

# CARBARYL

## what is carbaryl?

Carbaryl is an insecticide used on food crops, residential lawns, and trees. In Alaska, it is commonly used to spray for bark beetles on high-value spruce trees, typically in residential areas. Carbaryl targets the nervous system of insects. It disrupts the normal function of enzymes in organisms and causes neurological dysfunction that is fatal in target and a range of non-target organisms. It is typically sold under the brand name Sevin.

## what is its impact?



Carbaryl is **highly toxic to pollinators**, especially honeybees.<sup>1</sup> **Healthy ecosystems** depend on pollinators, as does the production of our vegetable, fruit, and nut crops. Carbaryl is also highly toxic to earthworms.



There is **no minimum safe level** of carbaryl exposure in animal testing, particularly for developing organisms.<sup>2</sup> This has ramifications for the health of human **babies and children**, as they are **uniquely susceptible** to even low levels of toxic exposure.<sup>3</sup> EPA classifies carbaryl as “**likely to cause cancer**.”<sup>4</sup> In studies of birds and mammals, low dose exposures over time were associated with decreases in the numbers of eggs and survival of young, respectively.<sup>5</sup>



Carbaryl is **highly toxic to aquatic and marine invertebrates**, including stoneflies, shrimp, and oysters. Low levels of exposure can disrupt the hormone systems in fish. The main breakdown product of carbaryl is directly and highly toxic to some fish. Carbaryl can have **cascade effects** within the watershed where it is applied. This includes **economically valuable species** such as salmon.<sup>6</sup>



Carbaryl is now widely found in **drinking water** sources, frequently at levels well above safe consumption guidelines.<sup>7</sup>

## RIGHT TO KNOW: Pesticide spraying in Anchorage

Anchorage law regulates the spraying of pesticides by pest control companies under **Title 15 of the Municipal Charter**. Under this law there is a provision for notification:

1. **Notice must be provided by the company at least 48 hours before application to the adjacent property owners and kept in place for 48 hours following the application.**
2. **The notice must be given to each residential and commercial building property that shares a common boundary and/or is near or close, but not necessarily touching the property to be sprayed.**
3. **Pesticides or broadcast chemicals may not be sprayed if the wind speed exceeds the maximum wind speed stated on the label, or 7 mph, if no wind speed is stated on the label.**

To report violations contact the **Anchorage Health Department Environmental Health Services** to file a complaint. If the company is found to be in violation, the spraying may be discontinued.

**(907) 242-4200**  
OR

**[www.muni.org/soundoff](http://www.muni.org/soundoff)**

### references

- <sup>1</sup> Durkin, P. R., & King, C. (2008). Carbaryl Human Health and Ecological Risk Assessment: Revised Final Report(Rep.). Fayetteville, New York: Syracuse Environmental Research Associates. Retrieved from <https://www.fs.fed.us/foresthealth/pesticide/pdfs/052-01-05aCarbaryl.pdf>.
- <sup>2</sup> United States of America, EPA, Office of Pesticide Programs. (2003, June 30). Carbaryl Interim RED. Retrieved from [https://archive.epa.gov/pesticides/reregistration/web/pdf/carbaryl\\_ired.pdf](https://archive.epa.gov/pesticides/reregistration/web/pdf/carbaryl_ired.pdf)
- <sup>3</sup> Lanphear, B. P. (2017). Low-level toxicity of chemicals: No acceptable levels? PLOS Biology, 15(12). doi:10.1371/journal.pbio.2003066
- <sup>4</sup> National Pesticide Information Center (2003). Carbaryl General Fact Sheet. Retrieved from <http://npic.orst.edu/factsheets/carbgen.pdf>.
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- <sup>6</sup> Ibid.
- <sup>7</sup> Canada, Health Canada Pest Management Regulatory Agency. (2016, March 31). Reevaluation Decision Carbaryl. Retrieved from [https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/cps-spc/alt\\_formats/pdf/pubs/pest/\\_decisions/rvd2016-02/rvd2016-02-eng.pdf](https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/cps-spc/alt_formats/pdf/pubs/pest/_decisions/rvd2016-02/rvd2016-02-eng.pdf)

# ALTERNATIVES TO PESTICIDES

Maintaining the health of your spruce trees will make them more resilient to infestation. Pesticides are not effective if a tree is already infested; however, there are a variety of other prevention strategies that will improve the vitality of your spruce trees.

## 1. fertilizing

Chemical fertilizers contaminate the environment and are unnecessary. Organic methods are just as effective and cost less.

## mulching

Mulch leaves instead of removing them from your property to provide valuable nutrients to spruce and other trees.

## fungi

Digging in a mix of ectomycorrhizal fungi, specialized fungi that enhance the nutrient uptake of other plants, into the roots of the tree is an environmentally friendly way to boost phosphorus content in the surrounding soil. Fungal inoculants are readily available from online retailers, as well as most home and garden stores. Some types of fungi to look for on labels include *Scleroderma* spp., *Pisolithus* spp., *Laccaria* spp., and *Boletus* spp.<sup>8</sup>

## 2. debris removal

Bark beetles reproduce and thrive in damaged or dead biomass of trees. Taking precautions to avoid damaging trees during any construction or extreme weather on your property will reduce this risk. Removing parts of the tree that are damaged or dying is also vital to preventing a build-up of beetle populations.

## 3. pruning

Pruning the lower branches of a spruce can reduce the chances of a beetle infestation by increasing air circulation and will promote overall health. Be sure not to prune during the active season for beetles, typically May to July, as the smell of freshly cut trees can attract them.

## 4. biodiversity

Maintain and enhance the biodiversity of the plant and animal populations surrounding your trees, as this will encourage the presence of natural deterrents. Birds and other insects naturally control beetle populations, decreasing the chance of infestation.

## 5. anti-aggregation pheromones

Beetles naturally release pheromones to coordinate colonization of spruce trees. Products are available that release pheromones that discourage beetles from colonizing healthy trees. They are currently licensed for use in Alaska as Synergy Shield MCH and have been a moderately successful prevention strategy.

## QUESTIONS?

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## references

<sup>8</sup> Lowenfels, J. (2018, April 18). Spruce Bark Beetles Are Back With a Vengeance and Here's How To Defend Your Trees. Anchorage Daily News. Retrieved from <https://www.adn.com/alaska-life/gardening/2018/04/19/spruce-bark-beetles-a-re-back-with-a-vengeance-heres-how-to-defend-your-trees/>