March 7, 2023

Minnesota 93rd Legislature
100 Rev. Dr. Martin Luther King Jr. Blvd.
Saint Paul, MN 55155
RE: HF 2472 and HF1317

To Whom It May Concern:

The Pollinator Stewardship Council has drafted comments to submit as testimony in support of treated seed bills HF2472 and HF1317. The US Environmental Protection Agency (EPA) has designated coated seed as "treated articles," which exempts them from pesticide regulation. Additionally, EPA concludes "these seed treatments provide little or no overall benefits to soybean production in most situations. Published data indicate that in most cases there is no difference in soybean yield when soybean seed was treated with neonicotinoids versus not receiving any insect control treatment." Unfortunately, use of treated seed continues on a massive scale without oversight or regulation. The impacts of this unregulated use of pesticides are devastating and must be addressed. Since the EPA continues to allow unmitigated sale and use of treated seeds, our best hope for protection is at the state level.

Field trials with field-realistic exposure across countries with differing habitat show that neonics are leaching into the soils and are then being picked up by non-target plants that bees visit near those agricultural fields. This idea was first demonstrated by the work of Krupke *et al.* (2017) and Botías *et al.* (2015) and, coupled with recent ground water contamination data by neonics (Hladik et al. 2014, Main et al. 2014, Raby et al. 2018), paint a picture of contamination and impact that cannot be ignored. Additionally, we are now aware that neonic toxicity increases with time due to bioaccumulation as recently reported in large-scale field tests of chronic exposure or "time-cumulative toxicity" scenarios (Sanchez-Bayo & Tennekes 2020). Regulatory agencies such as the EPA only use exposure dose in determining risk but we must consider the accumulation of neonics in water, soil and plants over time as a more accurate measure of the true risks and the observed negative effects we see on pollinators and other non-target organisms.

The persistence of neonics in the soil (Jones et al. 2014, Krupke et al. 2017) and water (Hladik et al. 2014) make this a mounting problem that will continue for decades even if neonic use stopped today. It will take time to for the soil and water to recover. Additionally, the prophylactic use of seed treatments is under-reported and not accurately tracked (Hitaj 2020). Many invertebrates and vertebrates are being affected by overuse of pesticides as evidenced by the startling studies on the reduction in invertebrate biomass (Hallmann et al. 2017). We need action now to save bats, birds (Hallmann et al. 2014), butterflies and bees and prevent an “Insect Apocalypse” that threatens the very fabric of our entire ecosystem (Goulson 2019).

Our ground water is also being contaminated with the widespread prophylactic use of neonics on all major crops. The prairie Midwest, where corn and soybean cultivation are dominant, is particularly at risk (Hladik et al. 2014, Main et al. 2014). The Midwest is also the home to over 50% of US honey bee colonies in the summer as they move to this area for honey production. During summer, honey bee colonies take in larger amounts of water to cool the hive and also use water to thin honey and add to food fed to larvae. The bees collect water from the surface of ponds and temporary pools in fields and ditches where the concentrations of pesticides are highest during runoff from fields (Hladik et al. 2014) and where they may not rapidly degrade (Lu et al. 2015). Thus, in addition to the movement of neonics into pollen and nectar via soil contamination; water contamination is also a major source of neonic exposure in honey bee hives.

Unlike honey bees, solitary native bees often live in or near the ground and thus are at greater risk than honey bees of being killed by pesticides that are commonly applied to the soil or coated on seeds. They also do not have the repair mechanisms afforded to bees living in colonies. Because the lifestyles of native bees are very different from honey bees, the European Academies Science Advisory Council has concluded that “owing to their life history, honey bees appear to be an inappropriate model system to evaluate the role of environmental stressors for populations of pollinating bees.” (EASAC, 2015)

Mounting evidence suggests that wild soil-nesting bees can be negatively impacted by soil pesticide contamination, especially from insecticide-treated seeds. Main et al. (2021) found that neonic presence in field soil was associated with significantly lower richness of wild bees and the authors suggested that neonicotinoid seed treatments be curtailed on lands managed for wildlife conservation. It is essential that seed treatments are considered as crops depend on healthy populations of pollinators in and around agricultural fields. A recent meta-review of the impact of pesticides on soil organisms, Gunstone et al. (2021), found that pesticides harm or kill soil invertebrates—which includes ground nesting bees—in 70.5% of cases analyzed. Neonicotinoids, specifically, negatively impacted soil taxa between 70% - 80% of the time. Because treated seeds deposit these pesticides directly into soil, they are of particular concern.

We also continue to be concerned about the impacts of pesticide-treated seed on water quality. Recent sampling has continued to find neonics and other systemic insecticides at levels exceeding EPA aquatic life benchmarks, especially in the Central Coast region, with an unknown contribution from seed treatment (Sandstrom et al. 2022). Research in the Midwest found that neonicotinoid concentrations, even below EPA aquatic life benchmarks, in wetlands surrounded by fields planted with treated seed were associated with declines in aquatic invertebrate biomass (Schepker et al. 2020).

Frame et al. (2021) explored mass losses from neonicotinoid-treated seed in crop fields in Pennsylvania, finding at least 1.09% of seed-applied neonics were lost in runoff from fields annually. Though that may seem to be an inconsequential figure, the authors note that given the widespread planting of treated seed, "Even a 1.09% mass loss has the potential to cause major pollution over large areas." Troubling levels of neonic contamination have been identified in watersheds dominated by crops planted with treated seed in the Midwest. Without a strong regulatory framework for treated seed, it will be impossible for agencies to monitor and mitigate any negative impacts of treated seed.

Since the prophylactic use of seeds treated with neonicotinoids is responsible for most of the soil and aquatic contamination, while many studies point to little productivity gain, one obvious solution is to stop the marketing of seeds coated with these insecticides (van der Sluijs et al., 2015) and use alternative and carefully targeted methods for pest control in agriculture. The current scientific-based research knowledge of these pesticides, shows it is not appropriate for these chemistries to be granted re-registration. Reversing pollinator decline demands this action be taken, and that the loophole of "treated article exemption" granted to seeds coated with these compounds must be revoked.

As treated seeds aren't considered pesticides by the EPA, their disposal isn't regulated. As many are aware, this led to a massive contamination incident in Nebraska when leftover treated corn seed was used in ethanol production. Since that time, state regulators have struggled to clean up the 115 million gallons of contaminated water and 99,000 tons of solid waste left behind.

It is time for Minnesota to take into account the mounting scientific evidence that shows a consistent pattern of negative effects of the neonicotinoid seed coatings. The risk-benefit analysis indicates that the adverse effects to pollinators and the broader environment are well documented and the benefits to farmers are insufficient to outweigh the significant risks associated with use of these insecticides. In Europe, a systematic review of neonics resulted in their use being banned (EFSA 2013a,b,c). European farmers are finding alternatives, and people are not starving due to crop failure.

More broadly, beekeepers are an essential part of agriculture, and if bees can't thrive near the land that grows our crops, we need to rethink how agriculture can be restructured to protect soils, pollinators, water quality, and humans. Prophylactic use of systemic pesticides (insecticides, fungicides, insect growth regulators) is incompatible with Integrated Pest Management and damaging to ecosystems. We urge legislators to take action to protect both the environment in which we live and pollinators whose services feed us daily.

Sincerely,

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Sources

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