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George Alexeeff, PhD
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Dear Dr. Alexeeff:

I have been asked by residents of Sacramento County to evaluate the toxicology of the agents and methods being used by the State of California regarding the control of Japanese Beetles.

I am a Professor Emeritus of Pediatrics at the Medical University of South Carolina and Primary and Co-Author of the USEPA documents: "*Recognition and Management of Pesticide Poisoning*" (5th and 6th editions) so have considerable background in the human effects of pesticides.

I am concerned about the apparent lack of information that has been provided to the public about these activities. I also have little confidence in the assurance professed by your agency that all non-chemical methods of control have been exhausted and that there is extensive monitoring of chemical residues in treated areas. We can agree that Integrated Pest Management, properly performed, requires use of the least toxic chemical agents only after all non-chemical methods have been exhausted.

The US Park Services has demonstrated at several sites that organic turf management is effective and cost-efficient. The towns of Ogunquit, ME and Takoma Park, MD have banned pesticides on lawns and ornamental landscapes. New York passed a Child Safe Playing Fields Act in 2010 that eliminated pesticide use on playing fields. Multiple public entities in Canada have banned the use of chemicals on lawns and landscapes.

As a pediatrician, I am very concerned about the greater exposure of children to pesticides due to their anatomy and physiology (e.g. greater skin surface, increase relative food and water intake, and greater breathing rates). Likewise developing systems in children, particularly the endocrine and nervous systems, are more

susceptible to injury by pesticides that the mature systems of adults. This is the logic behind the Food Quality Protection Act of 1996, which requires for most pesticides an additional 10-fold safety factor in setting pesticide tolerances to better protect children. Unfortunately this factor has been implemented by USEPA in a fashion that does not inspire confidence. These elements of concern for children require extreme caution in activities that might expose children to pesticides, including the presently proposed and implemented Japanese Beetle control program in California. The materials I have seen do not suggest that sufficient attention has been paid to eliminating risk to children. The proposal to treat all of the turf areas at Jesuit High School appears to represent a high risk of exposure to children and is contrary to activities elsewhere throughout the US.

The written and on-line materials provided to the public do not provide adequate information to assure me that the methods and chemicals used are sufficient to protect children, the public, or workers from adverse effects of these pesticides.

With regard to the specific agents, each represents concern for children and others. Carbaryl is considered a likely human carcinogen. Since it is accepted that there is no threshold for carcinogens, any exposure can result in cancer, particularly over the lifespan of a child. Carbaryl is listed under California Prop 65 due to its carcinogenic risk. The European Union considers it a probable endocrine disruptor that represents particular risk to the developing endocrine systems of children. As an anti-cholinesterase carbamate, Carbaryl is a potent neurotoxicant. These agents are closely related mechanistically to Organophosphates that have been shown to cause permanent neurologic impairment to children exposed in-utero and early in life. The assurance that the "inerts" in the formulation of Sevin SL pose no risk cannot be made in the absence of complete knowledge of the composition of these "inerts". Such knowledge is confidential business information and is not available to the public or medical scientists to make any judgment as to the accuracy of this assessment.

Imidacloprid (Merit) is likewise designed as a neurotoxicant. Though less toxic to humans than insects, it is considered moderately hazardous. Imidacloprid is in the class of Neonicotinoid Insecticides, derived from the highly toxic nicotine. Their neurotoxicity is a function of their action on the nicotinic acetylcholine receptors by displacing acetylcholine from the receptor. They appear to primarily affect the central nervous system of humans. Since these are relatively new agents with rapidly increasing market share, there is less experience or research in their human toxicity. There is a great deal of evidence for their considerable toxicity to non-target organisms. Neonicotinoids are of great concern for their toxicity to pollinators, particularly honey bees. This has led to suspension of their use in the European Union. An abundance of caution related to pollinator toxicity and likely neurotoxicity to children suggests that they should have no more than limited use and certainly should not be applied to playing fields. Again, the assurance of no toxicity from the "inert" ingredients cannot be made with even minimal confidence in the absence of knowledge of the composition of these ingredients.

Cyfluthrin/beta-cyfluthrin (Tempo) is a synthetic pyrethroid. These are highly active neurotoxicants, affecting several neurotransmitter systems. Rapid metabolism and excretion in adult mammals decreases their toxicity. However, they have been shown to have a ten-fold increase in toxicity in young rats compared to adult rats, suggesting a much greater risk to the fetus and young child compared to adults. Therefore considerable concern for protection of the young should be considered in any usage of this agent. There have been reports of relatively severe toxicity from exposure from drift with pyrethroids, so control of drift would be an important consideration in the use of this agent. Again, there is no confidence in the assurance about lack of toxicity from the "inerts" in this formulation.

In summary, I question the need for the widespread proposed use of the agents. There is no assurance that non-chemical approaches to control of the Japanese Beetle have been fully considered and applied. I am concerned about the potential exposure of children, the general public, and workers to these toxic agents. The potential for carcinogenesis, neurotoxicity, and endocrine disruption for children is considerable. There is no confidence that adequate information has been provided to the public to allay these concerns for me or for others.

Sincerely,



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