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

MEMORANDUM

Date: 3/13/09

SUBJECT: Transmittal of Data Evaluation Records (DERs) for Fipronil (129121)
Ecological Risk Assessment (Aquatic Issues). DP Barcodes 321165,
325983, 306156, 306157, 306173, 306174, 306176, 332742.

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THROUGH: Nancy Andrews, Branch Chief
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TO: Ann Sibold, PM Team Reviewer
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The Environmental Fate and Effects Division has reviewed and prepared DERs for two studies that evaluated effects of fipronil to aquatic organisms:

**(1) MRID 46619103. Fipronil - Life-Cycle Toxicity Test with Mysids
(*Americamysis bahia*) Under Static Conditions in a Water-Sediment System**

In a mysid life cycle study (MRID 46619103), fipronil concentrations in the water decreased over the study duration. Measured concentrations were below the level of detection (4 ng/L) on and after Day 14 (15 ng/L nominal group), Day 21 (30 ng/L nominal group), and 28 (60 ng/L nominal group). Therefore, measured concentrations are used to represent exposure levels in this study. Time-weighted average mean measured concentrations were calculated to estimate the concentration to which the mysids were exposed.

No statistically significant effects were observed in this study. However, there was a trend of decreasing population over time. The apparent population effect did not reach statistical significance when compared to the solvent control; however, these



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results appear to be biologically relevant because there was a dose-response trend and the total number of mysids was approximately 25% lower than controls at the highest mean measured concentration of 0.014 ug/L. Therefore, based on a reduction in the number of free-ranging mysids, the NOAEC appears to be between 0.004 and 0.014 ug/L.

This study is considered supplemental because it does not satisfy a data requirement.

(2) MRID 46733901. Chipco® TopChoice™ — Effects on Aquatic Fauna in Outdoor Simulate Ponds

Fipronil added to outdoor mesocosms was associated with reduced abundance in some aquatic invertebrates. Apparent recovery was observed in some species by Day 21 (mean fipronil concentration at Day 21 was 0.019 ug/L). However, marked reductions in abundance of some aquatic invertebrate species remained for the study duration. A significant ($p < 0.05$) reduction in mayfly abundance was observed for the entire study duration. The average fipronil concentration was lower than the detection limit at Day 28 and thereafter. The mean measured concentration for the study was 0.042 ug/L. Therefore, the LOAEC in this study was 0.042 ug/L, and a NOAEC was not established.

This study is considered supplemental because it does not satisfy a data requirement.

Neither of the aforementioned studies affect previous risk assessment conclusions for reasons discussed in D331595 (2007).

Other submissions:

The following submissions require no DER, but these summaries have been provided for completeness. They are considered supplemental information.

MRID 47245001. An assessment of fipronil effects on benthic invertebrates in freshwater ecosystems. Final Report.

In addition to MRID 46619103 and MRID 46733901 discussed above, a sediment recolonization study was also submitted (MRID 47245001). EFED previously commented on the potential utility of this study (D331595, 2007). EFED's original analysis remains unchanged and is summarized below. This study does not affect previous risk assessment conclusions.

The Agency's risk assessment did not identify high risk for sediment infaunal organisms *with little to no direct contact with overlying water*. However, given the very high toxicity of fipronil to aquatic invertebrates, the risk assessment still expressed concerns for epibenthic organisms with contact to overlying water concentrations of dissolved

fipronil. The available pond mesocosm study, discussed previously suggests supports this conclusion.

MRID 47245001 is limited in its utility because there is only a spiked sediment exposure. The overlying water in all systems investigated in this study did not also have an exposure to fipronil that would be expected under any realistic field conditions where the aquatic system would receive runoff and drift from nearby treatment areas. Additional issues include:

1. Lack of information on the effects of sediment manipulation before replacement to the aquatic system on the control or treatment sediments to support benthic life as compared to sediments in non-manipulated areas of the aquatic system
2. Lack of information on the impact of the very high level of un-impacted sediment areas surrounding the treated areas on the degree to which recolonization occurs. This is important because the study design does not readily duplicate expected conditions in aquatic systems receiving runoff and drift, where most if not all sediment areas may be contaminated with fipronil.
3. No information tracking the fate of individual organisms found to occur in treated areas. It is unknown if the measurements of recolonization represent organisms successfully maturing to emergence or if it reflects organisms simply moving into the treatment areas over time, only to succumb to fipronil exposure over the course of their occupation of the treated sediments.

For these reasons, EFED believes that the study may suggest recovery potential in areas where fipronil water exposure does not occur and where very small amounts of fipronil contaminated sediments occur. However, this is a situation that is not expected to commonly occur in natural systems receiving fipronil drift and runoff. Therefore, this study does not impact previous risk assessment conclusions.

This study is considered supplemental information.

Summary of EFED position on MRID46329901

This document is a non-Agency solicited non-guideline review of available macroinvertebrate survey information from state biological survey efforts. Presumably the purpose of this effort was to establish whether Agency requests for additional testing of mayflies (Ephemeroptera), caddisflies (Trichoptera) and stone flies (Plecoptera) was necessary presumably based on a determination if these emergent aquatic insects were actually observed in fireant quarantine states and in watersheds where residential/commercial fire ant control could be expected.

The conclusions of the document recommended the use of Level II Ecoregions as a descriptor for the occurrence of benthic macroinvertebrate groupings. Ten groupings were identified as prevalent within the ecoregions. These included Acari, Ephemeroptera, Plecoptera, Trichoptera, Diptera, Coleoptera, Odonata, Mollusca, other

Arthropoda, and Annelida. This list includes the emergent aquatic insect groups requested by the Agency for fipronil testing.

Summary of EFED Position on MRID46936105S

This document is a non-Agency solicited non-guideline registrant performed assessment of aquatic invertebrate risks of the fireant use of fipronil and resulting degradation products. Information contained therein regarding effects and fate inputs was considered in response to comments documentation in D331595 (2007).