School Pesticide Monitor

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Oregon Passes School IPM Legislation

Oregon Governor Ted Kulongoski has signed into law an act requiring all public and private K-12 schools and community colleges to adopt an Integrated Pest Management (IPM) program. The bill contains many exemplary provisions, such as its definition of IPM and plan requirements, as well as the restrictions on certain pesticides and practices.

"The use of [IPM] can help reduce pesticide exposures and also provide additional benefits by reducing pests and their associated allergens, possibly reducing asthma triggers. Many schools practicing [IPM] have documented improved pest management, cost savings, and reductions in pesticide applications by as much as 90 percent," said Senator Suzanne Bonamici.

IPM is defined as a prioritized strategic approach to managing pests, which is critical to ensure implementation of a comprehensive IPM program that will truly reduce and, ultimately eliminate, pesticide exposure at school. The legislation defines IPM at length focusing on monitoring, education/training and long-term management strategies based "on the prevention of pest problems by working to reduce or eliminate conditions of property construction, operation and maintenance that promote or allow for the establishment, feeding, breeding and proliferation of pest populations or other conditions that are conducive to pests or that create harborage for pests; [and] incorporates the use of sanitation, structural remediation or habitat manipulation or of mechanical, biological and chemical pest control measures that present a reduced risk or have a low impact." IPM, as defined, also excludes the application of pesticides on a routine schedule for purely preventive purposes as well as the application of pesticides for purely aesthetic/cosmetic purposes.

In addition, IPM "gives preference to the use of nonchemical pest control measures and allows the use of low-impact pesticides if nonchemical pest control measures have proven ineffective." Low-impact pesticides, as defined, do not include pesticides with the signal words 'warning' or 'danger' on the label, or pesticides classified by EPA as a "human carcinogen," "probable human carcinogen," "carcinogenic to humans," or "likely to be carcinogenic to humans." The

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Two States Move Away from Lawn Pesticides at Day Care Centers

Connecticut and Illinois have passed legislation to increase the protection of children at day care centers from toxic lawn chemicals. While providing different degrees of protection, both bills, which build on their existing state school pesticide laws, passed with overwhelming support in both chambers of their General Assembly.

"We know that contact with pesticides and chemicals are not compatible with healthy living. It is time to err on the side of caution and ban these pesticides from use any place our children and grandchildren learn and play," said Connecticut State Representative Terrie Wood.

The Connecticut bill extends the state's existing law that prohibits the application of pesticides on kindergarten through 8th grade school grounds to include day care center grounds as well. In addition, the bill requires only licensed pest control operators apply pesticides in day care center facilities or on their grounds. There is an exemption that allows general use pesticides to be used in an emergency situation when a pest, such as ticks, stinging insects or mosquitoes, pose an immediate threat to human health. Children are required to be kept away from any pesticide application area. Prior notification, including the name of the active ingredient, target pest, location and date of application, must be provided to all parents and guardians whose children attend the day care at least 24 hours before a pesticide application.

The bill delays the implementation date for banning the use of lawn chemicals on school athletic fields and playgrounds one year to July 1, 2010. Until then, schools must follow a state Integrated Pest Management program for the fields and playgrounds, which continues to allow some toxic chemical use.

The new Illinois bill prohibits the application of pesticides when children are present at licensed day care centers and the treated area must remain unoccupied for at least two hours following the application. It also requires toys and other items to be removed from the application area. Day care centers must maintain a registry of parents and guardians who want to receive four-day advance notice of a pesticide application. In addition, the bill requires public schools provide four-day advance notice of lawn pesticide applications, either by way of a registry or universal notification to parents and guardians of students attending the school. The Illinois Department of Public Health is directed to recommend a pesticide-free turf

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Scientists Study Children's Exposure to Pesticides, Urge EPA Act

Although it is known that infants are more susceptible than adults to the toxic effects of pesticides, this increased vulnerability may extend much longer into childhood than expected, according to a new study by researchers at the University of California, Berkeley. Among newborns, levels of paraoxonase 1 (PON1), an enzyme critical to the detoxification of organophosphate pesticides, average one-third or less than those of the babies' mothers. It was thought that PON1 enzyme activity in children approached adult levels by age two. Instead, the UC Berkeley researchers found that the enzyme level remained low in some individuals through age seven. Based upon the findings, reported in the journal *Environmental Health Perspectives*, the study authors recommend that the Environmental Protection Agency (EPA) re-evaluate the current standards for acceptable levels of pesticide exposure.

"Current EPA standards of exposure for some pesticides assume children are three to five times more susceptible than adults, and for other pesticides the standards assume no difference," said Nina Holland, Ph.D., UC Berkeley adjunct professor of environmental health sciences and senior author of the paper. "Our results suggest that the EPA standards need to be re-examined to determine if they are adequately protecting the most vulnerable members of the population."

The study involves 458 children from an agricultural region who were followed from birth through age seven. Cord blood samples were collected from all children to determine their PON1 genotype and to obtain baseline measures of the enzyme's activity level.

One's PON1 genotypic profile determines how effectively the enzyme can metabolize toxic chemicals. For example, people with two copies of the Q form of the gene - known as a QQ genotype - produce a PON1 enzyme that is less efficient at detoxifying chlorpyrifos oxon, a metabolite of chlorpyrifos, than the enzyme produced by people with two R forms of the gene. Similarly, individuals with two T forms of the PON1 gene on a different part of the chromosome generally have a lower quantity of the enzyme than do those with two C forms of the gene.

Previous research led by Dr. Holland found that some of the QQ newborns may be 50 times more susceptible to chlorpyrifos and chlorpyrifos oxon than RR newborns with high PON1 levels, and 130 to 164 times more susceptible than some of the RR adults.

Of the children in this latest study, 24 percent had the QQ genotype, and 18 percent had the TT genotype, both of which are associated with lower activity of the PON1 enzyme. Moreover, 7.5 percent of the children had both QQ and TT genotypes, which is considered an even more vulnerable profile. On average, the quantity of enzyme quadrupled between birth and age seven. The greatest rise in enzyme activity was among children with the RR and CC variants of the PON1 gene, which quickly outpaced the increase in children with the QQ and TT genotypes.

The fact that enzyme activity remained low for certain kids with vulnerable genotypes well past age two was surprising for the study authors. The researchers are continuing to collect data for these children as they grow older to see if the pesticide susceptibility continues.

"In addition to its involvement in the metabolism of pesticides, many studies are now finding that PON1 may play an important role in protecting against oxidative stress, which is linked to diseases from asthma to obesity and cardiovascular disease," said study lead author Karen Huen, a UC Berkeley Ph.D. student in environmental health sciences. "The children in our study whose genotypes are related to lower PON1 activity may not only be more susceptible to pesticides throughout much of their childhood, they may also be more vulnerable to other common diseases related to oxidative stress."

"What's important about this study is that it shows that young children are potentially susceptible to certain organophosphates for a longer period of time than previously thought," said Brenda Eskenazi, Ph.D., UC Berkeley professor of epidemiology. "Policymakers need to consider these vulnerable populations when establishing acceptable levels of exposure to different pesticides."

Oregon Adopts School IPM

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IPM plan coordinator must pre-authorize the use of a low-impact pesticide. A pesticide other than a low-impact pesticide may be applied only in a declared "pest emergency," a decision that is made by the IPM plan coordinator in consultation with the school faculty and administration.

The bill also requires at least 24 hour prior written notification of pesticide applications to parents, guardians and staff. Written notification is to include the name of the pesticide, EPA registration number, location and time of application. Notification signs are to be posted 24 hours prior to the pesticide application and remain for at least 72 hours after the application.

Schools must implement the IPM plan on or before July 1, 2012.

States Address Lawn Care Pesticides

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care program to all day care centers and public schools.

"It is critically important to protect children from pesticide exposure on their playgrounds and playing fields," said Rachel Rosenberg, Illinois' Safer Pest Control Project's executive director. "Safer Pest Control Project applauds the Illinois legislators who passed this law unanimously in both Houses. This new law, which awaits Governor Quinn's signature, will be a critical component of protecting children from early childhood exposures to pesticides. Pesticide free lawn care is easy and affordable, and we hope that this law inspires other states to take similar action."