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February 21, 2022

House Committee on Agriculture and Forests
State Legislature
Montpelier, VT

RE: H.626

Dear Members of the House Committee on Agriculture and Forests:

Thank you for taking testimony on H.626 to protect pollinators!

I would like to comment on recent neonic test results from Agency of Agriculture. It appears that they may be under-estimating the risk of chronic low amounts of neonics in water and soil by using the LOAEC benchmark rather than the NOAEC benchmark. LOAEC stands for “lowest observed adverse environmental concentration”. NOAEC stands for “NO observed adverse environmental concentration”. The latter is the more protective benchmark. The difference between the benchmarks is significant. Using the LOAEC removes many results from consideration and dismisses them, diminishing the danger to pollinators and aquatic biota in our midst. I hope the Agency will upgrade the testing capability to get lower detection limits.

Below I am sharing notes from an extended review of neonicotinoids in a scientific journal that addresses some concerns voiced within your committee. See citation and link below. *

Up front, I share this quote:
“There is enough mechanistic understanding to put the question of causality beyond reasonable doubt. The detrimental effects on pollinators from the present scale of use of neonicotinoids are likely to impact pollinator services and in turn, pollinator-dependent crop production.” (emphasis added)

Imidacloprid exposure as low as 0.04 nanograms per bee larva affected honey bee development and caused decreased olfactory learning ability in surviving adult bees. Sublethal dosages affected food gathering ability of worker bees. In addition, very low doses of imidacloprid decreased survival of queens.

Imidacloprid and thiamethoxam both reduced bee sperm viability and reduced the life-span of drones.

Chronic exposure to imidacloprid caused delayed mortality in both aquatic and terrestrial invertebrates.

Butterflies are adversely affected by several insecticides including imidacloprid, permethrin, and resmethrin: the effects include reduced survival rate, feeding interruption, and reproductive behavior.

In birds, imidacloprid caused reduced clutch size, delayed egg laying, altered sexual characteristics, heart malformation, neural tube defects, altered organ mass, and depressed immune response. In other vertebrates, imidacloprid caused *disruption of*

thyroid hormones, *alterations to white and red blood cells.* [NOTE: In other words, imidacloprid is an endocrine disruptor, capable of doing damage at very low concentrations.] (emphasis added)

Bats experienced diminished learning ability, disrupted spatial memory during echo-location, altered regulation of genes important in mammalian brain development. Natural predators such as ladybugs and beneficial parasitoids were impacted.

Ground crickets were harmed by imidacloprid which is persistent in soil.

Clothianidin reduced nematode diversity.

In assessing imidacloprid toxicity to aquatic invertebrates, using *daphnia* underestimates toxic risks to other invertebrates.

Dragonflies, damsel flies, mayflies are adversely affected. Higher temperatures in water *increase* toxicity of neonic contaminants. (emphasis added)

Additive toxicity results from the combination of neonics, and of neonics with other insecticides. Exposure to both contaminated water and treated leaves had additive adverse effects in insects. The combined exposure to neonics and fungicides can have synergistic (greater than additive) effects on bees.

"Mortality due to poisoning by imidacloprid seeds was likely in 70% of wildlife mortality incidents between 1994-2014."

Pesticide-treated seeds "present unacceptable risks to farmland birds."

Soil enzymes are significantly reduced by thiamethoxam. Microbial soil communities are depleted in first 3 weeks after planting.

In Netherlands where waterway contamination was more than *20ppt*, the populations of *14 species of birds have steadily declined* in the past 20 years. (emphasis added)

Industry studies do not take into account the chronic lethality to sensitive aquatic organisms.

Chronic exposure to low levels of neonic residues in water cause long-term lethality in most aquatic species, which eliminates populations from affected areas.

Abundance of natural enemies (of target pests) was greatly reduced in crops planted with pesticide-treated seeds, increasing likelihood of more weed growth.

I urge you to act now to protect bees and other pollinators as well as our food systems by taking a precautionary approach and moving H,626 forward.

Sincerely,
Sylvia Knight

* Lennard Pisa et al (2021). An Update of the Worldwide Integrated Assessment (WIA) on Systemic Insecticides. Part 2: Impacts on Organisms and Ecosystems. Environmental Science and Pollution Research (2021) 28:11749–11797 (14 scientists collaborated on this report.) https://link.springer.com/content/pdf/10.1007/s11356-017-0341-3.pdf