



A Project of:
Beyond Pesticides &
Center for Food Safety

Managing Pests Safely Without Neonicotinoids: For Homes, Schools, and Other Indoor/Outdoor Areas

Neonicotinoids (or “neonics” for short) are a group of chemicals linked to pollinator decline that kill a wide range of insect pests, including aphids, whiteflies, ants and termites. They can kill and impair the survival of pollinators like honey bees, wild bees, and butterflies, and can also impact beneficial insects, birds and other non-insect species. Beekeepers are reporting unprecedented losses, as high as 90 percent, in hives across the county. Since we rely on many of these organisms for essential services like the pollination of a third of the foods we eat, it is important for us to avoid using these chemicals and instead look for safer alternatives to managing pests in our homes, gardens, schools and communities.

Neonicotinoid-Free Indoor Environments

Several neonicotinoid products are designed to kill indoor pests such as ants, termites, bedbugs, as well as pests on indoor, potted plants like whiteflies and aphids. Imidacloprid and dinotefuran are commonly found in these indoor products and can be applied in our homes, schools and other indoor environments. However, you can control pests safely without exposing your family, children, and pets to neonicotinoids and other toxic pesticides with these simple measures:

Ants and Roaches: Deny Access. Caulk all gaps and openings (entry points for pests), preferentially with caulking.
Keep Clean: Clean up and remove food

sources, including left over pet food. Empty trash regularly and store with a secure fitting lid. Store outdoor garbage away from buildings.

Keep Sealed. Store food in glass or plastic containers with tight-fitting lids.

Monitor. Inspect and monitor cockroach hiding areas like cupboards, moist areas and wall cracks.

Use Least-Toxic Alternatives. Cleaning away ants with soap and water will disrupt the chemical trails of ants. Boric acid baits or gels, and diatomaceous earth can also be used to target larger populations of ants and roaches that cannot be sealed out.

Tip! Since most indoor ants originate outside, you can find their source of entry by following the ant trail. Cinnamon, coffee grinds, chili pepper, paprika, cloves, and dried peppermint all repel ants.

Safer Product Suggestion: EcoSmart Ant and Roach Killer.

Termites: While some alternative treatments are available, prevention is the best method.

Deny Access. Unfinished wood can be protected from termite attack by treatment with boric

Common Members of the Neonicotinoid Family:

Chemical Name	Product
Imidacloprid	2 in 1 Systemic Rose & FlowerCare, Termite Killer Granules, Ortho Bug B Gone
Clothianidin	Arena Insecticide
Thiamethoxam	Meridian Insecticide
Dinotefuran	Hot Shot Roach and Ant Gel Bait, Green Light Tree and Shrub Insect Control
Acetamiprid	Ortho Flower, Fruit & Vegetable Insect Killer

acid. Eliminate all earth-to-wood contact, including mulch, firewood, trellises, shrubbery or tree branches that come in contact with the structure.

Treat. Desiccating dusts, such as diatomaceous earth and silica aerogel can be used to prevent drywood termites. Choose a desiccating dust that it is not combined with a pyrethrin/pyrethroid, and food/garden grade diatomaceous earth. Heat treatments can also successfully kill termites.

Secured Baits. Many bait stations contain a toxicant that is brought back to the colony by the foraging termites, after which they are destroyed. Baits greatly limit the amount of a pesticide used compared to the traditional liquid termiticide soil barrier method of control, and decrease chances of exposure to the chemical because the baits are well contained. They are, however, still poisons and should be used with utmost care and only as a last resort.

Tip! Ensure good drainage away from building structures – point downspouts or gutters



Concerned About Kids at School?

Children are especially vulnerable to pesticide exposures. Talk to your school’s principal, administrator, or PTA about developing a safe school pest management program that would use least-toxic options for pest control. Provide school with materials regarding the dangers of pesticide use and the availability of alternatives.

What is Diatomaceous earth, and where can I find it?

Diatomaceous earth is the fossilized remains of minute aquatic organisms, whose shells are naturally high in silica. Most diatomaceous earth products come in powder or dust form, and while it is generally safe to humans and other vertebrates, diatomaceous earth is toxic to many insects, including bed bugs, cockroaches, spiders, ticks, and fleas. Diatomaceous earth pesticide products can be found in many garden stores, and 100% food-grade diatomaceous earth products are available online and in some health stores. Do not inhale dust.

away from the structure to minimize attractive water sources.

Safer Product Suggestion: Bio-Blast® Biological Termiticide.

Bedbugs: While there is no magic bullet solution to bed bug eradication, there are many ways to effectively control them without the use of dangerous chemical pesticides. Many pesticides are less effective against these persistent pests, due to a growing global resistance.

Deny Access. Caulk and seal crevices to prevent bed bugs from entering your home. Inspect clothing and bags after travel to remove hitchhiking bugs. Encase mattresses and box springs and make sure the encase-

ment does not contain synthetic pesticides impregnated in the material.

Keep Clean. Vacuuming can remove visible bed bugs, dead bed bugs and their droppings. Use a stiff brush to dislodge eggs in cracks and crevices and use a vacuum attachment that does not have bristles to get into the corners. Be sure to discard the bag immediately after vacuuming.

Launder Infested Fabrics and Clothing. Wash and dry clothing at the hottest setting the fabric will allow to kill bedbugs and their eggs.

Heat Treatments. This will kill all stages of bedbugs and involves exposing the bugs to extreme hot temperatures (~120° F). Steam or heated ambient air may be used. Many

pest control companies provide this option, but you may have to ask for it.

Tip! Eliminate clutter. Getting rid of as much clutter as possible will help you locate and eliminate infestations.

Safer Product Suggestion: Food-grade Diatomaceous Earth.

Treating Indoor Potted Plants: Fatty acid soaps/ insecticidal soaps. Commonly used soaps containing potassium and coconut oil are effective at controlling many soft-bodied insects, such as aphids, flies, and mites. Lightly spray all foliage and branches when pest activity is apparent, and follow product application directions.

Biological oils and herbal repellents. These oils and extracts are effective at controlling aphids, adelgids, spider mites, mealy bugs, sawfly larvae, whiteflies, plant bugs, caterpillars, scales, and some plant diseases like rusts and mildews. Some materials in this category include garlic and pepper extracts, neem, and tea tree oil.

Safer Product Suggestion: Safer Insect Killing Soap.

Neonicotinoid-Free Outdoor Environments

Homes, Schools, Playgrounds, and Other Landscapes: It can be fun spending time outdoors caring for our home, school, or community lawns and gardens. But outdoor application of pesticides can be detrimental to nearby foraging bees, butterflies, and other beneficial species even after application, as neonicotinoid pesticide residues can remain in plants, soil, and water for long periods of time, even years! If your out-

door plants or lawns encounter unwelcome pests, there are safer ways to manage these creatures.

Prevention. Many pest species, aphids in particular, are partial to plants fertilized with excess nitrogen, typical of synthetic fertilizer applications. Instead, opt for fertilizing with organic compost, compost teas, or fish emulsion as these release nitrogen and other nutrients slowly into the soil. Create a diverse garden or backyard with a variety of native flowers, grasses, and bushes to encourage natural predators like birds or ladybugs. For lawns, maintain a high mowing height (>2 inches) and less frequent watering.

Monitor. Determine your infestation level to decide the appropriate level of action. Infestations can be detected early by examining plants and trees for egg sacs or adults. Low level infestations

will not do much damage. Some bugs can be handpicked and removed or destroyed.

Treat. Insecticidal soaps and biological/essential oils can also be used on outdoor plants and vegetation to control pests. In addition, pheromone traps can be used for certain species. For lawns, nematodes, or *Bacillus Thuringiensis* (Bt) can take care of many soil swelling insects.

Tip! Certain plants and herbs are natural repellents to insect pests, or attract natural predators. Plant these intermittently among garden plants. Ask your local garden supply store for species native to your region.

Tip! When outdoors, make sure bees and other beneficial insects are not foraging before you use botanical/essential oil sprays, as direct exposure to high doses may smother and harm bees. Apply early mornings or in late evening, when bees are least active.

For more information, visit www.BEEprotective.org



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