

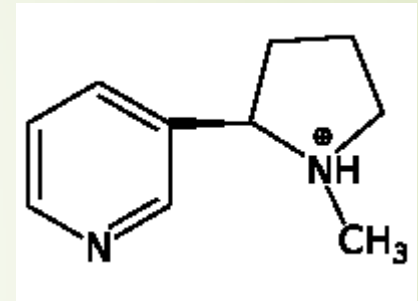


# Neonicotinoids (Neonics)

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# What are Neonicotinoids?

- Class of pesticides that are similar to nicotine
- Includes imidacloprid, thiacloprid, clothianidin, thiamethoxam, acetamiprid, nitenpyram, dinotefuran
- The most widely used type of pesticide world-wide
- Systemic- translocated to all parts of the plant
- They affect the nervous system of insects by continuously stimulating the nerves
- Leads to paralysis and death in insects
- Also have lethal and sub-lethal impact on non-target organisms





# How do Neonicotinoids affect bees?



## **Lethal effects-**

- Highly toxic, chronic exposure causes significant death rates

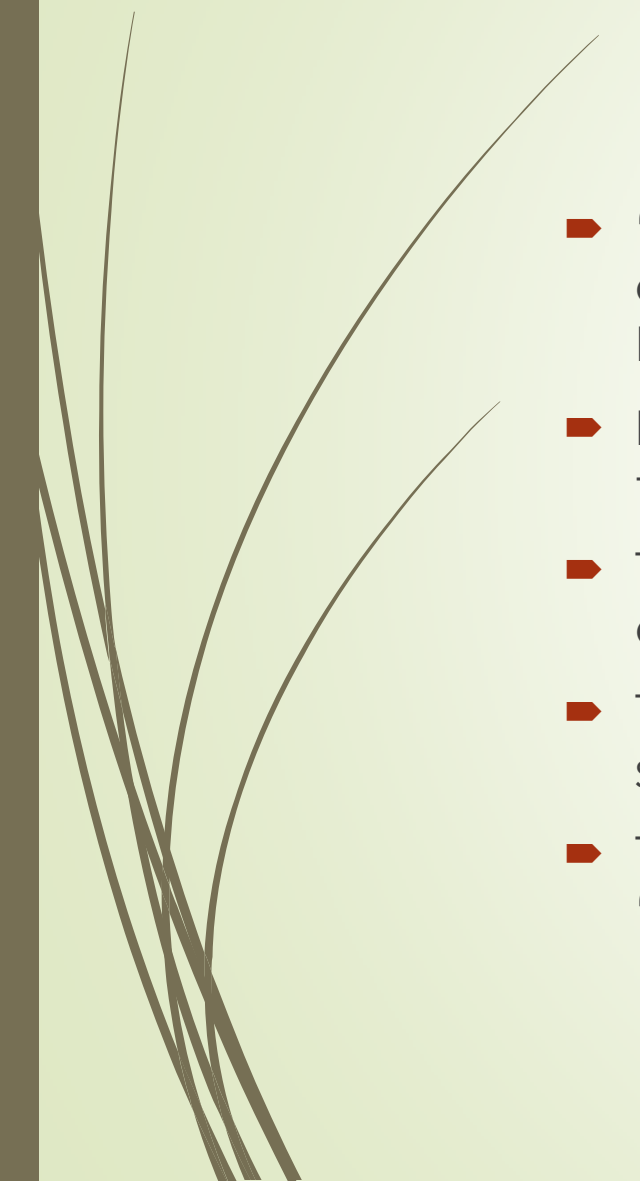


## **Sub-lethal effects-**

- Affect the bee's ability to gather pollen and navigate back to the hive
- Affect memory, reproduction, and winter survival rate
- Suppresses the immune system, makes bees more susceptible to disease
- Impacts the whole colony when residue is brought into the hive




# Can Neonicotinoids affect humans?

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- “Contrary to initial ideas, neonicotinoids may significantly affect the health of vertebrates including humans” – Environmental Science and Pollution Research International
  - Humans are exposed by eating vegetables containing neonicotinoids, as they can be absorbed by the intestine
  - The European Food Safety Authority’s Panel reviewed data on the potential effects of neonicotinoids on humans
  - They focused on potential damage to the developing human nervous system and brain
  - The panel advised that all neonicotinoids be evaluated for “developmental neurotoxicity”




# How do Neonicotinoids impact the environment?

- Persistent, low concentrations can have serious environmental effects
  - They're water soluble and can infiltrate water systems, affecting aquatic insects too
  - They take months or years to break down in soil
  - Found in dust, soil, water, plants, pollen, and nectar
  - Neonicotinoids are affecting pollinators, birds, earthworms, aquatic invertebrates, and plant-eating invertebrates
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# What's being done?

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- **Ontario (2015)** – decrease the number of neonicotinoids used by 80% in corn and soybean plants to decrease pollinator exposure
  - About 70% of dead bees found in 2012/2013 in Canada had neonicotinoid residue
  - The federal Pest Management Agency thinks that current neonicotinoid usage is not sustainable
  - **European Union (2013)** – 2-year limited ban on neonicotinoids due to the high risk to bee health
  - Decided that the chemical should be taken off the market because of the risk to the environment and a wide range of wildlife

# What can Riverview do?

- Bring attention to the harmful effects of neonicotinoids
- Find a more eco-friendly alternative
- Discontinue the usage of neonicotinoids on town property
- Ban neonicotinoids in the town, both commercially and residentially

