

Laurie Pine: Hi. I'm the immediate past president of the Olympia Beekeepers Association. And as a beekeeper I've become well acquainted of the impact of the neo-nicotinoid pesticides. Not only can these pesticides cause an acute lethal kill to target and non-target organisms, there are also sub-lethal, chronic, and cumulative exposure considerations. And in these, for us, are shorter life spans, immune system compromise, and susceptibility to pathogens, queen failure – and thus the colony's failure to thrive.

Fran Sant: Laurie, can you come up to the mic a little bit?

Laurie. These have significantly affected our native and our managed bee populations. And unless you know what these effects will be from Imidacloprid in the bay environment, it is a high-risk gamble as to what potential outcomes will be. These chemicals have a long half-life and can persist in soil for months and years after a single application. They can also persist in water. There is no way to maintain any application of Imidacloprid in the water. It will move and be carried with the waves and the tide. Recent research has also shown it to have cross-seasonal persistence in wetland sediment. Vegetation will be contaminated as it absorbs and takes up the pesticide. This is what's made the neonics so particularly debilitating for pollinators – because the pesticide is systemic in nature and the chemical is taken up by the plants roots. The entire plant becomes toxic which, for bees who gather the nectar and pollen from these plants as well as the guttation water droplets – it's a huge problem for us. Where the treated water goes, it can seep into other waterways – ground water and other flowers and plants can take it up via the root systems even if they are a mile or more away.

What will the impact be to the non-target and yet important organisms in the application area, including the insects, worms, and other crustaceans that live in and on the bottom of the water? Will they suffer long-term or chronic consequences of these chemicals? And if so, what are these consequences. How would a decrease in diversity, abundance, and size of these organisms affect the ecosystem? How would it affect the food chain? To what degree could it affect fish and birds? Would the metabolites or residues of Imidacloprid be an issue in this ecosystem? How toxic would they be? Do you know what they are? Would Imidacloprid react in any way with current herbicide sprays used in the area and could this a more toxic pesticide cocktail, as we found to be the case with some neonics and herbicide or fungicide combinations that, together, exceed their individual toxicities?

There is a significant amount of new science and information that documents the presence and persistence of Imidacloprid in lakes, rivers, streams, and other waterways at levels that exceed toxicity levels for fresh water invertebrates. There is also evidence that these chemicals affect the growth and survival as well as behavior to aquatic species – even at low levels. And much further research is needed.

One of the things I wanted to say was the studies that were absent when neonics were introduced to the market, with respect to bees – both managed and native bees – were really problematic for us. Because those studies didn't exist, and the first study that was done wasn't even – it was flawed. If we had had more information at the beginning in terms of bees we

might not be in the situation that we are in now with our pollinators. So I think that is important to remember as you consider your decision as well. The direct and indirect impacts of this application pose a risk to the short and long term ecological health of the bay. And there are too many unanswered questions. I urge you to not allow the use Imidacloprid in Grays Harbor and Willapa Bay, based on the hazards and the current scientific information. Thank you.