ALBERTA WILDERNESS ASSOCIATION

"Defending Wild Alberta through Awareness and Action"

Pest Management Regulatory Agency
Health Canada
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November 5, 2013

Dear Sirs and Madams:

Re: The Use of Neonicotinoid Pesticides

I am writing on behalf of the Alberta Wilderness Association (AWA). As an association that is dedicated to the preservation of all indigenous wildlife populations and the protection of Alberta's natural landscapes and ecological processes we are deeply concerned with the use of neonicotinoid pesticides and their adverse affects on Canada's wildlife and wild waters. We recognize the inherent value of nature as well as the countless benefits humans derive from it. AWA is requesting that the use of neonicotinoid pesticides which contaminate soils, watersheds and animals be prohibited.

Neonicotinoids were introduced in the 1990's and have rapidly become the most widely used pesticide in the world. They are readily absorbed by plants via their seeds, roots or leaves and then are transported throughout the tissues of the plant, allowing them protection from all types of insects (Goulson, 2013). Despite many warnings from scientists, the Pest Management Regulatory Agency (PMRA) has consistently allowed the registration of neonicotinoids for use on a variety of crops including corn, potatoes, canola, lettuce and others (Mineau and Farmer, 2013). One of the many examples of such warnings was from the United States Environmental Protection Agency, (USEPA, 2008) stating that thiamethoxam, a common neonicotinoid, was likely to have "direct adverse effects on freshwater invertebrates, birds and mammals." The message cannot be any clearer and yet its extensive use continues.

The widespread adoption of neonicotinoids as seed dressings has led to a move away from integrated pest management (IPM). IPM is a planning approach of pest management geared toward minimizing use of chemical pesticides by monitoring pest populations, making maximum

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use of biological and cultural controls, applying chemical pesticides only when needed and avoiding broad-spectrum, persistent compounds (Metcalf & Luckmann, 1994). Abandoning IPM is a significant step backwards from sustainable agricultural processes.

Major risk concerns about these pesticides being both persistent and mobile, likely to cause surface and ground water contamination, have been ignored. More specific to one neonicotinoid, imidacloprid is stable in water, not easily biodegradable and can accumulate in soil and sediments, where it persists for several months (Mason *et al.*, 2012). New York State has not registered clothianidin and has severely restricted the use of imidacloprid and thiamethoxam because of contamination of their water sources (Mason *et al.*, 2012). Are we going to continue to allow water contamination from these pesticides in Canada? Considering that Southern Alberta is prone to regular flooding, and with the recent extreme flooding events, the chances of pesticide runoff resulting in decreased quality of our freshwater are high. Once these pesticides leech into waterways the negative impacts are widespread and chronic. PMRA needs to take their blinders off and look at the whole picture. It is extremely naive to think that we can release toxic pesticides into our environment without severe consequences that will ultimately affect our own health.

Recent scientific studies have demonstrated neonicotinoid toxicity to pollinators and insectivores; nonetheless PMRA continues to allow their use. Pesticide Fact sheets show that imidacloprid, clothianidin and fipronil have the same level of toxicity in non-target invertebrates as target ones (Mason *et al.*, 2012).

Bees have suffered tremendous threats from neonicotinoids; the Xerces Society for Invertebrate Conservation reported that "at least four species of formerly common North American wild species have experienced catastrophic declines over the past decade – two of them may be on the brink of extinction." There are several avenues by which bees are interacting with these pesticides, the most obvious ones being pollen and nectar. Also, very small portions of the active ingredient in a neonicotinoid seed dressing does not get absorbed by the soil or crop and is lost as dust during sowing. This airborne dust is enough to kill near by flying pollinators (Goulson, 2013). There is evidence suggesting a strong correlation between neonicotinoid pesticides and the colony collapse disorder (CCD), where bees are abandoning their hives and dying off in large numbers (Mason *et al.*, 2012). Disorientation of bees that causes delay in foraging and hive abandonment is very similar to the abnormal neurological behaviour in bats affected by White Nose Syndrome (WNS), which has caused dramatic declines in bat populations. Yet another example of the possible pervasive and costly repercussions of neonicotinoids.

Neonicotinoids act as agonists at the insect nicotinic acetylecholine receptor (NAR), causing receptor blockage, paralysis and death (Goulson, 2013). Fundamental differences between NAR of insects and mammals give selectivity for the pesticide, which is why neonicotinoids were thought to be effective pest controls (Tomizawa and Casida, 2003). Although these pesticides have been praised for having a low affinity for vertebrate relative to insect NAR's, studies show that neonicotinoids cause chronic toxicities to vertebrates (Tomizawa, 2005). Non-target insects are far from the only animals these pesticides negatively impact.

Many of the grassland birds found in Alberta are either threatened or their population trends are heading in that direction. The cumulative effects of habitat loss and pesticides are disastrous for

these important birds and for the biodiversity of grassland regions. Mineau and Whiteside (2013) reported that pesticide toxicity should be considered a crucial factor in grassland bird declines, based on findings from their study in the U.S. Major bird declines have occurred in the last twenty years in the same countries where neonicotinoids are used in agricultural practices.

Most species that are at risk are insectivorous, feeding their young and themselves with pesticide covered insects. Others diet mainly on seeds, which they can easily uncover from neonicotinoid-treated seeds planted shallowly in the ground or spilled by farm machines. If birds do not die immediately, less obvious, and longer–lasting consequences occur including partial paralysis, decreased reproduction rates and behavioural changes (Mineau and Farmer, 2013). Because they are not fatal, these debilitations slip through the monitoring cracks.

Studies have shown that rat respiration and behavioural symptoms are impacted by neonicotinoid insecticides. This presents the possibility that neonicotinoids could have effects on human health (Guangming *et al.,* 2013).

The Organic Consumers Association warns that many crops that rely entirely on pollination by commercial beekeepers will continue to be adversely affected by the colony collapse disorder (CCD). Canada needs to take a serious look at where our priorities lie. We must not allow convenience of neonicotinoids to overrule the overwhelming evidence of serious side effects to all the ecosystem players.

Creating short cuts in the regulatory process of pest use in Canada is certain to create large, long-term costs that will appear in other forms such as lost ecological services and health care costs. PMRA has admitted that the use of neonicotinoids is not sustainable but their slow and baby step actions are not enough. **Urgent action is needed.**

AWA is in support of the widespread call for:

1. Suspension of all applications of neonicotinoids until a thorough independent review is completed of effects on terrestrial and aquatic invertebrates, birds and mammals.
2. A ban of neonicotinoid use as seed treatments.
3. Expansion of a re-registration review of neonicotinoids beyond bees to include birds, aquatic invertebrates, and other wildlife.

These pesticides are being called the “new DDT” because they were passed through registration without concern for the many red flags raised by scientists and now our environment is suffering the consequences. We look forward to your response and urgent action banning neonicotinoid pesticides immediately.

Sincerely,
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