

May 3, 2022

Assembly Member Rebecca Bauer-Kahan
Capitol Office, 1021 O Street, Suite 6320
Sacramento, CA 95814

Re: AB 2146 - Support

Dear Assembly Member Bauer-Kahan,

Thank you for your leadership on bill [AB 2146](#), which would prohibit the non-agricultural uses of five neonicotinoid (neonic) pesticides, imidacloprid, clothianidin, thiamethoxam, dinotefuran, and acetamiprid.¹ In addition to addressing the deadly risks that neonics pose to critical pollinators like bees, butterflies, and birds, AB 2146 offers significant protections for people as well.

The undersigned environmental health scientists and public health professionals write to strongly support this important bill. We are particularly concerned for pregnant women and children due to the neurodevelopmental effects of this class of pesticides.

People are regularly exposed to neonics. A survey by the Centers for Disease Control and Prevention (CDC) found that over half the U.S. population had traces of neonics in their urine, indicating recent exposures.² The non-agricultural, lawn and garden products targeted by AB2146 are not only used in the areas where children and pets are most likely to play outdoors, but likely contribute significantly to water contamination that ultimately winds up in drinking water and foods, including baby foods.³ California state water testing confirms the presence of neonic pesticides near-ubiquitously in urban areas, where non-agricultural pesticide uses predominate.⁴

Neonics work by interfering with the function of the brain and nervous system, permanently binding to nerve cell receptors, which leads to extended activation of the nervous system. In insects, this is fatal, even at extremely low exposure levels. Our concern is that the nerve cell receptors targeted by neonics are also in the brains of reptiles, fish, birds, and mammals – including people. The clinical signs of acute human neonic poisoning include dizziness, irregular heartbeat, nausea and vomiting, and, much more rarely, respiratory failure, ventricular fibrillation, or even death in extreme cases.⁵ In fact, from 2009-2019, U.S. EPA received over 1600 reports of people and pets being poisoned with the neonic imidacloprid, including from lawn and garden uses.⁶ Reported symptoms include muscle tremors, difficulty breathing, memory loss, and more.⁷ These symptoms are tell-tale signs of poisoning with a neurotoxic chemical.

In mammals, including people, the receptors that bind neonics are particularly prevalent in sensitive areas of the brain such as the cortex, thalamus, and cerebellum that play a critical role in early growth and development.⁸ For this reason, neurotoxic agents like neonics pose a risk of neurodevelopmental harm when short term exposures – even at levels too low to trigger measurable effects in an adult – occur during prenatal development. People are exquisitely vulnerable to neurotoxic agents during early life, when the brain and nervous system are undergoing rapid growth and development.

Neurological effects of neonics such as reduced thyroid function,⁹ structural changes in the brain, and impaired reflexes have been reported in studies of lab animals exposed prenatally to neonics, as well as in exposed wildlife.¹⁰ These findings are strengthened by evidence from unintentional human exposures, where epidemiologic studies have reported that neonic exposures during pregnancy, give rise to an elevated risk of birth defects affecting the heart¹¹ and brain,¹² autism-like symptoms,¹³ and other neurological conditions.¹⁴

In addition to neurodevelopmental risks, published animal studies suggest that neonics may be genotoxic, thus posing a possible risk of cancer, impair immune system function, and have adverse effects on sperm health and reproduction.^{15,16}

Chemicals that impact the developing nervous system, like lead and mercury, have no safe level of exposure during pregnancy and early life development. The brain and nervous system have very little capacity for repair, so exposures that occur during development can lead to neurological decrements that last a lifetime. For this reason, using pesticides designed to affect the nervous system is a terrible idea.¹⁷

AB 2146 would:

- Prohibit non-agricultural, outdoor uses of neonic products, including those that contain imidacloprid, thiamethoxam, clothianidin, acetamiprid, and dinotefuran. For example, it would prohibit the uses of these chemicals on lawns and gardens.
- Direct the California Department of Pesticide Regulation (DPR) to designate outdoor neonic products as restricted materials meaning they can only be purchased and used by certified applicator or certified commercial applicator.
- Give DPR the authority to allow neonic use to treat harmful invasive species, like citrus psyllid.

Despite evidence suggesting possible neurological and other health harms associated with neonics, they remain the most commonly used class of insecticides nationwide.¹⁸ The non-agricultural uses addressed by AB2146 are simply not worth the risk. We encourage swift passage of this bill, which would reduce harmful human exposures to these toxic compounds in California.

Respectfully,

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cc: Members of the Assembly Appropriations Committee
Marie Liu, Deputy Chief Consultant, Office of the Speaker

References:

¹ https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB2146.

² Ospina M, Wong LY, Baker SE, Serafim AB, Morales-Agudelo P, Calafat AM. Exposure to neonicotinoid insecticides in the U.S. general population: Data from the 2015-2016 national health and nutrition examination survey. *Environ Res.* 2019 Sep;176:108555. <https://doi.org/10.1016/j.envres.2019.108555>.

³ Craddock HA, Huang D, Turner PC, Quirós-Alcalá L, Payne-Sturges DC. Trends in neonicotinoid pesticide residues in food and water in the United States, 1999-2015. *Environ Health.* 2019 Jan 11;18(1):7. doi: 10.1186/s12940-018-0441-7. PMID: 30634980; PMCID: PMC6330495.

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- ⁴ See Budd R., *Urban monitoring in Southern California watersheds FY 2017-2018*, DPR (Mar. 1, 2019), <https://bit.ly/2nY9TUq> (finding imidacloprid in 92% of all samples in urban waters); Ensminger M., *Ambient and Mitigation Monitoring in Urban Areas in Northern California FY 2017/2018*, DPR (Feb. 21, 2019), <https://bit.ly/33EWXCK> (finding imidacloprid in 58% of all samples)
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- ⁶ Data records obtained via Freedom of Information Act Request, (under “Released Records,” select “Specified Incidents for PC 129099 from 1-1-2009 to 4-4-2019”). Available here: <https://foiaonline.gov/foiaonline/action/public/submissionDetails?trackingNumber=EPA-HQ-2019-004044&type=request>
- ⁷ U.S. EPA, *Recognition and Management of Pesticide Poisonings: Sixth Edition: 2013*, p. 91. Available here https://www.epa.gov/sites/default/files/documents/rmpp_6thed_ch9_otherinsecticides.pdf
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- ¹¹ Carmichael SL, Yang W, Roberts E, Kegley SE, Padula AM, English PB, Lammer EJ, Shaw GM. Residential agricultural pesticide exposures and risk of selected congenital heart defects among offspring in the San Joaquin Valley of California. *Environ Res*. 2014 Nov; 135:133-8. <https://doi.org/10.1016/j.envres.2014.08.030>.
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