7th PNW Pesticide Issues Conference
PESTICIDE SAFETY, HEALTH, and MEDICINE

Speaker Biographies

Michael Alavanja, DrPH, is a Captain in the US Public Health Service and Senior Investigator, Division of Cancer Epidemiology and Genetics, National Cancer Institute. He earned his DrPH. from Columbia University in Epidemiology and Environmental Health Science, and served as an Assistant Professor at Hunter College, City University of New York and an Epidemiologist and Section Chief at NIOSH before joining the National Cancer Institute in 1983. His research interests include environmental and genetic determinants of lung cancer and the epidemiology of agriculturally related disease and injury.

Dr. Alavanja has more than 100 publications in the peer reviewed biomedical literature and is listed in *Who's Who in America* and in *American Men and Women of Science*. His numerous professional awards and honors include several PHS service and commendation medals and a citation for chairing the Surgeon General's Scientist Professional Advisory Committee which named him the Career Scientist of the Year in 2000 for his sustained contribution to cancer research and public health. In addition, Dr. Alavanja is a Fellow in and serves on the admissions committee to the American College of Epidemiology and is a Professor of Environmental Biology at Hood College. Currently, he is the Principal Investigator of the Agricultural Health Study and of a series of case control studies investigating the etiology of lung cancer.

Patricia Boiko, MD, MPH, is Director for Research Outreach at the Pacific Northwest Agricultural Safety and Health Center. Her specialties include epidemiology and skin disease prevention and intervention. She recently finished a project that developed tools for diagnosing mental illness among Hispanic farm workers with a range of literacy and completed a grant to train Washington state medical providers about cholinesterase monitoring. She also continues to work as a family practice physician for Group Health. Dr. Boiko presently chairs the Washington Academy of Family Practice, Public Health, and Scientific Affairs Commission. She has an MD from Cornell University and an MPH in Epidemiology from the University of Washington. Beginning in March, Dr. Boiko will leave the PNASH Center to begin working on a video documentary with KCTS, Seattle's PBS affiliate, and the 911 Media Center.

Ann Byar, MS, CIH. is a Certified Industrial Hygienist who works for WISHA Services Division, WISHA Policy and Technical Services. She is the Department of Labor and Industries' representative for the Pesticide Incident Reporting and Tracking (PIRT) Review Panel, a member of the Pesticide Advisory Board, and a commissioner in the Washington State Commission on Pesticide Registration (WSCPR). Byar has worked in the environmental health and safety field for 15 years in both the private and public sectors and is a graduate of Drexel University in Philadelphia, Pennsylvania.

Carol Dansereau, JD, is Executive Director of the Farm Worker Pesticide Project (FWPP), a non-profit organization directed by farm workers and their allies. FWPP provides information on pesticides to farm workers and others; coordinates a state alliance striving to reduce workers' exposures; and engages in education, advocacy, and organizing on these issues. Dansereau received her law degree from the University of Michigan in 1984 and has worked on environmental health issues at non-profit organizations since that time. She is the former Director of the Washington Toxics Coalition and worked for Columbia Legal Services immediately prior to launching FWPP.

Todd Denny, VRC, is the Clinical Coordinator at Skagit Valley Occupational Medicine in Burlington, Washington. He has more than 15 years experience working closely with Washington employers in areas such as injury and illness care, pre-placement examinations, medical surveillance programs, and substance abuse testing. Dr. Denny is a state registered Vocational Rehabilitation Counselor (VRC) and has assisted L&I and self-insured employers meet federal and state industrial safety requirements while managing the costs associated with workplace injuries and illnesses.

Richard A. Fenske, PhD, MPH, is Professor of Environmental and Occupational Health Sciences at the University of Washington and director of the NIOSH-supported Pacific Northwest Agricultural Safety and Health Center. He has earned an international reputation in occupational skin exposure and agricultural hygiene, and he has developed a video imaging technique for assessing dermal exposure to hazardous chemicals that has been adopted by occupational health research laboratories in North America and Europe. His work over the last several years has focused on children's exposure to pesticides and other hazardous substances in agricultural communities.

Dr. Fenske serves on the National Advisory Panel of the National Cancer Institute's Agricultural Health Study and the National Academy of Sciences/Institute of Medicine Committee to Review the Health Effects in Vietnam Veterans of Exposure to Herbicides. Last year he was named to the EPA's Science Advisory Board, the primary source of independent advice and peer review for the EPA Administrator and Congress on the scientific and technical aspects of environmental problems and issues. From 1993 to 2000, Dr. Fenske was a member of the Agriculture Committee of the American Conference of Governmental Industrial Hygienists.

Allan Felsot, PhD, MS, is a Professor in the Department of Entomology at Washington State University. He holds a joint research and extension service appointment as a specialist in environmental chemistry and toxicology and is presently stationed at the WSU Food and Environmental Quality Lab in Richland. Before coming to WSU, he was a project leader for pesticide chemistry and toxicology research in the Illinois Natural History Survey at the University of Illinois. He is a member of the Advisory Committee for Crop Protection Chemistry of the International Union of Pure and Applied Chemistry (IUPAC) and the 2004 Program Chair of the American Chemical Society's Division of Agrochemicals. He is also a member of the Washington State Pesticide Incident Reporting and Tracking Panel

(PIRT) and holds the public toxicologist position on the WSDA Pesticide Advisory Board. Felsot is the recipient of the 2001 WSU College of Agriculture Award for Excellence in Extension and the 1999 North Star Award from the Western Crop Protection Association.

John Furman, PhD, MS, CIC, is an Occupational Health Nurse for the Washington State Department of Labor & Industries. He is also the Lead Researcher on the cholinesterase monitoring rule and the Washington State Bloodborne Pathogens Standard Coordinator. Previously, he served as the Infection Control/Occupational Health Manager at Western State Hospital and the Child Study and Treatment Center. Furman holds a PhD in Health Care Administration from Kennedy-Western University and an MS in Nursing from the University of Washington. Dr. Furman is a board member of the Puget Sound Chapter of the Association for Professionals in Infection Control and Epidemiology and the Washington State Healthcare Safety Council.

Matthew C. Keifer, MD, MPH, is an Associate Professor of Environmental and Occupational Health Sciences and Medicine at the University of Washington. He is the Director of Graduate Education and the Occupational Medicine Residency Program and is the Co-director of the Pacific Northwest Agricultural Safety and Health Center. Dr. Keifer received his MD from the University of Illinois, Urbana, and did his internal medicine and occupational medicine residencies and MPH at the UW. Before joining the UW faculty, he was the regional pesticide epidemiologist in Leon, Nicaragua, supported by CARE International. Dr Keifer conducts his clinical practice at the Occupational Medicine Clinic of Harborview Medical Center and the Yakima Valley Farm Workers Clinic. His main research interests include pesticide health effects, agricultural safety and health, and international occupational and environmental health.

Jeff Lutz is the Safety Director for the Washington Farm Bureau, which has the oldest and largest retrospective rating program serving Washington agriculture. As a safety specialist and consultant serving farmers and ranchers in the state, Lutz administers safety principles and policies for nearly 2500 members whose operations cover every commodity grown in the state. His duties include helping to develop and implement programs and policies; assistance in training modules and procedures for production agriculture; assistance in labor practices and referrals to appropriate legal channels; WSDA, EPA, DOE, L&I and basic government relations assistance to members; on-site safety and health inspections and consultations; and hazard analysis and correction.

Barbara Morrissey, MS, took her degree in Toxicology from the University of Washington School of Public Health and Community Medicine. She has worked with the Washington Department of Health for 11 years, investigating pesticide-related illnesses. She also provides scientific support on cholinesterase monitoring and other pesticide issues and conducts educational outreach. Morrissey represents the Department of Health on the Urban Pesticide Education Strategy Team.

Patrick Pleas, JD, is the Staff Attorney for the Northwest Justice Project, Farm Worker Unit. Since 1996, he has represented low-income farm workers in North Central

Washington on civil legal matters, including wage claims, workers' compensation, unemployment compensation, and health and safety. Pleas took his law degree from CUNY School of Law at Queens College and has served low-income clients in a variety of venues, including the Texas Center for Immigrant Legal Assistance, Northwest Immigrant Rights Project, and the Oregon Legal Services Corporation.

Carol Ramsay, MS, is the Pesticide Education Specialist at Washington State University. She has worked in pesticide safety education since 1987, and is a founding member of the American Association of Pesticide Safety Educators. Ramsay conducts pre-license and continuing education courses for professional pesticide applicators and serves as Vice-Chair for the EPA Certification and Training Assessment Group. She is also Treasurer for the PNW Integrated Vegetation Management Association. In recent years, she has focused much effort on information dissemination through the Internet. Her work has been recognized through various honors and awards nationally, regionally, and by Washington State University.

Pedro Serrano, is a Safety and Health Specialist with the Department of Labor and Industries. Prior to his position at the department, he worked in the agricultural industry for many years. Mr. Serrano is responsible for providing technical guidance, policy direction and training for WISHA 49.17 RCW activities throughout the state, which include pesticide activities. Mr. Serrano is a Certified Master Trainer with the Council for Agricultural Science & Technology (CAST) and the Environmental Protection Agency (EPA) on the CAST Train the Trainer Pilot Program implemented in 2003. Mr. Serrano has developed and presented occupational safety and health training and education programs for other state agencies, L&I staff, stakeholders and others in the state of Washington. Little known fact: Mr. Serrano is a commissioned and a reserve police officer

Daniel Sudakin, MD, MPH, PhD, is a Medical Toxicologist and Assistant Professor in the Department of Environmental and Molecular Toxicology at Oregon State University. He completed his medical toxicology fellowship at the Oregon Poison Center in 2000. He is currently a co-Principal Investigator of the National Pesticide Information Center and PI of the National Pesticide Medical Monitoring Program at OSU, both of which are cooperative agreements with the EPA Office of Pesticide Programs. Dr. Sudakin responds to inquiries relating to human health effects and pesticides from healthcare providers, public health agencies, federal agencies, and the general public. He has published on the topic of toxicosurveillance of pesticide-related illness, the acute toxicology of organophosphate insecticides, and the safety and risks of DEET in the general population.

Karl Weyrauch, MD, MPH, is a Research Consultant for the Pacific Northwest Agricultural Safety and Health Center at the University of Washington. He holds an MD from Cornell University and an MPH in Health Services from the University of Washington. Dr. Weyrauch is a practicing Family Physician at Group Health Permanente in Seattle and formerly was with Group Health of Spokane, where he founded the research program and published its quarterly newsletter. His research interests include the

physician-patient relationship and informed consent for human research subjects. Dr. Weyrauch sits on the Western Institutional Review Board, the oldest and most experienced human subjects review board in America. His publications include more than 30 scientific papers and other articles and reviews. He is also a poet and the founder and editor of eZAAPP, the weekly email poetry 'zine for doctors (www.ezaapp.org).

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Abstracts

Alavanja, ***Pesticides and lung cancer risk***
This presentation examines the relationship between 50 common agricultural pesticides and lung cancer incidence in a prospective cohort study of 52,395 private pesticide applicators, 4,916 commercial pesticide applicators, and 32,347 spouses of farmer applicators from Iowa and North Carolina with no history of lung cancer. Data were collected by means of self-administered questionnaires completed at enrollment (1993-1997). Cancer incidence was determined through population-based cancer registries from enrollment through December 31, 2001. A lung cancer standardized incidence ratio (SIR) was computed for the applicator cohort and the spouse cohort separately, using cancer incidence data from Iowa and North Carolina. Odds ratios were computed for individual pesticides. A lung cancer SIR, 0.46 (95% CI, 0.40-0.52) and 0.59(95% CI, 0.28-1.09) was observed for the private applicators and commercial applicator cohorts respectively. A lung cancer SIR, 0.36 (95% CI, 0.25–0.53) was observed for spouses of private applicators. This significantly lower risk of lung cancer was due, in large part, to a low prevalence of cigarette smoking in the cohort. Several pesticides showed a significantly greater risk of lung cancer with increasing use of the pesticides. This excess could not be explained by the age of the applicator, cigarette smoking, alcohol consumption, diets low in vegetable or fruit consumption, previous non-malignant lung disease, diesel exhaust, educational level, a family history of lung cancer, or state of residence. Age, cigarette smoking, previous non-malignant lung disease, diesel exhaust, not completing high school, or living in the state of North Carolina were all associated with a significant excess risk of lung cancer among applicators and the spouses of applicators.

Boiko, ***Grower/Manager Breakout***

This presentation will give growers and managers an understanding of the actions of the cholinesterase enzyme. Both plasma and red blood cell cholinesterase will be described. Symptoms of cholinesterase toxicity versus asymptomatic monitoring for the rule will be discussed. There will be time for questions.

Byar, ***Poisoning determinations***
This presentation will summarize the Department of Labor and Industries contribution to the 2003 Annual Report of the Pesticide Incident Reporting and Tracking (PIRT) review panel. It will include an analysis of claims and inspection data pertaining to pesticides and pesticide exposure and their implications in preventing exposures. A review of claims outcome versus Department of Health investigation determinations for recent data will also be presented.

Dansereau, ***Perspectives on pesticide-related illness in Washington***
This presentation will share perspectives of a farm worker advocacy organization regarding farm workers' exposures to agricultural pesticides and the actions that should

be taken to address the problem. It will first outline the extent and severity of exposures currently experienced by farm workers and their families, using statistics and information from recent studies and reports. The session will address the range of health effects associated with these exposures, again drawing upon recent studies and reports for examples of relevant findings. Then the general implications of the exposures and health effects and actions that should be taken by government agencies, growers, and others will be discussed. Specific reforms that should be undertaken to protect health and increase the long-term sustainability of farms in Washington state will be identified.

Denny, *Practicalities of the rule*
This presentation reviews the medical provider's service protocol under the new cholinesterase monitoring program. It will address the risks and benefits of testing; obtaining a signed consent or declination form; baseline medical history review; interpreting baseline and periodic test results; and medical provider's recommendations.

Fenske, ***Measuring pesticide exposure***
Reduction of pesticide health risks requires an understanding of the pathways by which exposure occurs. Workers are typically exposed to pesticides through inhalation and dermal contact. Aggregate exposure models that integrate all exposure pathways have been developed by the EPA to characterize children's exposures. Biological monitoring (usually involving urinalysis) has grown in popularity over the past decade as an exposure assessment method for both workers and children. In theory this method can integrate all exposure pathways in a single measurement. The strengths and weaknesses of urinary metabolite monitoring will be reviewed. Dietary ingestion is a common pathway by which children are exposed to pesticides. Children's diets are often rich in foods containing higher levels of pesticide residues, such as juices, fresh fruits, and fresh vegetables. Consumption of foods grown organically is often perceived to reduce risk by reducing exposure to pesticide residues. Biological monitoring results from a recent study of dietary pesticide exposure will be reviewed to highlight this topic. Biological monitoring based on saliva sampling (measuring the pesticide compound itself, rather than the metabolite) also appears to be a practical method for sampling worker and child exposures. This presentation will review current methods and results from recent studies of salivary monitoring for pesticide exposure. Finally, the potential for pesticide drift exposure is an area of active research in Washington. This presentation will review the exposure assessment methods used in a recent study of OP pesticide applications on potato fields, with special attention to the novel use of global positioning system (GPS) technology to assess children's activity patterns.

Keifer, ***Medical Provider Breakout***
This workshop will focus on the development and organization of a cholinesterase monitoring program. With the new rule in Washington, clinicians involved in the process will be presented with new opportunities and will face new responsibilities. The workshop is intended to provide a forum for the discussion of issues likely to confront medical providers. It will begin with a discussion of the basics of cholinesterase as a biomarker and its usefulness and limitations as a tool for monitoring workers with exposure to cholinesterase-inhibiting pesticides. Following this, common pesticide

poisoning symptoms will be reviewed and topics such as management of pesticide poisonings, pesticide-related worker compensation claims, and use of cholinesterase for pesticide poisoning diagnosis will be discussed. The session will also explore participant experience and opinions and attempt to involve the group in problem solving around some of the thornier issues of cholinesterase monitoring.

Lutz, ***Perspectives on pesticide-related illness in Washington***
Growers/Employers believe that the PPE regulations adopted by WISHA and promulgated by the EPA in the early 1990s are sufficient to protect workers from chemical exposures. The California cholinesterase monitoring data supports this theory in that 4% of tested individuals show a decrease in ChE levels, oftentimes due to circumstances outside pesticide applications. The Washington Farm Bureau will always fight for less regulation for employers while maintaining safety as the primary obligation and focus of Farm Bureau Retro/Safety. Members of Farm Bureau Retro/Safety have a consistent track record of having safer workplaces, as well as being below the average injury rate in agriculture in Washington and in the nation.

Morrissey, ***Pesticide-related illnesses: Washington Department of Health data***
Washington is one of 12 states that tracks acute pesticide-related illnesses. Health care providers who see cases of illness or injury related to pesticide exposure are required to report these cases to the Department of Health (DOH). DOH conducts follow-up to identify the pesticide involved, how the exposure occurred, and the medical outcome of the case. DOH tracks cases in all counties and includes homeowner exposures, workplace exposures, and any other exposures to either agricultural or non-agricultural pesticides. The data are compiled annually and published (online) in the PIRT report alongside pesticide incident data from other state agencies and the Washington Poison Center. This presentation will outline the public health role in investigating pesticide incidents relative to other agencies. Two case studies will show how DOH investigates and classifies cases. Finally, an overview of the statewide data will be presented, and how a public health approach can inform and target illness prevention will be shown.

Ramsay, *Handler/Applicator Breakout*
This presentation will give applicators and handlers an understanding of the basic function of the nervous system and the importance of the cholinesterase enzyme in mediating neural transmissions. It will illustrate how some insecticides stop the nerve from functioning properly, and why this may occur over time. The use of blood samples as a monitoring tool for exposure will be discussed, as well as the new state rule requiring monitoring of certain handlers or applicators if their exposure to organophosphate or carbamate insecticides exceeds a specific threshold. Removal from and re-entry back to pesticide-related work will be discussed. Lastly, there will be a review of the revised respirator classification and its relation to PPE respirator statements found on pesticide labels.

Sudakin, ***Acute pesticide toxicity***
This presentation will address the complexity of monitoring, managing, and preventing

acute pesticide exposures and will briefly focus on specific pesticides of concern for acute exposures. It will begin with an introduction of poison control center data as a source of information on acute pesticide toxicology, with an emphasis on the utility as well as limitations of the data. It will define some of the major classifications of pesticides associated with major morbidity and mortality in the United States. Further discussion of pesticide classifications of concern in the context of acute toxicity, such as fumigants and insecticides, will follow. The importance of understanding the chemical properties and toxicodynamic effects of pesticides will be discussed, with relevant examples explored in more detail. The presentation will conclude by introducing a new resource for clinicians, medical case profiles that have been developed to educate health care providers on the epidemiology, regulation, toxicology, and prevention of pesticide exposures.