

US EPA ARCHIVE DOCUMENT

100.0 Pesticidal Use

Diatomaceous earth is proposed as an insecticide to control various insects in lawns and gardens, on domestic pets and livestock, in feed, and on houseplants.

100.1 Application rates/methods/directions

1. Topical application to pets and livestock will be 1-3 ounces per animal.
2. For lawns and gardens, distribute 10 pounds/625 square feet by using a dust applicator. Reapply every 60 days.
3. Use 7 pounds per ton for grain in bins or silos. Use only one application per year.
4. Use 1-2 tablespoons around the base of houseplants. Repeat every 45-60 days as needed.
5. No rate is given for oral dosing of livestock for roundworms.

100.3 Precautionary labeling

No environmental precautions appear on the label.

100.4 Proposed EUP Program

100.4.1 Objectives

To determine efficacy on:

1. garden insects and other invertebrate pests,
2. roundworms in livestock,
3. ticks, lice, and mites on livestock and pets,
4. non-target invertebrates such as ladybugs, big-eyed bugs, etc.

100.4.2 Duration/date/amount shipped

A duration of one year is requested with no specific dates given. A total of 3000 pounds is requested on the EUP application form, but the experimental program calls for 3 tons. Approximately 5 acres of garden plots will be treated for garden insect control.

100.4.3 Application Procedures

See Section 100.1

100.4.4 Target Pests

1. garden insects and other invertebrate pests
2. roundworms in livestock
3. ticks, lice and mites on livestock and pets

100.4.5 Geographical Site Features

The proposed program states that Utah will be the primary testing site, but that roundworm control will be evaluated in Utah and Florida.

101.0 Chemical and Physical Properties

101.1 Chemical Name

None

101.2 Common Name

Diatomaceous earth

102.0 Behavior in the Environment

Inasmuch as diatomaceous earth is part of the environment, its fate in the environment is very difficult to classify. The primary component of diatomaceous earth is silica, the same inactive component as is in quartz, sand, agate, etc. As such it is essentially insoluble in water and will last indefinitely on land or in the hydrosol. It is unlikely that it would react chemically with any natural substance, and it would also be very resistant to mechanical degradation except over a long period of time.

103.0 Toxicological Properties

No data are available. The general action on insects is through piercing and abrading the cuticle with subsequent dehydration. In popular lore, it is said to be harmless to non-arthropods, but probably has a barrier effect on such invertebrates as snails and slugs in the same manner as sand, i.e., the abrading qualities are such that snails will not cross over a layer of sand.

It is probable that no adverse effects would occur to vertebrates except as might possibly occur through inhalation at the time of application. Although hard data are lacking, "organic gardeners" have long used diatomaceous earth with no apparent major problems.

104.0 Hazard Assessment

104.1 Discussion

Of the proposed applications, two are not at all applicable to ecological effects. One of these is oral dosing of livestock for roundworms, which would appear to be outside the jurisdiction of EPA, and the other is the houseplant use which is indoors. The stored grain use at 7 pounds/ton is equivalent to 0.35% diatomaceous earth in the grain. Topical doses on animals cannot be estimated from the data. The garden application at 10 pounds/625 square feet is equivalent to 697 pounds/acre which would result in soil surface residues of 7.3 grams/square foot.

104.1.1 Likelihood of Exposure to Non-target Organisms

A variety of non-target organisms would probably be exposed from the proposed use. However, it seems highly unlikely that vertebrates would be adversely affected. Non-arthropod invertebrates may be affected by barrier action of the diatomaceous earth, but would probably not be harmed. Some adverse effect may occur to non-target arthropods

104.1.2 Endangered Species Considerations

It is highly unlikely that endangered species would be affected by diatomaceous earth.

104.1.3 Data adequacy

No data were submitted

104.1.4 Additional data required

If this product is to be registered by the EPA as a pesticide, data requirements will be decided after consultation between the registrant and the Ecological Effects Branch. Waivers may be applicable for this product.

107.0 Conclusions

107.1 Environmental Fate and Toxicology

No Environmental Fate or Toxicology Branch files were examined for this submission.

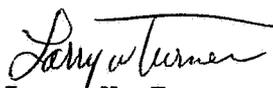
107.4.5 Data Adequacy/Requests

See Sections 104.1.3 and 104.1.4

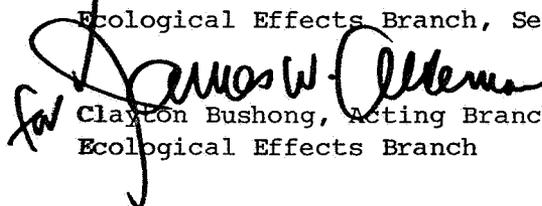
107.7 Recommendations

Even though no data were submitted, the Ecological Effects Branch expects no hazard to non-target organisms with the possible exception of minimal adverse effects on non-target arthropods.

The proposed oral dosing of livestock for roundworms appears to be within the jurisdiction of FDA, rather than EPA.


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