



Mission: To improve public health in Maryland through education and advocacy ***Vision:*** Healthy Marylanders living in Healthy Communities

WRITTEN TESTIMONY IN SUPPORT OF HOUSE BILL 0091
Agriculture - Neonicotinoid Pesticides – Prohibitions
Committee: Environment and Transportation
By: Maryland Public Health Association (MdPHA)
Hearing Date: February 4, 2026

Delegate Healey, Delegate Ruth, and Members of the Committee:

The Maryland Public Health Association supports HB91: Agriculture – Neonicotinoid Pesticides – Prohibitions, and we thank the delegates championing this bill for their leadership on this issue. From a public health perspective, this bill enforces tighter and necessary restrictions on the use of neonicotinoids as pesticides in Maryland agriculture.

Neonicotinoids: Mechanism of Action

Neonicotinoid pesticides are chemicals that largely operate as insecticides. They irreversibly bind to nicotinic acetylcholine receptors (nAChR), an ion channel important for nervous system regulation. By binding to these receptors, the nervous system of targeted insects are unable to function properly¹. While other pesticides and insecticides may allow for spot treatment or surface level application, neonicotinoids are administered through coating seeds. As the plant from the respective seed grows, its different parts contain 2-20% of the initially applied neonicotinoid. The distributed insecticide then is able to enact its toxic effects on pests that chew or suck on parts of the plant².

Negative Effects of Neonicotinoids

While neonicotinoids target the nAChRs of insects over those of vertebrates, there continues to be increasing evidence for the negative effects of this pesticide on the greater ecosystem, including humans. Studies have shown a positive association between maternal imidacloprid exposure, an active component of neonicotinoids, and adverse birth outcomes, such as anencephaly, a major birth defect resulting in deformed portions of the skull³. Studies have also shown associations between neonicotinoids and neurologic symptoms, such as memory loss and headaches⁴.

Furthermore, neonicotinoids can have unintended negative effects on pollinators, such as honey and bumble bees, essential to maintaining agricultural productivity. Neonicotinoids can have sublethal effects on reproduction and behavior and even lethal toxicity to these pollinator populations, which are already currently dwindling⁵.

Pest populations across the world have been starting to show signs of resistance to specific forms

of pesticides. Neonicotinoids, in particular, have a high probability of inferring resistance to their target pests. Since the insecticide is constantly present in low levels and targets a specific receptor, pests are more likely to develop genetic mutations that can lead to resistance. Species, such as the Colorado Potato Beetle, *Diaphorina citri*, and Whitefly, have already demonstrated this incurred resistance to neonicotinoids.^{6,7} When neonicotinoids were first introduced to the market, they were thought to be low resistance. However, evidence after introduction to the agricultural industry now shows the opposite, promoting the need for greater restriction on its current use.

Alternatives to Neonicotinoids

The pace of yield after the introduction of neonicotinoids to agriculture in the US and other parts of the world has not increased, showing support that the state will be able to sustain production with other methods of pest control.⁸ A study found that out of 152 authorized uses of neonicotinoids, only six were found to be unsubstitutable. These substitution methods included physical methods, biological control methods, and resistant plant varieties.⁹ Therefore, due to the proven ability for the agricultural sector to thrive in the absence of widespread use of neonicotinoids, we believe that restriction of use will promote the health of citizens of Maryland.

For these reasons, we respectfully urge a favorable report on House Bill 91.

References

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- ² ASPIRE Center (National Cancer Institute–funded). (2020). Tobacco Retailer Density Fact Sheet: Baltimore City, Maryland. https://aspirecenter.org/wp-content/uploads/2020/05/RetailerDensityFactSheet_Baltimore.pdf
- ³ Galiatsatos, P., et al. (2018). Neighborhood characteristics and health outcomes in urban communities. *Journal of Urban Health*, 95(1), 33–44.
- ⁴ Sargent, R. P., Shepard, R. M., & Glantz, S. A. (2004). Reduced incidence of admissions for myocardial infarction associated with a public smoking ban. *BMJ*, 328(7446), 977–980.
- ⁵ Bartecchi, C., et al. (2006). Reduction in hospital admissions for acute myocardial infarction after implementation of a smoke-free ordinance. *Circulation*, 114(14), 1490–1496.
- ⁶ Lightwood, J. M., et al. (2009). Declines in acute myocardial infarction after smoke-free laws. *Circulation*, 120(14), 1373–1379.
- ⁷ U.S. Surgeon General. (2016). E-cigarette use among youth and young adults: A report of the Surgeon General. U.S. Department of Health and Human Services.
- ⁸ Dave Goulson, “REVIEW: An Overview of the Environmental Risks Posed by Neonicotinoid Insecticides,” *Journal of Applied Ecology* 50, no. 4 (2013): 977–87, <https://doi.org/10.1111/1365-2664.12111>.
- ⁹ Hervé Jactel et al., “Alternatives to Neonicotinoids,” *Environment International* 129 (August 2019): 423–29, <https://doi.org/10.1016/j.envint.2019.04.045>.

The Maryland Public Health Association (MdPHA) is a nonprofit, statewide organization of public health professionals dedicated to improving the lives of all Marylanders through education, advocacy, and collaboration. We support public policies consistent with our vision of healthy Marylanders living in healthy, equitable, communities. MdPHA is the state affiliate of the American Public Health Association, a nearly 145-year-old professional organization dedicated to improving population health and reducing the health disparities that plague our state and our nation.

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