

To: Chair Rep. Salinas, Vice Chairs Rep. Hayden, Vice Chair Rep. Nosse,  
and members of the Health Care Committee  
From: Laura A. Calvache, member of [http://  
SustainableEconomiesNW.com](http://SustainableEconomiesNW.com)



### Scientific based Testimony in Favor of HB 4109

For the record my name is Laura Calvache. I have studied Biology and Historic Preservation of Architecture, having earned a Masters of Science degree in each. Additionally, I possess a Certificate in Geographic Information Systems (GIS), Restoration Ecology, and Fire Science. Early in my career, I worked as a Field Chemist for a nationally recognized hazardous waste disposal company, directing the appropriate disposal of chemical waste packed and transported from clients mainly in the Houston, TX, shipyard area. My next job was as a safety officer for the University of Texas, Galveston, hospital. There, I oversaw their hazardous chemical waste program. Given my education and direct experience with chemical waste, I am uniquely qualified to review the scientific literature and comment on chlorpyrifos, an organophosphate insecticide.

This chemical, chlorpyrifos, is primarily used to kill a wide variety of insects. It is mainly through the action as a contact poison through spraying. It acts by disrupting an enzyme, cholinesterase, that regulates the activities of the nervous system. This blocked enzyme controls the messaging between nerve cells, causing the system to malfunction, and death may result.

Why limit its use in Agricultural and household settings? To answer this question, one must undertake a brief review the effects of this pesticide on organisms.

This chemical is moderately toxic to humans, with the main routes of exposure through inhalation, direct contact, and ingestion. It can affect a number of systems including the central nervous, cardiovascular and respiratory system. Initial exposure includes bloody or running nose, coughing and difficulty breathing. Further symptoms within the first 12 hours, the person becomes pale, nauseous, vomits, diarrhea and cramps, headache and dizziness, vision blurring and pain, sweating and confusion. Severe poisoning will directly impact the central nervous system, including slurred speech and loss of muscle control, with eventual paralysis (including the respiratory muscles). Death may result from convulsions, respiratory failure and / or a heart attack. [http://  
pmep.cce.cornell.edu/profiles/extoxnet/carbaryl-dicrtophos/chlorpyrifos-ext.html](http://pmep.cce.cornell.edu/profiles/extoxnet/carbaryl-dicrtophos/chlorpyrifos-ext.html)

Research has shown that children have been adversely affected to exposure by the pesticide. Children who tested positive for chlorpyrifos from 0-3 years of age had more developmental disorders and delays, including attention deficit and hyperactivity disorders, than the control group. <http://npic.orst.edu/factsheets/chlorpge.html>

It is also toxic to other organisms including birds (moderately to highly toxic, reduced numbers of eggs), freshwater fish (highly toxic, offspring deformities with decreased

growth and survival), aquatic invertebrates and marine organisms (highly toxic). <http://pmep.cce.cornell.edu/profiles/extoxnet/carbaryl-dicrctophos/chlorpyrifos-ext.html> The pesticide can build up in the tissues of aquatic organisms and others that are in and around bodies of water in a process called bioaccumulation, which can have significant impacts to the food chains of these organisms and the other wildlife that eat them. <http://npic.orst.edu/factsheets/chlorpge.html>

This pesticide should not be used around active honeybees. They have been found to be severely affected by ingesting very small quantities of chlorpyrifos. One study showed that after their very low level exposure (1000 times lower than a lethal dose), bees learning and memory had suffered significantly. This would theoretically affect the insects' ability to recall where food sources were, and therefore limit their foraging and pollinator activities. <https://www.sciencedaily.com/releases/2016/03/160301174136.htm> The estimates are that 7 in 10 human food crops are pollinated by bees.

Given the impacts that this chemical, chlorpyrifos, has on both people and other organisms, this House Bill is an important step to protecting the life and health of our community. Aerial spraying should be prohibited so that people and other organisms cannot be directly impacted by the adverse impacts that this chemical could have. Equally as important, children in schools should not be inadvertently exposed to this pesticide. Finally, agricultural workers should also be protected from the adverse impacts that chlorpyrifos could have by coming into contact with a recently sprayed field. As this piece of legislature protects the health and well-being of ourselves and other organisms in our communities, I, support the signing of House Bill 4109.

Thank you,  
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