

Pesticide Review

An Information Source for Pest Control Operators

Volume I, Issue I

Fipronil—2007

*Helping to improve
water quality in
California
through the
implementation of
Integrated Pest
Management
practices.*



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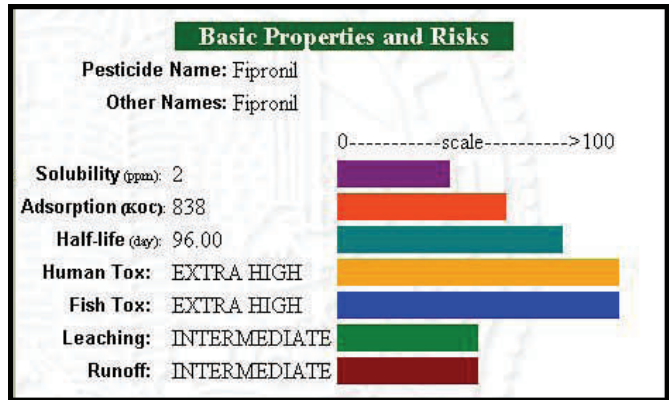


Aquatic Toxicity of Fipronil

Moran, K.D. 2007. Adapted from report to Urban Pesticide Committee.*

Fipronil and its degradates are highly toxic to aquatic species. Aquatic toxicity data for fipronil were obtained from the US EPA Ecotox database, the US EPA Pesticide Fact sheet for fipronil, and a CDPR summary on fipronil. From the data available from these agencies, it is clear that fipronil is highly toxic to aquatic species. Although very little data are available for fipronil degradates, available data suggests that they are also highly toxic to aquatic species.

Fipronil adversely affects crustaceans at concentrations that have been



measured in environmental samples. Various studies have documented lethality and sublethal toxicity to crustaceans at very low concentrations. Environmentally realistic concentrations of fipronil were reported to have adverse

effects on reproduction of a common estuarine copepod.

Data submitted to US EPA indicates that fipronil bioaccumulates in fish, with a bioconcentration factor of about 300.

(Continued on page 3)

What Effect does Fipronil have on Wildlife?

from the National Pesticide Telecommunications Network Fipronil Fact Sheet

What happens to fipronil in the environment?

Soil: In lab studies, fipronil has a half-life of 122-128 days in oxygenated sandy loam soil. In field studies, dissipation half-life on soil surfaces ranged from 0.7 to 1.7 months. Half-life of fipronil applied by soil incorporation ranged from 3 to 3.7 months.

Residues remained mainly in the upper 12 inches of soil. Fipronil has low soil mobility. It binds to the soil and has little potential for ground-water contamination.

Anaerobic metabolism: Fipronil degrades slowly in water and sediment that lack oxygen with a half-life ranging from 116-130 days.

Hydrolysis: Fipronil is stable to breakdown by water at mildly acid (lower pH) to neutral pH. It degrades with a half-life of 28 days in basic (higher pH) solutions.

Photodegradation: In studies where fipronil was exposed to light, fipronil had a half-life of 3.6 hours in water and 34 days in loamy soil.

(Continued on page 2)

Products Registered for use in California that include Fipronil as the Active Ingredient

Ceasefire™ Fire Ant Bait Insecticide
by Bayer Environmental Science

Chipco® Choice™ Insecticide
by Bayer Environmental Science

Chipco® Topchoice™ Insecticide
by Bayer Environmental Science

Combat® 12 Month 1
by Combat Insect Control Systems

Combat® Ant Killing Gel
by Combat Insect Control Systems

Combat® Outdoor Ant Stakes
by Combat Insect Control Systems

Combat® Platinum Roach Killing Gel
by Combat Insect Control Systems

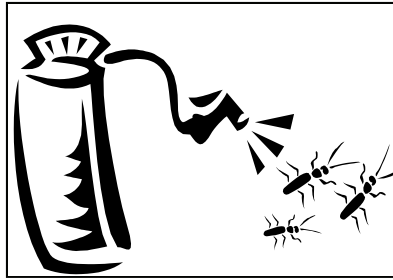
Combat® Plus Platinum Brand Roach Killing Gel
by Combat Insect Control Systems

Combat® Plus Platinum Roach Killing Gel
by Combat Insect Control Systems

Combat® Plus Brand Quick Kill Roach Killing Gel
by Combat Insect Control Systems
Combat® Plus Platinum Brand Roach Killing Gel
by Combat Insect Control Systems

Combat Plus Platinum Roach Killing Gel
by Combat Insect Control Systems

Combat® Plus Quick Kill Formula 1
by Combat Insect Control Systems



Combat® Plus Quick Kill Formula 1 Roach Baits
by Combat Insect Control Systems

Combat® Quick Kill Formula 1
by Combat Insect Control Systems

Combat® Quick Kill Formula 2
by Combat Insect Control Systems

Combat® Quick Kill Formula 3
by Combat Insect Control Systems

Frontline® Plus for Cats
by Merial Limited

Frontline® Plus for Dogs
by Merial Limited

Frontline® Spray Treatment
by Merial Limited

Frontline® Top Spot® for Cats
by Merial Limited

Frontline® Top Spot® for Dogs
by Merial Limited

Garden Tech® Over 'n' Out!® Fire Ant Killer Granules
by Techpac, LLC

Maxforce® Carpenter Ant Bait Gel
by Bayer Environmental Science

Maxforce® FC Professional Insect Control™ Ant Bait Stations
by Bayer Environmental Science

Maxforce® FC Professional Insect Control™ Ant Killer Bait Gel
by Bayer Environmental Science

Maxforce® FC Professional Insect Control™ Large Roach Bait Stations
by Bayer Environmental Science

Maxforce® FC Professional Insect Control™ Roach Bait Stations
by Bayer Environmental Science

Maxforce® FC Professional Insect Control™ Roach Killer Bait Gel (3 Pack)
by Bayer Environmental Science

Maxforce® FC Professional Insect Control™ Roach Killer Bait Gel (Reservoir)
by Bayer Environmental Science

Maxforce® FC Select Professional Insect Control™ Roach Killer Bait Gel
by Bayer Environmental Science

Maxforce® Tick Management System
by Bayer Environmental Science

Termidor® 80 WG Termiticide/Insecticide
by BASF Corporation

Termidor® SC Termiticide/Insecticide
by BASF Corporation

Effect on Environment and Wildlife cont. from page 1

What effect does fipronil have on wildlife?

- Fipronil is **highly toxic** to certain aquatic species, especially arthropods such as various shrimp. Its tendency to bind to sediment and its low water solubility may reduce the potential hazard to aquatic wildlife.
- Fipronil is **toxic** to bees and

should not be applied to vegetation when bees are foraging.

- Fipronil has been found to be **highly toxic** to upland game birds, but is practically non-toxic to waterfowl and other bird species. One of the metabolites of fipronil has a higher toxicity to birds than the parent compound itself.

- Fipronil is **non-toxic** to earthworms, soil microorganisms and aquatic plants. Fipronil is moderately toxic to small mammals if ingested.

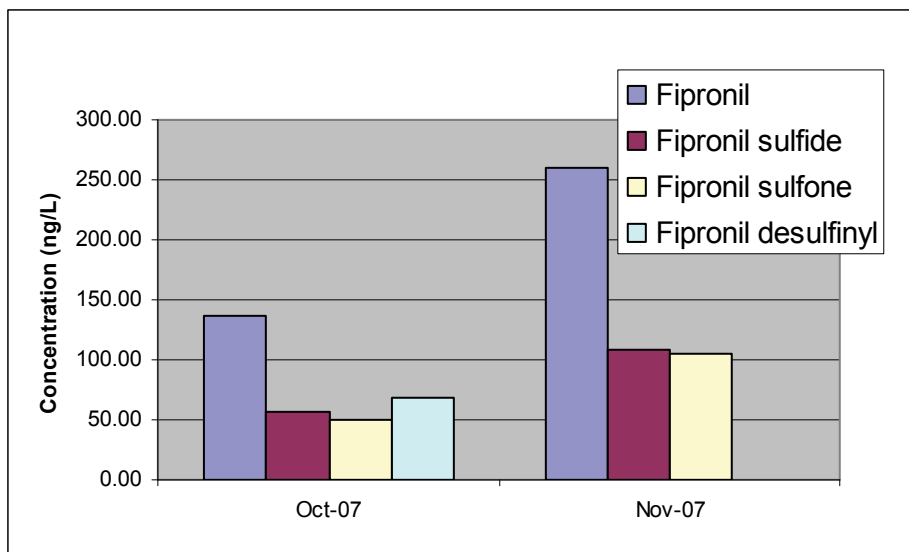
For more information, download the entire NPTN Fipronil Fact Sheet at <http://npic.orst.edu/npicfact.htm>

Aquatic Toxicity *cont. from page 1*

Additionally, as illustrated in the chart to the right, fipronil and its metabolites, fipronil sulfide, fipronil sulfone, and fipronil desulfinyl, have been detected in surface water in Orange County in concentrations from 50 to over 250 ng/L. Although this is below the LD₅₀ for many aquatic species, it still indicates that fipronil is moving offsite with runoff water.

*Moran, K.D. 2007. Urban use of insecticide fipronil—water quality implications.

http://www.up3project.org/documents/Final_Fipronil_Memo_2007.pdf



Reducing Surface Water Quality Impacts from Structural Pest Control Applications

by Darren Haver, UCCE Water Resources and Water Quality Advisor

Applications of pesticides to residential, industrial, and institutional buildings may have unintended negative impacts on local water quality if the pesticides do not remain at the site of application. As a licensed structural pest control applicator it is important to take steps to lessen the risk of off-target pesticide movement. The greatest risk arises from spray or granular applications applied to the perimeter of structures in an attempt to control pests such as termites, ants, and cockroaches. Depending on the chemical properties of the pesticide, off-target movement may occur as a result of the pesticide being carried directly in water (i.e. diazinon) or adsorbing to soil, dust or other organic solids (i.e synthetic pyrethroids, such as bifenthrin and permethrin) that are subsequently mobilized in surface runoff resulting from rain or irrigation events. Reducing the risk of surface water contamination requires the pesticide applicator to implement a few simple practices.



Hose and spray wands enable operators to apply pesticides directly to the site and avoid possible overspray.

The following practices will help to reduce the potential for structural pest control pesticides from negatively impacting local water quality:

- Properly dispose of any leftover pesticide residues from spray equipment.
- Inform the client of the potential movement of pesticides as a result of irrigation runoff or washing down of sidewalk surfaces especially immediately following the application.
- Ensure mulch and soil around the perimeter of a structure is

not easily washed into drains as synthetic pyrethroids readily adsorb to organic surfaces, such as soil particles, and therefore can be easily carried into storm drains.

- Avoid direct applications of pesticides (sprays or granular) to downspout drains and landscape drains located directly around the structure by covering them prior to the application.
- Coordinate pesticide applications with the client to ensure irrigation or rain events do not occur within 48 hours of the application.
- Be aware of noticeable surface runoff issues related to poor irrigation and notify the client of the need to address these issues prior to applying the pesticide.
- Sweep up any off-target granular applications of pesticides from hardscape surfaces as irrigation or rain events will quickly mobilize the pesticide into storm drains.

URBAN PESTICIDE RUNOFF MITIGATION AND OUTREACH PROJECT

University of California Cooperative Extension
Farm and Home Advisors Office
5555 Overland Avenue, Building #4, Suite #4101
San Diego, CA 92123

Phone: 858-694-2184
Fax: 858-694-2849
E-mail: saparker@ucdavis.edu
Web Site: <http://groups.ucanr.org/PesticideMitigation/>



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California
Department of Pesticide Regulation

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The Importance of Reading a Pesticide Label - It's the Law

Pesticides are [poisonous](#). Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock. Consult the [pesticide label](#) to determine active ingredients and signal words.

Pesticides applied in your home and landscape can move and [contaminate creeks, lakes, and rivers](#). Confine chemicals to the property being treated and never allow them to get into drains or creeks. Avoid drift onto neighboring properties, especially gardens containing fruits or vegetables ready to be picked.

Do not place containers containing pesticide in the trash or pour pesticides down sink, toilet, or outside drains. Either use the pesticide ac-

ording to the label until the container is empty, or take unwanted pesticides to a Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Hazardous Waste Collection site nearest you. Dispose of empty containers by following label directions. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

Important information regarding the pesticide can be found on the product's label. The label is a legal document required for every pesticide registered in the United States. The U.S. Environmental Protection Agency must approve the label. Always keep the product in the original package. Some of the information that is contained on the label includes:

- Trade name or brand name

- Active ingredients and their percentage by weight
- Types of plants or sites where pesticide may be used
- Pests targeted
- How much to use
- How and when to apply
- Required protective clothing and equipment
- Signal word defining short-term toxicity to people (DANGER, WARNING, or CAUTION)
- Precautionary statements defining hazards to people, domestic animals, or the environment
- Emergency and first aid measures to take if someone has been exposed
- How to properly store and dispose of the pesticide and empty containers