

Banned for Outdoor Use, yet Still Allowed for Use on Pets?

These chemicals are so toxic, they were banned — or at least restricted — for agricultural use. Yet the year after the complete ban of one of these chemicals, massive amounts were sold for the domestic pet market. Now, pets and the environment are paying the steep price.

Reviewed by [Dr. Becker](#)

STORY AT-A-GLANCE

- Imperial College London researchers warned that chemicals in flea and tick treatments, including imidacloprid and fipronil, are finding their way into U.K. rivers and ponds, where they may be disrupting ecosystems
- Fipronil has been found to “degrade stream communities” even at low concentrations
- Active ingredients from spot-on treatments, collars, tablets and chewables remain in pet’s skin, hair and excretions
- It’s believed the chemicals are entering the environment when pets are bathed or animal waste is flushed down a toilet, among other routes of exposure
- Urban areas tended to have the highest concentrations of pet flea and tick chemicals in their waterways, especially near wastewater treatment plants

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Indiscriminate use of parasiticides, especially chemical flea and tick preventives, not only has the potential to harm your pet but also the environment. Imidacloprid, a neonicotinoid, and a similar chemical fipronil, are among the most common pesticides found in flea and tick treatments.

Despite being banned or restricted for agricultural usage due to their toxicity, the chemicals are still allowed in flea and tick treatments for pets.¹ Aside from the clear risks of putting these toxins directly on pets’ fur, the chemicals are washed down drains during bathing and find their way to waterways, causing environmental harm.

Flea and Tick Treatments Harming Waterways

In a briefing paper, Imperial College London researchers warned that chemicals in flea and tick treatments, including spot-on products, collars, tablets and chewables, are finding their way into U.K. rivers and ponds. They explained:²

“By weight, imidacloprid is one of the best-selling veterinary parasiticides in the UK. Immediately before the ban on crop use, a combined total of over 4000 kg was used for agriculture and sold for veterinary use in a single year in the UK.

After the chemical was fully banned for all outdoor use in 2018 this dropped markedly, but over 2500 kg was still being sold in the following year, all of which was destined for the domestic pet market as a parasiticide.”

Neonicotinoids like imidacloprid are toxic to beneficial insects like bees as well as songbirds. Birds that ingested “realistic” amounts of neonicotinoids had reduced feeding and accumulation of body mass and fat stores, leading to delayed departure from stopover sites during migration, according to one study.³

In another trial, exposure to imidacloprid led to social behavior changes in bees,⁴ making them less active and less likely to contribute to the welfare of their colony, such as caring for larvae or maintaining the nest.⁵

Fipronil, meanwhile, has been found to “degrade stream communities” even at low concentrations.⁶ A U.S. Geological Survey study found fipronil reduced species diversity and was particularly harmful for aquatic insects. When introduced to a stream mesocosm ecosystem, the chemical altered the food web and triggered a trophic cascade. According to Beyond Pesticides:⁷

“A trophic cascade occurs when a disruption, in this case a pesticide, significantly reduces, changes the behavior of, or destroys certain populations of plants and animals, causing effects that ripple up and down the food chain. In this instance, fipronil harmed populations of insects known as scrapers (sometimes known as grazers) which include snails other aquatic insects that feed on algae.

This results in a bloom in algae populations. Although fipronil is not a fertilizer, it nonetheless has the potential to indirectly cause harmful algae blooms in U.S. streams and waterways.”

Urban Waterways Are at Risk from Pet Pesticides

The Imperial College London team reported that many freshwater species are vulnerable to chemicals used in pet flea and tick products, “even at environmental concentrations as low as 0.013 micrograms per liter for ... imidacloprid.”⁸

Active ingredients from spot-on treatments remain in pet’s skin, hair and excretions. Flea collars also cause active ingredients to remain in your pet’s skin and hair. Even flea and tick chemicals in chewable form are a risk, as the active ingredients are found in your pet’s excretions.⁹

It’s believed the chemicals are entering the environment when pets are bathed or animal waste is flushed down a toilet. Even pet hair and shedding skin that enters the environment is a potential source, as is pets swimming in ponds or other waterways and even pet guardians washing their hands after applying the chemicals.

“There is further evidence that parasiticides are shed gradually from pets, as significantly higher quantities of active ingredients have been found in the dust of households with treated animals. Bathing treated pets has been suggested as a common pathway for active ingredients to enter wastewater, though the washing of pets’ bedding could also be a contributing source,” the team explained.¹⁰

However, urban areas tended to have the highest concentrations of pet flea and tick chemicals in their waterways. Briefing note author Dr. Leon Barron, from the School of Public Health at Imperial College London, said in a news release:¹¹

“In our research in urban locations, these chemicals were found wherever we looked, and were in especially high concentrations near wastewater treatments plants, suggesting these are a major source.”

Previous research also looked for the presence of chemical insecticides found in flea/tick products in 20 English rivers from 2016 to 2018, finding such chemicals in the following percentage of samples tested:¹²

- Fipronil, 98.6%
- Fipronil sulfone, 96.5%
- Fipronil sulfide, 68.7%
- Imidacloprid, 65.9%

Protect Pets from Pests Naturally

It's risky — for your pet and the environment — to indiscriminately apply chemical flea and tick preventives to your pet on a monthly basis, year-round. It's best for most pet guardians to use chemical flea and tick preventives minimally (meaning when parasites are present) or, preferably, not at all.

During flea and tick season, beginning a natural multimodal parasite prevention strategy early can help keep chemical application to a minimum. First, make sure your animal's immune system is working optimally by titering in place of unnecessary annual vaccines, minimizing household chemical exposure and environmental stress, and feeding a minimally processed, human grade, species-appropriate diet with fresh garlic.

Generally, the healthier your animal is, the less appealing he'll be to parasites. Anytime your pet ventures outdoors, you'll want to thoroughly check him for pests as well. Use a flea comb to help the process. You can also spritz your dog or cat (on the body, not the face) with a homemade pest deterrent before they go outdoors:

- **For dogs** — Mix 8 ounces of pure water with 4 ounces of organic, unfiltered apple cider vinegar and 20 drops of neem oil. If you live in an area with ticks, you can also add five drops of lemon, lemongrass, eucalyptus or geranium essential oil for added punch.
- **For cats** — Mix 8 ounces of pure water with 4 ounces of organic, unfiltered apple cider vinegar, plus 10 drops of neem oil and 10 drops of catnip oil.

Additional nontoxic alternatives to ward off pests include:

- Cedar oil sprays (specifically manufactured for pet health)
- Natural, food-grade diatomaceous earth, topically (not on the head)
- Fresh garlic (1/4 teaspoon of freshly chopped garlic per 15 pounds of body weight)
- Make sure both your indoor and outdoor environments are unfriendly to pests

If you live in a high-risk area, you can often alternate chemical preventives with natural deterrents and detoxification to cut down on pesticide usage. Always flea comb your dogs after every outdoor adventure and perform daily tick checks on the entire family during high-risk months.

In addition, it's best to screen for tick-borne diseases once a year, or every six months in high-risk areas, using an Accuplex or 4DX screening test. This is necessary no matter which parasite protocol you choose, since pesticide resistance is a growing problem.

Sources and References

^{1, 11} [Phys.org](#) March 20, 2023

^{2, 8, 9, 10} [Imperial College London, Grantham Institute Briefing Note No 15, March 2023 \(Archived\)](#).

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⁴ [Science](#) November 9, 2018

⁵ [The Scientist](#) November 8, 2018 (Archived).

⁶ [Science Advances](#) October 23, 2020

⁷ [Beyond Pesticides](#) October 27, 2020

¹² [Science of the Total Environment](#) February 10, 2021, Volume 755, Part 1, 143560
