War II. Since then, they have been formulated in more than 1,500 products made by scores of companies. Most of these are over-the-counter products and will contain, in addition to the herbicides, industrial soaps to help the chemical cling to and then penetrate the plants.

Trials scrutinizing the safety of the products have typically only looked at the herbicides singly and have shown the chemicals to have either low, or no, toxicity. In the last 10 years, the pesticide industry has spent \$30 million on 2,4-D toxicity trials.

North Carolina agronomist Don Page, who represents the leading suppliers of the chemical in the U.S., has presented to the EPA 270 safety studies sponsored by his clients. He believes the chemical and products containing it are safe.

"The only verified examples of 2,4-D poisoning in humans is in suicides. If you drink enough of it, you can kill yourself," he said in June. He declined to comment on the latest study.

However, since the late 1970s, independent studies of crop workers in Europe and Kansas have suggested that pesticide applicators working heavily with products containing 2,4-D had higher rates of non-Hodgkins lymphoma.

In the mid-1990s, University of Minnesota pathologist Vincent Garry conducted studies in wheat, sugar beet and potato farming regions and found twice the rate of birth defects among children of crop workers who conceived the children during the months when the pesticide 2,4-D was sprayed.

Garry began to suspect that the reason the chemicals looked safe in trials conducted for the government regulators is because the labs were using pure 2,4-D, while crop workers were handling an enhanced chemical blend. Porter suspected the same thing. Designing the Wisconsin study, he set out to examine the toxicity of the mix as sold over the counter, not the single herbicides tested for the EPA.

"We have no idea what kind of reactions might be going on once these active ingredients are formulated into products," he said. "You're talking about putting a lot of very reactive chemicals together in a mix, and storing it at room temperature."

From Minnesota, Garry praised the choice to use the commercial mix. "It brings up the notion that it is the commercial-grade product that people are exposed to, and these need to be studied," he said. He added that he would like to see further tests to confirm the radical effects of such low doses.

Oakland research scientist Robert Gunier, an epidemiologist who has studied the effects of pesticides for the California Department of Health Services, praised the Wisconsin study for looking at such low doses. Most testing is done at extremely high doses, he said. "I think it really raises some important issues about how regulatory testing is done."

Spurred by the Kansas cancer study and Garry's work in Minnesota, the EPA is now reviewing the safety literature of 2,4-D and expects a decision on the status of the chemical in 2004.