PESTICIDE INCIDENT REPORTING AND TRACKING (PIRT) REVIEW PANEL
APRIL 22, 2009 MINUTES

NORTHWEST COMMUNITIES EDUCATION CENTER
GRANGER, WA
(APPROVED BY PIRT MAY 21, 2009)

PANEL MEMBERS AND ALTERNATES IN ATTENDANCE:

Cynthia Lopez (CL), Chair	Department of Health	(360) 236-3340
Allan Felsot (AF)	Washington State University	(509) 372-7365
Vincent Hebert (VH) (alternate)	Washington State University	(509) 372-7393
William Hurley (WH)	Washington Poison Center	(206) 517-2350
Karen Ripley (KR) (phone)	Department of Natural Resources	(360) 902-1691
Debby Sargeant (DS)	Department of Ecology	(360) 407-6139
Ann Wick (AW)	Department of Agriculture	(360) 902-2051
Michael Yost (MY) (alternate)	University of Washington	(206) 616-1958
Liesl Zappler (LZ)	Public Member	(425) 739.8100 EXT. 481

PANEL MEMBERS ABSENT:

Pam Edwards (PE)	Department of Labor and Industries	(360) 902-6457
Bridget Moran (BM)	Department of Fish and Wildlife	(360) 902-2589
Vacant	Toxicologist	

COORDINATOR

Fran McBride (FM), Coordinator	Department of Health	(360) 236-3367

IN ATTENDANCE:

Rafaela A.	Nuestra Casa
Robert Arrington	Department of Agriculture
Blanca Bazaldua	Nuestra Casa
Ofelio Borges	Department of Agriculture
Deborah Carter	Northwest Horticultural Council
Carol Dansereau	Farm Worker Pesticide Project
Grace R. Diaz	Nuestra Casa
Sandy Halstead	Environmental Protection Agency
Rosa Lopez	Nuestra Casa
Frank Lyall	Growers Clearing House
Anne Morrell	Northwest Horticulture
Helen Murphy	Pacific Northwest Agricultural Safety and Health Center
Jaime Ramon	Department of Agriculture

Alan Schreiber	Commission on Pesticide Registration
Kammeron Todd	Washington Friends of Farms and Forests
Chris Voight	Washington Potato Commission
Kurt Volker	Tessenderlo Kerley Inc.

CL called the meeting to order at 6:00 p.m. She announced that the meeting will be recorded to assist FM in transcribing the meeting minutes. The PIRT-approved minutes are the official meeting record. Panel members introduced themselves. LZ, AW, DS, CL, AF, and WH were present. VH, the WSU alternate, was present. KR was on the phone. CL asked VH to lead Science Corner first, as Helen Murphy was not yet present.

Draft March 10 Minutes
There were no suggested edits. KR moved to accept the minutes, and LZ seconded. WH, DS and AF abstained, as they were not present at the meeting, and the rest were in favor. The motion carried, as abstentions do not affect the quorum.

Draft March 19 Minutes
AF requested a correction to the sentence on page six: "AF is not affected because his teaching salary is not supported by state funds." When speaking of WSU budget cuts, he was referring to personnel employed by the lab, which he does not have. The sentence will be removed.

RF had emailed that he was ok with the minutes. DS moved to accept the minutes, AF seconded, and all were in favor.

CL moved to start Science Corner at 6:15 and to move Helen Murphy's presentation to 6:45. LZ seconded, and all were in favor.

Science Corner –"Synergistic Toxicity of Pesticide Mixtures on Endangered Salmon Species"

VH contributed to this research and presented on this topic. The abstract can be found at http://www.ehponline.org/realfiles/docs/2008/0800096/abstract.html. Since its publication on March 1, 2009, this article has received a lot of public attention. Its premise is that current risk assessments for individual pesticides do not hold true for circumstances where pesticides are in mixtures, particularly those with a common mode of action. The research centered on the question of whether combinations of organophosphates and carbamates, having a common mode of action, will result in enhanced effects, especially on the acetyl cholinesterase system. In most water systems, there could be a combination of organophosphates and/or carbamates. It is important to understand whether mixtures result in synergistic or additive effects, and identify that in vivo. The study looked at individual organophosphates and carbamates in different combinations to determine their effects on juvenile salmon. VH described the methodology. Researchers found that there was much more inhibition to acetyl cholinesterase in mixtures than anticipated based on the sum of the individual pesticides. Some organophosphate combinations were very synergistic at reasonably low effective concentrations, suggesting that with certain combinations of organophosphates and/or carbamates, there could be other enzymes inhibited besides cholinesterase. The paper suggests the importance of evaluating pesticides that have the same mode of action in combination, rather than individually.

Discussion: DS asked how pesticide concentrations used in the study compare to those in the environment. VH responded that we need to look at areas in which the worst case scenario may occur, such as the San Joaquin Valley, where there are lots of applications occurring during a short period of time, with a subsequent major rain event with a lot of run off. Though the concentrations in this study here are higher than what would be found in the environment, it is important to note that the paper shows what happens mechanistically at higher concentrations, and the importance of advancing our understanding of risk assessment. We want to conduct studies that are more environmentally relevant at lower concentrations. CL asked how likely it would be to have these compounds together. VH responded there are opportunities for them to exist together at the same time, but whether they would be at concentrations high enough to pose a hazard requires further investigation. The study was done with binary mixtures only. WH pointed out that the paper showed that the combination of diazinon plus malathion was significantly synergistic, even combined in very low concentrations. VH said malathion is selective for carboxyesterase inhibition. This study was done on juvenile salmon, but different stages, such as fry and yolk sac, may have different susceptibilities. AF said that there is plenty of data from the Yakima River Valley on what concentrations actually exist. Even at the lower end, concentrations in the study are up to two orders of magnitude higher. AF pointed out some problems in the paper, and said that in terms of its hypothesis of what happens with inhibition of carboxyesterase, the literature has previously demonstrated that. VH pointed out that we have many years of data from the Surface Water Monitoring Program on environmental concentrations and combinations.

Public Comment

Alan Schreiber asked whether VH had seen any levels in the water monitoring data that suggest a risk to salmon. VH responded that he had not, and qualified that this was his opinion. Carol Dansereau asked about the study's relevance to human exposure, especially to workers that may be in contact with mixtures in higher concentrations and their families. VH replied that now we are looking at cumulative effects targeting specific modes of action, specifically in dietary risk assessment; he does not know about data on worker exposure. AF added that the paper is not relevant to our state and patterns of pesticide use in our orchards. There is only one possible situation – thinning apples in orchards – where this might be relevant, when Carbaryl residues are still present after thinning on leaves and guthion is applied. There are no major issues of synergism with Carbaryl in the paper.

The Work to Home Exposure Pathway - Strategies to Protect Pregnant Women and Children

Helen Murphy, Pacific Northwest Agricultural Safety and Health Center, presented on research on this topic (see http://www.doh.wa.gov/ehp/Pirt/murphyppt.pdf). A 1995 study found that pesticide residues in yard soil and house dust were significantly higher in homes of agricultural workers. The next step was to determine whether children were really being exposed. Another study looked at pesticide (particularly organophosphate) by-products in urine of children of agricultural workers, and found levels that were significantly higher compared to those in non-agricultural settings. A larger study validated this, indicating that pesticide levels in dust from households of agricultural workers were seven times higher than from non-agricultural households. Another study found a correlation between residues in household dust and vehicles, demonstrating that vehicles were the transport mechanisms from the workplace.

Children are more vulnerable to exposure and acquire larger doses of contaminants because they tend to put their hands in their mouths, spend more time on the ground and outdoors, and consume

more per body weight than adults. Contributing biological factors include a higher metabolic rate, more skin per body weight, and developing organs. Pound for pound, children also inhale more air per day than adults. Studies on low level organophosphate exposure in children showed that the younger the child, the greater the consequences of organophosphate exposure on development; nerve cells are primarily affected; and levels are so low a depression in cholinesterase level will not be seen. Three scientifically rigorous cohort studies of mother-baby pairs with different populations, exposure levels, and exposure sources measured children's neurodevelopment over a period of time. These studies took place in urban New York and agricultural California. Despite the different locations, some patterns emerged. Prenatal exposure to organophosphates was associated with increased odds of abnormal reflexes in neonates, poorer mental development in two and three year olds, poorer verbal IQ for three and a half to five year olds, and increased odds of developmental disorder. Researchers are hoping that these effects won't last through adolescence and adulthood, though that is not yet known. This disturbing evidence demonstrates the need to increase efforts to limit women's and children's exposures.

Though there are home-based interventions such as steam-cleaning carpets to limit children's exposure, you must also keep contaminants from leaving the work place. A few interventions were examined, such as boot storage bins, encouraging workers to not wear shoes home, having two different lockers at work, changing clothes, and personal car vacuuming. Researchers found that personal car vacuuming significantly decreased the organophosphate load in the household. The more frequently they vacuumed, the lower the level. Vehicle loads were higher than household levels.

Another study called "Tracer in the Tank" used fluorescent tracer, visible only under UVA light, in the pesticide tank. This was used in a fruit orchard for a full spray session. Observations were made during handling activities, and workers were subsequently photographed in a dark room. Areas of contamination of clothing underneath PPE that had failed were evident in photos. This had a profound educational impact, as it helped workers see how they were being exposed, was interactive, and problems were solved promptly. PNASH is working on using this method as a training tool for employers.

Public Comment: Sister Grace Diaz asked if there was a way to provide that kind of evidence to farm workers in Spanish, because she thought most of the workers do not realize how dangerous it is. As a lay person, she could understand the presentation very well. HM said that a few years ago an effort such as this was proposed to a few orchard safety managers who at the time did not feel employers would be willing to participate primarily due to litigation concerns. As it was the study was lucky to find an employer that was interested in this demonstration project. Ofelio Borges from WSDA informed the audience that their Spanish language "Hands On" training program has a module on decontamination procedures that uses fluorescent tracer. Another member of the public, a grower, commented that several of his employees have been through this program; it was very effective and well done. Workers and their employers are very intelligent regarding this issue. He also stated that he was aware of no pesticide handler that has died from pesticide exposure, and very few that have actually become ill. A larger degree of death and dismemberment in the Yakima Valley is caused by automobile accidents. Violent crime, gunshots, stabbings, and drugs cause more harm to individuals than pesticide exposure. LZ said that we are discussing agricultural exposures because the meeting is on the east side. PIRT is not here saying that farmers are doing a bad job. How can we all work to make everyone safe? HM agreed that there are other acute risks in the agricultural workplace. There is a concern because we don't know about long term effects on children, and won't know for a long time. They are applying the precautionary principle to protect

families. A member of the public, a grower, said that an industry response to this is to remove worker housing from farms and consolidate workers in towns, thus resulting in more highway deaths. WH commented that motor vehicle deaths are a high priority item, and a lot of resources are dedicated to reducing them. Here we are also focusing on long term neurological toxicity on children and its reduction. WH added that there needs to be a balanced approach, where the greatest amount of resources is devoted to what is most harmful. (Chris Voight and Frank Lyall were the other members of the public who spoke during this time.)

Worker Protection Standard (WPS) Rule Revision

AW reported that WSDA, DOH, and L&I WPS trainers and enforcement staff met last week. Washington State is unique in that two different agencies (WSDA and L&I) are mandated to enforce the worker protection rules. Both agencies' rules must be identical, and are, at present. EPA passed new federal regulations on glove liners, which WSDA would like to incorporate in their worker protection rules. This would allow workers and handlers to use glove liners in the field under controlled circumstances. WSDA and L&I are working through the process to get the new federal regulations in place. WSDA does not have to take this to a hearing, since there is already a federal regulation in place. There will be a thirty day public comment period. WSDA is doing cleanup on the language. One regulation in the WSDA rule about L&I hazardous material regulations *(corrected to "hazardous communication standard" by Pam Edwards at May 21 PIRT meeting)* will be removed. (At last week's meeting, EPA talked about federal work on rewriting the WPS. The proposed rule is expected to be out January 2011 for public comment. The final rule is due in October 2012. Washington State already has many of these changes, as Washington rules are stricter than federal standards. A few changes would affect Washington. There should not be much change to orchard applications, but there will be to shank injections for fumigation. WSDA and L&I discussed enclosed cabs and whether or not respirators would be required under the new system. AW said that L&I would like to see a requirement on wearing respirators in enclosed cabs, as they no longer certify enclosed cabs. *(Pam Edwards clarified at May 21 PIRT meeting that workers still need to wear respirators if the label requires with enclosed cabs.)* Regardless of whether the cab was enclosed, applicators would probably bring residues into cabs and should still be wearing respirators.

ACTION: AW will send the WPS slides to FM.

Public Comment

Frank Lyall commented that current regulations on enclosed cabs give very little incentive for farmers to buy enclosed cabs. The law should encourage farmers to buy enclosed cabs for their employees, but no manufacturer wants to take on the liability of certifying them. Perhaps a government agency could. AW responded that L&I did, but has declined to do so now.

Break at 7:30, resume at 7:45. MY joined the meeting by phone.

Washington State University Air Monitoring for MITC

VH presented on this topic (see http://www.doh.wa.gov/ehp/Pest/wsu094ppt.pdf). DOH was allocated funding to administer an air monitoring program as part of the 2007-2009 budget. WSU had been doing residential air monitoring for metam sodium and its byproduct, methyl isothiocyanate (MITC), in south Franklin County since 2005. VH described the methodology for 2008 air monitoring. In the West Pasco area, seven air monitors sampled for twelve hour intervals

during the active fumigation period from September 5 through October 25. More intensive four hour interval sampling was done prior to the irrigation cutoff for area fumigations on October 23rd because in previous years, there were elevated levels of MITC prior to irrigation cutoff. Concentrations of MITC in the air exceeded the EPA level of concern of 22 parts per billion during this time, and exceeded it significantly on October 17, coinciding with a strong inversion condition. MITC air concentrations continued to trigger a regulatory inhalation exposure concern over the active fumigation season in this region. This report was submitted to DOH. WSU worked with growers and registrants to find ways to reduce emissions of MITC. Shank injection and reduced-emission drizzle boom reduced the amount of off-target emission. WSU conducted intensive monitoring at two 2-acre plots in which these reduced emission technologies were used and produced a report sent to the EPA recommending technologies to minimize buffer zones.

VH reported on a study assessing levels of naturally occurring isothiocyanates released from mustard, which is used as a green manure. Mustard was planted in a test field, chopped, and incorporated into the soil. Intensive sampling was done around the field. The highest concentration observed was during soil incorporation, 50 parts per billion of allylic isothiocyanate (mustard oil), well below an estimated threshold concentration of 350 parts per billion. The conclusion from this study was that naturally occurring isothiocyanates generated in the field do not pose a human health risk.

Barb Morrissey said that there will be a final report for each air monitoring project, to be released after review.

University of Washington Air Monitoring for Organophosphates

Dr. Michael Yost presented on the preliminary results on the air monitoring project (see http://www.doh.wa.gov/ehp/Pest/uw094ppt.pdf). The data is still under review by the technical review panel. DOH contracted with UW on organophosphate air monitoring. There was a series of public meetings in both sides of the state on study design. There were two phases of studies. The first was to capture chlorpyrifos spray in March. Sampling during this phase was done in Yakima Valley and the Wenatchee areas, which have high density of crops that use organophospate pesticides. The second phase, during June through July, was only done in the Yakima Valley region to capture azinphos methyl. Three kinds of samples were collected in each phase. Perimeter samples were taken within ten meters of the field edge. Samplers were located to form an eight point ring surrounding the field. A 24 hour pre-spray sample was taken to assess background levels. On the day of spray, they collected three eight hour samples, consecutively. The following day they collected two twelve hour samples, and on the next day, another 24 hour sample. The intent of perimeter samples was to capture peak levels during and immediately following an application to assess the upper limit. Receptor samples were 24 hour long samples at sites within 100 meters of a field with a crop that would use these chemicals, taken every third day over the course of a month. They had no knowledge of when and where chemicals would be used. Ambient samples are reference samples that represent the general background in that area, collected in the same way as receptor samples, except that they were located greater than 500 meters from applied fields.

To summarize the results: None of the 24 hour samples exceeded the California Department of Pesticide Regulation or EPA screening levels. However, the maximum eight hour perimeter azinphos methyl level during spraying exceeded the EPA acute level, but was ten times below California's screening level.

Discussion: DS asked if MY sampled for any other toxics besides chlorpyrifos and azinphos methyl. He said that they analyzed Phosmet and malathion, but none of those levels came anywhere close to the values shown tonight. These results are in the report submitted to the technical review panel. California did their own risk assessment and used different data than the EPA to determine their standards. UW also has complete meteorological data from the sites. The topography at both sites was relatively flat.

Carol Dansereau asked about comparison of these levels to children's reference ranges and the use of four hour intervals for sampling. Barbara Morrissey responded there will be some discussion of that in the final report.

2009 - 2011 Washington Budget Update

WH reported that WAPC is still working the numbers. The current budget proposed by the Senate and House allows WAPC to keep its doors open, but his job as director, support to physicians, and outreach and education activities will go away.

AF said they are still waiting for news from the president. The university mostly operates on soft money, and state money has become a smaller proportion.

CL said that the DOH pesticide program will be taking a loss of 3.4 full time equivalents, a little less than half the current staff. Without WAPC providing information to DOH on urban exposures, the caseload they will be able to investigate in the next biennium will be half or less.

AW reported that the WSDA pesticide section lost all their General Fund money. For the near future, they will be able to keep the program running at current levels, but they will be running in a deficit in a couple of years.

KR said that the DNR Forest Practices Program is facing large cuts. Her program, Forest Health, is looking at severe losses of General Funding. She thinks that DNR will be taking more of a deferential role to Ecology, which co-promulgates their forest protection rules.

MY reported that his department at UW receives a relatively small amount of state funding. None of the core programs that pertain to pesticides such as the lab and agricultural center will be impacted. The main impact to the department could be some loss of staff or faculty in the undergraduate program.

LZ asked how WAPC cuts would affect reporting of pesticide incident cases to DOH. WH said that reporting would probably continue until there is a glitch in the software program. With no funding to maintain the program, it probably would not be repaired.

May Agenda

The May agenda includes a presentation by Nadine Lehrer with the Pest Management Transition Project. LZ would like to postpone her presentation on penalties for pesticide violations in other states. CL had asked VH and Richard Fenske to provide an update of their air monitoring research on the west side of the state. AW suggested that Matt Keifer provide an update on the Pesticide

Program Dialogue Committee. There will be a discussion of the Granger meeting in May. WH moved to accept the May agenda, AF seconded, and all were in favor.

AF motioned to adjourn, WH seconded, and all were in favor. The meeting ended at 9:02 p.m.

Future PIRT Meetings

May 21	Department of Health, Tumwater
June 18	Department of Labor and Industries, Tukwila
July 16	Department of Health, Tumwater
August	No meeting

See http://www.doh.wa.gov/ehp/Pirt/pirt-meetings.htm for agendas directions, and meeting materials.