187006
RECORD NO.

075003
SHAUGHNESSY NO.

85
REVIEW NO.

EEB REVIEW

DATE: IN 12/19/86 OUT 04/17/87

FILE OR REG. NO 5217-2

PETITION OR EXP. NO.

DATE OF SUBMISSION 12/03/86

DATE RECEIVED BY HED 12/19/86

RD REQUESTED COMPLETION DATE 03/02/87

EEB ESTIMATED COMPLETION DATE 02/23/87

RD ACTION CODE/TYPE OF REVIEW 305

TYPE PRODUCT(S) : I, D, H, F, N, R, S Rodenticide

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. W. Miller (16)

PRODUCT NAME(S) 1080

COMPANY NAME ?

SUBMISSION PURPOSE Submission of Data in Response to RPAR Data Call-In (DCI) Notice

SHAUGHNESSY NO.	CHEMICAL, & FORMULATION	% A.I.

EEB REVIEW

100.0 Submission Purpose

The State of California, Department of Food and Agriculture has submitted 32 documents related to the hazard and/or efficacy of Compound 1080 to support their application for Federal registration of this chemical for field rodent control. The Federal application was submitted by California in response to the "Call-In" Notice issued by the Agency for all intrastate 1080 product.

101.0 Discussion

The Agency issued the above mentioned "Call-In" Notice for intrastate 1080 products so the regulatory position presented in the Special Review Position Document 4 could be implemented. Briefly, the regulatory position presented was that existing data suggest the use of 1080 to control field rodents presented the potential for effects in some nontarget wildlife populations. However, it was believed that these concerns could be reduced, possibly significantly, by the use of 1080 at reduced concentrations and application rates. Therefore, the Agency concluded in the document, that one of the first requirements of applicants in support of a Federal registration of this chemical will be the generation of efficacy data establishing the lowest effective bait concentration.

It does not appear that any of the 32 studies submitted by California address this question of lowest effective bait concentration for any of the target species listed on the draft label. In the absence of this information, further evaluation of potential impacts to nontarget wildlife species is of limited value since maximum use rates have not been defined, thus preventing estimates of potential exposure levels to nontarget species. Due to the limitations this imposes, we will limit this review to determining what data requirements appear to have been addressed, deferring assessment until the lowest effective bait concentration has been determined.

Of the 32 studies submitted, four appear to address some of the data required to support the Federal registration of 1080 for field rodent control in California. The other 28 studies in general either deal with other uses or have been previously reviewed and found insufficient to answer the Agency's questions related to the uses of 1080 in California. Table 1 briefly summarizes what data requirements are addressed and which are still outstanding.

TABLE 1

Wildlife and Aquatic Organism Data Requirements and Status

Data Requirement	Status	Study(ies) Submitted That Address Data Requirements
Field efficacy data to establish the lowest effective bait concentration. Every target rodent species must be tested.	Outstanding	
Avian Dietary LC_{50}	Submitted	Balcomb, R. et al. (1983) Acute and Sublethal Effects of 1080 on Starlings. Bull. Environ. Contam. Toxicol. 31. 692-698 Burns, R.J. et al. (1984) Toxicity of 1080-treated Diets to Magpies, Skunks, and Golden Eagles. U.S. Fish and Wildlife Service, Denver Wildlife Research Center. Unpublished Report 17 pp.
Mammalian Dietary LC_{50}	Submitted	Hornshaw, T.C. et al. (1983) Determination of LC_{50} for Compound 1080, o-cresol, Thiram and Aroclor 1254 in Mink and/or Ferrets. Department of Animal Science Michigan State Univ. 23 pp.

TABLE 1

Wildlife and Aquatic Organism Data Requirements and Status (cont'd)

Data Requirement	Status	Study(ies) Submitted That Address Data Requirements
Avian Reproduction	Outstanding. Note: One study submitted which addressed avian reproduction, however does not meet data requirement.	Balcomb, R. et al. (1983) Acute and Sublethal Effects of 1080 on Starlings. Bull Environ. Contam. 31. 692-698.
Avian and Mammalian Secondary Hazard	One study submitted ~~which~~ addressed secondary hazard to mammals. Adequacy of test dependent on results of tests on lowest effective bait concentration in addition to the adequacy of the study itself. Additional secondary studies may be required.	Marsh, R.E. et al. (1986) Secondary Hazards to Coyotes ~~or~~ from Ground Squirrels Poisoned with 1080 or Strychnine Unpublished Study.
Simulated and Field Testing, Mammals and Birds	Field tests may be required depending on results of efficacy data.	
Aquatic Organism Testing and Acute LC_{50} Freshwater Invertebrate	Outstanding	
Freshwater Fish LC_{50}	Outstanding. Studies submitted are inadequate to meet EPA's data requirements.	Rammal, C.C.; Fleming, P.A. (1978) Compound 1080 Properties and Use of Sodium monofluoroacetate in New Zealand. Animal Health

TABLE 1

Wildlife and Aquatic Organism Data Requirements and Status (cont'd)

Data Requirement	Status	Study(ies) Submitted That Address Data Requirements
Freshwater Fish LC_{50} (cont'd)		Div. Ministry of Agriculture and Fisheries. Wellington p. 24. Butcheler, C.L. (1978) Report to Minister of Forests and Minister of Agriculture and Fisheries on Compound 1080, its Properties, Effectiveness, Damage and Use. New Zealand Forest Service. Wellington p. 68. Bauermeister, A. et al. (1977) The Susceptibilty of Rainbow Trout to Fluoroacetate. Biochem. Soc. Trans 5:304-306.
Fish Early Life Stage and Aquatic Invertebrate Life Cycle	May be required depending on results of other tests.	
Aquatic Organism Accumulation	May be required depending on results of other tests.	
Simulated on Actual Field Testing Aquatic Organisms	May be required depending on results of other tests.	

102.0 Conclusions

The data submitted by California are insufficient to evaluate potential impacts to nontarget fish and wildlife from the use of 1080 to control field rodents in California. See section 101.0 of this review for data requirements.

Ed Fite 4/27/87

Ed Fite, Wildlife Biologist
Ecological Effects Branch
Hazard Evaluation Division (TS-769C)

Norman Cook 4.28.87

Norman Cook, Section Head
Ecological Effects Branch
Hazard Evaluation Division (TS-769C)

4/28/87

Michael W. Slimak, Chief
Ecological Effects Branch
Hazard Evaluation Division (TS-769C)

List of Studies Submitted by California

Study	Guideline Data Requirement No.
Balcomb, R.; Bowen II, C.A.; Williamson, H.O. (1983) Acute and Sublethal Effects of 1080 on Starlings. Bull. Environ. Contam. Toxicol. 31. 692-698.	71-2 and 71-4
Burns, R.J.; Connolly, G.; Meeker, D.; Tietjen, H.P. (1984) Toxicity of 1080-treated Diets to Magpies, Skunks, and Golden Eagles. Unpublished report prepared by the U.S. Fish and Wildlife Service. 17 pages.	71-2
Eastland, W.G.; Beasom, S.L. (1986) Potential Secondary Hazard of Compound 1080 to Three Mammalian Scavengers. Wildl. Soc. Bull. 14:233-233.	71-?
Hornshaw, T.C.; Ringer, R.K.; Aulerich, R.J.; Napolitano, A.C. (1983) Determination of LC_{50} for Compound 1080, o-cresol, Thiram, and Arcolor 1254 in Mink and/or Ferret. Unpublished report, Department of Animal Science, Michigan State Univ. 23 pages.	71-?
Littrell, E. (1982) Condors and Rodenticides. Unpublished paper presented at a conference on the Status and Survival of the California Condor. Santa Barbara. 6 pages.	71-?
Howard, W.E. (1958) Food Intake and Pellet Formation of a Horned Owl. Wilson Bull. 70(2):145-150.	71-?
Burns, R.J.; Connolly, G.; Meeker, D. (1984) Secondary Hazard of the 1080 Toxic Collar: Toxicity of Poisoned Coyotes to Skunks and Magpies. Pen studies, June-July 1984. Unpublished	71-?

List of Studies Submitted by California (cont'd)

Study	Guideline Data Requirement No.
report prepared by the U.S. Fish and Wildlife Service Denver Wildlife Research Center, 14 pages.	
Brock, E.M. (1965) Toxicological Feeding Trials to Evaluate the Hazard of Secondary Poisoning to Gopher Snakes, Pituophis catenifer. Copeia, No. 2, 2 pages.	71-?
Roest, A.I. (1970) Tolerance of a Turkey Vulture to 1080-poisoned Ground Squirrels. Unpublished report, Calif. State Polytechnic College, San Luis Obispo, Calif, 3 pages.	71-?
Matschke, G.H.; Savare, P.J. (1985) Potential of 1080 as a Prairie Dog Control Agent at Concentrations Less Than Currently Registered (0.125%), and Secondary Poisoning Effects on the Domestic Ferret. Unpublished report, U.S. Fish and Wildlife Service; Denver Wildlife Research Center, 54 pages.	71-?
Matschke, G.H.; Hegdal, P.L (1985) Efficacy of Two Lower Concentrations of 1080 Bait, 0.22% and 0.035%, Compared to the Standard 1080 Bait, 0.112%, for Controlling Black-tailed Prairie Dog Populations. Unpublished report U.S. Fish and Wildlife Service, Denver Wildlife Research Center, Final Report for Work Unit 902:29.	71-?
Marsh, R.E.; Schmidt, R.H.; Howard, W.E. (1986) Secondary Hazards to Coyotes of Ground Squirrels Poisoned with 1080 or Strychnine. Unpublished report.	71-?

List of Studies Submitted by California (cont'd)

Study	Guideline Data Requirement No.
Marsh, R.E. (1986) An Arerial Method of Dispensing Ground Squirrel Bait. Journ. Range Manage. 21(6):380-384.	71-5
Clark, W.R. (1967) Report on Aerial Application of Ground Squirrel Baits; Tulare County, Upper Mentz Ranch. Unpublished report, County of Tulare.	71-5
Spencer, D.A. (1945) Compound 1080 Sodium Fluoroacetate as a Control Agent for Field Rodents. Unpublished partial interim report. National Research Council Insect Control Committee Report No. 161, 24 pages.	71-5
Littrell, E. (1984) A Summary of the Effects of the Rodenticide Sodium Monofluoroacetate (1080) on Nontarget Wildlife as Observed by California Department of Fish and Game personnel, 1952-1978. Administrative Report 83-6. Calif. Department of Fish and Game, 1-18 pages.	71-5
Marsh, R.E. (1983) Rodenticide Selection and Bait Composition to Minimize Potential Primary Hazard to Nontarget Species when Baiting Field Rodents Proceed. First Eastern Wildlife Damage Control Conf. D.J. Decker, Ed., Cornell Univ. Ithaca, NY, pages 155-159.	71-5
Gashwiler, J.S. (1986) Deer Mouse Repopulation of a Poisoned Douglas Fir Clearcut. Journ. Forestry. Vol. 67, No. 7, 494-497.	71-5
Pank, L.F. (1976) Effects of Seed and Background Colors on Seed Acceptance by Birds. Journ. Wildlife Manage. 40(4):769-774.	71-5

List of Studies Submitted by California (cont'd)

Study	Guideline Data Requirement No.
Caithness, T.A., Williams, G.R. (1971) Protecting Birds from Poisoned Baits. New Zealand Journ. of Agriculture Department of Internal Affairs, Wildlife Pub. No. 129, 4 pages.	71-5
Kalmbach, E.R. (1943) Birds, Rodents and Colored Lethal Baits. Trans. Eighth N. Am. Wildlife Conf. 408-416.	71-5
Burns, R.J.; Connolly, G.; Meeker, D.; Tiefjen, H.T. (1984) Primary Hazard of the 1080 Toxic Collar to Skunks and Golden Eagles. Pen studies, August-November 1984. Unpublished report, U.S. Fish and Wildlife Service, Denver Wildlife Research Center. 22 page.	71-5
McIntosh, I.G.; Bell, J.; Poole, W.S.H.; Staples, E.L.J. (1966) The Toxicity of Sodium Monofluoroacetate (1080) to the North Island Weks (Gallirallus australis greyi). New Zealand Journal Science, Vol. G No. 1:125-28.	71-5
Kalmbach, E.R.; Welch, J.F. (1946) Colored Rodent Baits and Their Value in Safeguarding Birds. Journ. Wildl. Manage 10(4):353-360.	71-5
King, J.E.; Penfound, W.T. (1946) Effects of New Herbicides on Fish. Science 103:487.	72-1
Rammell, C.G.; Fleming, P.A. (1978) Compound 1080 - Properties and Use of Sodium Monofluoroacetate in New Zealand. Animal Health Division Ministry of Agriculture and Fisheries. Wellington, 24 pages.	72-1

List of Studies Submitted by California (cont'd)

Study	Guideline Data Requirement No.
Batcheler, C.L. (1978) Report to Minister of Forests and Minister of Agriculture and Fisheries on Compound 1080, its Properties, Effectiveness, Dangers, and Use. New Zealand Forest Service. Wellington, 68.	72-1
Bauermeister, A.; Thompson, C.J.; Nimmo, I.A. (1977) The Susceptibility of Rainbow Trout to Fluoroacetate. Biochem. Soc. Trans. 5:304-306.	72-1
Albert, S.W.; Record, C.R. (1981) Efficacy and Cost of Four Rodenticides for Controlling Columbian Ground Squirrels in Western Montana. Fifth Great Plains Wildlife Damage Control Workshop Proceeding. Pages 218-230, University of Nebraska, Lincoln.	Efficacy
Spencer, P.A. (1945) Compound 1080, Sodium Fluoroacetate, as a Control Agent for Field Rodents. Partial Interim Report National Research Council Insect Control Committee Report No. 161, 24 page.	Efficacy
Hegdal, P.L.; Fagerstone, K.A.; Gatz, T.A.; Glahn, J.F.; Matschke, G.H. (1986) Hazard to Wildlife Associated with 1080 Baiting for California Ground Squirrels. Widl. Soc. Bull. 14:11-21.	Efficacy
Eastland, W.G.; Beasom, S.L. (1986) Effects of Ambient Temperature on the 1080-LD_{50} of Raccoons. Wildl. Soc. Bull. 14:234-235.	Efficacy