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Update on the Neonicotinoid Pesticides

23 November 2016

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Neonicotinoid Pesticides

Neonicotinoids are a group of pesticides used in agriculture to protect crops from various insects. They are also used for other purposes, including killing insects in homes, controlling fleas on pets, and protecting trees from invasive insects such as the Emerald Ash borer. There are three important neonicotinoids currently approved for agricultural use in Canada, imidacloprid, clothianidin, and thiamethoxam.

The first neonicotinoid, imidacloprid, was approved for use in Canada in the 1990s to replace several older insecticides being removed from the market due to health and environmental risks. Neonicotinoids were found to be much less toxic to people than the products they replaced. However, like all pesticides, they have the potential to affect human health and the environment and must be used with caution. This is why all pesticides are stringently regulated under the *Pest Control Products Act* by Health Canada's Pest Management Regulatory Agency (PMRA). PMRA's scientists conduct thorough scientific assessments using modern and internationally recognized methods to ensure that pesticides pose minimal risk to human health and the environment when used according to label instructions.

Re-evaluation of Neonicotinoids

PMRA periodically re-examines pesticides to ensure they continue to meet modern health and environmental safety standards based on the latest science. As part of this process, PMRA is currently re-examining the potential risks to health and the environment posed by neonicotinoids noting that, their use in Canada has substantially increased over the last 5-6 years.

Neonicotinoids and Risks to Human Health

To date our assessments of the available data and published literature do not point to unacceptable risks to human health from the use of neonicotinoids, including any potential exposure from drinking water or food. The recently completed imidacloprid assessment has examined an extensive body of information that considers not only any potential toxicity and exposure but also considers any potentially sensitive populations including children. The amounts of neonicotinoids found in the environment are well below any level of concern for human health.

Neonicotinoids and the Risks to Bees and other Pollinators

In 2013, in response to reports of bee deaths linked to neonicotinoids (primarily in corn and soybean growing regions), PMRA increased incident monitoring and began conducting a scientific re-assessment of potential effects on pollinators in collaboration with the United States Environmental Protection Agency (USEPA). Following an analysis of incidents involving managed honeybees, PMRA found that recent changes to agricultural practices, including changes to the equipment used to plant treated seed, may have increased the risk to bees. Part of the seed coating containing the pesticide was being released into the air in the form of dust, causing the majority of the incidents reported during planting. PMRA worked with stakeholders to change planting practices, greatly reducing the potential exposure to bees and other



pollinators. Incidents related to honeybees have consistently been reduced by 70% to 80% since 2014. PMRA continues to monitor the situation in collaboration with the provinces. An updated report on bee incidents will be published in the coming weeks.

A preliminary pollinator risk assessment for one of the neonicotinoids, imidacloprid, was published in January 2016 and did not point to unacceptable risks to managed honeybees provided strict precautions to limit exposure were followed. The assessment was conducted following a recent approach developed in collaboration with other pesticide regulatory authorities from around the world including the USEPA. Work is continuing in collaboration with regulators internationally on this issue. The effects of neonicotinoids on wild native pollinators (for example, wild bees) are also being assessed by PMRA. A complete assessment of all potential risks to pollinators is expected to be completed in 2017.

Neonicotinoids and the Risks to the Environment

PMRA is also looking at the potential for neonicotinoids to affect other parts of the environment including aquatic life such as fish, insects, and other organisms. An aquatic risk assessment for one of the neonicotinoids, imidacloprid, currently indicates that the risks to aquatic insects are no longer acceptable over the long term. The assessment is based on an analysis of scientific information from a wide variety of sources including industry, federal and provincial governments, international regulators, and extensive public literature. An analysis of water monitoring data in Canada indicates that the levels found in many surface waters in areas of intensive agriculture are substantially above a level of concern for harmful effects to aquatic insects which are an essential component of the aquatic ecosystem. In addition, two other neonicotinoids used in Canada, clothianidin and thiamethoxam, are being detected in similar aquatic environments.

Planned Actions

PMRA is publishing the results of its current risk assessment based on the information available for imidacloprid,¹ with the exception of the pollinator risk assessment which is anticipated to be completed in 2017. Based on our assessment, PMRA is proposing to phase out most agricultural and outdoor uses of imidacloprid in 3-5 years, depending on the availability of alternatives. This proposal is a public consultation and is based on currently available information. Any new information and comments submitted during the 90-day consultation period will be reviewed and considered by PMRA prior to issuing a final decision.

In addition, based on the evidence to date, and the similarities between the three neonicotinoids, PMRA will initiate Special Reviews² of the other two major neonicotinoids, clothianidin and thiamethoxam with a focus on risks to aquatic life. These assessments are expected to be completed in mid-2017. A consultation document will then be published and will include PMRA's assessments, and proposed regulatory actions if needed.

¹ Proposed Re-evaluation Decision PRVD2016-20, *Imidacloprid*

² Re-evaluation Note REV2016-17, *Initiation of Special Reviews: Potential Environmental Risk to Aquatic Invertebrates Related to the Use of Clothianidin and Thiamethoxam*