

# School Pesticide Monitor

A Bi-monthly Bulletin on Pesticides and Alternatives



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Beyond Pesticides / National Coalition Against the Misuse of Pesticides  
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## Pyrethroid Pesticide Affects Puberty at Low Levels

**L**ow-dose, short-term exposure to esfenvalerate, a synthetic pyrethroid pesticide, delays the onset of puberty in rats at doses two times lower than U.S. EPA's stated no observable effect level (NOEL) of 2.0 mg/kg/day, according to a new study published in *Environmental Health Perspectives*. The researchers conclude, "This could potentially affect current established exposure levels for humans."

Delayed pubertal onset in humans has been associated with low bone mass density, and estrogen is necessary for bone mineral acquisition in both girls and boys. Importantly, a lowered endogenous

estrogen level in females is one factor associated with bone fragility.

With the phase-out of most residential uses of the common organophosphate insecticides chlorpyrifos and diazinon, use of pyrethroids has increased. Synthetic pyrethroids are used for everything from lawn care and structural insecticides, to mosquito control and agriculture.

While pyrethroids are a synthetic version of an extract from the chrysanthemum plant, they are chemically engineered to be more toxic, take longer to breakdown, and are often formulated with synergists, increasing potency and compromising

the human body's ability to detoxify the pesticide.

Exposure to pyrethroids can cause headaches, dizziness, nausea, irritation, and skin sensations. Pyrethroids may affect neurological development, disrupt hormones, induce cancer, and suppress the immune system. They have also been linked to respiratory problems and may trigger asthma attacks.

*Schools should avoid using pyrethroids by using non- and least-toxic strategies. See Beyond Pesticides' Gateway on Pesticide Hazards and Safe Pest Management at [www.beyondpesticides.org/gateway](http://www.beyondpesticides.org/gateway).*

## Studies Show Pesticides Contaminate Homes and Daycares

**A** new study by the U.S. EPA's National Exposure Research Laboratory finds concentrations of 13 synthetic pyrethroids and their degradates in indoor dust collected from homes and daycare centers in North Carolina and Ohio. The study results show the extent to which hazardous pesticides are present in indoor environments and threaten the public's health, especially the health of children.

According to the study, published in the journal *Environmental Research*, permethrin is present in every dust sample, at least one pyrethroid pesticide was found in 69 samples and phenothrin was found in 36 samples. The majority of the metabolites are present in more than half of the dust samples.

Children are especially sensitive to the effects of permethrin and other synthetic pyrethroids. Lab rodent studies find permethrin is almost five times more toxic

to the young due to incomplete development of the enzymes that break down pyrethroids in the liver and newborns show that permethrin may inhibit neonatal brain development.

A study published in the *International Journal of Hygiene and Environmental Health* also finds synthetic pyrethroids persisting in house dust and air in significant concentrations for months after they are applied. As long as one year after treatment, both permethrin and cyfluthrin levels remain elevated, in what the authors call "general background level[s]," indicating that these two pyrethroids have very slow degradation times.

A 2003 study published in *Environmental Science & Technology* finds endocrine disrupting pesticides, chemicals that can mimic or interfere with human hormones, in indoor air and dust samples. The study detected 52 different com-

pounds in air and 66 in dust. The number of chemicals detected in a home ranged from 13-28 for indoor air and from 6-42 for dust.

A 1998 study finds that certain pesticides accumulate on furniture, toys and other sorbent surfaces up to two weeks after application. A separate study finds substantially higher pesticide concentrations in the infant breathing zone. A 1996 study shows that 2,4-D can be tracked from lawns into homes, leaving residues of the herbicide in carpets.

EPA's Non-Occupational Pesticide Exposure Study (NOPES) finds households have multiple pesticides in indoor air, at levels often ten times greater than levels measured in outdoor air. Another EPA study finds pesticides in and around the home even when there has been no known use of them on the premises.

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## Report Documents School Pesticide Poisoning Incidents

Children participating in school activities have been exposed to pesticides dozens of times in the past ten years, according to a review of pesticide poisoning complaint records kept at the Oregon State Department of Agriculture and Department of Human Services. The review of the State's pesticide complaint records was conducted by Oregon Toxics Alliance, a statewide organization working to protect human and environmental health. The report uses data from the Oregon Department of Agriculture, the Oregon Department of Human Services and the Oregon Department of Forestry to develop a better understanding of how and why Oregon school children are being exposed to pesticides during their school activities.

The data collected for the report reveals an on-going pattern of pesticide exposure to school children in classrooms, on playgrounds, on ball fields and at school bus stops. 56 separate cases of Oregon school children experiencing pesticide exposure were reported in Oregon since 1990 - 43 of them filed in just the past ten years. In 14 cases, the risk from pesticide exposure was severe enough to result in school evacuations, trips to emergency rooms,

and citations from a violation of state pesticide law.

Oregon Toxics Alliance undertook the study because the organization receives numerous calls from parents and teachers who express concern for children's safety and health. Reviewing pesticide complaint logs, Oregon Toxics Alliance found that highly toxic pesticides linked to cancer, reproductive effects, and nervous system damage are routinely used in Oregon's schools for pest control.

"This is only the tip of the iceberg," said Lisa Arkin, Executive Director of the Alliance and author of the report. "The records under represent the actual number of pesticide poisonings at school activities because children may not know why they are feeling ill, or adults may not report an exposure to a state agency."

A case at one elementary school illustrates this point. Teachers and young students suffered adverse health effects, including sore throats and headaches up to six days after an insecticide was sprayed in the attic and building exterior near classrooms. When schools are sprayed, the vapors and residues can linger for hours or days

in an indoor environment.

According to the U.S. EPA fact sheet, "Pesticides and Their Impact on Children," a child's developing organs are less capable of detoxifying and excreting harmful chemicals than adults. This means that children experience subtle neurological effects from low-level exposures to environmental agents where adults may not.

Oregon lacks a statewide policy to ensure safe pest management practices at schools," said Ms. Arkin. "That is incomprehensible, because twenty-five percent of the states have already taken such action."

Oregon Toxic Alliance is recommending that the State move quickly to reduce children's exposure to pesticides, require comprehensive Integrated Pest Management (IPM) practices in all schools and public facilities, and do more to prevent pesticides from drifting onto school grounds.

*To find out whether your state has an IPM policy, visit our State Pages. If you would like to develop a policy for your school or district, please contact Beyond Pesticides.*

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Although synthetic pyrethroids are often seen as alternatives to organophosphate insecticides, these studies clearly demonstrates that when these chemicals are ap-

plied, they do not disappear. Moreover, they are making their way into human bodies at alarming rates. At the same time, there are methods for managing homes and schools that prevent infesta-

tion of unwanted insects without the use of synthetic chemicals. Based on the host of health effects linked to this chemical class, synthetic pyrethroid use in schools is hazardous and unnecessary.