Testimony on Oregon House Bill 3499 by Jeffrey Jenkins 5/1/13

Members of the House Rules Committee:

As a Professor and Extension Toxicologist in the Department of Environmental and Molecular Toxicology, Oregon State University, a member of the Society of Toxicology, and current President and Trustee of the Toxicology Education Foundation, at the invitation of Representative Whitsett I am here today to testify on the human health risks associated with exposure to chemical contamination from methamphetamine manufacturing.

Across the United States methamphetamine is manufactured in residences that often results in high levels of exposure to hazardous chemicals; the volume and combined toxicity far exceeds normal household chemical use. EPA estimates that the production on 1 lb of methamphetamine results in 7 lbs of hazardous waste. Spillage and off-gassing of these chemicals can thoroughly contaminate a residence through chemical transport by foot traffic, air movement, and through the HVAC system. Contaminated air and surfaces (walls, flooring, and ceiling) home furniture, appliances, toys, etc., are all potential sources of human exposure. Of particular concern is contaminant exposure by infants and children. Children may be more vulnerable to environmental exposures than adults because their bodily systems are still developing; they eat more, drink more and breathe more in proportion to their body size; and their behavior can expose them more to contaminants. In addition, age-related behaviors of young children (such as frequent hand-to-mouth contact and physical contact with their environment) increase the likelihood that they will inhale, absorb or ingest contaminants[1].

A number of states have developed clean-up guidelines and benchmarks for methamphetamine contamination remediation that are considered protective of human health for those occupying residents previously used for methamphetamine manufacturing. Recently the US EPA published information on the various methods for manufacturing methamphetamine, the chemicals used in each method, the human health effects associated with exposure, and current state remediation standards[1]. Appendix A contains the four primary methods of production and associated hazards, and Appendix C contains the properties of chemicals associated with methamphetamine (including health effects). This list includes over 50 chemicals of varying levels of toxicity. In addition to methamphetamine, these contaminants include volatile organic hydrocarbons – VOCs (acetone, benzene, ether, freon, hexane, isopropanol, methanol, toluene, Coleman fuel, naphtha, ronsonol, and xylene), heavy metals (mercury and lead), and caustic acids and bases. When there is sufficient information on health effects remediation standards are based on the determination of an exposure level that is unlikely to result in adverse health effects, even in the most sensitive sub-populations, such as children or the elderly. This no adverse health effect level is often further reduced to account for uncertainty in exposure estimates and human susceptibility. When there is insufficient information on health risks, remediation standards are risk-based. Current state methamphetamine remediation standards for contaminated surfaces range from 0.05 µg/100 cm^2 to 1.5 µg/100 cm^2. Oregon's standard is 0.5 µg/ft^2 = 0.05 µg/100 cm^2. While health

[1] U.S. EPA Voluntary Guidelines for Methamphetamine Laboratory Cleanup (March 2013)

based remediation standards offer a benchmark for clean-up, in the absence of such standards the goal should be that very sensitive detection methods result in zero detectable contamination.

Of increasing concern is that while health standards are determined for individual contaminants, in the real world people are exposed to mixtures. Deciphering and predicting the complex interactions among the various classes of organic and inorganic chemicals that may lead to adverse health effects present enormous challenges to toxicologists. As the aftermath of residential methamphetamine manufacturing often results in a complex mixture of toxic contamination for which there is insufficient information on health effects of the contaminants, individually or as mixtures, policy makers should carefully consider allowing occupation by the unsuspecting.