lead arsenate EPA Pesticide Fact Sheet 12/86

EPA Pesticide Fact Sheet

Name of Chemical: Lead arsenate
Reason for Issuance: Special review
Date Issued: December 1986
Fact Sheet Number: 112

1. DESCRIPTION OF CHEMICAL

- Common Name: Lead Arsenate
- Chemical Name: Acid Orthoarsenate - PbHAsO4
  Basic Orthoarsenate - Pb4(PbOH) (AsO4)3
- Trade Name: Lead Arsenate, Gypsine, Security, Talbot
- EPA Shaughnessy Code: Standard (Acid) 013502
  Basic 013503
- Chemical Abstracts Service (CAS) Number: 7778-40-9
- Year of Initial Registration:
- Pesticide Type: Growth Regulator, Insecticide, Herbicide, Fungicide
- Chemical Family: Inorganic Arsenicals
- U.S. and Foreign Producers: Mechema Chemicals Ltd. (Great Britain),

2 USE PATTERNS AND FORMULATIONS

Lead arsenate is currently used as a growth regulator on U.S. grapefruit crop. 10,000 pounds of lead arsenate are annually to control cockroaches, silverfish and crickets. Unknown of any current use as a foliar insecticide or as a h

- Types and Methods of Application: Airblast sprayer, folia dust, bait box.
- Application Rates: Growth Regulator - 1.3 lbs arsenic/A;
  Insecticide - 1.7 lbs arsenic/A

http://magritte.psur.cornell.edu/profiles/insect-mite/fenitrothion-methylpara/lead-arsenate... 10/19/2007
- Types of Formulations: Dust, flowable liquid, wettable powder/dust, granular, impregnated

3. SCIENCE FINDINGS

Chemical Characteristics

- Lead arsenate is a pentavalent form of inorganic arsenic. It exists as white crystals with no discernible odor. Lead arsenate contains 22% arsenic and is very slightly soluble in cold water. The melting point of lead arsenate is 1042 degrees C, the density is 4.0 and the molecular weight is 347.12. Technical lead arsenate is a 95-98% lead arsenate. Under most conditions basic lead arsenate is more stable than acid lead arsenate.

Toxicological Characteristics

- Inorganic arsenical compounds have been classified as Class 2B carcinogens, demonstrating positive oncogenic effects based on human epidemiological evidence.
- Inorganic arsenicals have been assayed for mutagenic activity in a variety of test systems ranging from bacterial cells to peripheral lymphocytes from humans exposed to arsenic. The weight of evidence indicates that inorganic arsenical compounds are mutagenic.
- Evidence exists indicating that there is teratogenic and fetotoxic potential based on intravenous and intraperitoneal routes. However, evidence by the oral route is insufficient to confirm lead arsenate's teratogenic and fetotoxic effects.
- Inorganic arsenicals are known to be acutely toxic. The symptoms following oral exposure include severe gastrointestinal damage in vomiting and diarrhea, and general vascular collapse leading to shock, coma and death. Muscular cramps, facial edema, and vascular reactions are also known to occur following oral arsenic.

Environmental Characteristics

- The environmental fate of lead arsenate is not well documented. Studies to demonstrate its fate must take into account the...
inorganic arsenicals are natural constituents of the soil, forms of inorganic arsenic may change depending on environ conditions. Based on very limited data lead arsenate is no to leach significantly.

Ecological Characteristics

- Lead arsenate is moderately toxic to birds, slightly toxic moderately toxic to aquatic invertebrate species.
- Metabolism: The metabolism of inorganic arsenic compounds in animals is well known. The pentavalent form, such as 1 arsenate, is metabolized by reduction into the trivalent f followed by transformation into organic forms which are ex within several days via the urine. All animals exhibit th metabolism except rats, which retain arsenic in their bodi 90 days.
- Tolerance Assessment: Tolerances were established in 40 C for residues of lead arsenate.
- Reported Pesticide Incidents: The Agency's Pesticide Inci Monitoring System (PIMS) has many recorded incidents of ac poisonings from the use of lead arsenate baits. Nine of t incidents involved hospitalizations and 16 involved child from "roach hive" products.

4. SUMMARY OF REGULATORY POSITION AND RATIONALE

The Agency is proposing to cancel all existing nonwood r of lead arsenate, with the exception of the growth regulator grapefruit. Measures to mitigate the inhalation risks inclu masks, respirators, which would be expected to reduce inhala exposure by 80 and 90 percent, respectively, and restricting certified applicators were considered by the Agency during Review. The Agency has determined that these protective me not reduce risks to an acceptable level in light of the limi benefits. The Agency has further determined that the toxico risks from all nonwood uses of lead arsenate, except the gr use, outweigh the limited benefits. The growth regulator us grapefruit is being deferred pending further evaluation by E Assessment Forum of the carcinogenic potency of inorganic ar dermal and dietary exposures

- Benefits Analysis: The economic impact from cancellation
arsenate insecticide baits could range from $.84 to $6.7 million actual amount depending on whether the alternative chemical by homeowners or professionals. No economic impact is expected as a result of cancellation of the herbicide and foliar insecticide lead arsenate. Viable alternatives are available.

5. CONTACT PERSON

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For more information relative to pesticides and their use, please contact the PMEP staff at:

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Questions regarding the development of this web site should be directed to the PMEP Webmaster at:

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