Facts About Neonicotinoid Insecticides

What do we know about the worlds most widely used insecticides?

Neonicotinoids or neonics for short, are a class of insecticide chemically related to nicotine. Acetamiprid, Clothianidin, Dinotefuran, Imidacloprid, Nitenpyram, Thiocloprid and Thiamethoxam are all neonics. These compounds work by targeting the central nervous system of insects.[1]

Small quantities of these systemic insecticides are present in the pollen and nectar of treated plants and pose sub-lethal risks to beneficial insects, such as bees. Nearby plants can be contaminated as these persistent insecticides are highly water soluble and can move rapidly through the soil. Neonics are also frequently detected in streams and other bodies of water.[2]

One study found that birds raised fewer chicks when levels of imidacloprid were higher in surface waters.[3] A review from 2017 found harm to earthworms, ants, mayflies and caddisflies, and potential links to butterfly declines.[4]

Evidence documents harm to honeybees, bumblebees, and solitary bees by neonics and they are widely present in our environment.[5]

Neonics have been found to act as endocrine disruptors in bees, and a study from 2018 provides evidence that neonics have an effect on gene expression of aromatase - an enzyme involved in the production of estrogen - and may potentially alter estrogen production in humans.[6]

Emerging evidence also shows that neonicotinoid pesticides pose a threat to the developing brain.[7]

1. King, A., Chemistry World, What you need to know about neonicotinoids, March 24, 2018
2. Trager, R., Chemistry World, Neonicotinoids present in many US streams, August 28, 2015
3. Hallman, C.A., et al., Declines in insectivorous birds are associated with high neonicotinoid concentrations, July 17, 2014
4. Wood, T.J., Goulsen, D., The environmental risks of neonicotinoid pesticides: a review of the evidence post 2013, July 2017
5. Xerces Society, How Neonicotinoids Can Kill Bees: Executive Summary
6. Baines, D., et al., Neonicotinoids act like endocrine disrupting chemicals in newly-emerged bees and winter bees, September 8, 2017, Neonicotinoids may alter estrogen production in humans, ScienceDaily, 26 April 2018.
7. Bennett, D., et al., Project TENDR: Targeting Environmental Neuro-Developmental Risks The TENDR Consensus Statement, July 1, 2016

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