

March 21, 2005

Children's Cancer And Pesticides

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More proof on who the governments support using our tax dollars. With friends like this who needs enemies...

Chris Gupta

[Children's Cancer And Pesticides](#)

Cancers diagnosed in children younger than 15 are increasing at about one percent per year in the U.S.[1] Cancers are now the second leading cause of death among children (after accidents). An estimated 7800 children in the U.S. were diagnosed with new cancers in 1995.[2] Part of this increase results from better diagnosis and better recording of cases by state and federal agencies, but "taken together they cannot explain the magnitude of the increases that have been observed over the last several decades." [1] In other words, childhood cancer really is increasing.

Two kinds of childhood cancers account for 50% of all cases: leukemias (cancers of the blood-forming organs), and brain cancers. Leukemias seem particularly likely to strike

children younger than age two, and brain tumors occur most often in children younger than age six.

In adults, cancers occur after a delay of seven to 20 years (or more) between the time of exposure to cancer-causing agents and the manifestation of a cancer. However, in the case of childhood cancers, these delays are often much shorter. This makes it seem as if many childhood cancers occur in children who are somehow predisposed to get the disease. If they are exposed to a carcinogen before or shortly after birth, their disease manifests quickly. Perhaps the predisposition is inherited, or perhaps it is caused by something in the environment.

The best-established environmental cause of cancers in children is ionizing radiation. A study of 32,000 twins in 1985 showed that those who had leukemia were twice as likely to have been exposed to [x-rays](#) as were healthy children.[3] Other studies have confirmed these findings.

Exposure to electromagnetic fields (EMFs) from power lines and from 110-volt wiring in homes has been studied for its effects on childhood leukemia, with mixed results. Some studies show a relationship, others show none.[4] The connections between EMFs and cancer need to be clarified by further study.

It is conceivable that some childhood leukemia is caused by one or more viruses. Viruses cause leukemias in cats, chickens, and cattle, so there is no reason, on the face of it, to rule out humans.[1]

Certain chemicals also might be related to childhood cancers. Unfortunately, there is a "conspicuous absence of information on chemical exposures and toxicity relating to children." [1] Neither government nor the chemical corporations have seen it as their job to discover whether chemicals are harming children.

Nevertheless, several studies have shown a link between childhood cancers and pesticides. Childhood leukemias, lymphomas, neuroblastomas, and brain cancers have all been linked to pesticides in recent years. (See REHW [#333](#), [#559](#).)

Children are exposed to pesticides by many routes. No-pest strips, pet collars, and shampoos (for pets, and in some cases for the children themselves, for head lice), plus routine use of pesticides against rodents, insects, funguses, and weeds in homes, lawns, and gardens can expose children.

Americans put an estimated 62.7 million pounds (28.5 million kilograms) of pesticides and 278.5 million pounds (126.6 million kilograms) of antimicrobials (disinfectants) into their homes each year.[5] Recent studies estimate that between 78% and 97% of families in the midwestern U.S. use pesticides in and around the home.[6] A study of indoor air in homes in Jacksonville, Florida detected pesticides in the air in 100% of the homes.[7]

A recent review article described 31 studies of pesticides and childhood cancers reported

during the period 1970-1996. The review concluded that, "In general, results from leukemia studies suggest that no-pest strips and frequent use of pesticides in the home may be strongly associated with childhood leukemia..."[6]

Several different kinds of exposure of children to pesticides have been studied:

1) Father's exposure to pesticides while the mother is pregnant: "Collectively, these studies suggest an increase in risk of brain cancer, leukemia, Wilms' tumor, Ewing's sarcoma, and germ cell tumors associated with paternal occupational exposure to pesticides prior to and during pregnancy.... Childhood brain cancer and leukemia were the most studied, with fairly consistent, moderate increases in risk."[6]

2) "Farm residence was associated with brain cancers, neuroblastoma, retinoblastoma, non-Hodgkin's lymphoma, and Wilms' tumor to varying degrees."[6]

3) "Few studies have evaluated no-pest strips or pesticides used on pets; however, those [few] studies, as well as studies of pesticide use in the home, have reported fairly consistent associations for exposure during childhood and the risk of brain cancer and leukemia, despite their [the studies'] small size."[6]

4) "In general, professional extermination and use of garden pesticides were less likely to show positive effects than the use of other home pesticides for most childhood cancers; however, the risk of Wilms' tumor and lymphoma was elevated with professional extermination use during childhood and brain cancer was elevated with termite extermination during pregnancy."[6]

The authors make the important point that careful studies, in which pesticide exposure is actually measured (rather than estimated or assumed) are much more likely to reveal a significant relationship between pesticides and childhood cancers. When a father's exposure to pesticides is estimated, based on his job title, for example, the resulting study is likely to show less effect of pesticides on childhood disease compared to a careful (and expensive) study in which the father's exposure to pesticides is measured. Very few studies of pesticides actually go to the trouble (and expense) of measuring exposures. The clear implication is that, if funds were available for better studies, we would have more bad news about the relationship of pesticides to childhood cancers.

A recent study of pesticides and childhood brain cancers has revealed a strong relationship between brain cancers and compounds used to kill fleas and ticks.[7] The specific chemicals associated with children's brain cancers were pyrethrins and pyrethroids (which are synthetic pyrethrins, such as permethrin, tetramethrin, allethrin, resmethrin, and fenvalerate), and chlorpyrifos (trade name: Dursban).

A recent, careful study of chlorpyrifos (Dursban) residues in a home offered some surprising results.[5] A home was professionally treated with chlorpyrifos (trade name: Dursban), following the ventilation recommendations printed on the government-approved label. The residues were then measured on the surface of a dresser and on the

surfaces of children's plastic toys and cloth toys for two weeks. Chlorpyrifos is the most commonly used pesticide in the U.S. It is a potent nerve poison --a fifth of an ounce is sufficient to kill an adult.

To the researchers' surprise, the measurable residues of chlorpyrifos continued to increase for a week after the initial treatment. They discovered that the pesticide was entering the air, then slowly settling out onto plastic and cloth surfaces, especially children's toys. Based on their measurements of toys, they estimated a typical child's exposure to chlorpyrifos from this one application: it was six to 21 times as high as the recommended "safe" dose. Thus we learn that government "safe" standards for pesticides in the home are based on unrealistic estimates of the amounts of pesticides that will remain in the home after treatment. Chlorpyrifos was measurable in this particular home for 2 weeks after the initial application.

This chlorpyrifos study estimated exposure based on pesticide residues on toys alone. Other studies have shown that pesticides are also retained on carpeting, and on pets. Furthermore, pets, and peoples' shoes, bring pesticides into the home from outdoors. Without sunlight to help break them down, pesticides can remain on carpets for long periods. These routes of exposures were not considered in the chlorpyrifos study just described. Thus even this careful study may have underestimated actual exposures that children encounter.

We often hear it said that the burden of proof is on the pesticide companies to show that their products are harmless to humans before they can be marketed. But this is clearly not the case. Dozens of studies have now shown that several classes of pesticides are associated with brain cancers and leukemias in children, yet those products continue to be sold in enormous quantities and the pesticide companies continue to mislead the public by claiming that their products are entirely "safe." The burden is clearly on the public to show that specific children have been harmed by specific pesticide applications. Because cancers are delayed, showing cause and effect is all but impossible. Thus do the chemical corporations have their way with our children, while government looks on approvingly. No, the burden of proof of harmlessness is not on the corporations, it is on us. This should be reversed.

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--Peter Montague
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[1] Charles W. Schmidt, "Childhood Cancer: A Growing Problem," ENVIRONMENTAL HEALTH PERSPECTIVES Vol. 106, No. 1 (January 1998), pgs. A18-A23. This article mistakenly says that childhood cancers are increasing at 10% per year. For the correct estimate, see footnote 2, below. See also REHW #559.

[2] Carol L. Kosary and others, editors, SEER CANCER STATISTICS REVIEW, 1973-1992 TABLES AND GRAPHS [NIH PUBLICATION NO. 96-2789] (Bethesda, MD: National Cancer Institute, 1995), Table I-3, pg. 17.

[3] E.B. Harvey and others, "Prenatal x-ray exposure and childhood cancer in twins," NEW ENGLAND JOURNAL OF MEDICINE Vol. 312, No. 9 (February 28, 1985), pgs. 541-545.

[4] Many studies are cited in Martha S. Linet and others, "Residential exposure to magnetic fields and acute lymphoblastic leukemia in children," NEW ENGLAND JOURNAL OF MEDICINE Vol. 337, No. 1 (July 3, 1997), pgs. 1-7.

[5] Somia Gurunathan and others, "Accumulation of Chlorpyrifos on Residential Surfaces and Toys Accessible to Children," ENVIRONMENTAL HEALTH PERSPECTIVES Vol. 106, No. 1 (January 1998), pgs. 9-16.

[6] Julie L. Daniels and others, "Pesticides and Childhood Cancers," ENVIRONMENTAL HEALTH PERSPECTIVES Vol. 105, No. 10 (October 1997), pgs. 1068-1077.

[7] Janice M. Pogoda and Susan Preston-Martin, "Household Pesticides and Risk of Pediatric Brain Tumors," ENVIRONMENTAL HEALTH PERSPECTIVES Vol. 105, No. 11 (November 1997), pgs. 1214-1220.

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