1/31/05

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

MEMORANDUM

SUBJECT: Ecological Risk Assessment Issues Associated with the Addition of *Lasius neoniger* (nuisance ant) to the Ceasefire® Fire Ant Bait Label (PC Code 129121; DP Barcode D308382)

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TO: Marion Johnson, Acting Branch Chief
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This memorandum is a response to registrant concerns on registration conditions to restrict above-the-ground fipronil use in 15-to-20 geographically dispersed watersheds in the fire ant quarantine area for addition of *Lasius neoniger* (nuisance ant) to the Ceasefire® Fire Ant Bait label. The registrant claims the need for field biological monitoring is "groundless and without merit". Additionally, the registrant claims the Agency has no risk assessment to support the need for biological monitoring.

The EFED risk assessment has shown that broadcast uses of fipronil bait for fire ant control at four applications of 0.0000225 lbs ai/A (15 lbs of Chipco® 61442) at 14 day intervals will not pose a risk to aquatic or terrestrial organisms (D260843, D253952, 254316, D254316, D254075, D254075, D253660, D244061; December 6, 1999). This assessment is appropriate for assessing the ecological risk for aquatic and terrestrial organisms from broadcast uses of Ceasefire® at 0.000025 lbs ai/A (15 lbs Ceasefire®/A). One exception is the risk quotient for freshwater aquatic invertebrate will change because the most sensitive organism has been changed from *Daphia magna* (EC50=190 µg/L) to *Chironomus tepperi* (EC50=0.43 µg/L). The revised risk quotient for fipronil effects on freshwater aquatic invertebrates is 0.002.

Although the current risk assessment indicates the use of Ceasefire® alone will not pose a risk to aquatic or terrestrial organisms, the addition of nuisance ants as a target organism will increase the geographic distribution and use intensity of all above-the-ground uses of fipronil. This situation, therefore, may limit the ability to locate reference watersheds, especially within the fire ant quarantine area (i.e., southeastern United States). Because field biological monitoring and runoff studies have been recommended to support the registration of broadcast applications of fipronil granules for control of fire ants, the inability to find suitable reference sites (those watersheds with no fipronil occurrence or no above-the-ground uses of fipronil) in a biological monitoring program may compromise the ability to determine direct biological effects on aquatic invertebrates in watersheds with fipronil use.

The most recent field and laboratory data providing lines of evidence supporting the potential for fipronil residue occurrence and possible ecological effects are as follows:

Field Occurrence Data

- The USGS found that most frequent detections (14 to 34%) of fipronil residues are associated with urban and integrated watersheds. A maximum fipronil water concentration of 0.117 µg/L was detected in integrated (mixed land use) watersheds. These detections may be associated with the above-ground uses of fipronil in turf for fire ant control in urban environment. (***Sandstrom, M. and J. Madison. 2003. Determination of Fipronil and Degradates in Environmental-Water Samples by Solid Phase Extraction and Gas Chromatography/Mass Spectrometry (GC/MS). SECTAC Conference.***)

- Preliminary results from registrant sponsored monitoring data in NC, FL, and TX show fipronil (applied as Chipco Topchoice®) concentrations in runoff from turf areas immediately post-application during high rainfall events. The maximum total fipronil water concentrations was 0.47 µg/L in an estuary at Gulf Breeze, FL. Fipronil residue concentrations in sediment were ≤ 0.1 µg/kg. (***BASF/ Bayer CropScience Presentation at USEPA, December 7th , 2004)***

- Monitoring studies in the southwestern LA rice growing region indicate that fipronil residues accumulated in bed sediment as fipronil sulfide (0.636 to 24.8 µg/kg), desulfiny fipronil (0.55 to 7.01 µg/kg), fipronil sulfone (ND to 10.5 µg/kg) Water concentrations of fipronil residues ranged from 0.829 to 5.29 µg/kg, which corresponded with the release of rice field water. (***USGS Fact Sheet FS-010-03, March 2003)***

Field and Laboratory Aquatic Invertebrate Effects Data

- Canonical correspondence analysis of USGS data from the southwestern LA rice growing region showed that maximum fipronil concentrations in water was a significant variable describing the distribution of aquatic invertebrates. USGS concluded "the maximum concentration of dissolved fipronil was the only significant environmental variable related to consistent decreases in relative abundance for many species, notably midges". Additionally, they found that "relative abundance of species decreased at lower concentrations of fipronil degradation products (fipronil sulfone, fipronil sulfide, and desulfinylfipronil) than of parent fipronil compound" . (***USGS, Water Resources Invertigations Report 03-4185, 2004***).

- Laboratory data indicates the most sensitive freshwater aquatic invertebrate is *Chironomus tentans.* The registrant reported acute LC50 is 0.45 µg/L. (***BASF/ Bayer CropScience Presentation at USEPA, December 7^{h} , 2004***)

- Laboratory data indicate that sediment dwelling crustaceans Amphiascus tenuiremis cf. Miekle (1974) copepod had net reproductive and net production depression for parent fipronil (0.25 and 0.5 µg/L), desulfinylfipronil (0.25 and 0.5 µg/L), fipronil sulfide (0.15 µg/L) as compared to controls. Significant reductions (67 to 50%) in production rates per females were found at fipronil sediment concentrations at 65-300 ng/g. (***Chandler, T.G. et al. 2004. Population Consequences of Fipronil and Degradates to Copepods at Field Concentrations: An Integration of Life Cycle Testing with the Leslie Matrix Population Model. Environ. Sci. Technol. 38: 6407-6414)***