

April 16, 2024

Vermont Senate Committee on Agriculture  
Vermont State House  
115 State Street  
Montpelier, VT 05633

Dear Chair Starr and Committee Members:

As environmental health scientists and health professionals, we urge you to eliminate harmful and unnecessary uses of neonicotinoid pesticides (neonics) in Vermont—specifically, by passing H.706. Growing evidence indicates widespread and increasing exposures to neonics pose neurotoxic risks to wildlife and to people, with potentially untold harms to the health of Vermont’s residents, especially children.

Neonics are neurotoxic insecticides that permanently bind to nerve cell receptors, causing overstimulation of nerve cells and, eventually, paralysis and death of exposed insects. These same receptors populate the cells of the brain and nervous system across species—including humans, where they are prevalent in sensitive brain areas (such as the cortex, thalamus, and cerebellum) that play a critical role in early growth and development.<sup>1</sup>

Exposures to neurotoxic chemicals like neonics during pregnancy and early in life raise special concerns—similar to those raised by lead and mercury—because of the exquisite sensitivity of the developing brain and nervous system. Tragically, experience demonstrates that even minuscule exposures to lead and mercury can lead to lifelong neurological harm, including reduced intelligence (i.e., lower IQ scores), shorter attention spans, and behavioral disruptions.

These concerns are heightened by evidence that neonic exposure in is rampant and growing. In 2016, Centers for Disease Control and Prevention (CDC) monitoring found over half the U.S. population had traces of neonics in their urine.<sup>2</sup> However, a more recent academic study—from 2017 and 2020, testing 171 pregnant women across country—detected neonics *in over 95% of participants*, with higher rates of exposure in Hispanic women.<sup>3</sup> Neonic levels were higher than in earlier CDC monitoring and *steadily increased over the four-year study* in both level and frequency of detection. This indicates a disturbing trend (and one also observed in wild deer<sup>4</sup>).

Since neonics pass from mother to the developing fetus,<sup>5</sup> and from breast milk to nursing newborns,<sup>6</sup> neonic exposures in pregnant and nursing mothers is a significant concern for our children. While further research will no doubt delineate more fully the health effects of neonics on people, there is already enough concerning evidence to warrant taking immediate action to reduce neonic exposures:

- **Birth defects of the heart** - A study of infants born to mothers in California’s San Joaquin valley reported a statistically significant association between living close to agriculture areas that use imidacloprid and having a baby born with Tetralogy of Fallot, a rare heart defect.<sup>7</sup>
- **Birth defects of the brain** - A study of the same population (in California’s San Joaquin valley) reported a suggestive association between living near agriculture areas that use imidacloprid and an almost 3-fold elevated risk of having a baby born with anencephaly, lacking parts of the brain and skull.<sup>8</sup>
- **Autism-like symptoms** - A study by NIH-funded researchers from UNC Chapel Hill and UC Davis reported that frequent exposure to imidacloprid during pregnancy was associated with a 2-fold elevated risk of autism spectrum disorder in prenatally exposed children.<sup>9</sup>

- **Acute poisoning reports** - From 2018-2023, the U.S. Environmental Protection Agency (EPA) received more than 840 reports of people poisoned with neonicotinoids,<sup>10</sup> with reported symptoms including muscle tremors, difficulty breathing, memory loss, and more—all signs of poisoning with a neurotoxic chemical.<sup>11</sup>
- **Reduced Sperm Counts and Testosterone Levels** - Studies also link neonic exposure in adults to decreased testosterone levels<sup>12</sup> and significant reductions in sperm count and motility.<sup>13</sup>

Research in animals corroborates harms from neonic exposure across a wide range of mammals. Unpublished testing on neonics—submitted to EPA by pesticide manufacturers for product approvals—reports a wide variety of developmental deficits in prenatally exposed rodents, including statistically significant decreases in the thickness of key areas of the brain (caudate and putamen),<sup>14</sup> altered brain morphology,<sup>15</sup> and significantly delayed and altered reflexes.<sup>16</sup> A recent study of white-tailed deer linked neonic exposures in the womb with decreased body and organ weight, decreased jawbone length, and higher mortality rates for fawns.<sup>17</sup> Research also links neonic exposures in mammals to decreased sperm count, sperm motility, live sperm, and testosterone levels, as well as higher incidence of hypothyroidism and lethargy, delayed reproductive development, and sperm abnormalities.<sup>18, 19, 20, 21, 22, 23, 24, 25, 26</sup>

Neonics also harm people indirectly by contributing to mass declines of insect pollinators that help produce affordable and nutritious foods. A global research team recently estimated that global production of fruits, vegetables, and nuts is reduced by 3-5% due to inadequate pollination. The team also estimated that this shortage of produce is potentially resulting in roughly half a million deaths per year globally due to diseases such as diabetes, obesity, heart disease, stroke, and cancer.<sup>27</sup> The predicted elevated disease levels were highest in middle-and-higher-income countries like the U.S., likely as a result of a shift away from fresh fruit and vegetable products to processed foods.

H.706 eliminates unnecessary neonic uses that account for the vast majority of the chemicals entering the state’s environment yearly—specifically, those which in-depth research finds provide no economic benefits to users or are replaceable with safer, effective alternatives.<sup>28</sup> The act would significantly reduce direct neonic exposure in treated lawns and parks as well as urban and agricultural runoff into Vermont’s water sources. Drinking water contamination presents a significant exposure concern, given that conventional water treatment generally fails to remove neonics.<sup>29</sup> Infants may be doubly exposed through contaminated baby food as well as formula reconstituted with contaminated tap water.

Vermont must not repeat the same mistakes we as a nation made with lead and other older neurotoxic chemicals—delaying action while millions of children were exposed and suffered permanent damage. It should follow the example of neighboring provinces and states—such as Québec, Ontario, and New York—that have taken steps to rein in harmful neonic pollution. Allowing needless and replaceable neonic uses is simply unjustifiable. We strongly urge you to vote to advance and pass H.706 as soon as possible.

Respectfully,

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