3 March 2010

Mr. Jon Jennings
Mosquito Control Permit Comments
Washington State Department of Ecology
Water Quality Program
P.O. Box 47600
Olympia, WA 98504

Dear Mr. Jennings:

This letter represents written comments on the Washington State Department of Ecology’s Draft Aquatic Mosquito Control General Permit. Please note that the comments in this document are ours and do not necessarily reflect the views of our employer, Montana State University.

The state of Washington’s draft Aquatic Mosquito Control National Pollutant Discharge Elimination System State Waste Discharge General Permit (SWDE 2010) states that “The Permittee may only use Malathion and Naled in case of documented pyrethroid resistance development in a specific vector mosquito population.” This statement cannot be supported by the current scientific knowledge. Further, the state of Washington’s Department of Ecology provides no rationale for this statement. Currently, evidence indicates that naled or malathion present risks to non-target organisms and human health well below regulatory thresholds. Davis et al. (2007) conducted an ecological risk assessment on the six mosquito adulticides malathion, naled, permethrin, resmethrin, d-phenothrin (sumithrin), pyrethrins, and piperonyl butoxide and found that the risks to mammals, birds, and aquatic vertebrates and invertebrates are most likely negligible after truck-mounted ultra-low-volume (ULV) applications. In fact, mathematically, naled and malathion present the same risk as permethrin to Daphnia magna and they present a lower risk than pyrethrins (Davis et al. 2007). Hill et al. (1971) found that aerial applications of ULV malathion significantly decreased populations of terrestrial Hymenoptera, but these populations rapidly re-established. Aerial applications of ULV malathion did not significantly affect Hemiptera, Coleoptera, and Diptera (excluding Culicidae) populations (Hill et al. 1971).

Several quantitative human-health risk assessments, biomonitoring, and epidemiological studies have been conducted for malathion and naled and demonstrate that the risks of exposure after ULV applications are negligible (Currier et al. 2005; Duprey et al. 2008; Karpati et al. 2004; Kutz and Strassman 1977; Macedo et al. 2007; NYCDOH 2005; O'Sullivan et al. 2005; Peterson et al. 2006; Schleier III 2008; Schleier III et al. 2009a; Schleier III et al. 2009b; Schleier III et al. 2008; Suffolk County 2006; USEPA 2005, 2006a, b). A manuscript from our lab that is currently in review used a Bayesian approach to
integrate the above studies into an overall estimate of risk and found that the probability that malathion or permethrin would exceed a regulatory level of concern for humans was less than 0.0001.

Mosquito adulticides have been shown to be effective not only in reducing mosquito populations and the number of West Nile virus (WNV) positive mosquito pools, but also have been shown to prevent human cases of WNV disease which provides a net economic benefit (Barber et al. 2010; Breidenbaugh et al. 2008; Carney et al. 2008; Elnaiem et al. 2008; Macedo et al. 2010). The use of one class of insecticide can lead to a fixation of resistant alleles making pyrethroids not effective because of cross resistance (Naumann 1990). If the application of adulticides in no longer effective, the response of mosquito management districts will have little to no effect on reducing a disease outbreak.

The current state of knowledge on the risks of naled and malathion to both human and environmental health does not support the findings of the Department of Ecology that malathion and naled can only be used in emergency situations when resistance is documented. Regulations should be commensurate with the risks, yet we believe the draft permit imposes regulations in excess of the potential risks from insecticide used for adult mosquito management. By not allowing the use of malathion and naled by mosquito management practitioners, this could likely result in populations developing resistance in the state of Washington, which can have far-reaching deleterious consequences to human and environmental health.

Sincerely,

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