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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

December 12, 2002

SUBJECT: EH - 2001 Section 3 control of the Richardson Ground Squirrel
PC Code No:000905 Sulfonic acids
PC Code No:014901 Yellow mustard seed
DP Barcode D286494

FROM: James Wolf, Ph.D., Soil Scientist *James K. Wolf 12/12/02*
Henry Craven, Biologist *Henry Craven 12/12/02*
Environmental Risk Branch III
Environmental Fate and Effects Division 7507C

THRU: Stephanie Irene, Acting Branch Chief *Stephanie R. Irene*
Environmental Risk Branch III
Environmental Fate and Effects Division 7507C *12/16/02*

TO: Geri McCann, Biologist
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Registration Division 7505C

This memo brings to closure a series of informal and formal communications between scientists from OPP and Canada's Pest Management Regulatory Agency (PMRA) scientists concerning the registration of Exit Holdings L.L.C.'s product EH-2001.

Background

Exit Holdings L.L.C. is seeking product registration in both the USA and Canada. This product is a foam to be applied directly to the burrow of the Richardson and Wyoming Ground Squirrels. The assumption was made that any organism in the burrow at the time of treatment will suffocate. Therefore out of concern for non target animals, particularly endangered species inhabiting burrows, EFED requested Exit Holdings L.L.C. to provide information on the geographical range of the Richardson and Wyoming Ground Squirrels within the USA where control was being sought. The registrant was granted waiver requests for all ecotox and any outstanding environmental fate studies due to the information provided in the published literature.

Conclusions

The following items reflect EFED's conclusions.

1. Dr. Larry Turner of OPP/FEAD believes the habitats of U.S. listed endangered species of concern do not overlap the range or do not share the habitat of the two target species of ground squirrels. Therefore the endangered species labeling proposed by the registrant should be deleted. Note: Adding more target species to the label or listing of new threatened or endangered species may necessitate future consultation with the US Fish and Wildlife Service.
2. Applicators should be aware of signs indicating Burrowing owls are inhabiting a burrow that is targeted for treatment. The owl is protected under the Migratory Bird Treaty, therefore no treatment of the burrow in question should occur. EFED is recommending a label statement to address this concern.
3. Although EFED is uncertain as to the ecological impact of treating burrows over a vast area, EFED acknowledges that mortality will be limited to target and non target organisms within the burrows at the time of treatment. Restricted Use is not recommended at this time.
4. Another concern raised by EFED was the potential for and extent of ground water contamination. Some evidence exists indicating a short half life of alpha olefin sulfonate (AOS). Nevertheless, even if appropriate environmental chemistry data were available, EFED is not able at this time to provide a quantitative assessment. Certainly the wide spread use of the AOS as a fire suppressant in forests results in greater exposure to water resources than the proposed use. Furthermore, AOS is used in remediation programs for organic contaminants in soil and groundwater.

Ecological Precautionary Labeling

"This product will suffocate all organisms within the treated burrow. Do not apply where there is evidence that the burrow may be occupied by a burrowing owl. Do not contaminate water when disposing of equipment washwater or rinsate."

Environmental Risk Assessment

Environmental Fate

The following paragraph is cited from PMRA' report **EAD Product Monograph - EH-2001** of Dec 2002: *Note: EFED concurs with this draft. See conclusion pg 30 in Appendix IV.*

"AOS has been widely used for decades in personal care products, especially dishwashing liquids and shampoos. Such products enter

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domestic and commercial wastewater and are discharged to the environment. AOS is also a component of many fire-suppressant foams that are applied in large volume to forests, woodlands, and grasslands to combat wildfires. AOS is also widely used as a direct additive to soil and groundwater, in remediation programs for both sorbed and discrete-phase organic contaminants. Finally, AOS is widely used throughout the world in tertiary oil recovery. Water containing AOS is pumped underground to serve as a release agent and carrier for oil that cannot be recovered by other means. As a result of all these uses, AOS already enters the environment in large quantities. In contrast, the use of EH-2001 would result in release to the environment of relatively small quantities of AOS, underground, and in limited areas.

For the above reasons, no adverse effects on the environment can be expected from residues of MSP or AOS in rodent burrows; thus, data regarding abiotic transformation of MSP and AOS should not be required."

Ecotoxicity summary

The available ecotoxicity data on AOS are limited to mammalian and aquatic studies. The following information was abstracted from Environmental Health Criteria 169, Linear Alkylbenzene Sulfonates and Related Compounds 1996 published by the International Programme on Chemical Safety.

Test Organism	End point	Toxicity Classification
mouse	acute oral LD50 = 3,000 mg/kg	practically non toxic
Daphnia	LC50 range from 19 – 26 ppm for (C ₁₆ - C ₁₈)	moderately toxic
Fish	LC50 range from 0.3 – 6.8 ppm for (C ₁₂ - C ₁₈)	highly to moderately toxic
Algae	EC50 > 20 – 65 ppm	not classified

There are no relevant ecotoxicity data (even for mammals) for the use of EH- 2001 in burrows. As was previously stated this review, the mode of action is via suffocation. Therefore, any terrestrial organism within the burrow at the time of treatment will be killed. However, the advantage of this product over other rodenticides is that no organisms outside the burrow will be killed.

If you have further questions you may contact Henry Craven (703-305-5320)

Attachments: See Appendices

Appendix I Label Information

Ingredient Statement

ACTIVE INGREDIENT

Mustard seed powder [*Brassica hirta*]10.89%
 α -olefin sulfonate, sodium.....6.91%

OTHER INERT INGREDIENTS.....82.20%

TOTAL
100.00%

Target Species

This product may only be used for the control of Richardson's Ground Squirrels [*Spermophilus richardsonii*] and the Wyoming Ground Squirrel [*Spermophilus elegans*] in rangeland, ornamental plantings, orchards, golf courses, parks, nurseries and non-crop rights of way.

Range of the Ground Squirrel

The habitat of the Richardson's Ground Squirrel and the Whoming Ground Squirrel is [in the U.S.] from N. E. Idaho, Montana, North Dakota, Wyoming, N. E. South Dakota, N.W. Colorado, extreme west of Minnesota with isolated areas in S. W. Idaho and N. E. Nevada.

Use Instructions

Add concentrate to water in the ratio of 1 gallon of concentrate to 24 gallons water. Stir for one minute to make a uniform mixture.

APPLICATION

Apply mixture under pressure of 20 - 55 psi through a foam nozzle so that the foam fills the burrow system and the rodent is asphyxiated and dies of anomia. At approximately 20 psi, 1 quart of diluted field solution produces about 5 quarts of foam and takes about 15 seconds to apply.

Richardson Ground Squirrels:

- A. Locate open burrows
- B. Place mesh basket over burrow opening
- C. Apply EH-2001 through an aspirating nozzle [a 3 gallon/minute nozzle is preferred] until the burrow is full of foam. It is very important to ensure that the burrow is completely full of foam.
- D. Keep mesh basket in place for approximately 1 minute after foam application has stopped. If there is no movement in the burrow, remove the mesh basket, fill the burrow entrance with soil and tamp down the soil to firmly close the burrow entrance.

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- E. If after the application has stopped, a ground squirrel surfaces and bumps against the mesh basket, more foam may be required to completely fill the burrow up to the bottom of the mesh basket. Keep the basket in place until there is no further movement. Remove basket from the burrow entrance, fill with soil and tamp firmly to close the entrance.
- F. Continue this process until all open burrows have been treated and closed.
- G. Monitor plugged burrows, should any burrow be re-opened, retreat as above.

Appendix II

Comments from Initial USA and Canada Environmental Effects Screens

The EPA Environmental Effects Screen:

Adapted from Dr. William Erickson's email of June 12, 2001.

A couple of issues that need to be addressed:

The label must include text to protect endangered/nontarget species that may inhabit burrows. It is not enough to simply say "observe for nontarget species before applying". How does the applicator determine what's inhabiting the burrow? There could be a burrowing owl using the burrow which Canada has claimed as an endangered species. Applicators must be educated to identify occupied burrows and the fauna that may occupy them. California has information available about these issues that the registrant could and should utilize.

The label must also instruct the applicator how to differentiate between the target species (Richardson's ground squirrel or the Wyoming ground squirrel) and other non-target species that are similar (the Uinta ground squirrel). The label must specify how non-target species will be protected.

Comments on EPA EH 2001 Environmental Effects Screen

Linda Toy
Scientific Evaluation Officer
Environmental Assessment Division
Pest Management Regulatory Agency
June 28, 2001

The EAD agrees that the issues raised by William Erickson must be addressed during the review of these submissions. The potential risks to non-target organisms, particularly endangered species, are definitely a concern that we will be reviewing in more depth. To minimize the risks to non-target organisms, applicators must be trained in the following areas:

1. How to differentiate between the target species and similar non-target species
2. Which non-target species (including threatened and endangered species) could be at risk from the use of this product
3. How to determine what is inhabiting a burrow

Some of this information should be included on the product label; however, it would probably not be practical or effective to use the label as the sole means of educating applicators. One possible way to mitigate the risks would be to restrict the use of this product to licensed applicators who have taken a training course. The EAD suggests that a combination of label statements and a product stewardship program could be used to minimize the risks to non-target

organisms. At this time, the applicant should be made aware of our concerns and should be asked to provide further information as to how non-target organisms will be protected. It is suggested that the following paragraph be added to our deficiency letter:

The use of this product according to label instructions will pose potential risks to non-target organisms that inhabit or use burrows, including the burrowing owl which is an endangered species in Canada. If the product is registered, there will be a requirement for protective measures to minimize the risks to non-target organisms. These measures should include both label statements and a product stewardship program to educate applicators in recognizing signs of non-target species and in distinguishing between burrows occupied by the target species versus burrows that may be occupied by non-target species. The applicant should provide more detailed information as to how non-target organisms will be protected. The product label instructs applicators to inspect burrows for evidence of endangered species and not to apply the product where endangered species may be present. More detailed information as to how applicators will be able to determine what is inhabiting a burrow is required. This may include signs to look for that indicate the presence of a particular species. The label should also include a list of all non-target birds, mammals, reptiles, and amphibians that could be at risk from using this product, and should indicate which of these are vulnerable, threatened and endangered species.

The following deficiencies should also be pointed out:

The data provided concerning acute toxicity of AOS and AOS-containing foams to aquatic organisms, terrestrial plants, terrestrial invertebrates, and terrestrial vertebrates (sections 9.1 and 9.9 of Environmental Toxicology binder) should be supported by hard copies of the references.

The applicant has stated that "asphyxiation of the target pest occurs rapidly, and little if any of either active ingredient actually enters the pest's body" (section 9.6.1 of Environmental Toxicology binder). This statement should be supported by either a laboratory study or a reference to the scientific literature.