

Watts Remy

From: Felice K <felice.kelly@gmail.com>
Sent: Tuesday, April 2, 2019 12:37 AM
To: SENR Exhibits
Subject: testimony in support of SB926

Chair Dembrow and members of the Committee,

Thank you for your consideration of my testimony. I write today as a concerned citizen and an avid trail runner and hiker with a background in science to urge you to seriously consider SB926. As I detail below, the herbicides commonly sprayed on clear-cuts include chemicals that persist in water and are harmful to human health from both acute and chronic exposure. Though I am not a toxicologist, I hold a PhD in molecular biology and genetics from Rockefeller University, I completed post-doctoral work at Stanford University School of Medicine, and I currently work as a research microbiologist at Oregon Health Sciences University. Since learning about the extent of clear-cut logging in Oregon I have been reading some of the scientific literature about the health effects of chemicals aerially sprayed on clear-cuts, and what I have found worries me, so I wanted to summarize some of my concerns for the committee. The views I express here are informed by my education, but are my own conclusions, and do not come from my work at OHSU or represent the views of OHSU.

The three herbicides that I will briefly discuss—glyphosate, atrazine, and 2,4-D—are commonly included in the aerially sprayed chemical mixtures used on recent clear cuts, and water run-off from these clear-cuts and drifting spray from aerial spraying leads to community exposure through drinking water and aerial drift. It's difficult to find up-to-date measurements of pesticides in drinking water, especially those—like glyphosate—that may show spikes in concentration after spraying and then degrade quickly in the water system, but data collected by the state shows atrazine and its breakdown products, which persist longer in water systems than other herbicides, in 32% of the 22 school water systems tested in 2012.

(<https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/SOURCEWATER/Pages/pd-p-schools.aspx#table1>). In addition, atrazine has been detected in the urine of residents who live downstream from clear-cut logging, and many rural coastal residents seasonally draw their water directly from downstream rivers, so their exposure to these chemicals may be much higher than those measured in schools or municipal water treatment plants. (<https://olis.leg.state.or.us/liz/201311/Downloads/CommitteeMeetingDocument/37225>).

Glyphosate, which is one of the most commonly sprayed chemicals, has been credibly linked to increased cancer risk, particularly Non-Hodgkin lymphoma. A recent analysis of all the relevant population studies found an association between glyphosate and increased risk of lymphoma.

(<https://www.sciencedirect.com/science/article/pii/S1383574218300887>). You may have seen that a jury recently found that repeated glyphosate exposure was a significant factor in a California man's development of cancer. (<https://www.npr.org/2019/03/19/704978021/california-jury-finds-roundup-caused-mans-cancer>). Some animal studies have shown dose-response relationships between glyphosate and the development of malignant lymphoma, though the mechanism is unknown. As with most pesticides there is controversy surrounding the real-world health effects of exposure, as outlined in the following link with regards to glyphosate, but I wanted to be sure that you were aware of some of the more concerning data that have been published. (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5515989/>)

Atrazine persists in the environment and also acts as an endocrine disruptor. Very low environmental levels of atrazine induce deformities in the sexual organs of frogs and can result in genetically male frogs developing as females, which may be contributing to amphibian declines around the world.

(<https://www.pnas.org/content/pnas/107/10/4612.full.pdf>). These endocrine-disrupting effects have also been observed in mammals, with testicular atrophy observed in male rats exposed to atrazine.

(<https://www.ncbi.nlm.nih.gov/pubmed/20045047>). In humans causation is always more difficult to prove, particularly when agricultural communities may be exposed to multiple pesticides, but there are data that show

a significant correlation between atrazine exposure through drinking water and low birth weight. (<https://www.ncbi.nlm.nih.gov/pubmed/30200320>). In addition, low semen quality (defects in sperm motility and morphology) was correlated with high urine levels of atrazine metabolites in a study of men from agricultural regions of Missouri and Minnesota. (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1241650/>). Due to the unavoidable contamination of water with atrazine and its effects on human health the European Union phased out atrazine, beginning in 2003, and environmental groups have suggested that the US should follow suit. (https://www.biologicaldiversity.org/campaigns/pesticides_reduction/atrazine/). The bill considered here does not come near to banning atrazine, but would take significant steps towards reducing the drift and run-off from atrazine into communities downstream from public forests. Finally, 2,4-dichlorophenoxyacetic acid, commonly known as 2,4-D, may act as an endocrine disruptor and studies have shown an association between exposure and an increased risk of non-Hodgkin lymphoma. (<https://www.ncbi.nlm.nih.gov/pubmed/28476329>). On the whole I found fewer compelling studies of the effects of 2,4-D on human health, but given the questions that remain about its effects, so reasonable care to minimize the contamination in drinking water would be appropriate.

Eliminating aerial spraying on state lands would be a modest step that will reduce the exposure of citizens to the chemicals I discussed here by reducing drift from aerial spraying into waterways and towns. In addition, state forests, such as the Tillamook and Clatsop Forests, are public lands, and are popular destinations for recreational users, such as hikers, trail runners, and anglers. All of these users value the landscape, and did not consider chemical exposure as a likely outcome of their day in the woods! As an Oregonian I am a co-owner of these forests, and I ask that they be managed in a way that is responsible with regards to the effects on human and ecosystem health.

Thank you for your time and consideration. Please let me know if you would like any more information on the herbicides I discussed above or would like PDF copies of any of the articles that I linked to in this text.

Sincerely,
Felice Kelly, Ph.D.
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