School Pesticide Monitor

A Bi-Monthly Bulletin on Pesticides and Alternatives
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Brain Tumors in Children Linked to Parental Exposure

A recent study reveals that women exposed to pesticides within a year of pregnancy are almost twice as likely to have a child that develops a brain tumor. The study, "Exposure to Pesticides and the Risk of Childhood Brain Tumors," was published in *Cancer Causes and Control*, and specifically looks at whether exposure to pesticides a year prior to conception, during pregnancy and exposure during childhood were likely to augment the risk of brain tumors. Instead of examining household applications by homeowners, the study examines the role of pesticides applied by professional pest control applicators particularly to eradicate termites, spiders, and insects. Research was led by Professor Elizabeth Milne, PhD., head of the cancer epidemiology group at the Telethon Institute for Child Research.

"The findings confirm what has been found in previous studies but we have been able to go a little bit further," Dr. Milne said. Interestingly, "The increased risk associated with termite treatments may be as high as twofold, while the increased risk with other pesticides may be about 30 percent."

The results indicate that termites treatment by professional applicators pose a much greater risk than insecticide treatments, with a 50 percent greater risk if mothers and fathers are exposed either in the year before or during pregnancy. While researchers found little evidence that treatments after birth were linked to childhood brain tumors, the study did not account for long term risks of developing tumors past childhood.

The findings support previous studies that indicate maternal pesticide exposure may play a role in childhood leukemia. Prenatal pesticide exposure has been linked to leukemia in older children. Few of these studies have looked at infants and toddlers or considered household pesticide use during the prenatal

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Preliminary Assessment Finds Risks to Children

On February 6, the U.S. Environmental Protection Agency (EPA) released its preliminary volatilization assessment for the registration review of chlorpyrifos, finding that vapors may be emitted from treated fields at levels resulting in exposure to children and others who live, work, attend school, or otherwise spend time nearby. In some circumstances, these bystanders may be exposed to chlorpyrifos and/or the transformation product chlorpyrifos-oxon at concentrations that could cause adverse effects.

EPA's preliminary volatilization assessment is partially in response to a petition filed by the Natural Resources Defense Council (NRDC) and the Pesticide Action Network North America (PAN) in 2007, which requested that the agency revoke all tolerances and cancel all registrations for chlorpyrifos. In a letter to NRDC and to PAN dated January 25, 2013, updating these groups on EPA's response to their September 12, 2007 joint petition regarding chlorpyrifos, EPA stated that, "This assessment represents a significant advancement in the evaluation of pesticide risks, as it will be the first probabilistic assessment of the

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Brain Tumors

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period. Also, most of the studies focused on occupational exposures.

Given such compelling research on the risks associated with childhood exposure to pesticides, the prevalence and persistence of pesticides in our living environment is a huge concern. A 2009 study from the U.S Environmental Protection Agency (EPA) and U.S Department of Housing and Urban Development (HUD) found the pesticide permethrin in 89% of the 500 homes randomly selected for sampling. Another study conducted by the School of Medicine at The University of Texas San Antonio earlier this year found at least five pesticides in the air of 60% of 29 homes occupied by pregnant Hispanic women. In 2008, researchers at Columbia University's Center for Children's Environmental Health (CCCEH) found PBO in 75% of homes occupied by pregnant women in inner-city New York.

To see more scientific research on the effects of pesticides on human health, including birth defects, see Beyond Pesticides' *Pesticide-Induced Diseases Database* at www.beyondpesticides.org/health.

For more information on what you can do, see our materials for new parents with tips on food choices and safer pest management, specifically designed for new moms and dads at www.beyondpesticides.org/hospitals/newmoms.php.

Risks

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risks posed by the post-application volatilization of a semi-volatile pesticide." The implications of the draft assessment and possible regulatory pathways forward could be significant, particularly with regard to pesticide spray drift.

If the final, more refined, chlorpyrifos volatility assessment indicates that risks are similar to those found in the preliminary evaluation, EPA anticipates that it may be necessary to take action to reduce bystander risks. With more information, however, the agency's preliminary assessment could be refined and result in lower exposure and risk estimates. Last year, EPA announced new mitigation measures to reduce bystander exposure to chlorpyrifos drift from agricultural fields, including the use of buffer zones for residential areas, schools, hospitals, etc. Chlorpyrifos was voluntarily withdrawn by manufacturers from residential use after EPA determined that cumulative exposure resulted in serious adverse health outcomes, especially for children. Short-term effects of exposure to chlorpyrifos include chest tightness, blurred vision, headaches, coughing and wheezing, weakness, nausea and vomiting, coma, seizures, and even death.

Chlorpyrifos is a neurotoxic insecticide that was banned from residential applications after EPA determined that cumulative exposure resulted in serious adverse health outcomes, especially for children. Prenatal and early childhood exposure has been linked to low birth weights, developmental delays, ADHD and other health effects. Beyond Pesticides has cited EPA's action regarding the organophosphate chlorpyrifos as a classic failure of the risk assessment process under the *Food Quality Protection Act* (FQPA) —a failure that is repeated over and over again in agency chemical regulation decisions. The purpose of FQPA is to protect infants and children from pesticides, taking into account the potential for pre- and post-natal toxicity via any route of exposure, including exposures through structural and landscape uses, diet, and water. Advocates have pointed to chlorpyrifos as the poster child for why risk assessment does not work to protect the public, workers and the environment, given that safer practices, including organic practices and products are increasingly available in the marketplace.

By focusing on risk reduction strategies to come up with "acceptable," but unnecessary, rates of illness across the population, EPA continues to underestimate the impact of the chemical's continued widespread use in agriculture. Chlorpyrifos is a frequent water contaminant and a long range contaminant, exposing communities and contaminating pristine areas far from where it was applied. Residues in food and water continue to put public health, particularly childrens,' at risk. Volatilization drift —the evaporation of the pesticide after application— is also part of the problem for chlorpyrifos, but the new restrictions do not take into account volatilization drift. EPA noted its intention to address volatilization drift when the chlorpyrifos risk assessment is finalized in 2014.

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