

White Paper

IMPROVING PEST MANAGEMENT AND REDUCING PESTICIDE RISKS IN OREGON PUBLIC SCHOOLS, PARKS, AND SENSITIVE SITES (Care Facilities)

Prepared by: Tim Stock, IPM Education Specialist, Integrated Plant Protection Center (IPPC), Oregon State University. stockt@science.oregonstate.edu (541) 737-6279.

October 30, 2007

Health Issues associated with pests and pesticides

Children are especially vulnerable to problems associated with some pests. Cockroaches are asthma triggers (Arruda, et al. 2001). Rodent infestations can also trigger asthma and are vectors of disease. Many children are allergic to yellow jacket stings.

Children are also especially vulnerable to the effects of pesticides because their anatomical and physiological makeup is different from adults, as are their behavior patterns (National Research Council, 1993, Goldman, 1995, Eskenazi, et al. 1999, Alarcon, et al. 2005, Jones, et al. 2006). Those in adult care facilities are also more vulnerable because of their weakened immune systems.

Pediatric asthma is on the rise in the United States. Environmentally related exacerbation is estimated to account for one third of the cases. All of the top five most frequently applied pesticides in schools and child care facilities are respiratory irritants and therefore asthma triggers (Salam et al. 2004). In addition, commonly used pesticides in Oregon public schools have been associated with cancer, hormone (endocrine) system damage, reproductive problems, or nervous system damage (Beyond Pesticides, 2001, PAN, 2005, as cited in OEC 2005).

Pesticide contamination of the environment is often thought to be caused by agricultural practices. However, municipalities often have contamination of surface waters due to urban pesticide use. Overuse and misuse of pesticides by municipal workers, professional pest managers, and teachers leads to storm water runoff events resulting in contamination. Many urban areas draw their drinking water from surface sources, causing concern about the environmental fate and potential long-term health effects of pesticides.

In low-income urban communities, exposure to both pests and pesticides is a common health threat inside schools and care facilities. High levels of pests in aging buildings drive people to extreme measures with the only tools they can access at the local hardware store – pesticides. Pesticide labels are not consulted or followed by a large percentage of users, and pesticides are often not properly stored.

Pest management practices in Oregon's schools, parks, and care facilities

Pest problems and pest management in Oregon's public schools, parks, hospitals, day care facilities, and adult care facilities are as varied as the state's geography. Mice, rats, bats, pigeons, cockroaches, termites, carpenter ants, yellow jackets, and nuisance ants are some of the most common pests.

In a study on Pest Control Practices in Oregon Schools, the Oregon Environmental Council, in conjunction with the Oregon Department of Education, surveyed all of Oregon's 198 public school districts regarding their pest management practices (OEC 2005). The survey found that nearly 75% of schools rely on their facilities staff to manage pest problems. Another 25% contract with pest control companies to manage their pest problems. The strategies employed by various pest control companies range from calendar applications to verifiable Integrated Pest Management (IPM) Programs. The survey also found that only 30% of the districts said they are familiar with IPM and that they use it in their schools.

Current statewide efforts

Oregon is one of 14 states that have no school pest management requirements for posting of pesticide applications, no pre-notification of applications, no IPM law or rule, or minimum requirements for applicators (training, certification, supervision, etc.). Most schools are unaware that the Pesticide Use Reporting System (PURS) applies to them.

Currently, there is no statewide-coordinated effort to improve pest management in schools, parks, and care facilities. There is no systematic sharing of pest control needs, problems, strategies, limitations, issues, training, etc. in schools and care facilities, nor between parks and school turf managers. The Western IPM Center (sponsored by USDA/CSREES) recently funded a small project to enable sharing of weed management strategies between public parks managers in the northwest. This is a step in the right direction, yet it's scope and time frame are limited.

Oregon State University has a faculty member with 20% of his time devoted to school IPM (the IPM Education Specialist at IPPC), but this is insufficient to move much beyond the information-gathering/analysis stage.

The IPM Education Specialist is a member of the Western Region School IPM Implementation and Assessment Work Group (also funded by the Western IPM Center). In September 2007, the Specialist hosted a Work Group meeting in Portland. Nine states were represented and a mixture of extension faculty, advocacy groups, regulatory agencies, school facility management representatives, and funding agencies (USDA and EPA). A school site inspection in the Portland Public School district was included, along with a discussion with the District's school IPM coordinator. The District has a well-implemented IPM program and contracts with a pest control company that is highly experienced at verifiable IPM implementation.

The IPM Education Specialist is also a member of the Multistate Education/Extension and Research Coordinating Committee (project # WERA TEMP 2182) “Implementation and Assessment of IPM in Urban Environments”. The objectives of the committee include an expansion of the Work Group, inviting stakeholder input to further awareness of needs, and the facilitation of the adoption of standard IPM practices in each state.

The promise of IPM for schools, parks, and sensitive sites

Integrated Pest Management (IPM) can be defined as an ecologically based management strategy that focuses on long-term solutions to pest problems with minimum impact on human health and the environment. Solutions are based on understanding pest biology and behavior. Key concepts for School IPM include:

- Long-term solutions
- Prevention and avoidance through pest exclusion and good sanitation
- Monitoring and identification of pests
- Treatment – A combination of cultural, physical, biological, and (least of all) chemical methods

The national average reduction in pesticides and pest complaints for verifiable IPM programs is a 71% reduction in pesticide applications and a 78% reduction in pest complaints (Gouge, Lame, and Snyder, 2006). The key word is “verifiable”. A verifiable IPM program includes records of site inspections, monitoring protocols, and treatments. A verifiable IPM program also results in a reduction in pest management costs (though initial costs for exclusion and control of serious pest problems can be higher), without increasing the work load of school facilities maintenance staff (Kubista-Hovis and Lame, 2004, Gouge, Lame, and Snyder, 2006).

The components of verifiability include independent assessment of the program, to confirm: identification, inspection, monitoring, faculty and staff training, exclusion practices, documented administrative commitment, an IPM committee, partnership/oversight with and of a pest management professional, high sanitation standards, pest sighting logs, notification of parents, posting of pesticide treated areas, and a reduced-risk pesticide products list.

Lessons learned from other states

Regulation-based incentives for the adoption of IPM practices have often focused on pesticide availability through “pesticide reform” (Goldman, 1996). There are several schools throughout the country that have excellent school IPM policies, but terrible implementation. This is not due to lack of funds. Experience has shown that unless school facilities staff and/or the school district administration are excited and engaged in IPM it will not happen. Likewise, if implementation programs rely solely on information distribution and workshops rather than support of a planned implementation program, they have little chance of success (Lame, 2005). Most success stories in school IPM have common elements:

- They begin by executing a well-designed, well-planned pilot program in one or two schools where the district superintendent and the facilities managers are supportive and engaged.
- They treat custodial staff as professionals deserving respect.
- They start where the facilities managers are and build on what they know.
- They deal with critical issues and concerns first, generating early recognizable results, and bring facilities into compliance with state and federal laws.
- When pest management professionals are involved, their IPM services are “demand-driven” by knowledgeable school facilities staff (i.e. facilities staff demand verifiable IPM).
- They include training in verifiable IPM for facilities staff and pest management professionals.
- They have a mechanism for facilities managers and custodians to promote successes to their peers via coalitions or working groups.

At the Western Region School IPM Implementation and Assessment Work Group meeting in Portland, the Group identified priority goals, many of which fit with the common elements and reflect the needs in the State of Oregon:

- Outreach and tools to stakeholders working in or with the school system to drive demand for IPM and improve communication and partnerships with all stakeholders
- Develop concise IPM materials and training for school maintenance staff
- Increase incentives and resources for school maintenance staff
- Develop and implement pest control company training in IPM (to establish a standard such as technician certification) and outreach to the PCO organizations

Health and environmental concerns, lack of training and sharing, and a paucity of verifiable IPM implementation all warrant attention and action. Clearly there is a need for a comprehensive statewide-coordinated education and verifiable IPM program.

What is needed to improve pest management in Oregon’s public schools, parks, and sensitive sites

To achieve the outcomes of improved pest management and reduced pesticide risk, all the common elements of successful school IPM programs must be present (see “Lessons learned from other states” section). To accomplish this, staff and resources will be needed to develop and build a comprehensive statewide-coordinated education and verifiable IPM program. This program will be consistent with the goals of the National Roadmap for Integrated Pest Management.

Components of a Statewide IPM Program for School, Parks, and Sensitive Sights:

- Develop and build a statewide coalition which includes representatives and pest management practitioners from the Departments of Health, Education,

Agriculture, and Environmental Quality, OSU Extension Service, the Oregon School Facilities Management Association, child care facilities, adult care facilities, industry associations, and advocacy agencies.

- As part of the coalition development, identify stellar pest management programs such as the Portland Public School District's Program.
- Include technical training, regulatory updates, current pest issues, and periodic sharing of past problems/successes in most coalition meetings.
- Work with the coalition to execute a well-designed/planned program in one or two pilot schools, parks, and/or sensitive sites. The main criteria for the pilots are the "common elements" mentioned previously. Development of materials and training for those responsible for pest management at schools, parks, and sensitive sites are other criteria.
- Through the coalition and the pilots, provide outreach and tools to stakeholders working in or with the school system to drive demand for IPM and improve communication and partnerships with all stakeholders.
- Develop a curriculum and provide training to Pest Management Professionals in verifiable IPM implementation at schools, parks, and sensitive sites.
- Use the successes of the pilots to expand to other schools, parks, and sites via "peer promotion" and peer-to-peer training where appropriate.
- Based on the experience gained from pilot implementation, the coalition will make policy recommendations to the state legislature

OSU staffing and resource needs:

The Program will reside within the Integrated Plant Protection Center (College of Agricultural Sciences), and will be part of the Statewide IPM Program.

1 FTE that will serve as the overall School/Parks/Sensitive Sites IPM (SPSS IPM)

Coordinator for the State and be responsible for structural pest control areas

1 FTE that will serve as a Turf and Landscape Pest Management Specialist and report to the SPSS IPM Coordinator

1 FTE for administrative support

1 FTE on a two-year contract to develop a curriculum and provide training to Pest Management Professionals in verifiable IPM implementation. Once established, this training would be taken over by the SPSS IPM Coordinator

\$15,248 for four desktop computers and two notebook computers

\$800 for two digital cameras and one digital video camera

\$720 per annum for cell phones for SPSS IPM Coordinator and Turf & Landscape Pest Management Specialist
\$8,500 per annum for travel expenses
\$2,900 for IPM monitoring and inspection equipment, training and office supplies, reproduction of educational materials, etc.

References Cited

Alarcon, W. A., G. M. Calvert, J. M. Blondell, L. N. Mehler, J. Sievert, M. Propeck, D. S. Tibbetts, A. Becker, M. Lackovic, S. B. Soileau, R. Das, J. Beckman, D. P. Male, C. L. Thomsen, M. Stanbury. 2005. Acute Illnesses Associated With Pesticide Exposure at Schools. *JAMA*. 294:455-465.

Arruda, L.K., L.D. Vailes, V.P. Ferriani, A.B. Santos, A. Pomes, M.D. Chapman. 2001. Cockroach allergens and asthma. *J. Allergy Clin. Immunol.* 107:419-428.

Beyond Pesticides, Washington D.C. 2001. Beyond Pesticides and School Pesticide Reform Coalition. 2003. *Safer Schools: Achieving a Healthy Learning Environment through Integrated Pest Management*. 60 pp.
<http://www.beyondpesticides.org/schools/publications/IPMSuccessStories.pdf>

Eskenazi, B, A. Bradman and R. Castorina. 1999. Exposures of children to organophosphate pesticides and their potential adverse health effects. *Environmental Health Perspectives* 107 (Suppl. 3):409-19.

Goldman, L. R. 1995. Children – unique and vulnerable: environmental risks facing children and recommendations for response. *Environmental Health Perspectives* 103 (Suppl. 6):13-18.

Gouge, D. H., M. L. Lame, and J. L. Snyder. 2006, Fall Issue. Use of an Implementation Model and Diffusion Process for Establishing Integrated Pest Management in Arizona Schools. *American Entomologist* B05-030

Goldman, L. 1996. EPA's policy on pesticides gets tougher. *Forum Appl. Res. Public Policy* 11(1):46-53.

Jones, E. V., R. Axelrad, W. A. Wattigney, M. Stat. Healthy and Safe School Environment, Part II, Physical School Environment: Results From the School Health Policies and Programs Study 2006. 2006. *Journal of School Health*. Oct. 2007:77(8):544-556

Kubista-Hovis, K. and M. L. Lame. 2004. The economics of school integrated pest management: An analysis of the Monroe IPM model in Bloomington, Indiana. *National Schools Update*. USEPA, BPPD 1(3): 5-7.

Lame, M. L. 2005. A Worm in the Teacher's Apple: Protecting America's School Children from Pests and Pesticides. Bloomington, IN: Authorhouse.

National Research Council. 1993. Committee on Pesticides in the Diets of Infants and Children. 1993. Pesticides in the Diets of Infants and Children. Washington, DC: National Academy Press. 0309048753. http://www.nap.edu/catalog/2126.html?se_side.

Pesticide Action Network (PAN) Pesticides Database, as cited in 2005. Updated database available at <http://data.pesticideinfo.org/Index.html>

Salam, M.T., Y-F. Li, B. Langholz, and F. D. Gilliland. 2004. Early-life environmental risk factors for asthma: findings from the children's health study. Environ. Health Perspect. 112(6):760-765.

Weiss, L. and S. Moran. 2005 "Pest Control Practices in Oregon Public Schools." Oregon Environmental Council. Available at <http://oeconline.org/publications/reportsandstudies/pestcontrol/view?searchterm=pest%20control%20practices%20in%20oregon%20schools>.