Executive Summary

The annual report summarizes pesticide incident data collected by agencies during 2007 and activities of the PIRT Review Panel for 2008.

The legislature created the Pesticide Incident Reporting and Tracking (PIRT) Review Panel to monitor pesticide-related incidents that have suspected health or environmental effects (RCW 70.104.070 through 70.104.090). PIRT Panel members include representatives of six state agencies and the Washington Poison Center (WAPC) that respond to statewide incidents, two university members, a Governor-appointed toxicologist, and a member representing the public.

Member agencies conduct pesticide incident investigations in accordance with their statutory responsibilities and report findings to the PIRT Panel for evaluation. PIRT submits an annual report summarizing pesticide incidents to the legislature, Governor, agency heads and the public. This 2008 report presents individual and combined agency data for 2007 and a summary of the activities of PIRT and its member agencies for 2008.

Panel Activities and Issues for 2008

The PIRT Panel convened 12 times in 2008 in Tumwater, Seattle, Tukwila, and Yakima. Ongoing, mandated activities include reviewing member agencies' independent strategies to reduce pesticide incidents, evaluating combined PIRT data, and reporting on product labels that are inadequate or unclear. In 2008, PIRT monitored many topics (Appendix G) including: pesticide drift, the pesticide air monitoring study, use of pesticides in schools, West Nile virus, the Worker Protection Standard, illnesses related to pyrethroid insecticides, pesticide use reporting, the use of pesticides for roadside vegetation management and forestry, and the implications of funding cuts proposed in the Governor's 2009-2011 budget.

Findings and Recommendations

The PIRT Panel presents the following findings and recommendations based on 2007 incident information.

1. Approximately one-third of the 207 Department of Health (DOH) cases classified as definitely, probably or possibly (DPP) related to pesticide exposure were human exposures related to agriculture. About one-half (33) of these cases were exposures from drift or residues. Approximately 20 percent of the 177 Department of Agriculture (WSDA) cases were also from possible drift exposure. Training programs, application methods, and decision support tools that reduce pesticide drift have potential to reduce these incidents.

Pesticide drift or suspicion of drift also causes distress to workers and the public. Land use changes may increasingly put families in close proximity to agricultural operations that use pesticides. The DOH Pesticide Program has recently demonstrated leadership over the 2007-2009 Pesticide Air Monitoring Project.[1] The Legislature directed DOH to administer air monitoring programs conducted by the University of Washington and with Washington State University. These publicly funded studies on organophosphate insecticide/fumigant concentrations in ambient air provide high quality information to residents, pesticide users, and

[1] http://www.doh.wa.gov/ehp/pest/drift.htm

regulators that will help institute appropriate prevention tactics. DOH should be commended for its leadership and commitment to acquiring and dispersing critical information and should continue to provide such support as recommended by the technical review panel.

2. Half of the cases DOH identified as affecting agricultural workers related to individuals "handling" pesticides at the time of their exposure. Training programs are important for increasing worker proficiency and emphasizing rigorous implementation of worker protection standards promulgated by the Environmental Protection Agency (EPA). Cholinesterase monitoring and associated compliance investigations conducted by Labor and Industries (L&I) continue to provide insight about potential pesticide exposures among pesticide handlers[2] and can identify methods for improving practices.[3]

3. Two thirds (147/207) of DOH's 2007 DPP cases were not associated with agriculture. This finding is likely due to effective incident reporting from WAPC, which serves urban populations and medical facilities. Of the 147 exposures, thirty-seven (25%) of the individuals were working at the time of exposure and 110 (75%) were not at work. One hundred twelve (76%) were at a residential site at the time of their exposure. Accidents or spills, treatments of insects in or around the home, herbicide treatments, and treatments to people or pets for lice or fleas were major sources of these incidents.

4. Thirty-one DPP cases investigated by DOH were related to pesticide exposure of children. Nineteen of the children were under the age of six. Twelve incidents resulted from the pesticide being within the reach of children and accidently released or mistakenly ingested. The lack of child-proof devices on pesticide containers, particularly those for home use, should receive more attention. Appendix H summarizes DOH DPP cases and WSDA investigations that involve children.

5. West Nile Virus (WNV) was detected in mosquitoes, birds, horses, and humans in Washington in 2008. Risk of WNV-related pesticide exposure incidents is now increasing due to the likelihood for human disease and the desire to apply pesticides to kill adult mosquitoes if prevention activities do not occur or fail. DOH, WSDA, Ecology and L&I can each capture and share information about whether the response to WNV causes an increase in pesticide exposure incidents. The Legislature and local governments should continue their vigilance with respect to WNV prevention, integrated pest management programs to reduce mosquito populations in high-risk areas, and public notification efforts.

6. Pyrethroid and pyrethrin-related illnesses and injuries continue to increase in Washington. Findings from illness investigations are a) rates of cases are increasing over time, b) respiratory symptoms are the most common reported symptoms, c) a small percentage of cases resulted in moderate to severe medical outcomes, and d) people with pre-existing conditions appear to be at higher risk for moderate to severe reactions. The increase in reported cases probably reflects the predominance of pyrethroids and pyrethrins in home use insecticides such as foggers. DOH prevention activities in 2008 included: initiating a media campaign and developing a website

[2] Pesticide handlers do work that includes applying, mixing/loading, or transporting pesticides, or maintaining pesticide equipment.

[3] http://www.lni.wa.gov/Safety/Topics/AtoZ/Cholinesterase/files/DOSH_ChE_Report07_Final_010407.pdf

related to fogger hazards, alerting the medical director at WAPC, and co-authoring two articles to notify the public health and medical community of the potential hazards of pyrethroids.[4]

The DOH and WSDA also provided data and recommendations (Appendix F) to the EPA on labeling and additional packaging safety restrictions for total release foggers that are used in the home for control of insects, particularly fleas. Recommendations include reducing package size, improving child-proof packaging, having a safety shut-off feature, and providing clearer instructions on leaving the premises during treatment and ventilating properly prior to returning.

7. Financial penalties may be insufficient to prevent or deter pesticide use violations that threaten people and the environment. Financial penalties appear to be relatively low when compared to likely medical and emotional costs of potential injuries to people and potential damage to the environment. More attention should be given to the penalty structure used by, and recent penalties levied by, WSDA, L&I, and Ecology.

2007 Summary Data for PIRT Agencies

The following agency summaries identify key points from the analysis of 2007 pesticide incident data.

Department of Agriculture

In 2007, WSDA investigated 177 pesticide-related complaints. After investigation, it was determined that 103 involved pesticide applications and 69 were unrelated to actual applications. The application status of five complaints was not specified. During 2007, 104 of WSDA complaint investigations resulted in some type of violation. Drift continues to be one of the most frequent types of complaint involving pesticide applications. WSDA received 38 complaints about drift in general and 20 complaints specifically about human exposure due to drift. WSDA also received numerous complaints about licensing and records, misuse, Structural Pest Inspections, and distribution, sales and registration. Other less frequent complaints concerned such issues as water contamination, animal deaths, and bee kills. WSDA assessed $25,175 in monetary penalties during 2007. In addition, there were 12 individual or business license suspensions from periods of two days to five years.

Department of Ecology

In 2007, Department of Ecology (Ecology) investigated 14 pesticide-related complaints involving threats to ground or surface water, unsafe pesticide storage and handling, pesticide disposal or waste concerns, and spills or fires. Ecology is responsible for oversight of contaminated areas requiring cleanup or monitoring. During 2007, Ecology placed 21 new pesticide-contaminated sites on the Toxic Cleanup Program list. Ecology's Water Quality program is responsible for aquatic pesticide and mosquito control permitting, as detailed in Ecology's summary. Ecology completed a report on pesticides and other contaminants in Yakima River fish in 2007 and has two studies underway on pesticides in Washington waterways.

[4] *"Illnesses and injuries related to total release foggers – eight states, 2001-2006,"* Morbidity and Mortality Weekly Report, October 17, 2008. (Reprinted in Journal of the American Medical Association, December, 2008). *"Pyrethrin and pyrethroid illness in the Pacific Northwest,"* Public Health Reports, Jan - Feb 2009, Vol. 124.

Department of Health

In 2007, DOH investigated 247 pesticide incidents involving 310 individuals. Of the 310 illnesses/injuries, 207 were classified as definitely, probably, or possibly (DPP) related to pesticide exposure.

There were 147 non-agricultural DPP cases in 2007. Thirty-seven of these occurred on the job (occupational) and 110 were non-occupational. Of the 37 occupational cases, 20 were handling pesticides at the time of exposure. Ninety-eight of the 110 non-agricultural, non-occupational exposures occurred in residential settings.

Sixty of the 2007 DPP cases were related to agriculture. Thirty-four agricultural cases were associated with the tree fruit industry, five with other fruit, eleven with field and vegetable crops, and six with other agricultural commodities. The remaining four cases were not associated with applications to specific crops. Forty-four agricultural cases involved agricultural workers. Of these, 27 workers were handling pesticides at the time of their exposure.

Department of Labor and Industries

L&I's Division of Occupational Safety and Health (DOSH) Services conducted 28 pesticide-related safety and health inspections in 2007. All of these inspections resulted in general, serious, or failure to abate citations being issued to the employer. L&I assessed $30,935 in monetary penalties for these citations.

During 2007, 226 employers and 1,857 pesticide handlers participated in baseline cholinesterase testing. Of the 386 handlers who were tested again at least once during the application season, 49 had at least one cholinesterase depression at a level requiring the employer to evaluate pesticide handling practices. Eighteen were temporarily removed from exposure to covered pesticides because of a cholinesterase depression at the work removal level. In 2007 the cholinesterase monitoring program changed to a new testing laboratory, which resulted in increased test variability compared to 2006.

In 2007, the L&I Insurance Services Division, Claims Administration Program received 104 claims which appeared to be related to pesticide illness and referred these to DOH. Of the 104 claims, 83 were compensated by L&I as being work related injuries, 20 were rejected, and one was kept on salary. Seventy-six were related to agriculture and 28 were non-agricultural. DOH investigated the 104 claims and classified 39 agricultural and 24 non-agricultural claims as having signs or symptoms that were definitely, probably, or possibly related to the pesticide exposure.

Of the 39 DPP agricultural workers, 28 claims involved workers in the tree fruit industry, eight claims involved workers in other food crop production industries, and the remaining three claims involved workers in other agricultural industries.

Washington Poison Center

In 2007, WAPC provided immediate professional medical advice regarding pesticide-related questions and emergencies to 2,077 callers. Of the 2,077 calls, 1,182 involved insecticides and 168 involved insect repellents. Herbicides were involved in 358 of the calls. Thirty pesticide-related human exposure calls involved moderate health effects and no calls involved major health effects. One accidental exposure case that resulted in death was classified by DOH as insufficient information because the identity of the herbicide involved could not be confirmed. DOH screened all human pesticide-related illness calls to WAPC and investigated 183 calls where the caller sought medical care and the exposure was not part of a suicidal gesture. One

hundred thirty-two of these calls involved illnesses determined to be definitely, probably or possibly related to pesticide exposure.

Current Issues

1. Funding reductions proposed in 2008 will be detrimental to the PIRT state agencies, educational institutions and WAPC.

Reduction in staffing, particularly for the Department of Health (DOH) pesticide program, will reduce the ability to collect data on pesticide incidents. Complete investigations provide data that allow agencies to take corrective actions and develop education to prevent further incidents. Such data are extremely useful to Washington state pesticide management programs and to the EPA (letter, Appendix F).

Proposed funding reductions for the WAPC have the potential to close this program within one year. It is anticipated that lack of access to the information provided by the WAPC will increase the need for paramedic, hospital emergency room and physician services and substantially increase the costs of health care. It has been estimated that every dollar spent on poison control centers saves seven dollars in healthcare costs; this may be an underestimate.[5]

- The WAPC provides free and accessible pesticide information for physicians and the public.
- WAPC is the primary source of pesticide incident reports to the Department of Health. In 2007, WAPC received 2,077 calls concerning human exposures to pesticides and DOH received fifty eight percent of its pesticide illness exposure reports through electronic reporting from WAPC.
- Electronic reporting from WAPC enables rapid initiation of investigations by DOH and increases the ability to obtain high quality, comprehensive data about the exposure. This system required years to develop and is not easily replicated with other pesticide information suppliers.

Legislation for the 2009 session has proposed that many committees and boards, including PIRT, be eliminated. PIRT-compiled data are the only comprehensive source of information state-wide on pesticide incidents and state agency responses. PIRT reports provide an understandable compilation of technical data analyses and serve as a publicly available archive of pesticide incident data. The PIRT Panel, with a wide range of member expertise, brings a broader perspective to analysis of pesticide incidents and possible corrective actions than an individual agency may have. The effort of compiling the PIRT report increases collaboration and information-sharing between agencies and the public.

2. Pesticide related research and worker training programs are important components of incident prevention programs and should continue.

- The Labor & Industries' Cholinesterase Rule that mandates monitoring possible exposures of agricultural workers to organophosphate and carbamate insecticides has shown possible exposure pathways and allowed growers to institute preventative measures.

[5] http://www.aapcc.org/DNN/Resources/TheValueofPoisonCenters/tabid/383/Default.aspx

- Cooperative bilingual training programs in pesticide safety by the Washington State Department of Agriculture, the Department of Health and the Department of Labor & Industries play an important role in employee protection and incident prevention for Spanish-speaking agricultural labor.
- The Pesticide Air Monitoring Project[6] and the Pesticide Transition[7] project provide information that will help growers, pesticide regulators and the state to make sound decisions on pesticide use and regulations. Support for these activities should continue.

3. The PIRT Panel members welcome feedback on the content, format and utility of the PIRT report. Panel members have focused attention on providing this report to the legislature as quickly as agency data are available for analysis. Please contact the PIRT Chair (Appendix A) if you have comments, suggestions, or want to request meeting materials.

Conclusion

The number of DOH DPP cases in Washington has been fairly steady at approximately 180-233 cases per year since 2003. Most have had low or mild symptoms, but moderate and severe symptoms (including one death) have occurred in about 14% of these cases since 2005. These numbers likely underestimate the actual occurrence of pesticide-related illness and injuries that occur.[8] Many people with mild symptoms do not seek health care, physicians may fail to recognize and report pesticide related illness, and workers who perceive threats to job security may hesitate to report. Washington's pesticide exposure surveillance and investigation efforts rely on many agencies and collaborators to collect sufficient data to target needed, effective prevention enhancement activities.

[6] http://www.doh.wa.gov/ehp/pest/drift.htm
[7] http://pmtp.wsu.edu/
[8] See "Improving Data Quality in Pesticide Illness Surveillance" June 17, 2004. http://www.doh.wa.gov/ehp/oehas/publications_pdf/improving_data_quality_in_pesticide_illness_surveillance-2004.pdf