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Biological Sciences

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Testimony in Support of: SB375: Agriculture -Neonicotinoid Pesticides – Sales and Storage

Before the Senate Education, Health & Environment Committee
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Dear members of the committee,

My name is Hartmut Doebel, PhD, a research scientist at the biology department of George Washington University. For the last 8 years I have studied how very low doses of pesticides (sublethal and orders of magnitude below the known LD-50) affect the cognitive behavior of honeybees. What follows is a brief excerpt of mostly recent research, documenting the harmful effects of neonicotinoids on pollinators, especially honeybees.

Since the Maryland General Assembly passed the 2016 Pollinator Protection Act based on the then strong body of science underscoring the adverse impacts of neonicotinoids on bees and other pollinators, additional research has further highlighted the threat neonicotinoids pose to pollinators and the need to protect pollinators from exposure to this class of pesticides.

The longstanding, persistent and widespread use of systemic, water-soluble neonicotinoids to control pest species in agro-ecosystems has had many unintended and severe consequences. Studies in 2020 and 2021 further note that numerous non-target species, ranging from highly sensitive aquatic invertebrate keystone species (1,2) to beneficial and economically important pollinators, including honeybees have been impacted (3,4,5). Even protected nature reserves do not appear to be protected from such pesticides (6).

As countless scientific research studies have consistently and repeatedly documented the negative effects of neonicotinoids on pollinators, three neonicotinoids (imidacloprid, clothianidin, thiamethoxam) have been subsequently banned by the European Union in 2018 (7). Similarly, in 2018 legislation has been moved forward by the Canadian government to severely restrict the use of and phase out these neonicotinoids in 2021 in order to protect honeybees (8).

While acute toxicity of neonicotinoids (causing death) has been documented, most worrisome are their sublethal effects, invisible to the casual observer but potent in severely altering the behavior of honeybees. Research on bees documented that sublethal doses of neonicotinoids

- disrupt their sleep and circadian rhythm (9)
- negatively impacts the cognitive and memory functions (10)
- hinder bees from flying back to their hives (11)

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These findings, among many others, combined with the fact that more and more long-lasting residues of neonicotinoids are found in soils and are eventually taken up by bees far removed from agricultural fields (12), are not only documenting the negative impact of neonicotinoids on honeybees, but are strongly suggestive of playing a major role in colony collapse disorder.

Last but not least, several recent studies found either no economic benefit to farmers when applying neonicotinoids (13), or even an economic loss due to the harm of important biological control agents (14).

Our food supply depends on our pollinators. No bees, no pollination, less food, more expensive. I urge a favorable report on HB208 to ensure the law is implemented as this body intended.

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