

# Iron (Ferric) Phosphate (034903) Technical Document

**Date Issued:** October 1998

**Reason for Issuance:** Administrative Update and Amendment to Add Commercial Sites

## 1. Description of the Chemical

- **Generic Name(s) of the Active Ingredient(s):** Iron (ferric) orthophosphate, iron (ferric) phosphate ( $\text{FePO}_4 \cdot 2\text{H}_2\text{O}$ )
- **Trade and other name(s):** Neu 1165M Slug and Snail Bait
- **Chemical Code:** 034903
- **Year of Initial Registration:** 1997
- **Pesticide Type:** Biochemical molluscicide
- **U.S. Agent:**

Walter G. Talarek  
1008 Riva Ridge Drive  
Great Falls, VA 22066

- **Foreign Producers:**

W. Neudorff GmbH KG  
An der Muhle 3  
D-31860 Emmerthal, Germany

## 2. Use Profile

- **Registered Use:** Molluscicide
- **Target Pests:** A variety of slugs and snails including *Deroceras reticulatum*, *Deroceras laeve*, *Arion subfuscus*, *Arion circumscriptus*, *Arion hortensis*, *Arion rufus*, *Arion ater*, *Limax flavus*, *Limax tenellus*, *Ariolimax columbianus*, *Helix spp.*, *Helicella spp.* and *Cepaea spp.*
- **Use Sites:**

**Terrestrial non-food:** outdoor ornamental, lawn and garden use

**Terrestrial food crops:** vegetables, berries, fruit trees including citrus), field crops (artichokes, asparagus, beans, beets, broccoli, brussel sprouts, cabbage, carrots, cauliflower, corn, cucumbers, potatoes, soybeans, sugar cane, lettuce, onions, peas, peppers, potatoes, radishes, strawberries, tomatoes, turnips, wheat.

**Indoor:** greenhouses

### **3. Science Findings**

#### **A. Human Health Effects**

##### **Toxicology**

All toxicity data requirements have been satisfied for the purpose of the registration. The information submitted to support the acute toxicity requirements for iron phosphate indicate toxicity category IV for acute oral toxicity, category IV for acute dermal toxicity, category III for primary eye irritation, and category IV for primary dermal irritation. Acute inhalation, dermal sensitization, genotoxicity, immunotoxicity, developmental toxicity and subchronic (90 day) oral toxicity studies were waived because of iron phosphates' FDA GRAS (generally regarded as safe) status, the abundance of iron in nature, its low toxicity, its use as a nutritional supplement, and its low water-solubility, which would decrease its absorption across the intestinal epithelium. The Agency has no information to suggest that ferric phosphate has any effect on the immune and endocrine systems.

No unreasonable adverse effects to human health are expected from the use of iron phosphate.

##### **Potential for the Transfer of the Pesticide to Drinking Water**

Although the potential exists for a minimal amount of iron phosphate to enter ground water or other drinking water sources, phosphate has an extremely low solubility in water. Thus, the amount would, in all probability, be undetectable or more than several orders of magnitude lower than those levels considered necessary for safety. Both percolation through soil and municipal treatment of drinking water would reduce the possibility of exposure to iron phosphate through drinking water. Therefore, the potential of significant transfer to drinking water is minimal to nonexistent.

##### **Aggregate Exposure**

Dietary exposure of ferric phosphate via food or water exists due to its use as a nutritional supplement and its ubiquitous presence in nature. Residues from use of the biochemical pesticide, ferric phosphate, will not significantly add to the current dietary exposures.

Increased non-dietary exposure of ferric phosphate via non-commercial greenhouse, home lawn and garden or ornamental use will be minimal. Exposure by the inhalation route would be non-existent because ferric phosphate is not volatile and

the formulation of the product is a solid matrix of non-respirable size. In summary, the potential aggregate exposure, derived from non-dietary and non-occupational exposure should be minimal.

### **Cumulative Effects**

Because of its low toxicity, low rate of application, and use patterns, the Agency believes that there is no reason to expect any cumulative effects from ferric phosphate and other substances.

### **Acute and Chronic Dietary Risks for Sensitive Subpopulations, Particularly Infants and Children**

A battery of acute toxicity/pathogenicity studies is considered sufficient by the Agency to perform a risk assessment for biochemical pesticides.

In considering health risk from iron phosphate, it is important to keep the ubiquitous nature of this mineral in mind. Despite decades of widespread use of iron as a nutritional supplement, there have been no confirmed reports of immediate or delayed allergic reactions with significant oral exposure.

## **B. Ecological Effects**

### **Ecological Effects Hazard Assessment**

A number of ecological effects toxicology data requirements were waived based on the known lack of toxicity of iron phosphate to birds, fish and non-target insects, its low solubility in water, conversion to less soluble form in the environment (soil), and its use pattern (soil application). An acute oral toxicity study in Bobwhite quail (NOEL & LD50 greater than 2000 mg/kg) indicated that iron phosphate was practically nontoxic to avian species. Based on these factors, the data requirements for the toxicity studies in Mallard duck, rainbow trout, freshwater invertebrates, and nontarget insect/honeybees are waived. It is likely that there will be exposure to ground-feeding nontarget insects and earthworms. Submitted studies involving ground beetles, rove beetles and earthworms demonstrated that the product will not affect these organisms at up to two times the maximum application rate.

### **Environmental Fate and Ground Water Data**

Exposure assessments on this type of product (biochemical pesticide) are not performed unless human health or ecological effects issues arise in the toxicity

studies for either of these disciplines. Since no endpoints of concern were identified, there is no requirement for environmental fate data.

### **Ecological Exposure and Risk Characterization**

Exposure to daphnids and other aquatic invertebrates would not occur based on current label use directions. Exposure to honeybees is also not expected to occur, due to the composition and particle size of the end-use product and its use pattern (soil application). Nontarget insects, such as ground beetles and earthworms, could encounter the end-use product; however, in tests of rove beetles, ground beetles and earthworms, no effects were observed at up to twice the maximum application rate. Thus, the acute risk to aquatic invertebrates, nontarget insects, and earthworms is considered minimal to nonexistent.

## **4. Data Gaps**

There are no data gaps for this pesticide registration.

## **5. Regulatory Actions**

An unconditional registration was granted for NEU 1165M Slug and Snail Bait, containing the new pesticidal active ingredient, iron (ferric) phosphate August 14, 1997. An amendment to add commercial use sites to this registered product was approved on March 16, 1998.

## **6. Tolerance**

An exemption from the requirement of a tolerance is established for residues of the biochemical pesticide, ferric phosphate.

## **7. Additional Contact Information**

[Ombudsman, Biopesticides and Pollution Prevention Division](#) (7511P)  
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