Common Chemicals Harmful to Pollinators

Neonicotinoids are a class of insecticides, chemically similar to nicotine, used widely in agriculture, the nursery business and lawn care. Studies have shown that neo-nicotinoids can have **both lethal and chronic effects** on honeybees and native bees. Four neonicotinoids, imidacloprid, clothianidin, thiamethoxam and dinotefuran, are now "restricted use" for only those who are certified pesticide applicators.

Organophosphates are potent chemicals **toxic to insects, mammals, fish, and aquatic invertebrates.** They are used widely in agriculture, as well as on forested lands, and even in mosquito spraying. Examples are **chlorpyrifos**, **diazinon** and **malathion**. Try to avoid using any organophosphates.

Glyphosate is the active ingredient in RoundUp, the **most widely used herbicide** in the United States. It has been declared a "probable carcinogen "by the World Health Organization. It is used extensively to kill back vegetation which would have been used as forage and habitat for bees and other pollinators. "Inactive" ingredients such as solvents, preservatives, and surfactants also contribute to its toxicity.

Fungicides: Recent studies have shown that fungicides have a **synergistic effect** when combined with certain pesticides, making the pesticides much more toxic than they would have been by themselves. Fungicides have been shown to **weaken bees' immune systems**, making them more susceptible to parasites, such as the *Nosema* parasite.

Permethrin, a member of the pyrethroid family, is commonly used for area-wide tick control. Permethrin is extremely **toxic to bees**. It is also **toxic to fish** and should be kept out of all bodies of water. Permethrin is listed as a "restricted use" substance by the EPA due to its high toxicity to aquatic organisms. Permethrin is also **toxic to cats**. Please use alternative methods of tick control that are safer to pets and wildlife.

Weed 'N Feed: This combination product (a mix of fertilizer and an herbicide, usually 2,4-D) is used by broadcasting it over the entire lawn, thereby using 20 to 30 times more herbicide than is needed. This can lead to **water pollution** as well as putting **birds, ground-nesting native bees and other wildlife at risk.** This product has been banned in Canada.

NOTE*: Individually these chemicals have specific risks associated with them, but in combination they may be even more toxic. Very little testing for such synergistic effects has been done. Therefore, reduction of any and all pesticides is encouraged – working towards more organic methods for agriculture and lawn and garden care.*

Protect Our Pollinators **www.propollinators.org**

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