United States
Environmental Protection
Agency

Office of Prevention, Pesticides
and Toxic Substances
(H-7508W)

EPA 738-R-93-011
September 1993

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EPA Reregistration Eligibility Decision Document

DAMINOZIDE

Printed on Recycled Paper

SM-X3

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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

CERTIFIED MAIL

Dear Registrant:

I am pleased to announce that the Environmental Protection Agency has completed its reregistration eligibility review and decisions on the pesticide active ingredient daminozide. The enclosed Reregistration Eligibility Decision (RED) document contains the Agency's evaluation of the data base of this chemical, its conclusions of the potential human health and environmental risks of the current product uses, and its decisions and conditions under which these uses and products will be eligible for reregistration. The RED includes the data and labeling requirements for products for reregistration.

To assist you with a proper response, read the enclosed document entitled "Pesticide Reregistration Handbook". This handbook also refers to other enclosed documents which include further instructions. You must follow all instructions and submit complete and timely responses. **The first set of required responses are due 90 days from the date of this letter. The second set of required responses are due 8 months from the date of this letter.** Complete and timely responses will avoid the Agency taking the enforcement action of suspension against your products.

If you have questions on the product specific data requirements or wish to meet with the Agency, please contact the Special Review and Reregistration Division representative Franklin Gee at (703) 308-8008. Address any questions on required generic data to the Special Review and Reregistration Division representative Andrew Ertman at (703) 308-8063.

Sincerely yours,

Daniel M. Barolo, Director
Special Review and
Reregistration Division

Enclosures

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United States Environmental Protection Agency
Office of Prevention, Pesticides And Toxic Substances (H-7508W)
EPA-738-F-93-007 September 1993

EPA R.E.D. FACTS

Daminozide

Pesticide Reregistration

All pesticides sold or distributed in the United States must be registered by EPA, based on scientific studies showing that they can be used without posing unreasonable risks to people or the environment. Because of advances in scientific knowledge, the law requires that pesticides which were first registered years ago be reregistered to ensure that they meet today's more stringent standards.

In evaluating pesticides for reregistration, EPA obtains and reviews a complete set of studies from pesticide producers, describing the human health and environmental effects of each pesticide. The Agency imposes any regulatory controls that are needed to effectively manage each pesticide's risks. EPA then reregisters pesticides that can be used without posing unreasonable risks to human health or the environment.

When a pesticide is eligible for reregistration, EPA announces this and explains why in a Reregistration Eligibility Decision (RED) document. This fact sheet summarizes the information in the RED document for daminozide, or butanedioic acid mono (2,2-diemthylhydrazide), also known by the trade name Alar.

Use Profile

Daminozide is a systemic growth regulator registered for use on ornamentals, including potted chrysanthemums and poinsettias, and bedding plants in enclosed structures such as greenhouses, shadehouses and interiorscapes. It is formulated as a soluble concentrate and applied as a pre-plant dip and/or foliar spray.

Regulatory History

Daminozide was initially registered as a pesticide in the United States in 1963 for use on potted chrysanthemums. The first food use, apples, was registered in 1968. EPA issued a Registration Standard for daminozide in June 1984 (NTIS PB87-104782), requiring additional product and residue chemistry, toxicology, worker exposure, ecological effects and environmental fate data.

In July 1984, EPA initiated a Special Review of pesticide products containing daminozide based on findings that daminozide and its degradate and metabolite, unsymmetrical dimethylhydrazine (UDMH), were oncogenic (caused the growth of tumors) at multiple organ sites, in multiple species and strains of test animals. The Agency issued a Data Call-In in 1986 requiring additional toxicology and worker exposure data. As a result of the Special Review, the registrant, Uniroyal Chemical Company, voluntarily cancelled all food use registrations of daminozide on November 14, 1989. EPA revoked the tolerances (maximum residue limits) for these food uses in March 1990.

EPA continued to evaluate the risks to workers (mixers, loaders and applicators) posed by the remaining non-food uses of daminozide, and found that those uses did not pose an unreasonable risk. The Agency allowed the non-food uses to continue in completing the Special Review of daminozide in October 1992.

Currently, four products (two end-use, one technical and one formulation intermediate) containing daminozide are registered in the U.S.

Human Health Assessment

Toxicity

Daminozide is of very low acute and subacute toxicity. It is placed in Toxicity Category IV, indicating the lowest level of acute toxicity, for oral and inhalation effects, and is placed in Toxicity Category III, indicating a slightly greater degree of acute toxicity, for dermal effects. A subchronic feeding study using rats did not produce any discernable toxic effects.

In carcinogenicity studies using mice, daminozide caused some increase in the incidence of malignant and benign tumors. UDMH caused a slight increase in liver tumors in rats, and produced liver vascular tumors and lung tumors in mice. EPA has classified UDMH as a Group B2, "probable human carcinogen." Since UDMH is dependent on the presence of the parent chemical, daminozide also has been classified as a Group B2 carcinogen.

Daminozide produced some maternal toxicity but no developmental toxicity in rats and rabbits. In a reproduction study using rats, daminozide caused systemic toxicity at the highest dose levels, but did not cause reproductive toxicity. Neither daminozide nor UDMH have been shown to cause mutagenic effects. In metabolism studies, daminozide was rapidly excreted by minipigs.

Dietary Exposure

There are no longer any registered food or feed uses of daminozide, and all tolerances have been revoked. Dietary exposure therefore is not anticipated.

Occupational and Residential Exposure

EPA performed a detailed analysis of the cancer risk to workers (mixers, loaders and applicators) from exposure to daminozide and UDMH. The total risk is a sum of the risk from direct exposure to daminozide (which is converted to UDMH when it is absorbed through the skin or lungs), plus the risk from exposure to the UDMH contaminant in commercial products (which increases in the mixing tank, prior to application).

EPA estimated risks from dermal and inhalation exposure to daminozide and UDMH for large greenhouse and small greenhouse uses, assuming application of fine spray (which would result in the greatest exposure). The estimated combined cancer risks range from 1.4 in 1 million (for workers in large greenhouses) to 5.8 in 10 million (for workers in small greenhouses). EPA considers these estimated risks to be reasonable.

In view of the known toxicological properties of daminozide and UDMH, however, as well as the likelihood of foliar residues, EPA is strengthening the current 24 hour Reentry Interval, which allows workers to reenter treated areas during the 24 hours after application if they wear protective clothing. The Agency instead is requiring a 24-hour Restricted Entry Interval, which prohibits reentry to perform hand labor for 24 hours following treatment except under very narrow circumstances, described in the Worker Protection Standard (WPS) for Agricultural Pesticides.

EPA also is requiring personal protective equipment (PPE) for early entry workers, consistent with that required for pesticides classified as Toxicity Category II for acute dermal toxicity. Post-application exposure to daminozide is mostly on the hands from handling treated plants. Therefore, for early entry as allowed by the WPS, level II PPE including chemical-resistant gloves must be used.

Human Risk Assessment

Daminozide does not pose human dietary risks since food-related uses are no longer registered and dietary exposure is not anticipated.

Greenhouse workers may be exposed to daminozide dermally or by inhalation, during or after application of the pesticide to plants. Risks from this exposure should be mitigated by observing the more stringent 24-hour Restricted Entry Interval and, in cases where reentry is necessary, by using the required personal protective equipment including chemical-resistant gloves. Daminozide is not expected to cause an unreasonable cancer risk to workers when used in accordance with these requirements, which will be reflected in product labeling as a result of this RED.

Environmental Assessment

Environmental Fate

Daminozide is stable to hydrolysis (it does not decompose readily by reaction with water); hydrolysis does not contribute significantly to the dissipation of daminozide in the environment. However, daminozide degrades rapidly in soil, leaving only volatile compounds and bound residues, including low levels of the degradate formaldehyde. Thus, its mobility probably is not a concern. Since registered products are labeled only for use in confined greenhouse areas, daminozide is not expected to occur in agricultural runoff or ground water.

Ecological Effects

Since daminozide may be applied only inside greenhouses, eco-toxicity data were used only to evaluate the hazard to non-target organisms that could result from misuse or spillage during transport, and to determine appropriate environmental hazard label statements. Daminozide is practically non-toxic to mammals, birds and freshwater fish, on an acute basis. It is slightly toxic to aquatic invertebrates.

Ecological Effects Risk Assessment

Environmental exposure is expected to be minimal when daminozide is used according to product label directions. Therefore, the ecological risk from use of daminozide also is expected to be very low.

Additional Data Required

The generic data base for daminozide is substantially complete. However, EPA is requiring additional information on a previously submitted aerobic soil metabolism study as confirmatory data. EPA also is requiring product-specific data, including product chemistry and acute toxicity studies, as well as revised Confidential Statements of Formula and revised labeling for reregistration of pesticide products containing daminozide.

Product Labeling Changes Required

All end-use daminozide products must comply with EPA's pesticide product labeling requirements. In addition:

- **Compliance with Worker Protection Standard (WPS)** - Any product whose labeling permits use in the production of an agricultural plant on any agricultural establishment (farm, forest, nursery or greenhouse) must comply with the labeling requirements of:

- PR Notice 93-7, "Labeling Revisions Required by the Worker Protection Standard (WPS)," and
- PR Notice 93-11, "Supplemental Guidance for PR Notice 93-7."

Unless specifically directed in the RED, all statements required by these two PR Notices must appear on product labeling exactly as instructed in the Notices. Labels must be revised by April 21, 1994, for products distributed or sold by the primary registrant or supplementally registered distributors, and by October 23, 1995, for products distributed or sold by anyone.

o **Exclusionary Statement** - All end-use product labels must carry the following statement on the front panel near the product name or Directions for Use:

"For use only in commercial or research greenhouses or shade houses."

o **Personal Protective Equipment (PPE) Requirements** - All end-use product labeling must carry the following PPE requirements:

"Applicators and other handlers must wear:

--Coveralls over short-sleeved shirt and short pants

--Chemical-resistant or waterproof gloves (*)

--Chemical-resistant footwear plus socks

--Chemical-resistant headgear for overhead exposure

--Chemical-resistant apron when cleaning equipment, mixing, or loading" (**)

* See Supplement Three of PR Notice 93-7.

** "Mixing" or "loading" may be removed if the product is formulated as "ready-to-use."

o **Entry Restrictions** - A 24-hour Restricted Entry Interval (REI) is required for all uses, for all end-use products. The Personal Protective Equipment (PPE) for early entry should be that which is required for applicators of daminozide, except no apron or respirator is required. These REI and PPE instructions should be inserted into the standardized statements required by PR Notice 93-7.

- **Single active ingredient products** - Adopt these entry restrictions and remove any conflicting ones from labeling.
- **Multiple active ingredient products** - Compare these entry restrictions with those on current labeling and retain the more protective restrictions.

Regulatory Conclusion

The use of currently registered pesticide products containing daminozide in accordance with labeling consistent with the RED and approved by the Agency will not pose unreasonable risks or adverse effects to humans or the environment. Therefore, all uses of these products are eligible for reregistration.

These daminozide products will be reregistered once the product-specific data, revised Confidential Statements of Formula and revised labeling are received and accepted by EPA.

For More Information

EPA is requesting public comments on the Reregistration Eligibility Decision (RED) document for daminozide during a 60-day time period, as announced in a Notice of Availability published in the Federal Register. To obtain a copy of the RED document or to submit written comments, please contact the Pesticide Docket, Public Response and Program Resources Branch, Field Operations Division (H-7506C), Office of Pesticide Programs (OPP), US EPA, Washington, DC 20460, telephone 703-305-5805.

Following the comment period, the daminozide RED document will be available from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, telephone 703-487-4650.

For more information about EPA's pesticide reregistration program, the daminozide RED, or reregistration of individual products containing daminozide, please contact the Special Review and Reregistration Division (H-7508W), OPP, US EPA, Washington, DC 20460, telephone 703-308-8000.

For information about the health effects of pesticides, or for assistance in recognizing and managing pesticide poisoning symptoms, please contact the National Pesticides Telecommunications Network (NPTN). Call toll-free 1-800-858-7378, between 8:00 am and 6:00 pm Central Time, Monday through Friday.

DAMINOZIDE REREGISTRATION ELIGIBILITY TEAM

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GLOSSARY OF TERMS AND ABBREVIATIONS

a.i.	Active Ingredient
CAS	Chemical Abstracts Service
CSF	Confidential Statement of Formula
EEC	Estimated Environmental Concentration. The estimated pesticide concentration in an environment, such as a terrestrial ecosystem.
EP	End-Use Product
EPA	U.S. Environmental Protection Agency
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FFDCA	Federal Food, Drug, and Cosmetic Act
HDT	Highest Dose Tested
LC_{50}	Median Lethal Concentration. A statistically derived concentration of a substance that can be expected to cause death in 50% of test animals. It is usually expressed as the weight of substance per weight or volume of water or feed, e.g., mg/l or ppm.
LD_{50}	Median Lethal Dose. A statistically derived single dose that can be expected to cause death in 50% of the test animals when administered by the route indicated (oral, dermal). It is expressed as a weight of substance per unit weight of animal, e.g., mg/kg.
LD_{lo}	Lethal Dose-low. Lowest Dose at which lethality occurs
LEL	Lowest Effect Level
MP	Manufacturing-Use Product
MPI	Maximum Permissible Intake
MRID	Master Record Identification (number). EPA's system of recording and tracking studies submitted.
N/A	Not Applicable

GLOSSARY OF TERMS AND ABBREVIATIONS (cont.)

NPDES	National Pollutant Discharge Elimination System
NOEL	No Observed Effect Level
OPP	Office of Pesticide Programs
PADI	Provisional Acceptable Daily Intake
PPE	Personal Protective Equipment
ppm	Parts Per Million
REI	Restricted Entry Interval
RfD	Reference Dose
RS	Registration Standard
TD	Toxic Dose. The dose at which a substance produces a toxic effect.
TC	Toxic Concentration. The dose at which a substance produces a toxic effect.
TMRC	Theoretical Maximum Residue Contribution.
TEP	Typical End-Use Product
TGAI	Technical Grade of the Active Ingredient

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EXECUTIVE SUMMARY

This Reregistration Eligibility Decision document (RED) will address the eligibility for reregistration of products containing daminozide.

Daminozide is the common name for butanedioic acid mono (2,2-dimethylhydrazide). The sole registrant, Uniroyal Chemical Company (Uniroyal), produces four products, B-Nine, B-Nine SP, Alar-85, and Alar Technical, which contain daminozide as the active ingredient. There is one Special Local Need currently registered. Daminozide is a systemic growth regulator registered for use on ornamental and bedding plants in enclosed commercial structures such as greenhouses, shadehouses, and interiorscapes.

Daminozide is formulated as a soluble concentrate. The registered products are applied by either foliar spray, pre-plant dip, or a combination thereof.

Daminozide was initially registered in 1963 by the Uniroyal Chemical Company, Inc., for use on potted chrysanthemums. The first food use of daminozide (apples) was registered in 1968. A Registration Standard was issued in June, 1984 (NTIS PB87-104782). This Registration Standard summarized the available data supporting the reregistration of products containing daminozide. The Registration Standard also required additional product chemistry, residue chemistry, toxicology, worker exposure, ecological effects, and environmental fate data.

On July 18, 1984, the Agency issued a Notice of Initiation of a Special Review of pesticide products containing daminozide (49 FR 29186). This action was based on the Agency finding that pesticide products containing daminozide met the risk criterion relating to oncogenicity formerly at 40 CFR 162.11(a)(3)(ii)(A) and now found at 40 CFR 154.7(a)(2)(i). Specifically, available data indicated that administration of daminozide and its degradate and metabolite, unsymmetrical dimethylhydrazine (UDMH), to laboratory animals resulted in statistically and biologically significant oncogenic responses at multiple organ sites in multiple species and strains of animals. The Agency has classified both daminozide and UDMH as B2 probable human carcinogens. On November 14, 1989, during the Special Review process, Uniroyal Chemical Company voluntarily canceled all the food use registrations of daminozide (54 FR 47492). Following an evaluation of the risk to workers (mixer/loaders and/or applicators) exposed to daminozide, the Agency concluded that the non-food uses of daminozide did not pose an unreasonable risk to workers. The Special Review of daminozide was concluded October 8, 1992 (54 FR 46436).

The Agency has determined that the uses of daminozide as currently registered will not cause unreasonable risk to humans or the environment and these uses are eligible for reregistration.

Before reregistering the products containing daminozide, the Agency is requiring that product specific data, revised Confidential Statements of Formula (CSF) and revised labeling be submitted within eight months of the issuance of this document. These data include product chemistry for each registration and acute toxicity testing. After reviewing these data and any revised labels and finding them acceptable, the Agency will reregister a product if it meets the

requirements in Section 3(c)(5) of FIFRA. Those products which contain other active ingredients will be eligible for reregistration only when the other active ingredients are determined to be eligible for reregistration.

I. INTRODUCTION

In 1988, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) was amended to accelerate the reregistration of products with active ingredients registered prior to November 1, 1984. The amended Act provides a schedule for the reregistration process to be completed in nine years. There are five phases to the reregistration process. The first four phases of the process focus on identification of data requirements to support the reregistration of an active ingredient and the generation and submission of data to fulfill the requirements. The fifth phase is a review by the U.S. Environmental Protection Agency (referred to as "the Agency") of all data submitted to support reregistration.

FIFRA Section 4(g)(2)(A) states that in Phase 5 "the Administrator shall determine whether pesticides containing such active ingredient are eligible for registration" before calling in data on products and either reregistering products or taking "other appropriate regulatory action." Thus, reregistration involves a thorough review of the scientific data base underlying a pesticide's registration. The purpose of the Agency's review is to reassess the potential hazards arising from the currently registered uses of the pesticide; to determine the need for additional data on health and environmental effects; and to determine whether the pesticide meets the "no unreasonable adverse effects" criterion of FIFRA section 3(c)(5).

This document presents the Agency's decision regarding the reregistration eligibility of the registered uses of daminozide. The document consists of six sections. Section I is the introduction. Section II describes daminozide, its uses, data requirements and regulatory history. Section III discusses the human health and environmental assessment based on the data available to the Agency. Section IV presents the reregistration decision for daminozide. Section V discusses the reregistration requirements for daminozide. Finally, Section VI is the Appendices which support this Reregistration Eligibility Decision. Additional details concerning the Agency's review of applicable data are available on request.[1]

[1] EPA's reviews of data on the set of registered uses considered for EPA's analysis may be obtained from the OPP Public Docket, Field Operations Division (H7506C), Office of Pesticide Programs, EPA, Washington, DC 20460.

II. CASE OVERVIEW

A. CHEMICAL OVERVIEW

The following active ingredient is covered by this Reregistration Eligibility Decision:

- **Common Name:** Daminozide
- **Chemical Name:** Butanedioic acid mono (2,2-dimethylhydrazide)
- **CAS Registry Number:** 1596-84-5
- **OPP Chemical Code:** 035101
- **OPP Case Number:** 0032
- **Empirical Formula:** $C_6H_{12}N_2O_3$
- **Trade and Other Names:** Alar 85, B-Nine, B-Nine SP, Alar Technical
- **Basic Manufacturer:** Uniroyal Chemical Company, Inc.

B. USE PROFILE

The following is information on the current registered uses of daminozide with an overview of use sites and application methods. A detailed table of these uses can be found in Appendix A.

Type of Pesticide:

Plant growth regulator

Use Sites:

- Greenhouse Non-Food (enclosed commercial structures; greenhouses, shadehouses, interiorscapes); ornamental woody shrubs and vines; ornamental herbaceous flowering/foliage plants.

Target Pests:

- Not Applicable

Formulation Types Registered:

- Soluble concentrate/solid; 85%

Method and Rates of Application:

- <u>Soluble Concentrate/Solid</u>
  Apply as cutting, foliar, post-plant, or potted spray with standard spray equipment at 0.01 to 0.0625 lb AI/gal of spray;
  Apply as a pre-plant dip at 0.0085 lb AI/gal of solution.

Use Practices Limitations:

- Do not apply this product through any type of irrigation system;
- Do not contaminate water, food, or feed;
- Do not reenter treated areas until 24 hours after application, unless wearing protective clothing;
- Do not handle treated plants until sprays have dried;
- For use only in enclosed commercial structures such as greenhouses, shadehouses, and interiorscapes;
- Stock solutions should not be held for more than 24 hours;
- Do not syringe treated plant for 18-24 hours after spraying.

C. ESTIMATED USAGE OF PESTICIDE

This section summarizes the best estimates available for the pesticide uses of daminozide. These estimates are derived from a variety of published and proprietary sources available to the Agency. The data, reported on an aggregate and site (crop) basis, reflect annual fluctuations in use patterns as well as the variability in using data from various information sources.

The table below summarizes the pesticides use by site.

Domestic Usage of Daminozide			
Site	Total Area x 1,000 (square feet)	Total Area Treated x 1,000 (square feet)	% Treated
Potted Mums	23,753.0	21,377.7	90%
Poinsettias	73,500.0	18,375 - 36750	25% - 50%
Bedding Plants	261,063.0	104,425.2 - 130,531.5	40% - 50%

D. DATA REQUIREMENTS

Data requested in the 1984 Registration Standard for daminozide included studies on product chemistry, residue chemistry, toxicology, ecological effects, environmental fate, and worker exposure. These data were required to support the uses listed in the Registration Standard. A Data Call-In issued in 1986 required that additional toxicology

and worker exposure data be submitted. Appendix B includes all data requirements identified by the Agency for currently registered uses needed to support reregistration.

E. REGULATORY HISTORY

Daminozide was first registered in the United States in 1963 for use on potted chrysanthemums. The first food use of daminozide (apples) was registered in 1968. A Registration Standard for daminozide was issued in June, 1984 (NTIS #PB87-112025) which evaluated the studies submitted to that date. A subsequent Data Call-In issued in 1986 called in additional toxicology and worker exposure data. This Reregistration Eligibility Decision reflects a reassessment of all data which were submitted in response to the Registration Standard and Data Call-In.

On July 18, 1984, the Agency issued a Notice of Initiation of a Special Review of pesticide products containing daminozide (49 FR 29186). This action was based on the Agency finding that pesticide products containing daminozide met the risk criterion relating to oncogenicity formerly at 40 CFR 162.11(a)(3)(ii)(A) and now found at 40 CFR 154. On November 14, 1989, during the Special Review process, Uniroyal Chemical Company voluntarily canceled all the food use registrations of daminozide (54 FR 47492). Following an evaluation of the risk to workers (mixer/loaders and/or applicators) exposed to daminozide, the Agency concluded that the non-food uses of daminozide did not pose an unreasonable risk to workers. The Special Review of daminozide was concluded October 8, 1992 (54 FR 46436).

There are currently two end-use products containing daminozide registered in the United States. There is one registered technical product and one registered formulation intermediate. Daminozide is currently registered for use on non-food crops in enclosed commercial structures (greenhouses, shadehouses, and interiorscapes).

III. SCIENCE ASSESSMENT

The Agency has conducted a thorough review of the scientific data base for daminozide for the purposes of determining the reregistration eligibility of this pesticide.

A. Physical Chemistry Assessment

The physical and chemical properties of daminozide are as follows:

- **TGAI**

Color	White
Physical State	Solid
Odor	Slight to no odor
Melting Point	154 to 156°C
Density	1.34 grams/cm^3

Solubility	Soluble in water; 14.7 g/100 ml of solvent at 25° C Soluble in methyl alcohol up to 5 grams Soluble in acetone up to 2.2 grams Soluble in acetonitrile at 0.2 grams Insoluble in xylene Insoluble in aliphatic hydrocarbons Practically insoluble in hexane; 86 ppb
Vapor Pressure	1.7×10^{-4} torr at 23 $\pm$ 2°C
Dissociation Constant	pK_1 = 4.19 (amine) pK_2 = 5.59 (carboxylic acid group)
Octanol/Water Partition Coefficient	Will partition almost completely into aqueous solution
pH	3.8
Stability	Stable after one year at room temperature (25°C) Stable after 5 months at 50°C

- **Analytical Method for Daminozide**

The basis of the analysis of daminozide is the titration of N-dimethylaminosuccinamic acid with sodium hydroxide, using Cresol Red as the indicator. A second procedure consists of reacting daminozide in a closed flask with an excess of bromate/bromide in acid for 30 minutes. After addition of potassium iodide the liberated iodine is titrated with standard thiosulfate solution to determine the concentration of daminozide by back titration.

- **Conclusions**

There is adequate physical chemistry information on the technical grade of the active ingredient (TGAI) of daminozide to support its reregistration.

B. Human Health Assessment

1. Toxicology Assessment

Daminozide metabolizes or degrades to unsymmetrical dimethylhydrazine (UDMH). The Agency, therefore, has investigated the hazards of both UDMH and daminozide.

The toxicological data base for daminozide/UDMH is adequate to support its reregistration.

a. **Acute Toxicity**

TABLE I: Acute Toxicity Data for Daminozide (TGAI)

TEST	RESULT	CATEGORY
Oral LD_{50} rat (MRID 00009712)	>5.0 g/kg	IV
Inhalation LC_{50} rat (MRID 00009712)	>20.0 mg/L/hour	IV
Dermal LD_{50} rabbits (MRID 00009737)	>16 g/kg	III

b. **Subchronic Toxicity**

Subchronic feeding of daminozide to rats for 13 weeks did not produce any discernable toxic signs or effects at the highest dose of greater than 2,160 mg/kg/day (MRID 00009727).

c. **Chronic Toxicity**

Daminozide has been tested in several chronic feeding studies using rats, mice, and dogs. One rat study (MRID 00009413) fed daminozide up to levels of 3,000 ppm (~150 mg/kg/day) in the diet with no effects reported in the test animals. A second rat study (NCI Carcinogenesis Technical Report Series No. 83, 1978) using dose levels as high as 10,000 ppm (~500 mg/kg/day) in the diet also reported a lack of toxicity in the two-year study. A third rat study (MRID 40813101) also tested daminozide in the diet at 10,000 ppm (~500 mg/kg/day) for two years and found no toxicity in the test animals.

Beagle dogs were fed diets containing up to 7,500 ppm (~187 mg/kg/day) of daminozide for one year and showed no toxic effects (MRID 40928101). Further testing with canines was not required. A two-year feeding study with up to 10,000 ppm (~1,430 mg/kg/day) of daminozide in the diet was performed with mice (MRID 40813102, 40093501) and though some incomplete reporting was noted, data indicated that the red blood cell counts, hemoglobin levels, and hematocrits were reduced in males at the highest dose. A NOEL for these effects was 6,000 ppm (~860 mg/kg/day) in the interim report. The effects on the hematological parameters were not reported in the two-year sacrifice. An earlier study (NCI Carcinogenesis Technical Report Series No. 83, 1978) in mice with up to 10,000 ppm (~1430 mg/kg/day) of daminozide in the diet demonstrated decreased body weights and lowered survival in females. The NOEL for those effects was 5,000 ppm (~720 mg/kg/day).

d. Carcinogenicity

Daminozide Carcinogenicity. Daminozide has been tested in rats at doses as high as 3,000 ppm (~150 mg/kg/day) in the diet with no tumorigenic response noted (MRID 00009413). A second study of two years' duration at doses of 5,000 (~250 mg/kg/day) or 10,000 ppm (~500 mg/kg/day) of daminozide in the diet showed an increase of adenocarcinomas of the endometrium and leiomyosarcomas of the uterus of female rats at the 5,000 ppm (~250 mg/kg/day) dose level (NCI Carcinogenesis Technical Report Series No. 83, 1978). These two tumor responses were not thought to be chemically related as the effects were not statistically significant. A third feeding study tested Fischer 344 rats at doses up to 10,000 ppm (~500 mg/kg/day) of daminozide in the diet with only sporadically observed tumors which were not considered to be chemically-related effects (MRID 40813101). Mice have been tested in several two-year feeding studies. One study indicated hepatocellular carcinomas in B6C3F1 male mice at the highest dose level of 10,000 ppm (~1,430 mg/kg/day) but not at 5,000 ppm (NCI Carcinogenesis Technical Report Series No. 83, 1978). A second study also tested CD-1 mice at up to 10,000 ppm (~1,430 mg/kg/day) levels in the diet with a statistically significant dose-related increased trend in liver hemangiosarcomas and combined hemangiosarcomas/hemangiomas but without pair-wise comparisons being statistically significant. The incidence of combined carcinomas and adenomas was significantly increased in the 6,000 ppm (~857 mg/kg/day) dose group compared to the controls (MRID 40813102).

UDMH Carcinogenicity. UDMH was given to Fischer 344 rats in buffered drinking water at 1, 50, or 100 ppm (~0.06, 6.3, or 9.3 mg/kg/day for males) dose levels for two years (MRID 41253303). Only a slight weight reduction was seen at the 100 ppm (~9.3-11.8 mg/kg/day) dose in both sexes. Male test animals showed no clinical signs but did have focal inflammation of the liver at doses of 50 and 100 ppm (6.3 and 9.3 mg/kg/day) when examined histologically. A slight increase in liver tumors was noted. A maximally tolerated dose (MTD) was not reached in the study.

Mice were tested in two different studies (in the same laboratory) for a period of two years. The starting times of the two studies were similar enough to allow the data to be evaluated together as a single study. The first study tested dose levels of 0, 1, 5, or 10 ppm (~0, 0.18, 0.97, or 1.9 mg/kg/day) of UDMH (low dose study) in the males with the female mice receiving 0, 1, 5, or 20 ppm (~0, 0.27, 1.4, or 2.7 mg/kg/day) of UDMH in the drinking water (MRID 41253302). The second study provided dose levels of 0, 40, or 80 ppm (~7.3 or 13mg/kg/day) in males and ~11.6 and 21.7 mg/kg/day in females

through their drinking water (high dose study) (MRID 41378001).

In the second year of the low dose study, lung tumors were statistically increased as well as a slight but non-statistically significant increase in liver vascular tumors in female mice at 20 ppm (2.7 mg/kg/day). The MTD was not exceeded for the study.

Both sexes at both dose levels of the high dose study showed increased vascular tumors of the liver and also lung tumors. However, though the dose levels were high and caused some significant liver toxicity to some of the test animals, tumors were early appearing and were not thought to have been influenced by any excessive dosing over the MTD.

e. Developmental Toxicity

Daminozide has been tested in both rats and rabbits for its potential to produce developmental toxicity. Rats (MRID 00053764) were administered the test material by gavage at doses of 85, 390, or 1,800 mg/kg/day during the period of organogenesis with the result that maternal toxicity (lowest effect level or LEL) was only seen at 1,800 mg/kg/day with a NOEL of 390 mg/kg/day and developmental toxicity was not produced at the highest dose tested (1,800 mg/kg/day) indicating a NOEL of 1,800 mg/kg/day for the study. Rabbits (MRID 00150511) were dosed with daminozide by gavage at levels of 50, 150, or 300 mg/kg/day and produced some maternal toxicity expressed as slight reductions in weight gains and changes in consistency of feces. Developmental toxicity was not demonstrated. The NOEL was 150 mg/kg/day for the maternal toxicity while the NOEL for developmental toxicity was 300 mg/kg/day.

f. Reproductive Toxicity

Rats were tested in a two-generation reproduction study with dietary levels of 100, 1,000, or 10,000 ppm (~5, 50, or 500 mg/kg/day) of daminozide (MRID 40233901). The NOEL was determined to be 1,000 ppm (~50 mg/kg/day) based on reduced body weights (which is systemic toxicity) in F1 females at 10,000 ppm (~500 mg/kg/day). There was otherwise no reproductive toxicity in the study and the NOEL for reproductive toxicity was 10,000 ppm (~500 mg/kg/day).

g. Mutagenicity

Daminozide Mutagenicity. Mice have been dosed with up to 25,000 ppm (~3,570 mg/kg/day) of daminozide for 5 days and produced only diarrhea at the highest dose tested. The NOEL for toxicity to the animals was 10,000 ppm (1,430 mg/kg/day). A mutagenic effect was not demonstrated at either dose level in this dominant lethal study (MRID

00009683)ble a

Daminozide technical was tested for its ability to cause DNA damage and repair stimulation in E. coli strains WP-2, WP-67, and CM-871 both with and without S-9 activation. No significant alterations in DNA repair processes were found at up to 10,000 μg/mL of daminozide (MRID 00143054).

A second study using Saccharomyces cerevisiae D-6 strain with and without S-9 activation did not indicate positive mutagenicity from daminozide exposure (MRID 00143055). Technical daminozide in dimethyl sulfoxide (DMSO) did not cause a mutagenic response in Salmonella and Saccharomyces at up to 500 μg/plate (MRID 00009681).

The mouse lymphoma test using L5178Y cells when exposed to up to 3,000 μg/mL to the thymidine kinase gene locus with and without activation did not show a significant mutagenic effect (MRID 00143053).

UDMH Mutagenicity. UDMH, the metabolite of daminozide, has been tested for its mutagenic activity in the Ames Salmonella organism test (MRID 40319901) both with and without S-9 activation at doses from 25 to 5,000 μg/plate with negative results. Chinese hamster ovary cells (CHO) (MRID 40319901) were treated with and without activation by rat liver microsomes and produced equivocal results with respect to the hypoxanthine guanine phosphoribosyltransferase (HGPRT) gene locus. The study was repeated; subsequent results were negative.

Chromosomal aberrations (MRID 40319901) were not produced from CHO cells being treated with up to 500 μg/mL of UDMH.

DNA repair (MRID 40319901) tests were negative at up to 250 μg/mL with cytotoxicity appearing at that dose level. Additional testing with the metabolite chemical, UDMH, is not warranted because the chemical is already a proven carcinogen in live animal studies.

h. Metabolism

Daminozide has been studied in minipigs chosen because of the similar stomach conditions to the human. They were given oral doses of radio-labelled test material at 5 mg/kg body weight. It was found to be rapidly excreted with approximately 60 percent excreted by 48 hours. The metabolite (UDMH) was found in urine at up to 2.8 ppm; lesser amounts were found in the feces. Radio-labelled 1,1-dimethylnitrosamine at levels of 0.69 ppm levels were also found in the urine of the test animals (MRID 40282901).

A second study was performed with a dermal application of radio-labelled daminozide covering dermal surfaces with concentrations of 0.5, 0.05, or 0.005 mg/cm^2 for periods up to 24 hours. As much as 1.8 percent of the dose was absorbed and excreted by the test animals in 24 hours (MRID 40214501).

i. Carcinogenicity Classification

Daminozide Carcinogenicity. The Office's Cancer Peer Review Committee has classified daminozide as a Group B_2 probable human carcinogen. The data from the mouse study were used to derive a Q_1^* for the quantification of human risk. The data show that in the male mice, there was a significant linear trend for combined lung carcinomas and adenomas, and that the incidence of combined carcinomas and adenomas was significantly increased in the 6,000 ppm (~857 mg/kg/day) dose group compared to the controls (MRID 40813102). Based on this data set, a Q_1^* of 0.0087 (mg/kg/day)$^{-1}$ was calculated using the linearized multistage model.

UDMH Carcinogenicity. Upon review of the chronic feeding/carcinogenicity, metabolism, and mutagenicity studies, the Office's Cancer Peer Review Committee classified UDMH as a Group B_2 probable human carcinogen. The Committee determined that because the contaminant, metabolic, and/or break-down product, UDMH, was dependent upon the presence of the parent chemical (i.e., daminozide), then the parent chemical should also be classified as a B_2 carcinogen. A Q_1^* was determined for UDMH as 0.46 (mg/kg/day)$^{-1}$ based on the incidence of hemangiosarcomas in the male mice.

j. Reference Dose

A reference dose (RfD) for systemic toxicity was determined for daminozide as 2.0 mg/kg/day based upon a NOEL of 187.5 mg/kg/day from a long term feeding toxicity study in dogs (MRID 40928101). An uncertainty factor of 100 was used to account for the interspecies extrapolation and intraspecies variability.

2. Exposure Assessment

Greenhouse workers are exposed to both daminozide and its metabolite UDMH. The exposure data base for daminozide/UDMH will support reregistration eligibility.

a. Dietary Exposure

There are no registered food uses for daminozide.

b. Occupational and Residential

Mixers/Loaders/Applicators: Exposure to Daminozide and UDMH

Exposure to daminozide/UDMH comes from two pathways: (1) The direct exposure to daminozide and the conversion of daminozide to UDMH when it is ingested or absorbed through the skin or lungs (i.e., in vivo conversion); and (2) The presence of UDMH as a contaminant in the commercial product and conversion of daminozide to UDMH when it is left standing in the mixing tank. The total cancer risk from UDMH is estimated by adding the individual risks from each pathway of exposure to UDMH.

Direct Exposure to Daminozide. The worker exposure estimates are derived from the study "B-Nine SP on Ornamentals -- Greenhouse Mixer/Loader/Applicator Exposure Study," which was submitted by Uniroyal (MRID 41876001, 41876002). Also used in the exposure estimates were typical use pattern data available to the Agency.

Typical use patterns were based on information from a survey of greenhouse managers. The survey indicated that, on average, a worker uses approximately 24 pounds of daminozide yearly in a large greenhouse and about 10 pounds yearly in a small greenhouse. The amount of daminozide used per application depends on solution concentrations, which range from 0.0375 percent to 0.5 percent.

The Uniroyal study provided data correlating a worker's exposure to the amount of daminozide used. The study was designed to measure potential exposure to workers from the preparation and application of a 0.5 percent solution of daminozide to chrysanthemums in a greenhouse. Because workers may function in the capacity of mixer/loader/applicator (M/L/A), the sum of the mixer/loader and applicator exposures would represent the maximum potential exposure for an individual worker.

Workers were exposed to coarse and fine sprays of 0.5 percent solutions of daminozide during greenhouse operations. Exposure was considered to be highest for the workers using fine sprays. Field trial and field spiked samples were analyzed by the method of Conditt et.al. (Conditt, M. K.; Baumgardner, J. R.; Hellman, L. M. (1988)). Workers wore respirators, one-piece union suits (whole body dosimeter) over cotton briefs and under long-sleeved shirts and long pants, socks, rubber or leather boots, and rubber gloves. The average exposures (without adjusting for typical use patterns) as a function of the amount of daminozide are provided in Table 2. The units "mg/kg used" mean milligrams of test material per kilogram of material handled:

TABLE 2: Average Worker Exposure to Daminozide

Application Method	Dermal Exposure (mg/kg used)	Inhalation Exposure (mg/kg used)
Coarse Spray	0.92	0.40
Fine Spray	1.14	0.75

Integrating the analysis of the Uniroyal data and the typical use patterns, the Agency estimates the following typical worker exposures (Table 3). The units of "mg/kg/yr" mean milligrams of test material per kilogram of body weight per year. The estimates are for the average dermal and inhalation yearly exposures.

TABLE 3: Average Yearly Worker (M/L/A) Exposure to Daminozide

Application Method	Dermal Exposure (mg/kg/yr)	Inhalation Exposure (mg/kg/yr)
Large Greenhouse		
Coarse Spray	0.14	0.06
Fine Spray	0.18	0.12
Small Greenhouse		
Coarse Spray	0.060	0.025
Fine Spray	0.075	0.049

Exposure to UDMH from Contamination and Hydrolysis of Daminozide. UDMH is found as a 0.005 percent contaminant in commercial daminozide products. Exposures to the contaminant are estimated from the average yearly exposures that are provided in Table 3 (i.e., 0.005 percent multiplied by the average exposures). These estimates are provided in Table 4; the units of "mg/kg/yr" mean milligrams of test material per kilogram of body weight per year.

TABLE 4: Average Yearly Worker (M/L/A) Exposure to the UDMH Contaminant

Application Method	Dermal Exposure (mg/kg/yr)	Inhalation Exposure (mg/kg/yr)
Large Greenhouse		
Coarse Spray	7.0E-06	3.0E-06
Fine Spray	9.0E-06	6.0E-06

TABLE 4: (cont'd)

Small Greenhouse		
Coarse Spray	3.0E-06	1.3E-06
Fine Spray	3.8E-06	2.5E-06

The exposure assessment, additionally, examines the hydrolytic degradation of daminozide and its contribution to worker exposure. Because the current product label permits storage of a stock solution of daminozide for up to 24 hours after mixing, there exists a potential for exposure to the degradation product UDMH. Using a degradation rate of 0.012 percent per day and the average exposures provided in Table 3, the following amounts (i.e., Table 5) of daminozide would be degraded in 24 hours. The units of "mg/kg/yr" mean milligrams of test material per kilogram of body weight per year.

TABLE 5: Average Yearly M/L/A Exposure to UDMH from 24 Hours of Daminozide Degradation

Application Method	Dermal Exposure (mg/kg/yr)	Inhalation Exposure (mg/kg/yr)
Large Greenhouse		
Coarse Spray	1.7E-05	7.2E-06
Fine Spray	2.2E-05	1.4E-05
Small Greenhouse		
Coarse Spray	7.2E-06	3.0E-06
Fine Spray	9.0E-06	5.9E-06

Reentry Workers: Foliar Dislodgeable Residue Study

The Agency finds the foliar dislodgeable residue (FDR) study submitted by Uniroyal (MRID 40037001) to be supplemental. The study did provide some data that were used to help establish a restricted entry interval (REI) for post-application workers. In addition to the rough estimates based on the FDR study, the Agency relied on the use pattern as well as the risk reduction provisions of the Worker Protection Standard in setting the REI.

3. Human Health Risk Assessment

a. Dietary

There are no registered food uses for daminozide.

b. Occupational and Residential

RISK CHARACTERIZATION

As stated previously, the total risk to workers from exposure to daminozide and UDMH is a sum of the risk due to exposure to daminozide (see Table 3) plus the risk due to the exposure from the UDMH contaminant and hydrolysis of daminozide to UDMH (see Tables 4 and 5).

Assumptions Used to Estimate Cancer Risk from the <u>in vivo</u> Conversion of Daminozide

The risk to workers from exposure to daminozide/UDMH may be considered as a function of daminozide exposure (Approach I) or as a function of UDMH exposure (Approach II), and characterized accordingly. Each approach to risk characterization has different sets of assumptions, and because of these assumptions, each approach introduces some uncertainties. The preferred approach would be to base the risk on exposure to UDMH, the primary chemical identified by the Agency in the Special Review to address the carcinogenicity endpoint.

<u>Approach I</u>. For a risk characterized as a <u>function of UDMH</u>, the Agency makes the following assumptions:

(1) Daminozide may be absorbed into the body at a rate of one percent by the dermal route based on the data from a dermal absorption study in rats (MRID 40214501). It is estimated to be 100 percent absorbed by the inhalation route, as the worst-case scenario, because inhalation absorption data are unavailable.

(2) Daminozide is converted to UDMH upon entering the human body. The conversion is estimated to be one percent; this level of conversion is considered as a maximum because the more neutral pH of the blood is expected to cause less breakdown of daminozide than the lower pH of the stomach.

(3) The molecular weight of UDMH is approximately 40 percent of the molecular weight of daminozide.

(4) The extra cancer risk from exposure is based on a Q_1^* of 0.46 $(mg/kg/day)^{-1}$, derived from the UDMH study in mice.

Because of limited information on the metabolic conversion of daminozide to UDMH from dermal or inhalation exposure, the Agency is also characterizing the risk as a function of daminozide so as to arrive at

a reasonable assessment. The risk estimates obtained from these two separate approaches may serve to define a potential range of risk for risk assessment purposes.

Approach II. For a risk characterized as a function of daminozide, the Agency makes the following assumptions:

(1) Daminozide may be absorbed into the body at a rate of one percent by the dermal route based on data from a dermal absorption study in rats (MRID 40214501). It is estimated to be 100 percent absorbed by the inhalation route, as the worst-case scenario, because inhalation absorption data are unavailable.

(2) The extra cancer risk from exposure is based on a Q_1^* of 0.0087 $(mg/kg/day)^{-1}$, derived from the daminozide study in mice.

Assumptions Used to Estimate Cancer Risk from Contamination and Hydrolysis

To the risk that is derived by either of the above two approaches will be added two additional risk components: (1) the contribution from the UDMH contaminant in the commercial product; and (2) the UDMH formed from hydrolysis of daminozide during 24-hour storage of the stock solution. To estimate the contribution of UDMH as a contaminant and hydrolysis product, the following assumptions are used:

(1) The commercial product is contaminated with 0.005 percent UDMH.

(2) Daminozide is degraded to succinic acid and UDMH upon storage as a solution in water; at 24 hours, 0.012 percent of the daminozide will have hydrolyzed.

(3) The human dermal absorption rate for UDMH is based on the rat dermal absorption rate that most closely approximates the worker use pattern. Because exposure depends on varying greenhouse practices and information on bioaccumulation is unavailable, a dermal absorption rate of 20 percent will be used as reasonable worst-case scenario for risk assessment purposes.

(4) The inhalation absorption rate is assumed to be 100 percent, the worst-case scenario, because inhalation absorption data are unavailable.

(5) The extra cancer risk from exposure to UDMH is based on a Q_1^* of 0.46 $(mg/kg/day)^{-1}$.

Estimation of Cancer Risk from Daminozide and UDMH Contamination/Hydrolysis

The extra cancer risk may be estimated using the following equations:

Extra cancer risk = Q_1^* × lifetime average daily dose (LADD); (Eq. 1)

where:

$$\text{LADD} = \frac{\text{dose (mg/kg/day)}}{\text{365 days/yr}} \times \frac{35}{70} \quad \text{(Eq. 2)}$$

$\text{dermal dose}_{\text{Approach I}}$ = dermal absorption × in vivo conversion rate × molecular weight × dermal exposure (from Table 3)

$\text{dermal dose}_{\text{Approach II}}$ = dermal absorption × dermal exposure (from Table 4)

NOTE: The inhalation doses are calculated similarly, using relevant parameters.

The dermal and inhalation cancer risk estimates are provided in Table 6. Only the risk estimates for the fine spray application are provided because exposure from this application method was higher than from the coarse spray and thus represents a worst-case scenario.

TABLE 6: Summary of Cancer Risk Estimates for Greenhouse Workers

		LARGE GREENHOUSE	SMALL GREENHOUSE
RISK DUE TO DERMAL EXPOSURE TO DAMINOZIDE	As a function of UDMH	7.0E-09	2.9E-09
	As a function of daminozide	2.4E-08	9.7E-09
RISK DUE TO INHALATION EXPOSURE TO DAMINOZIDE	As a function of UDMH	3.0E-07	1.2E-07
	As a function of daminozide	1.4E-06	5.8E-07

Combining the dermal and inhalation cancer risks, the following ranges for fine spray are observed:

3.0E-07 to 1.4E-06 for large greenhouse workers; and
1.2E-07 to 5.8E-07 for small greenhouse workers.

The cancer risk ranges for greenhouse workers represent a reasonable characterization of risk. Risk to workers who use a coarse spray is about half these estimates (inhalation exposure, which provides the greater risk component, is approximately halved when a coarse spray application is used).

Restricted Entry Interval (REI)

The Agency is requiring a 24-hour restricted-entry interval (REI). The existing label prohibits workers from entering treated areas for 24 hours after application unless protective clothing is worn. In addition, the existing label states that treated plants should not be handled until sprays have dried and that treated plants should not be syringed for 18-24 hours after application to allow the chemical to enter the plant. These use-directions indicate that a 24-hour REI will not substantially interfere with the cultural practices already in place when this chemical is applied. Therefore, the Agency does not anticipate an economic hardship in converting from a 24-hour reentry interval (where reentry with protective clothing is allowed) to a 24-hour restricted-entry interval (where entry to perform hand labor during the restricted period is prohibited except under very narrow circumstances).

Furthermore, given the known toxicological concerns for daminozide/UDMH and based on the risk to early entry workers found in the foliar dislodgeable residue study (MRID 40037001), the Agency considers the additional protections offered by the requirements in 40 CFR Parts 156 and 170 -- the Worker Protection Standard (WPS) for Agricultural Pesticides -- essential to its decision that a 24-hour restricted entry interval for this chemical will offer sufficient risk mitigation to workers. Therefore, during the REI the Agency will allow workers to enter areas treated with daminozide before the expiration of the REI in only the few narrow exceptions allowed in the WPS.

The Agency has determined that there are no currently registered uses of daminozide outside the scope of the Worker Protection Standard for Agricultural Chemicals. The registrant is adding an "exclusionary" statement to clarify the use-sites.

Although daminozide has been classified as a Toxicity Category III chemical (MRID 00009737) for acute dermal toxicity, the Agency, for the

reasons stated in the above paragraphs, is requiring personal protective equipment (PPE) for early entry workers consistent with the PPE level (as established in the WPS) required for pesticides classified as Toxicity Category II for acute dermal toxicity. The Agency has determined that post-application exposure to daminozide is mostly on the hands from handling treated plants. Therefore, for early entry allowed by the WPS, dermal exposure of workers should be mitigated if level II PPE, including chemical-resistant gloves, is used. A glove permeability study (MRID 400326002) indicates that many types of gloves can be used to reduce exposure to daminozide, including disposable, lightweight polyethylene and polyvinyl chloride (PVC) gloves, natural latex and butyl rubber gloves, and lightweight barrier laminate gloves.

C. Environmental Assessment

1. Environmental Fate

a. Environmental Chemistry, Fate and Transport

The environmental fate data submitted on daminozide indicate that this chemical is stable to hydrolysis at 200 ppm in aqueous buffered solutions at pHs 5, 7, and 9, and degrades slowly (observed half-life > 30 days) in a pH 1 solution during 30 days of incubation. The degradate 1,1-dimethylhydrazine was 33.5 ppm in the pH 1 solution at the day 30 sampling interval, and at relatively low concentrations in the other pH solutions (MRID 00147749, 00154942). The data also indicate that daminozide rapidly mineralizes to CO_2 in aerobic soil (62% of the applied radioactivity is degraded to CO_2 after 72 hours, half-life of 9.5 hours). The only identified degradate in the aerobic soil was formaldehyde (present at very low levels); bound residues comprised less than 15% of the applied radioactivity (MRID 42687201).

b. Environmental Fate Risk Assessment

Hydrolysis does not contribute significantly to the dissipation of this chemical in the environment. However, supplemental aerobic soil metabolism data suggest that daminozide is metabolized rapidly to CO_2 in aerobic sandy loam soil (half-life of 9.5 hours), with the only degradate identified in the soil extracts being formaldehyde at low concentrations; bound residues comprised $\approx$15% of the applied radioactivity (MRID 42687201). Because daminozide degrades so rapidly in aerobic soil to volatile compounds and bound residues, the mobility of daminozide could not be determined, but probably is not a concern. In addition, products containing daminozide are labeled for use only in confined greenhouse situations, therefore, the chemical is not expected to occur in ground water or agricultural runoff.

2. Ecological Effects

The Agency has sufficient data to support the non-food, enclosed commercial structure (greenhouses, shadehouses, interiorscapes) uses of daminozide. Due to daminozide's use pattern, the required studies are used only to evaluate the hazard to nontarget organisms that could result from misuse or spillage during transport and for determining the environmental hazard statements on the label.

a. Terrestrial Data

Available mammalian data indicate that daminozide is practically non-toxic to mammals on an acute basis (acute oral LD_{50} 8.4 gm/kg for rats). The results of avian toxicity studies indicate that the technical grade (TGAI) of daminozide is practically non-toxic to birds on an acute oral basis (LD_{50} on mallard duck (waterfowl) is >2250 mg/kg; MRID 42429001), and on a dietary basis (LC_{50} on mallard duck (waterfowl) and bobwhite quail (upland game bird) was determined to be greater than 10,000 ppm; MRID 00009705, 00009575).

b. Aquatic Data

Data were submitted to characterize the toxicity of daminozide to non-target aquatic organisms. The results of these studies indicate that daminozide is practically non-toxic to freshwater fish (LC_{50} values of 448 ppm and > 100 ppm were reported for bluegill (warm water fish) and rainbow trout (cold water fish) respectively; MRID 00009704, 00009706). The results of a study using Daphnia magna as the test species suggest that daminozide is slightly toxic to aquatic invertebrates (the 96-hour EC_{50} was 71 mg/L; MRID 42429002).

c. Ecological Effects Risk Assessment

Environmental exposure is expected to be minimal when daminozide is used according to the directions on the label; therefore, the ecological risk is expected to be low.

3. Data Requirements

The Agency received an Aerobic Soil Metabolism study (162-1; MRID 42687201) that needs additional data to be upgraded and fulfill this guideline data requirement. However, this required additional information is not expected to change the overall qualitative assessment for daminozide or affect its reregistration eligibility. Additional data are needed on a confirmatory basis to fully characterize the radioactive contents of the ethylene glycol trap from this study. These data are expected to provide

information on the nature and relative quantities of the volatiles present in the vapor phase. Based on the results of the original submission (MRID 42687201), it appears highly unlikely that volatile degradates (other than CO_2) exceeding 10% of the applied radioactivity would be produced. Therefore, data on the photodegradation in air (161-4), laboratory volatility (163-2), and field volatility (163-3) of daminozide are not necessary to characterize the risks associated with the use of daminozide and are no longer required.

IV. RISK MANAGEMENT AND REREGISTRATION DECISION

A. Determination of Eligibility

Section 4(g)(2)(A) of FIFRA calls for the Agency to determine, after submission of relevant data concerning an active ingredient, whether products containing the active ingredients are eligible for reregistration. The Agency has previously identified and required the submission of the generic (i.e. active ingredient specific) data required to support reregistration of products containing daminozide as the active ingredient. The Agency has completed its review of these generic data, and has determined that the data are sufficient to support reregistration of all products containing daminozide. Appendix B identifies the generic data requirements that the Agency reviewed as part of its determination of reregistration eligibility of daminozide, and lists the submitted studies that the Agency found acceptable.

The data identified in Appendix B were sufficient to allow the Agency to assess the registered uses of daminozide and to determine that daminozide can be used without resulting in unreasonable adverse effects to man and the environment. The Agency therefore finds that all products containing daminozide as the active ingredient are eligible for reregistration. The reregistration of particular products is addressed in Section V of this document.

The Agency made its reregistration eligibility determination based upon the target data base required for reregistration, the current guidelines for conducting acceptable studies to generate such data and the data identified in Appendix B. Although the Agency has found that all uses of daminozide are eligible for reregistration, it should be understood that the Agency may take appropriate regulatory action, and/or require the submission of additional data to support the registration of products containing daminozide, if new information comes to the Agency's attention or if the data requirements for reregistration (or the guidelines for generating such data) change.

1. Eligibility Decision

Based on the reviews of the generic data for the active ingredient daminozide, the Agency has sufficient information on the health effects of daminozide and on its potential for causing adverse effects in fish and wildlife and the environment. The Agency concludes that products containing daminozide for

use in enclosed commercial structures such as greenhouses, shadehouses and interiorscapes are eligible for reregistration.

The Agency has determined that daminozide products, labeled and used as specified in this Reregistration Eligibility Decision, will not pose unreasonable risks or adverse effects to humans or the environment.

2. Eligible and Ineligible Uses

The Agency has determined that the uses of daminozide in enclosed commercial structures such as greenhouses, shadehouses and interiorscapes are eligible for reregistration. These are the only registered uses of daminozide.

B. Regulatory Position

The following is a summary of the regulatory positions and rationales for daminozide. Where labeling revisions are imposed, specific language is set forth in Section V of this document.

1. Tolerance Reassessment

All food uses for daminozide were voluntarily cancelled on November 14, 1989. There are no longer any registered uses for daminozide in or on food or feed. All tolerances have been revoked.

2. Labeling Rationale

All daminozide end-use products within the scope of the Worker Protection Standard for Agricultural Pesticides (see PR Notice 93-7) -- must, within the timeframes listed in PR Notice 93-7 and 93-11, revise their labeling to be consistent with the WPS, as directed in those notices. The personal protective equipment and restricted-entry interval for daminozide end-use products are listed below.

Although daminozide has been classified as a Toxicity Category III chemical (MRID 00009737) for acute dermal toxicity, the Agency is requiring personal protective equipment (PPE) for all pesticide handlers as well as early entry workers consistent with the PPE level (as established in the WPS) required for pesticides classified as Toxicity Category II for acute dermal toxicity. As noted previously in this document, this is due to the known toxicological concerns for daminozide/UDMH and the residue dissipation study indicating risks to early entry workers from foliar residues (MRID 40037001).

The Agency is requiring a 24-hour restricted-entry interval (REI) for all uses for all daminozide end-use products. All currently registered uses are within

the scope of the WPS (see PR Notice 93-7). The registrant must add an "exclusionary" statement to clarify the use-sites.

To remain in compliance with FIFRA, it is the Agency's position that the "Environmental Hazards" section should include the following for all manufacturing use products:

> "Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product into sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the the Agency."

To remain in compliance with FIFRA, it is the Agency's position that under the heading "Directions for Use," all manufacturing use products (MP) must be labeled in accordance with PR Notice 91-8. This notice requires, among other things, that all MP labels specify which uses can be contained on end use products formulated from each manufacturing use product. The specific label language for MPs containing daminozide is found in Part V.

V. ACTIONS REQUIRED BY REGISTRANTS

This section specifies the data requirements and responses necessary for the reregistration of both manufacturing-use (MP) and end-use products (EUP). In addition to the data listed below, the Agency is requiring that revised Confidential Statements of Formula (CSFs) and revised labeling be submitted within 8 months from receipt of this document.

A. Manufacturing-Use Products

1. Additional Generic Data Requirements

There are no new generic data being called-in for daminozide. The generic data base supporting the reregistration of daminozide for the above eligible uses has been reviewed and determined to be substantially complete. However, additional confirmatory information is needed to fulfill the aerobic soil metabolism data requirement.

2. Labeling Requirements for Manufacturing-Use Products

To remain in compliance with FIFRA, it is the Agency's position that the "Environmental Hazards" section, to be consistent with PR Notice 93-10, must include the following:

"Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product into sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the the Agency."

To remain in compliance with FIFRA, and be consistent with PR Notice 91-8, it is the Agency's position that under the heading "Directions for Use" the following labeling statement is required:

"Only for formulation into products for (1) The following uses **(list those uses that are being supported by each MP registrant)** (2) Uses for which USEPA has accepted the required data and/or citations of data that the formulator has submitted in support of reregistration; and (3) Uses for experimental purposes that are in compliance with USEPA requirements."

Also, as noted in PR Notice 91-8, the Agency recognizes that some manufacturing products (MP) manufacturers may have concerns over liability which may result from a use or uses that they have not supported with scientific data. Therefore, the Agency will permit MP registrants/applicants to amend or include on their labels an additional liability disclaimer for the unsupported (unlisted) uses that disclaims liability for crop damage or failed efficacy resulting from the use of a formulated product containing an MP registrants's product. Any such disclaimer must otherwise be consistent with 40 CFR 156.10(a)(5).

B. End-Use Products

1. Additional Product-Specific Data Requirements

Section 4(g)(2)(B) of FIFRA calls for the Agency to obtain any needed product-specific data regarding the pesticide after a determination of eligibility has been made. The product specific data requirements are listed in Appendix G, the Product Specific Data Call-In Notice.

Registrants must review previous data submissions to ensure that they meet current Agency acceptance criteria (Appendix G; Attachment E) and if not, commit to conduct new studies. If a registrant believes that previously submitted data meet current testing standards, then study MRID numbers should be cited according to the instructions in the Requirement Status and Registrants Response Form provided for each product.

2. Labeling Requirements for End-Use Products

Any product whose labeling reasonably permits use in the production of an agricultural plant on any agricultural establishment (farm, forest, nursery, or greenhouse) must comply with the labeling requirements of PR Notice 93-7, "Labeling Revisions Required by the Worker Protection Standard (WPS), and PR Notice 93-11, "Supplemental Guidance for PR Notice 93-7," which reflect the requirements of EPA's labeling regulations for worker protection statements (40 CFR part 156, subpart K). These labeling revisions are necessary to implement the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170) and must be completed in accordance with, and within the deadlines specified in, PR Notices 93-7 and 93-11. Unless otherwise specifically directed in this RED, all statements required by PR Notices 93-7 and 93-11 are to be on the product labeling exactly as instructed in those notices.

- After April 21, 1994, except as otherwise provided in PR Notices 93-7 and 93-11, all products within the scope of those notices must bear WPS PR-Notice-complying labeling when they are distributed or sold by the primary registrant or any supplementally registered distributor.

- After October 23, 1995, except as otherwise provided in PR Notices 93-7 and 93-11, all products within the scope of those notices must bear WPS PR-Notice-complying labeling when they are distributed or sold by any person.

Exclusionary Statement: All end-products must carry the following statement located (1) on the front panel of the label in association with the product name or (2) near the beginning of the Directions For Use section:

"For use only in commercial or research greenhouses or shade houses."

Personal Protective Equipment Requirements

All End-Use Products: The personal protective equipment (PPE) requirement for pesticide handlers on all end-use products is:

"Applicators and other handlers must wear:
- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant or waterproof gloves (see instructions * below)
- Chemical-resistant footwear plus socks
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing, or loading" (see instructions ** below)

* The glove statement for daminozide is the statement established through the instructions in Supplement Three of PR Notice 93-7.

** The words "mixing, or loading" may be removed if the product is formulated as "ready-to-use."

End-use products that contain daminozide must compare the personal protective equipment requirements set forth in this section to the personal protective equipment requirements, if any, on their current labeling and retain the more protective. For guidance in choosing which requirement is more protective, see Supplement Three of PR Notice 93-7. If the existing labeling requires a "protective mask for mixers and loaders," use the guidance in Supplement Three of PR Notice 93-7 to determine the appropriate respirator statement.

Entry Restrictions

All End-Use Products: A 24-hour restricted entry interval (REI) is required for all uses for all end-use products. All uses are within the scope of the WPS (see PR Notice 93-7). This REI should be inserted into the standardized REI statement required by PR Notice 93-7. The personal protective equipment (PPE) for early entry should be the PPE required for applicators of daminozide (except no apron or respirator is required). This PPE should be inserted into the standardized early entry PPE statement required by PR Notice 93-7.

Sole-active-ingredient end-use products that contain daminozide must be revised to adopt the entry restrictions set forth in this section. Any conflicting entry restrictions on their current labeling must be removed.

Multiple-active-ingredient end-use products that contain daminozide must compare the entry restrictions set forth in this section to the entry restrictions on their current labeling and retain the more protective. A specific time-period in hours or days is considered more protective than "sprays have dried" or "dusts have settled."

C. Existing Stocks

Registrants may generally distribute and sell products bearing old labels/labeling for 26 months from the date of issuance of this RED. Persons other than the registrant may generally distribute or sell such products for 50 months from the date of the issuance of this RED. However, existing stocks time frames will be established case-by-case, depending on the number of products involved, the number of label changes, and other factors. Refer to "Existing Stocks of Pesticide Products"; Federal Register, Volume 56, No. 123, June 26, 1991.

The Agency has determined that registrants may distribute and sell daminozide products bearing old labels/labeling for 26 months from the date of issuance of this RED. Persons other than the registrant may distribute or sell such products for 50 months from the date of the issuance of this RED.

APPENDIX A

Table of Use Patterns
Subject to Reregistration

The following table shows the eligible uses of Daminozide. It does not show any changes resulting from the RED review itself. Changes that result from the RED review; e.g. PHI, application rates etc. are specified in section IV.

APPENDIX A - Case 0032, [Daminozide] Chemical 035101											
Application Type	Application Timing	Application Equipment	Form	Maximum Application Rate	Max. # Apps.	Max. # Apps. @ Max. Rate	Min. Interval Between Apps. @ Max. Rate (Days)	Restricted Entry Interval (Days)	Geographic Limitations		Use Pattern Limitations
									Allowed	Disallowed	
USES ELIGIBLE FOR REREGISTRATION											
NON-FOOD/NON-FEED USES											
Site: Ornamental Herbaceous Plants		**Use Group: Greenhouse Non-Food Crop**									
Dip, Cutting, Dip Tank			SC/S	1⅓ tsp per gal	NS	NS	NS	1	NS	NS	NPDES license restriction; Do not apply in marine and/or estuarine environments, oil fields, or discharge effluent into lakes, streams, ponds or public water (NPDES license restriction)
Dip, Foliar, Dip Tank			SC/S	1⅓ tsp per gal	NS	NS	7	1	AZ	NS	NPDES license restriction; Do not apply in marine and/or estuarine environments, oil fields, or discharge effluent into lakes, streams, ponds or public water (NPDES license restriction)
Spray, Foliar, Sprayer			SC/S	8 tsp per gal	NS	NS	7	1	AZ	NS	NPDES license restriction; Do not apply in marine and/or estuarine environments, oil fields, or discharge effluent into lakes, streams, ponds or public water (NPDES license restriction)
Spray, Foliar, Sprayer			SC/S	8 tsp per gal	NS	NS	NS	1	NS	NS	NPDES license restriction; Do not apply in marine and/or estuarine environments, oil fields, or discharge effluent into lakes, streams, ponds or public water (NPDES license restriction)
Site: Herbaceous Plants		**Use Group: Indoor Non-Food**									
Spray, Foliar, Sprayer			SC/S	8 tsp per gal	NS	NS	NS	1	NS	NS	NPDES license restriction; Do not apply in marine and/or estuarine environments, oil fields, or discharge effluent into lakes, streams, ponds or public water (NPDES license restriction)
Site: Ornamental Woody Shrubs and Vines		**Use Group: Greenhouse Non-Food Crop**									
Spray, Foliar, Sprayer			SC/S	12 tsp per gal	NS	NS	NS	1	NS	NS	NPDES license restriction; Do not apply in marine and/or estuarine environments, oil fields, or discharge effluent into lakes, streams, ponds or public water (NPDES license restriction)
Spray, Foliar, Sprayer			SC/S	12 tsp per gal	NS	NS	7	1	AZ	NS	NPDES license restriction; Do not apply in marine and/or estuarine environments, oil fields, or discharge effluent into lakes, streams, ponds or public water (NPDES license restriction)

	APPENDIX A - Case 0032, [Daminozide] Chemical 035101										
	Application Type	Application Timing	Application Equipment	Form	Maximum Application Rate	Max. # Apps.	Max. # Apps. @ Max. Rate	Min. Interval Between Apps. @ Max. Rate (Days)	Restricted Entry Interval (Days)	Geographic Limitations		Use Pattern Limitations
										Allowed	Disallowed	
	USES ELIGIBLE FOR REREGISTRATION											
	Site: Ornamental Woody Shrubs and Vines **Use Group: Indoor Non-Food**											
	Spray, Foliar, Sprayer			SC/S	12 tsp per gal	NS	NS	NS	1	NS	NS	NPDES license restriction; Do not apply in marine and/or estuarine environments, oil fields, or discharge effluent into lakes, streams, ponds or public water (NPDES license restriction)

Abbreviations used

Header: Max. # Apps. = maximum number of applications
Max. # Apps. @ Max. Rate = maximum number of applications at maximum rate
Min. Interval Between Apps. @ Max. Rate (Days) = minimum interval between applications at maximum rate (in days)

Formulation: SC/S = Soluble Concentrate/Solid

In general: NA = not applicable; NS = not specified

Geographic Codes: AZ = Arizona

APPENDIX B

Table of the Generic Data Requirements and Studies Used to Make the Reregistration Decision

GUIDE TO APPENDIX B

Appendix B contains listings of data requirements which support the reregistration for the pesticide daminozide covered by this Reregistration Eligibility Decision. It contains generic data requirements that apply to daminozide in all products, including data requirements for which a "typical formulation" is the test substance.

The data table is organized in the following format:

1. Data Requirement (Column 1). The data requirements are listed in the order in which they appear in 40 CFR, Part 158. The reference numbers accompanying each test refer to the test protocols set in the Pesticide Assessment Guidelines, which are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703) 487 - 4650.

2. Use Pattern (Column 2). This column indicates the use patterns for which the data requirements apply. The following letter designations are used for the given use patterns:

A	Terrestrial food
B	Terrestrial feed
C	Terrestrial non-food
D	Aquatic food
E	Aquatic non-food outdoor
F	Aquatic non-food industrial
G	Aquatic non-food residential
H	Greenhouse food
I	Greenhouse non-food
J	Forestry
K	Residential
L	Indoor food
M	Indoor non-food
N	Indoor medical
O	Indoor residential

3. Bibliographic citation (Column 3). If the Agency has acceptable data in its files, this column lists the identifying number of each study. This normally is the Master Record Identification (MRID) number, but may be a "GS" number if no MRID number has been assigned. Refer to the Bibliography appendix for a complete citation of the study.

APPENDIX B

Data Supporting Guideline Requirements for the Reregistration of Daminozide

REQUIREMENT		USE PATTERN	CITATION
PRODUCT CHEMISTRY			
61-1	Chemical Identity	ALL	00009540
61-2	Starting Materials & Manufacturing Process	ALL	GS032003, 00009511, 00009514
61-3	Formation of Impurities	ALL	GS032003, GS032040, 42025201
62-1	Preliminary Analysis	ALL	GS032040
62-2	Certification of Limits	ALL	GS032040
62-3	Analytical Method	ALL	00022043, 00009423, 00009540, 00009511
63-2	Color	ALL	00009540
63-3	Physical State	ALL	00009540
63-4	Odor	ALL	00009540
63-5	Melting Point	ALL	00009540
63-7	Density	ALL	00154941
63-8	Solubility	ALL	00009540, 41603401
63-9	Vapor Pressure	ALL	41603402

APPENDIX B

Data Supporting Guideline Requirements for the Reregistration of Daminozide

REQUIREMENT		USE PATTERN	CITATION
63-10	**Dissociation Constant**	ALL	**00009540**
63-11	**Octanol/Water Partition**	ALL	
63-12	**pH**	ALL	**00009540**
63-13	**Stability**	ALL	**00009540**

APPENDIX B

Data Supporting Guideline Requirements for the Reregistration of Daminozide

REQUIREMENT		USE PATTERN	CITATION
ECOLOGICAL EFFECTS			
*	**Additional Ecological Effects data were levied in the June, 1984 Daminozide Registration Standard; However, these requirements have since been waived due to the change in use pattern. The guidelines cited below are those necessary to support the greenhouse/non-food use pattern.**		
71-1a	Acute Avian Oral-Quail/Duck	I	42429001
71-2a	Avian Dietary (LC_{50}) - Quail	I	00009705
71-2b	Avian Dietary (LC_{50}) - Duck	I	00009575
72-1a	Fish Acute (LC_{50}) - Bluegill	I	00009704
72-1c	Fish Acute (LD_{50}) - Trout	I	00009706
72-2a	Aquatic Invertebrate (EC_{50})	I	42429002[2]

[2] Although no core aquatic invertebrate acute toxicity study was submitted, because the use of daminozide is restricted to greenhouses, there are sufficient data to provide labeling statements.

APPENDIX B

Data Supporting Guideline Requirements for the Reregistration of Daminozide

REQUIREMENT		USE PATTERN	CITATION
TOXICOLOGY			
81-1	Acute Oral Toxicity - Rat	I	00009712
81-2	Acute Dermal Toxicity	I	00009737
81-3	Acute Inhalation - Rat	I	00009712
82-1a	90-Day Feeding - Rodent	I	00009727
83-1a	Chronic Toxicity - Rodent	I	00009413, 40813101
83-1b	Chronic Toxicity - Non-rodent	I	40928101
83-2a	Oncogenicity - Rat (Daminozide)	I	00009413, 40813101
83-2a	Oncogenicity - Rat (UDMH)	I	41253303
83-2b	Oncogenicity - Mouse (Daminozide)	I	40093501, 40813102
83-2b	Oncogenicity - Mouse (UDMH)	I	41253302, 41378001
83-3a	Developmental Toxicity - Rat	I	00053764
83-3b	Developmental Toxicity - Rabbit	I	00150511
83-4	2-Generation Reproduction - Rat	I	40233901
84-2a	Gene Mutation (Daminozide)	I	00143054, 00009681
84-2a	Gene Mutation (UDMH)	I	40319901, 40319901

APPENDIX B

Data Supporting Guideline Requirements for the Reregistration of Daminozide

REQUIREMENT		USE PATTERN	CITATION
84-2b	Structural Chromosomal Aberration (Daminozide)	I	00009683
84-2b	Structural Chromosomal Aberration (UDMH)	I	40319901
84-4	Other Genotoxic Effects (Daminozide)	I	00143055
84-4	Other Genotoxic Effects (UDMH)	I	40319901
85-1	General Metabolism	I	40282901, 40214501

APPENDIX B

Data Supporting Guideline Requirements for the Reregistration of Daminozide

REQUIREMENT		USE PATTERN	CITATION
ENVIRONMENTAL FATE			
*	**Additional Environmental Fate data were levied in the Daminozide Registration Standard of June, 1984; However, these data have since been waived due to the change in use pattern. The guidelines stated below are those necessary to support the greenhouse/non-food use pattern.**		
161-1	Hydrolysis	I	00147749, 00154942
161-4	Photodegradation - Air	I	WAIVED[1]
162-1	Aerobic Soil Metabolism	I	42687201 DATA GAP[2]
163-1	Leaching/Adsorption/Desorption	I	42687201[3]
163-2	Laboratory Volatility	I	WAIVED[1]
163-3	Field Volatility	I	WAIVED[1]

[1] Based on the results of the supplemental Aerobic Soil Metabolism study (MRID 42687201), it appears highly unlikely that volatile degradates (other than CO_2) exceeding 10% of the applied would be produced. Therefore, data on the photodegradation in air (161-4), laboratory volatility (163-2), and field volatility (163-3) of daminozide are no longer required.

[2] One study (Yu and Kobryn, 42687201) was reviewed and provides supplemental information that daminozide degrades with a half-life of 9.5 hours when incubated aerobically in a sandy loam soil. The major degradate was CO_2, with formaldehyde detected in the soil in small quantities during the study. Additional information regarding the characterization of radioactivity present in the ethylene glycol volatiles trap is required.

[3] Because daminozide degrades so rapidly in aerobic soil (half-life of 9.5 hours), and the only degradation products are volatile compounds and bound residues (Yu and Kobryn, 42687201), the Agency considers the data requirement fulfilled.

APPENDIX B

Data Supporting Guideline Requirements for the Reregistration of Daminozide

REQUIREMENT	USE PATTERN	CITATION

RESIDUE CHEMISTRY

* Residue chemistry data were levied in the June, 1984 Daminozide Registration Standard. These requirements were waived when the food uses of daminozide were voluntarily cancelled on November 14, 1989.

APPENDIX B

Data Supporting Guideline Requirements for the Reregistration of Daminozide

REQUIREMENT		USE PATTERN	CITATION
EXPOSURE			
133-1-A	Foliar Residue Dissipation	I	40037001[1]
133-3A-S	Glove Permeability	I	40032602
133-3-SS	Exposure to Greenhouse Workers	I	41876001, 41876002

[1] This study was found to be supplemental but provided data that were used to help establish a 24 hour restricted entry interval (REI) for post-application workers.

APPENDIX C

BIBLIOGRAPHY

Citations Considered to be Part of the Data Base Supporting Reregistration

GUIDE TO APPENDIX C

1. **CONTENTS OF BIBLIOGRAPHY.** This bibliography contains citations of all studies considered relevant by the Agency in arriving at the positions and conclusions stated elsewhere in the Reregistration Eligibility Decision. Primary sources for studies in this bibliography have been the body of data submitted to the Agency and its predecessor agencies in support of past regulatory decisions. Selections from other sources including published literature, in those instances where they have been considered, are included.

2. **UNITS OF ENTRY.** The unit of entry in this bibliography is called a "study". In the case of published materials, this corresponds closely to an article. In the case of unpublished materials submitted to EPA, the Agency has sought to identify documents at a level parallel to the published article from within the typically larger volumes in which they were submitted. The resulting "studies" generally have a distinct title (or at least a single subject), can stand alone for purposes of review and can be described with a conventional bibliographic citation. The Agency has also attempted to unite basic documents and commentaries upon them, treating them as a single study.

3. **IDENTIFICATION OF ENTRIES.** The entries in this bibliography are sorted numerically by Master Record Identifier, or "MRID Number". This number is unique to the citation, and should be used whenever a specific reference is required. It is not related to the six-digit "Accession Number" which has been used to identify volumes of submitted studies (see paragraph 4(d)(4) below for further explanation). In a few cases, entries added to the bibliography late in the review may be preceded by a nine character temporary identifying number which is also to be used whenever specific reference is needed.

4. **FORM OF ENTRY.** In addition to the Master Record Identifier (MRID), each entry consists of a citation containing standard elements followed, in the case of material submitted to the Agency, by a description of the earliest known submission. Bibliographic conventions used reflect the standard of the American National Standards Institute (ANSI), expanded to provide for certain special needs.

   a. **Author.** Whenever the author could confidently be identified, the Agency has chosen to show a personal author. When no individual was identified, the Agency has shown a identifiable laboratory or testing facility as the author. When no author or laboratory could be identified, the Agency has shown the first submitter as the author.

   b. **Document Date.** The date of the study is taken directly from the document. When the date is followed by a question mark, the bibliographer has deduced the date from the evidence contained in the document. When the date appears as (19??), the Agency was unable to determine or estimate the date of the document.

c. **Title.** In some cases, it has been necessary for the Agency's bibliographers to create or enhance a document title. Any such editorial insertions are contained between square brackets.

d. **Trailing Parentheses.** For studies submitted to the Agency in the past, the trailing parentheses include (in addition to any self-explanatory text) the following elements describing the earliest known submission:

(1) Submission Date. The date of the earliest known submission appears immediately following the word "received".

(2) Administrative Number. The next element immediately following the word "under" is the registration number, experimental use permit number, petition number, or other administrative number associated with the earliest known submission.

(3) Submitter. The third element is the submitter. When authorship is de-faulted to the submitter, this element is omitted.

(4) Volume Identification (Accession Numbers). The final element in the trailing parentheses identifies the Agency accession number of the volume in which the original submission of the study appears. The six-digit accession number follows the symbol "CDL", which stands for "Company Data Library". This accession number is in turn followed by an alphabetic suffix which shows the relative position of the study within the volume.

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40282901 Harned, W.; Tortora, N.; Billings, T. (1987) Metabolism of Daminozide in Miniature Swine: Uniroyal Project No. 8637: Southwest Bio-Labs, Inc. Project No. 8631S. Unpublished study prepared by Uniroyal Chemical Co., Inc. in cooperation with Southwest BioLabs, Inc. 146 p.

40319901 Hastings, C. (1987) Uniroyal Response to EPA Comments of June 1, 1987 on Four Mutagenicity Studies Performed Using UDMH. Unpublished study prepared by Uniroyal Chemical Co., Inc. 7 p.

40813101 Johnson, D. (1988) Alar Technical (Daminozide): Two Year Dietary Toxicity and Oncogenicity Study in Rats: Report No. 399-055. Unpublished study prepared by International Research and Development Corp. 1875 p.

40813102 Johnson, D. (1988) Alar Technical (Daminozide): Two Year Oncogenicity Study in Rats: Report No. 399-054. Unpublished study prepared by International Research and Development Corp. 1563 p.

40928101 Johnson, D. (1988) One Year Dietary Toxicity Study in Dogs: Alar Technical: Laboratory Product ID: 399-066. Unpublished study prepared by International Research and Development Corp. 320 p.

41253302 Goldenthal, E. (1989) Two Year Oncogenicity Study in Mice: UDMH: Report No. 399-063. Unpublished study prepared by International Research and Development Corp. 2082 p.

41253303 Goldenthal, E. (1989) Two Year Oncogenicity Study in Rats: UDMH: Report No. 399-062. Unpublished study prepared by International Research and Development Corp. 1757 p.

41378001 Goldenthal, E. (1990) Two Year Oncogenicity Study in Mice: UDMH: Lab Project Number: IRDC/399/065. Unpublished study prepared by International Research and Development Corp. 1734 p.

41876001 Rotondaro, A. (1991) B-Nine SP on Ornamentals Greenhouse Mixer/ Loader/Applicator Exposure Study: Lab Project Number: PAL-EF-89RP-89053: 89-6532-16. Unpublished study prepared by Hill Top Biolabs, Inc., in coop. with Pan-Agricultural Labs, Inc. 308 p.

41876002 Ball, J. (1991) UDMH Greenhouse Worker Exposure Assessment. Unpublished study prepared by Uniroyal Chemical Co. 9 p.

42429001 Campbell, S.; Lynn, S. (1992) Alar Technical: An Acute Oral Toxicity Study with the Mallard: Lab Project Number: 117-165. Unpublished study prepared by Wildlife International, Ltd. 18 p.

42687201 Yu, W.; Kobryn, K. (1993) Daminozide Aerobic Soil Metabolism: Lab Project Number: 92123. Unpublished study prepared by Uniroyal. 53 p.

APPENDIX D

List of Available Related Documents

APPENDIX D

The following is a list of available documents related to daminozide. Its purpose is to provide a path to more detailed information if it is required. These accompanying documents are part of the Administrative Record for Daminozide and are included in the the Agency's Office of Pesticide Programs Public Docket.

1. Health and Environmental Effects Science Chapters

2. Detailed Label Usage Information System (LUIS) Report

3. Daminozide RED Fact Sheet (included in this RED)

4. PR Notice 91-2 (Included in this RED) Pertains to the Label Ingredient Statement

Federal publications on daminozide are available and may be purchased from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161.

1. Guidance for the Reregistration of Pesticide Products Containing Daminozide as the Active Ingredient (The 1984 Registration Standard): NTIS Stock No. PB87-104782

2. Pesticide Fact Sheet (No. 26) for daminozide: NTIS Stock No. PB87-112025

APPENDIX E

Pesticide Reregistration Handbook

United States
Environmental Protection
Agency

Office of Prevention, Pesticides
and Toxic Substances
(H-7508W)

October 1991

EPA

Pesticide Reregistration Handbook

How to Respond to the Reregistration Eligibility Decision Document

PRODUCT REREGISTRATION HANDBOOK

TABLE OF CONTENTS

PESTICIDE REREGISTRATION HANDBOOK

I. INTRODUCTION

A. Purpose and Content of this Handbook

This Handbook provides instructions to registrants on how to respond to the Reregistration Eligibility Document (hereafter referred to as the "RED") and how to reregister products.

Section I is this introduction.

Section II contains step-by-step instructions which must be followed by registrants responding to the RED.

Section III provides additional instructions on the format, content and other aspects of generic data, product specific data and labels/labeling which may be required to be submitted.

Detailed instructions are in the Appendix.

B. The Reregistration Eligibility Document (RED)

Under Section 4 of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended in 1988, EPA is required to reregister pesticides that were first registered before November 1, 1984. The RED describes in detail the subject chemical, its uses and its regulatory history; describes EPA's decision concerning the eligibility of the uses of the chemical for reregistration; and explains the scientific and regulatory bases for this decision. EPA's reviews[1] of the data by scientific discipline are available upon request. Appendices to the RED contain: (1) a Data Dall-In Notice which requires submission of generic and product specific data and which gives directions for responding, (2) a listing of existing studies that satisfy generic data requirements and (3) a bibliography of the generic studies EPA has reviewed.

C. The Reregistration Process

Reregistration involves a thorough review of the scientific data base underlying a pesticide's registration. The purpose of EPA's review is to reassess the potential hazards arising from the currently registered uses of the pesticide, to determine whether the data base is substantially complete or there is need for additional generic data, and to determine whether the pesticide is eligible for reregistration. This decision is issued as the RED.

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[1] EPA's science reviews and information on the registered uses considered for EPA's analyses may be obtained from: EPA, Freedom of Information, 401 M St., S.W., Washington, D.C. 20460.

If the RED declares that some or all uses of the chemical are eligible for reregistration, affected registrants must first respond within 90 days of receipt to the data call-in portion of the RED. Within 8 months of receiving the RED, registrants must submit or cite any data and labels/labeling required for each product. EPA has until 14 months after the RED is issued (i.e., 6 months after the registrants' 8 month deadline) to review the submission for each product and decide whether to reregister it based on the following criteria:

--whether all of the product specific data and labels/labeling are acceptable,

--whether all of the uses on the label/labeling are eligible,

--whether all of the active ingredients in the product are eligible, and

--if no List 1 toxic inert ingredient is contained in the product (a List 1 inert is permitted only if all data for it have been submitted and EPA determines that the inert does not pose any unreasonable adverse effects in that product).

Products which meet all of these criteria will be reregistered. Products which do not meet all of these criteria, but which have acceptable product specific data and labeling, will be processed as amendments in order to implement label changes required by the RED.

II. INSTRUCTIONS FOR RESPONDING

A. How and When to Respond

This section provides directions for submitting timely and adequate responses necessary to reregister products containing the active ingredient covered by the RED. Registrants must follow these steps exactly to avoid suspension of their products. All products containing the active ingredient in the RED [i.e., manufacturing use products, end use products and special local need (SLN or Section 24c) registrations] are subject to the requirements of the RED. Figure 1 summarizes how and when to respond to the RED. A step-by-step explanation follows.

Step 1. Are Expedited Label Changes Required? In some instances, EPA may conclude that certain changes to product labels/labeling must be implemented rapidly. If the RED requires expedited label/labeling changes, registrants must submit the items below by the deadline specified in the RED. If expedited label changes are not required, go to Step 2.

a. Application for Registration (EPA Form 8570-1). Complete

and sign the form. In Section II, insert the phrase "Expedited Amendment in Response to the Reregistration Eligibility Document for (insert case name for chemical)." Applications for expedited label changes will be processed as applications for amended registration. Use only an original application form with a red identifier number in the upper right-hand corner.

b. Five (5) copies of revised draft label and labeling. Refer to the RED for label/labeling changes and follow the instructions in Section III.C. and the Appendix of this Handbook for revising the label and labeling for each product.

Step 2. Are data required? If the RED requires generic or product specific data, you must follow the directions in the data call-in notice in the RED. All registrants must respond for all products within 90 days of receipt; products for which an adequate response is not received on time will be subject to suspension. No time extensions will be given for responding within 90 days.

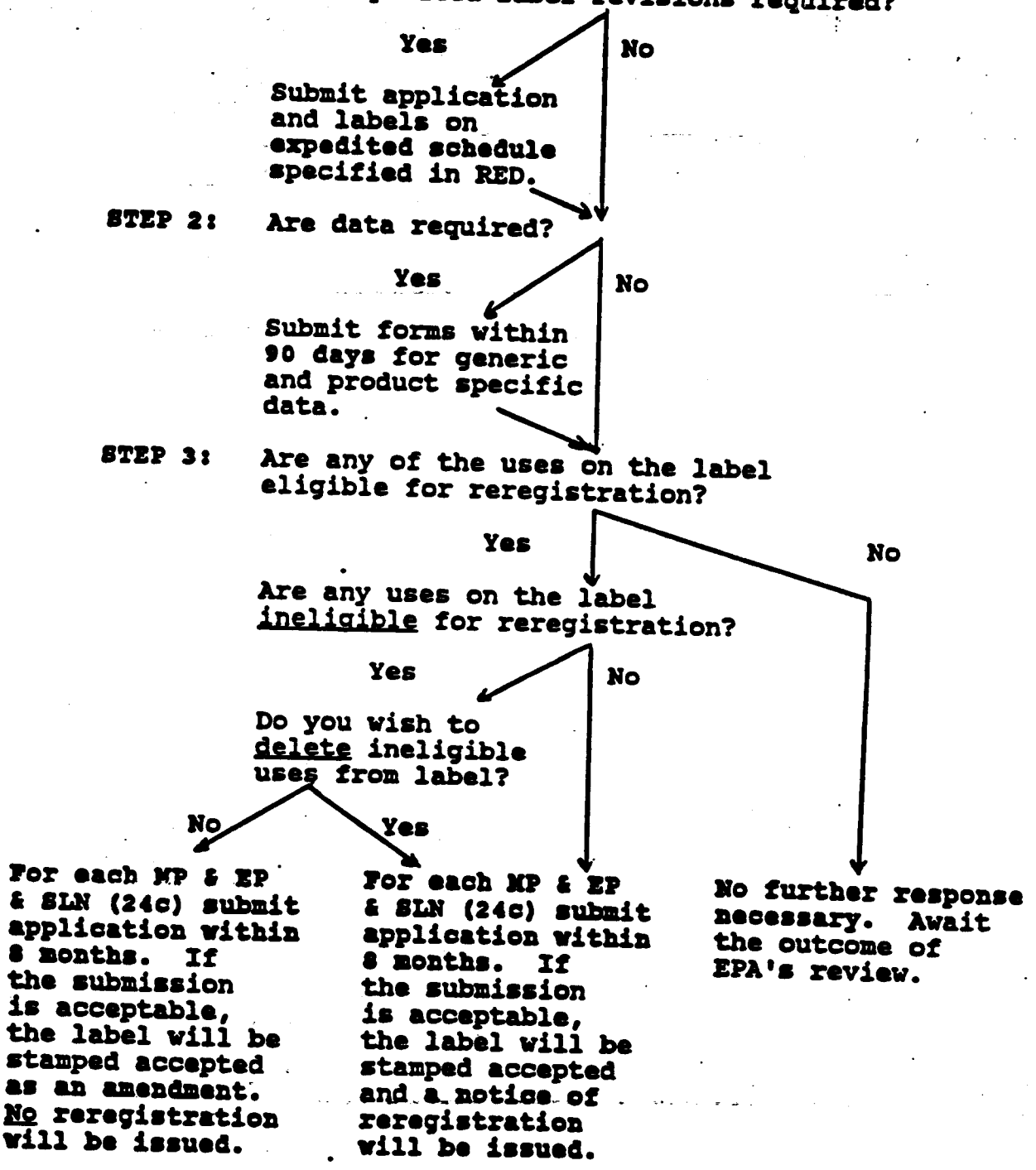
Step 3. Are Uses of a Pesticide Eligible for Reregistration? If any uses of the active ingredient(s) covered by the RED are eligible for reregistration, follow these instructions. If no uses are eligible, no further response may be needed (see page 5).

EPA's decision on the eligibility of each of the uses of the active ingredient(s) is presented in the RED. If any uses of a chemical are eligible for reregistration, registrants for manufacturing-use products (MPs), end-use products (EPs) and special local needs registrations (SLNs), must submit the items below for each product within 8 months of the date of issuance of the RED:

a. Application for Reregistration (use EPA Form 8570-1). Complete and sign the form. In Section II of that form, check the box "Other" and insert the phrase "Application for Reregistration." Use only an original application form with a red identifier number in the upper right-hand corner.

b. Five (5) copies of revised draft label and labeling. Refer to the RED for labeling changes specific to the active ingredient, follow the instructions in Section III.C. of this Handbook and refer to the Appendix of this Handbook for guidance on current requirements for labels and labeling. If there are ineligible uses on the label or labeling, you may delete such uses and avoid all requirements and consequences which may be associated with ineligible uses (e.g, generic data requirements, cancellation, suspension, etc.). If you delete certain uses now and those uses become eligible for reregistration later, you must submit an amendment application to add those uses back to the label.

FIGURE 1. HOW AND WHEN TO RESPOND TO THE REREGISTRATION ELIGIBILITY DOCUMENT (RED) FOR MANUFACTURING USE PRODUCTS (MPs), END-USE PRODUCTS (EPs) and SPECIAL LOCAL NEEDS REGISTRATIONS (SLNs).



c. Product Specific Data. You must follow the instructions in the Data Call-In Notice in the RED and in Section III of this Handbook. Responses to the data call in are due within 90 days of receipt of the RED and submission or citation of data is due within 8 months of the issuance of the RED.

d. Two (2) copies of the current Confidential Statement of Formula (EPA Form 8570-4, revised February 85). Two completed and signed CSF forms must be submitted for the basic formulation and for each alternate formulation. If CSFs are not provided for the alternate formulas, they will not be reregistered and will no longer be acceptable. The Appendix of this Handbook has specific instructions for completing the CSF form.

e. Certification With Respect to Citation of Data (EPA Form 8570-31). This form must be completed, signed and submitted for each product to assure that the data compensation provisions of FIFRA are met.

B. When No Response is Needed

If no uses of a pesticide are eligible for reregistration, it is unlikely that you will be required to submit product specific data or labeling. Uses of an active ingredient may be declared ineligible for reregistration for two possible reasons:

--Available data indicate that one or more of the criteria for an in-depth special review have been met;

--Additional generic data are required.

In the first instance, if the active ingredient is placed into special review, reregistration activities associated with those uses of the chemical are stopped until EPA makes a final determination. At that time, EPA will indicate which uses may be eligible for reregistration and which uses are to be cancelled. If some or all of the previously ineligible uses become eligible for reregistration, EPA will start the reregistration process for products containing only eligible uses.

In the second instance, based upon the review of studies for an active ingredient during reregistration, additional generic data (e.g., second- or third-tier studies) may be needed (see the RED). In such cases, the chemical's uses will not be eligible for reregistration until the additional generic data have been submitted to and reviewed and found acceptable by EPA. If the data are reviewed and found to be acceptable, EPA will indicate which uses will be eligible for reregistration and will initiate reregistration of products containing previously ineligible uses. If the data are not submitted, products containing the active ingredient may be suspended.

C. Where to Respond

By U.S. Mail:

Document Processing Desk (insert distribution code)
Office of Pesticide Programs (H7504C)
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460-0001

By express mail or by hand delivery:

Document Processing Desk (insert distribution code)
Office of Pesticide Programs (H7504C)
Room 266A, Crystal Mall 2
1921 Jefferson Davis Highway
Arlington, VA 22202

These mailing addresses and the following distribution codes must be used to assure the timely receipt and processing of your submissions. Not using them may significantly delay the handling of your submissions:

RED-SRRD-xxx (where xxx is the case code given on the front of the RED)--use this distribution code for all responses pertaining to or containing generic data. Such responses include the 90-day response forms for generic data or hard copies of generic data.

RED-RD-PMxx (where xx is the Product Manager team number)--use this distribution code for all responses pertaining to or containing product specific data or labeling. Such responses would include expedited labeling amendments, 90-day responses to product specific data requirements, hard copies of product specific data and applications for reregistration.

III. SUBMISSION OF DATA AND LABELS/LABELING

This section provides additional instructions concerning responses required for generic data, product specific data and labels/labeling.

A. Generic Data

During EPA's evaluation of an active ingredient for reregistration, additional generic data requirements may be identified that registrants must fulfill. In some instances these data requirements would have to be satisfied before an active ingredient or some of its uses could be declared eligible for reregistration. In other cases, these new data requirements would not affect the eligibility of the active ingredient, but would be necessary to confirm EPA's assessment of that chemical.

Any new data requirements and how they affect reregistration eligibility of a chemical are discussed in the RED. If new generic data requirements are imposed in a Data Dall-In Notice in the RED, registrants must respond as described in that Notice. The RED also contains instructions for completing these forms, a citation of EPA's legal authority for requiring the new data, a listing of options available to registrants for satisfying the data requirements and the name of the contact person for inquiries.

B. Product Specific Data

Product specific data may be required for the reregistration of each pesticide product in three areas--product chemistry, acute toxicity and efficacy.

1. Product Chemistry

Following are instructions for submitting product-specific data and a discussion of EPA's policy on inert ingredients.

a. Data

All data requirements for MPs, EPs and SLNs (24c's) are specified in the Data Call-In Notice in the RED. In addition:

--If you cite data from another identical, registered product, you must identify the EPA registration number of that product.

--If the product-specific data submitted or cited do not pertain to an identical formulation to the product submitted for reregistration, then new product-specific data are required to be submitted by the deadline specified in the Data Call-In Notice. The only exception is for products which EPA "groups" together a being similar enough to depend on the same data. Such groupings are discussed in the appendix to the RED (for acute toxicity purposes, for example), if it was feasible to do so.

b. Inert Ingredients

EPA has implemented a strategy for regulating inert ingredients which affects the reregistration of pesticide products. This strategy, issued on April 22, 1987 (52 FR 13305-13309) and updated on November 22, 1989 (54 FR 48314-48316), adopted certain policies designed to reduce the potential for adverse effects from pesticide products containing intentionally added inert ingredients. EPA divided the known inert ingredients into four categories:

--Inerts of toxicological concern (List 1) for which available data demonstrate toxic effects of concern (includes about 50 chemicals).

--Potentially toxic inerts (List 2) for which only limited data are available, but such data or the chemical structure suggest the potential for toxicity (includes about 60 chemicals).

--Inerts of unknown toxicity (List 3) for which no data or bases for suspecting toxic effects are available (includes up to 2,000 chemicals).

--Inerts of minimal concern (List 4) which are generally regarded as innocuous (includes about 290 chemicals).

When a RED is issued and any uses of an active ingredient are declared eligible for reregistration, all products containing that active ingredient will be subject to reregistration. EPA will, as part of the reregistration review, examine the inert ingredients of each product prior to reregistration to ensure that they do not present unreasonable risks. In reviewing the product chemistry data, EPA will identify List 1 inerts. EPA will continue to encourage registrants to eliminate any List 1 inerts present. Reregistration of products containing only List 2, 3 or 4 inerts will be unaffected by the inerts strategy.

Consistent with the strategy on inerts, a product containing a List 1 inert ingredient will not be reregistered until a full risk assessment of the product has been conducted, based on the data called in for that inert ingredient. However, the existing registration of a product containing a List 1 inert will remain valid as long as the product bears the required label warning and is in compliance with any outstanding DCI, or other activity under the inerts strategy.

Any product containing a List 2, 3 or 4 inert may be reregistered if it meets all other requirements for reregistration. As the inerts strategy is implemented and data for the List 2 and 3 inerts are reviewed, EPA may move these inerts to the other Lists. If an inert were moved to List 1, products containing that inert would become ineligible for reregistration. Inert ingredients must also meet normal registration and tolerance requirements, as applicable.

2. Acute Toxicity

The data call-in notice in the RED specifies the acute toxicity data required for reregistration of each MP or EP. It indicates whether any of the standard tests have been waived and, if so, why.

If feasible, EPA will "batch" products that are similar with respect to their acute toxicity so that one set of tests can support reregistration of each baatch of products. This approach will impose the least amount of testing necessary to adequately support the registration and labeling for pesticide products. The

main benefits of this approach are to minimize the need for animal testing, reduce the expense to registrants to generate the tests and decrease the resources EPA must spend on reviewing data. Registrants may contact other registrants with products in the same "batch" to decide whether to provide or depend on one set of data; alternatively, registrants may choose to conduct their own studies.

3. Product Performance

Consult the Data Call-In section of the RED to determine whether Product Performance data are required for your product.

Product performance (efficacy) data are generated in studies designed to document how candidate pesticide formulations perform as pest control agents. These data include tests run to determine whether a formulation is lethal to certain pest species, to document the effectiveness of the formulation in controlling pest species in actual use situations, and to determine whether certain claims beyond mere control of a pest (e.g., "six-month residual effect," "kills Warfarin resistant house mice," etc.) are justified.

EPA has standard protocols for certain efficacy tests. In general, standard methods have been developed for tests needed to substantiate claims that have been made frequently for pesticide products. As the scope of potential pesticidal claims is extremely broad, the Agency does not have standard methods for tests needed to substantiate many pesticide claims, especially those that are uncommon. The Product Performance Guidelines, Subdivision G, offer general guidance for developing protocols for efficacy testing. Proposed protocols should be submitted to EPA for review before tests are initiated.

a. Efficacy Data Submission Waiver Policy

FIFRA gives the Administrator of EPA authority "to waive data requirements pertaining to efficacy" but does not require that efficacy data requirements be waived for any class of pesticide product registered under Section 3 of the Act. As a matter of policy, EPA does not require submission of efficacy data to support many types of pesticidal claims but does require submission of such data for certain types of claims. As noted in 40 CFR 158.640, this waiver applies to the submission of efficacy data rather than to the generation of efficacy data. EPA expects each registrant to "ensure through testing that his products are efficacious when used in accordance with commonly accepted pest control practices."

This general policy notwithstanding, EPA may, at any time, require a registrant to submit efficacy data to support any claim made for a product. EPA also may require that certain claims of effectiveness be established before a Section 3 registration is granted.

Confidential Business Information: Does Not Contain National Security Information (E.O. 12065) Form Approved. OMB No. 2070-0060. Approval expres 11-30-93

EPA

United States Environmental Protection Agency
Office of Pesticide Programs (TS-767)
Washington, DC 20460

Confidential Statement of Formula

A. ☐ Basic Formulation ☐ Alternate Formulation

B. Page of

See Instructions on Back

1. Name and Address of Applicant/Registrant *(Include ZIP Code)*

2. Name and Address of Producer *(Include ZIP Code)*

3. Product Name

4. Registration No./File Symbol

5. EPA Product Mgr/Team No.

6. Country Where Formulated

7. Pounds/Gal or Bulk Density

8. pH

9. Flash Point/Flame Extension

EPA USE ONLY	10. Components in Formulation *(List as actually introduced into the formulation. Give commonly accepted chemical name, trade name, and CAS number.)*	11. Supplier Name & Address	12. EPA Reg. No.	13. Each Component in Formulation a. Amount	b. % by Weight	14. Certified Limits % by Weight a. Upper Limit	b. Lower Limit	15. Purpose in Formulation
16. Typed Name of Approving Official				17. Total Weight	100%			

18. Signature of Approving Official	19. Title	20. Phone No. *(Include Area Code)*	21. Date

EPA Form 8570-4 (Rev. 12-90) . Previous editions are obsolete.

White - EPA File Copy (original) Yellow - Applicant copy

b. Claims and Products for Which Efficacy Data Generally Are Required

Submission of efficacy data at reregistration typically is required for the following types of products:

1. products claimed to control microorganisms that pose potential threats to public health;

2. products claimed to control vertebrate pests that may directly or indirectly transmit diseases to humans;

3. potentially very hazardous products for which EPA determines that it is necessary to conduct a "risk-benefits" analysis;

4. products of types for which EPA has reasons (e.g., consumer complaints, unlikely claims, unusual use patterns, etc.) to question claims; and

C. Labels and Labeling

To remain in compliance with FIFRA, the label and labeling of each product must be revised to meet the requirements for reregistration as described below. "Labeling" includes the container label and any written, printed or graphic matter that accompanies the pesticide in U.S. commerce at any time (such as technical bulletins, collateral labeling, etc.). Applications for new uses or labeling changes that do not pertain to reregistration must be filed separately from the application for reregistration described in Step 3 earlier. Changes to labeling which must be made for reregistration include, but are not limited to:

1. Labeling changes specified in the RED. Such changes may include statements on RESTRICTED USE, groundwater hazards, protective clothing/equipment, endangered species, environmental hazards, etc.

2. The format and content of labeling as described in 40 CFR 156.10. When further acute testing is needed, the currently accepted precautionary statements will usually be retained until testing is completed and the data are reviewed.

3. Labeling changes required by Pesticide Regulatory (PR) Notices, regulations, regulatory decisions and policies issued by EPA which are relevant to the pesticide. Your product's labeling must reflect any applicable requirements which are in effect at the time the RED is issued. Some existing notices are referred to in Section B. of the Appendix.

APPENDIX

A. Confidential Statement of Formula and Instructions

B. Instructions for Label Contents

C. Sample Label Formats--General Use & Restricted Use

D. Label Regulations (40 CFR 156.10)

Instructions for Completing the Confidential Statement of Formula

The Confidential Statement of Formula (CSF) Form 8570-4 must be used. Two legible, signed copies of the form are required. Following are basic instructions:

a. All the blocks on the form must be filled in and answered completely.

b. If any block is not applicable, mark it N/A.

c. The CSF must be signed, dated and the telephone number of the responsible party must be provided.

d. All applicable information which is on the product-specific data submission must also be reported on the CSF.

e. All weights reported under item 7 must be in pounds per gallon for liquids and pounds per cubic feet for solids.

f. Flashpoint must be in degrees Fahrenheit and flame extension in inches.

g. For all active ingredients, the EPA Registration Numbers for the currently registered source products must be reported under column 12.

h. The Chemical Abstracts Service (CAS) Numbers for all actives and inerts and all common names for the trade names must be reported.

i. For the active ingredients, the percent purity of the source products must be reported under column 10 and must be exactly the same as on the source product's label.

j. All the weights in columns 13.a. and 13.b. must be in pounds, kilograms, or grams. In no case will volumes be accepted. Do not mix English and metric system units (i.e., pounds and kilograms).

k. All the items under column 13.b. must total 100 percent.

l. All items under columns 14.a. and 14.b. for the active ingredients must represent pure active form.

m. The upper and lower certified limits for all active and inert ingredients must follow the 40 CFR 158.175 instructions. An explanation must be provided if the proposed limits are different than standard certified limits.

n. When new CSFs are submitted and approved, all previously submitted CSFs become obsolete for that specific formulation.

B. INSTRUCTIONS FOR LABEL CONTENTS

40 CFR 156.10 and Pesticide Regulatory (P.R.) Notices require that specific labeling statements appear at certain locations on the label. The sample label formats in Appendix C show where these statements are to be placed.

Item 1. PRODUCT NAME - The name, brand or trademark is required to be located on the front panel, preferably centered in the upper part of the panel. The name of a product will not be accepted if it is false or misleading. [40 CFR 156.10(b)]

Item 2. COMPANY NAME AND ADDRESS - The name and address of the producer, registrant or person for whom the product is produced are required on the label and should be located at the bottom of the front panel or at the end of the label text. [40 CFR 156.10(c)]

Item 3. NET CONTENTS - A net contents statement is required on all labels or on the container of the pesticide. The preferred location is the bottom of the front panel immediately above the company name and address, or at the end of the label text. The net contents must be expressed in the largest suitable unit, e.g., "1 pound 10 ounces" rather than "26 ounces." In addition to English units, net contents may be expressed in metric units. [40 CFR 156.10(d)]

Item 4. EPA REGISTRATION NUMBER - The registration number assigned to the pesticide product must appear on the label, preceded by the phrase "EPA Registration No.," or "EPA Reg. No." The registration number must be set in type of a size and style similar to other print on that part of the label on which it appears and must run parallel to it. The registration number and the required identifying phrase must not appear in such a manner as to suggest or imply recommendation or endorsement of the product by the Agency. [40 CFR 156.10(e)]

Item 5. EPA ESTABLISHMENT NUMBER - The EPA establishment number, preceded by the phrase "EPA Est." is the final establishment at which the product was produced, and may appear in any suitable location on the label or immediate container. It must also appear on the wrapper or outside container of the package if the EPA establishment number on the immediate container cannot be clearly read through such wrapper or container. [40 CFR 156.10(f)]

Item 6A. INGREDIENTS STATEMENT - An ingredients statement is normally required on the front panel. The ingredients statement must contain the name and percentage by weight of each active ingredient and the total percentage by weight of all inert ingredients. The preferred location is immediately below the product name. The ingredients statement must run parallel with, and be clearly distinguished from, other text on the panel. It must not be placed in the body of other text. [40 CFR 156.10(g)]

Item 6B. POUNDS PER GALLON STATEMENT - For liquid agricultural

formulations, the pounds per gallon of active ingredient must be indicated on the label. [40 CFR 156.10(h)(iv)]

Item 6C. NAMES TO BE USED IN INGREDIENT STATEMENT - The acceptable common name, if there is one, shall be used, followed by the chemical name. If no common name has been established, the chemical name alone shall be used. Chemicals related to the active ingredient are allowed to be listed only if efficacy data supporting such claims are submitted or referenced. If such data are provided, the related chemicals must be listed separately and not as a portion of the active ingredient.

Item 6D. INERT INGREDIENTS RECLASSIFIED AS ACTIVE INGREDIENTS - If EPA has reclassified chemicals from inert ingredient status to active ingredient status, registrants of affected products must change the ingredient statement accordingly (See 52 FR 13307-8, April 22, 1987). If such pesticides have food uses, tolerances must either be established for such uses, or an exemption from the requirement for tolerances must be obtained.

Item 6E. NOMINAL CONCENTRATION - The amount of active ingredient declared in the ingredient statement must be the nominal concentration of the product as defined in 40 CFR 158.153(i) and described in P.R. Notice 91-2.

Item 7. WARNINGS AND PRECAUTIONARY STATEMENTS - Front panel precautionary statements must be grouped together, preferably within a block outline. The table below shows the minimum type size requirements for various size labels.

Size of Label on Front Panel in Square Inches	Signal Word Minimum Type Size All Capitals	"Keep Out of Reach of Children" Minimum Type Size
5 and under	6 point	6 point
above 5 to 10	10 point	6 point
above 10 to 15	12 point	8 point
above 15 to 30	14 point	10 point
over 30	18 point	12 point

Item 7A. CHILD HAZARD WARNING STATEMENT - The statement "Keep Out of Reach of Children" must be located on the front panel above the signal word except where contact with children during distribution or use is unlikely. [40 CFR 156.10(h)(1)(ii)]

Item 7B. SIGNAL WORD - The signal word (DANGER, WARNING, or CAUTION) is required on the front panel immediately below the child hazard warning statement. [40 CFR 156.10(h)(1)(i)].

Item 7C. SKULL & CROSSBONES AND WORD "POISON" - On products assigned a toxicity Category I on the basis of oral, dermal, or inhalation toxicity, the word "Poison" shall appear on the label in red on a background of distinctly contrasting color and the skull and crossbones shall appear in immediate proximity to the word POISON. [40 CFR 156.10(h)(1)(i)].

Item 7D. STATEMENT OF PRACTICAL TREATMENT - A statement of practical treatment (first aid or other) shall appear on the label of pesticide products in toxicity Categories I, II, and III. [40 CFR 156.10(h)(1)(iii)]

Item 7E. REFERRAL STATEMENT - The statement "see Side (or Back) Panel for Additional Precautionary Statements" is required on the front panel for all products, unless all required precautionary statements appear on the front panel. [40 CFR 156.10(h)(1)(iii)].

Item 8. SIDE/BACK PANEL PRECAUTIONARY LABELING - The precautionary statements listed below must appear together on the label under the heading "PRECAUTIONARY STATEMENTS." The preferred location is at the top of the side or back panel preceding the directions for use, and it is preferred that these statements be surrounded by a block outline. Each of the three hazard warning statements must be headed by the appropriate hazard title. [40 CFR 156.10(h)(2)]

Item 8A. HAZARD TO HUMANS AND DOMESTIC ANIMALS - Where a hazard exists to humans or domestic animals, precautionary statements are required indicating the particular hazard, the route(s) of exposure and the precautions to be taken to avoid accident, injury or damage. [40 CFR 156.10(h)(2)(i)]

Item 8B. ENVIRONMENTAL HAZARD - Where a hazard exists to non-target organisms excluding humans and domestic animals, precautionary statements are required stating the nature of the hazard and the appropriate precautions to avoid potential accident, injury, or damage. [40 CFR 156.10(h)(2)(ii)]

Item 8C. PHYSICAL OR CHEMICAL HAZARD - FLAMMABILITY Precautionary statements relating to flammability of a product are required to appear on the label if it meets the criteria in the PHYS/CHEM Labeling Appendix. The requirement is based on the results of the flashpoint determinations and flame extension tests required to be submitted for all products. These statements are to be located in the side/back panel precautionary statements section, preceded by the heading "Physical/Chemical Hazards." Note that no signal word is used in conjunction with the flammability statements.

Item 9A. RESTRICTED USE CLASSIFICATION - FIFRA sec. 3(d) requires that all pesticide formulations/uses be classified for either general or restricted use. Products classified for restricted use may be limited to use by certified applicators or persons under their direct supervision (or may be subject to other restrictions that may be imposed by regulation). If your product has been classified for restricted use, then these requirements apply:

1. **All uses restricted.** The following statements must be placed in a black box at the top of the front panel of the label and labeling:

   a. The statement "Restricted Use Pesticide" must appear at the top of the front panel of the label. The statement must be set in type of the same minimum size as required for human hazard signal word [see table in 40 CFR 156.10(h)(1)(iv)]. No statements of any kind may appear above this RUP statement.

   b. The reason for the the restricted use classification must appear below the RUP statement. The RED will prescribe this statement.

   c. A summary statement of the terms of restriction must appear directly below this reason statement on the front panel. If use is restricted to certified applicators, the following statement is required: "For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's Certification." The RED will specify what statement must be used.

2. **Some but not all uses restricted.** If the RED states that some uses are classified for restricted use, and some are unclassified, several courses of action are available:

   a. You may label the product for Restricted use. If you do so, you may include on the label uses that are unrestricted, but you may not distinguish them on the label as being unrestricted.

   b. You may delete all restricted uses from your label and submit draft labeling bearing only unrestricted uses.

   c. You may "split" your registration, i.e., register two separate products with identical formulations, one bearing only unrestricted uses, and the other bearing restricted uses. To do so, submit two applications for reregistration, each containing all forms and necessary labels. Both applications should be submitted simultaneously. Note that the products will be assigned separate registration numbers.

Item 9B. MISUSE STATEMENT - All products must bear the misuse statement, "It is a violation of Federal law to use this product in a manner inconsistent with its labeling." This statement appears at the beginning of the directions for use, directly beneath the heading of that section.

Item 10A. REENTRY STATEMENT - If a restricted entry interval (REI) has been established by the Agency, it must be included on the label. Additional worker protection statements may be required in

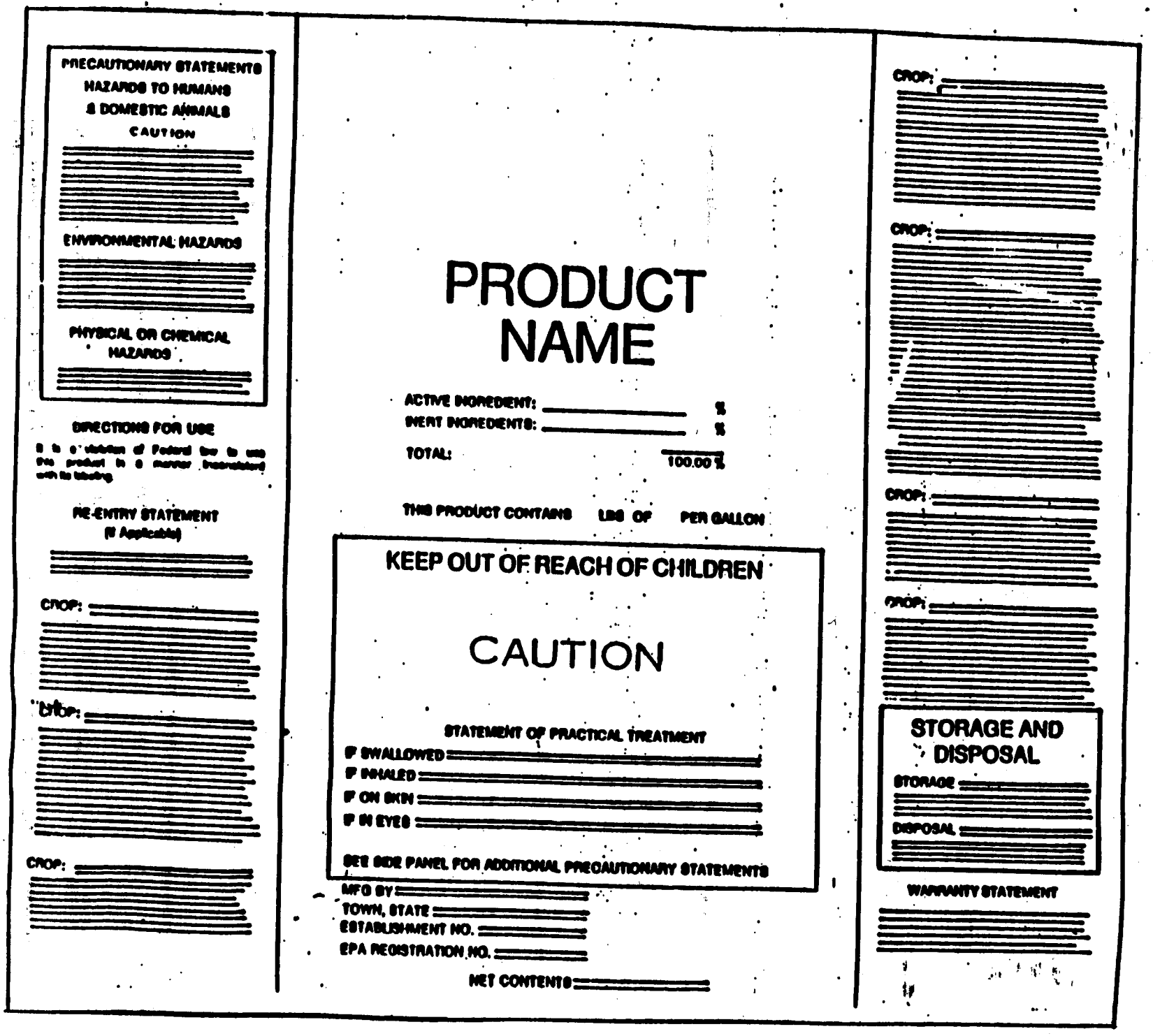
accordance with PR Notice 83-2, March 29, 1983.

Item 10B. STORAGE AND DISPOSAL BLOCK - All labels are required to bear storage and disposal statements. These statements are developed for specific containers, sizes, and chemical content. These instructions must be grouped and appear under the heading "Storage and Disposal" in the directions for use. This heading must be set in the same type sizes as required for the child hazard warning. Refer to P.R. Notices 83-3 and 84-1 to determine the storage and disposal instructions appropriate for your products.

Item 10C. DIRECTIONS FOR USE - Directions for use must be stated in terms which can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. When followed, directions must be adequate to protect the public from fraud and from personal injury and to prevent unreasonable adverse effects on the environment. [40 CFR 156.10(i)(2)]

COLLATERAL LABELING

Bulletins, leaflets, circulars, brochures, data sheets, flyers, or other written or graphic printed matter which is referred to on the label or which is to accompany the product are termed collateral labeling. Such labeling may not bear claims or representations that differ in substance from those accepted in connection with registration of the product. Collateral labeling must be made part of the response to the RED and submitted for review.



LABEL FORMAT FOR UNCLASSIFIED PRODUCTS

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS & DOMESTIC ANIMALS

DANGER

ENVIRONMENTAL HAZARDS

PHYSICAL OR CHEMICAL HAZARDS

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

RE-ENTRY STATEMENT
(If Applicable)

STORAGE AND DISPOSAL

STORAGE

DISPOSAL

CROP:

RESTRICTED USE PESTICIDE

Due to (insert reason*)

FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION

(*for example, "Due to high acute toxicity.")

PRODUCT NAME

ACTIVE INGREDIENT: _____ %

INERT INGREDIENTS: _____ %

TOTAL: 100.00 %

THIS PRODUCT CONTAINS LBS OF PER GALLON

KEEP OUT OF REACH OF CHILDREN

DANGER—POISON

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED

IF INHALED

IF ON SKIN

IF IN EYES

SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

MFG BY

TOWN, STATE

ESTABLISHMENT NO.

EPA REGISTRATION NO.

NET CONTENTS

CROP:

CROP:

CROP:

CROP:

CROP:

WARRANTY STATEMENT

LABEL FORMAT FOR PRODUCTS CLASSIFIED FOR RESTRICTED USE

submitter has asserted a confidential business information claim concerning the material).

(5) A copy of each document, proposal, or other item of written material concerning the Registration Standard provided by the Agency to any person or party outside of government (within 15 working days after the item is made available to such person or party).

(6) A copy of the Registration Standard;

(7) With respect to a Registration Standard for which the Agency has determined that a substantially complete chronic health and teratology data base exists, a copy of the FEDERAL REGISTER notice concerning availability of a proposed Registration Standard, and a copy of each comment received in response to that notice (within 10 working days after receipt by the Agency, or 15 working days if the submitter has asserted a confidential business information claim concerning the material).

(8) A copy of the FEDERAL REGISTER notice announcing the issuance of the Registration Standard (within 10 working days after the publication of the notice).

(c) *Index of the docket.* The Agency will establish and keep current an index to the docket for each Registration Standard. The index will include, but is not limited to:

(1) A list of each meeting between the Agency and any person or party outside of government, containing the date and subject of the meeting, the names of participants and the name of the person requesting the meeting.

(2) A list of each document in the docket by title, source or recipient(s), and the date the document was received or provided by the Agency.

(d) *Availability of docket and indices.* (1) The Agency will make available to the public for inspection and copying the docket and index for any Registration Standard.

(2) The Agency will establish and maintain a mailing list of persons who have specifically requested that they receive indices for Registration Standard dockets. On a quarterly basis, EPA will distribute the indices of new materials placed in the public docket to these persons. Annually, EPA will require that persons on the list renew their requests for inclusion on the list.

(3) The Agency will issue annually in the FEDERAL REGISTER (in conjunction with the annual schedule notice specified in § 155.25) a notice announcing the availability of docket indices.

(4) Each FEDERAL REGISTER notice of availability of a Registration Standard will announce the availability of the docket index for that Standard.

§ 155.24 Notice of availability.

(a) The Agency will issue in the FEDERAL REGISTER a notice announcing the issuance and availability of Registration Standard which:

(1) Concerns a previously unregistered active ingredient; or

(2) Concerns a previously registered active ingredient, and the Registration Standard states that registrants will be required (under FIFRA section 3(c)(2)(B)) to submit chronic health (including, but not limited to, chronic feeding, oncogenicity and reproduction) or teratology studies.

(b) Interested persons may submit comments concerning any Registration Standard described by paragraph (a) of this section at any time.

(c) The Agency will issue in the FEDERAL REGISTER a notice announcing the availability of, and providing opportunity for comment on, each proposed Registration Standard which concerns a previously registered active ingredient for which the Agency has determined that a substantially complete chronic health and teratology data base exists. Following the comment period and issuance of the Registration Standard, the Agency will issue in the FEDERAL REGISTER a notice of availability of the Registration Standard.

PART 156—LABELING REQUIREMENTS FOR PESTICIDES AND DEVICES

AUTHORITY: 7 U.S.C. 136–136y.

§ 156.10 Labeling requirements.

(a) *General*—(1) *Contents of the label.* Every pesticide products shall bear a label containing the information specified by the Act and the regu-

lations in this Part. The contents of a label must show clearly and prominently the following:

(i) The name, brand, or trademark under which the product is sold as prescribed in paragraph (b) of this section;

(ii) The name and address of the producer, registrant, or person for whom produced as prescribed in paragraph (c) of this section;

(iii) The net contents as prescribed in paragraph (d) of this section;

(iv) The product registration number as prescribed in paragraph (e) of this section;

(v) The producing establishment number as prescribed in paragraph (f) of this section;

(vi) An ingredient statement as prescribed in paragraph (g) of this section;

(vii) Warning or precautionary statements as prescribed in paragraph (h) of this section;

(viii) The directions for use as prescribed in paragraph (i) of this section; and

(ix) The use classification(s) as prescribed in paragraph (j) of this section.

(2) *Prominence and legibility.* (i) All words, statements, graphic representations, designs or other information required on the labeling by the Act or the regulations in this part must be clearly legible to a person with normal vision, and must be placed with such conspicuousness (as compared with other words, statements, designs, or graphic matter on the labeling) and expressed in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use.

(ii) All required label text must:

(A) Be set in 6-point or larger type;

(B) Appear on a clear contrasting background; and

(C) Not be obscured or crowded.

(3) *Language to be used.* All required label or labeling text shall appear in the English language. However, the Agency may require or the applicant may propose additional text in other languages as is considered necessary to protect the public. When additional text in another language is necessary, all labeling requirements will be applied equally to both the English and other-language versions of the labeling.

(4) *Placement of Label*—(i) *General.* The label shall appear on or be securely attached to the immediate container of the pesticide product. For purposes of this Section, and the misbranding provisions of the Act, "securely attached" shall mean that a label can reasonably be expected to remain affixed during the foreseeable conditions and period of use. If the immediate container is enclosed within a wrapper or outside container through which the label cannot be clearly read, the label must also be securely attached to such outside wrapper or container, if it is a part of the package as customarily distributed or sold.

(ii) *Tank cars and other bulk containers*—(A) *Transportation.* While a pesticide product is in transit, the appropriate provisions of 49 CFR Parts 170–189, concerning the transportation of hazardous materials, and specifically those provisions concerning the labeling, marking and placarding of hazardous materials and the vehicles carrying them, define the basic Federal requirements. In addition, when any registered pesticide product is transported in a tank car, tank truck or other mobile or portable bulk container, a copy of the accepted label must be attached to the shipping papers, and left with the consignee at the time of delivery.

(B) *Storage.* When pesticide products are stored in bulk containers, whether mobile or stationary, which remain in the custody of the user, a copy of the label of labeling, including all appropriate directions for use, shall be securely attached to the container in the immediate vicinity of the discharge control valve.

(5) *False or misleading statements.* Pursuant to section 2(q)(1)(A) of the Act, a pesticide or a device declared subject to the Act pursuant to § 153.240, is misbranded if its labeling is false or misleading in any particular including both pesticidal and non-pesticidal claims. Examples of statements or representations in the labeling which constitute misbranding include:

(i) A false or misleading statement concerning the composition of the product;

(ii) A false or misleading statement concerning the effectiveness of the product as a pesticide or device;

(iii) A false or misleading statement about the value of the product for purposes other than as a pesticide or device;

(iv) A false or misleading comparison with other pesticides or devices;

(v) Any statement directly or indirectly implying that the pesticide or device is recommended or endorsed by any agency of the Federal Government;

(vi) The name of a pesticide which contains two or more principal active ingredients if the name suggests one or more but not all such principal active ingredients even though the names of the other ingredients are stated elsewhere in the labeling;

(vii) A true statement used in such a way as to give a false or misleading impression to the purchaser;

(viii) Label disclaimers which negate or detract from labeling statements required under the Act and these regulations;

(ix) Claims as to the safety of the pesticide or its ingredients, including statements such as "safe," "nonpoisonous," "noninjurious," "harmless" or "nontoxic to humans and pets" with or without such a qualifying phrase as "when used as directed"; and

(x) Non-numerical and/or comparative statements on the safety of the product, including but not limited to:

(A) "Contains all natural ingredients";

(B) "Among the least toxic chemicals known"

(C) "Pollution approved"

(6) *Final printed labeling.* (i) Except as provided in paragraph (a)(6)(ii) of this section, final printed labeling must be submitted and accepted prior to registration. However, final printed labeling need not be submitted until draft label texts have been provisionally accepted by the Agency.

(ii) Clearly legible reproductions or photo reductions will be accepted for unusual labels such as those silk-screened directly onto glass or metal containers or large bag or drum labels. Such reproductions must be of microfilm reproduction quality.

(b) *Name, brand, or trademark.* (1) The name, brand, or trademark under which the pesticide product is sold shall appear on the front panel of the label.

(2) No name, brand, or trademark may appear on the label which:

(i) Is false or misleading, or

(ii) Has not been approved by the Administrator through registration or supplemental registration as an additional name pursuant to § 152.132.

(c) Name and address of producer, registrant, or person for whom produced. An unqualified name and address given on the label shall be considered as the name and address of the producer. If the registrant's name appears on the label and the registrant is not the producer, or if the name of the person for whom the pesticide was produced appears on the label, it must be qualified by appropriate wording such as "Packed for • • •," "Distributed by • • •," or "Sold by • • •" to show that the name is not that of the producer.

(d) *Net weight or measure of contents.* (1) The net weight or measure of content shall be exclusive of wrappers or other materials and shall be the average content unless explicitly stated as a minimum quantity.

(2) If the pesticide is a liquid, the net content statement shall be in terms of liquid measure at 68° F (20°C) and shall be expressed in conventional American units of fluid ounces, pints, quarts, and gallons.

(3) If the pesticide is solid or semi-solid, viscous or pressurized, or is a mixture of liquid and solid, the net content statement shall be in terms of weight expressed as avoirdupois pounds and ounces.

(4) In all cases, net content shall be stated in terms of the largest suitable units, i.e., "1 pound 10 ounces" rather than "26 ounces."

(5) In addition to the required units specified, net content may be expressed in metric units.

(6) Variation above minimum content or around an average is permissible only to the extent that it represents deviation unavoidable in good manufacturing practice. Variation below a stated minimum is not permitted. In no case shall the average con-

tent of the packages in a shipment fall below the stated average content.

(e) *Product registration number.* The registration number assigned to the pesticide product at the time of registration shall appear on the label, preceded by the phrase "EPA Registration No.," or the phrase "EPA Reg. No." The registration number shall be set in type of a size and style similar to other print on that part of the label on which it appears and shall run parallel to it. The registration number and the required identifying phrase shall not appear in such a manner as to suggest or imply recommendation or endorsement of the product by the Agency.

(f) *Producing establishments registration number.* The producing establishment registration number preceded by the phrase "EPA Est.", of the final establishment at which the product was produced may appear in any suitable location on the label or immediate container. It must appear on the wrapper or outside container of the package if the EPA establishment registration number on the immediate container cannot be clearly read through such wrapper or container.

(g) *Ingredient statement*—(1) *General.* The label of each pesticide product must bear a statement which contains the name and percentage by weight of each active ingredient, the total percentage by weight of all inert ingredients; and if the pesticide contains arsenic in any form, a statement of the percentages of total and water-soluble arsenic calculated as elemental arsenic. The active ingredients must be designated by the term "active ingredients" and the inert ingredients by the term "inert ingredients," or the singular forms of these terms when appropriate. Both terms shall be in the same type size, be aligned to the same margin and be equally prominent. The statement "Inert Ingredients, none" is not required for pesticides which contain 100 percent active ingredients. Unless the ingredient statement is a complete analysis of the pesticide, the term "analysis" shall not be used as a heading for the ingredient statement.

(2) *Position of ingredient statement.* (i) The ingredient statement is normally required on the front panel of the label. If there is an outside container or wrapper through which the ingredient statement cannot be clearly read, the ingredient statement must also appear on such outside container or wrapper. If the size or form of the package makes it impracticable to place the ingredient statement on the front panel of the label, permission may be granted for the ingredient statement to appear elsewhere.

(ii) The text of the ingredient statement must run parallel with other text on the panel on which it appears, and must be clearly distinguishable from and must not be placed in the body of other text.

(3) *Names to be used in ingredient statement.* The name used for each ingredient shall be the accepted common name, if there is one, followed by the chemical name. The common name may be used alone only if it is well known. If no common name has been established, the chemical name alone shall be used. In no case will the use of a trademark or proprietary name be permitted unless such name has been accepted as a common name by the Administrator under the authority of section 25(c)(6).

(4) *Statements of percentages.* The percentages of ingredients shall be stated in terms of weight-to-weight. The sum of percentages of the active and the inert ingredients shall be 100. Percentages shall not be expressed by a range of values such as "22-25%." If the uses of the pesticide product are expressed as weight of active ingredient per unit area, a statement of the weight of active ingredient per unit volume of the pesticide formulation shall also appear in the ingredient statement.

(5) *Accuracy of stated percentages.* The percentages given shall be as precise as possible reflecting good manufacturing practice. If there may be unavoidable variation between manufacturing batches, the value stated for each active ingredient shall be the lowest percentage which may be present.

(6) *Deterioration.* Pesticides which change in chemical composition significantly must meet the following labeling requirements:

(i) In cases where it is determined that a pesticide formulation changes chemical composition significantly, the product must bear the following statement in a prominent position on the label: "Not for sale or use after [date]."

(ii) The product must meet all label claims up to the expiration time indicated on the label.

(7) *Inert ingredients.* The Administrator may require the name of any inert ingredient(s) to be listed in the ingredient statement if he determines that such ingredient(s) may pose a hazard to man or the environment.

(h) *Warnings and precautionary statements.* Required warnings and precautionary statements concerning the general areas of toxicological hazard including hazard to children, environmental hazard, and physical or chemical hazard fall into two groups; those required on the front panel of the labeling and those which may appear elsewhere. Specific requirements concerning content, placement, type size, and prominence are given below.

(1) *Required front panel statements.* With the exception of the child hazard warning statement, the text required on the front panel of the label is determined by the Toxicity Category of the pesticide. The category is assigned on the basis of the highest hazard shown by any of the indicators in the table below:

Hazard indicators	Toxicity categories			
	I	II	III	IV
Oral LD_{50}	Up to and including 50 mg/kg.	From 50 thru 500 mg/kg.	From 500 thru 5000 mg/kg.	Greater than 5000 mg/kg.
Inhalation LC_{50}	Up to and including .2 mg/liter.	From .2 thru 2 mg/liter	From 2 thru 20 mg/liter	Greater than 20 mg/liter.
Dermal LD_{50}	Up to and including 200 mg/kg.	From 200 thru 2000	From 2,000 thru 20,000	Greater than 20,000.
Eye effects	Corrosive; corneal opacity not reversible within 7 days.	Corneal opacity reversible within 7 days; irritation persisting for 7 days.	No corneal opacity; irritation reversible within 7 days.	No irritation.
Skin effects	Corrosive	Severe irritation at 72 hours.	Moderate irritation at 72 hours.	Mild or slight irritation at 72 hours.

(i) *Human hazard signal word*—(A) *Toxicity Category I.* All pesticide products meeting the criteria of Toxicity Category I shall bear on the front panel the signal word "Danger." In addition if the product was assigned to Toxicity Category I on the basis of its oral, inhalation or dermal toxicity (as distinct from skin and eye local effects) the word "Poison" shall appear in red on a background of distinctly contrasting color and the skull and crossbones shall appear in immediate proximity to the word "poison."

(B) *Toxicity Category II.* All pesticide products meeting the criteria of Toxicity Category II shall bear on the front panel the signal word "Warning."

(C) *Toxicity Category III.* All pesticide products meeting the criteria of Toxicity Category III shall bear on the front panel the signal word "Caution."

(D) *Toxicity Category IV.* All pesticide products meeting the criteria of Toxicity Category IV shall bear on the front panel the signal word "Caution."

(E) *Use of signal words.* Use of any signal word(s) associated with a higher Toxicity Category is not permitted except when the Agency determines that such labeling is necessary to prevent unreasonable adverse effects on man or the environment. In no case shall more than one human hazard signal word appear on the front panel of a label.

(ii) *Child hazard warning.* Every pesticide product label shall bear on the front panel the statement "keep out of reach of children." Only in cases where the likelihood of contact with children during distribution, marketing, storage or use is demonstrated by the applicant to be extremely remote, or if the nature of the pesticide is such

that it is approved for use on infants or small children, may the Administrator waive this requirement.

(iii) *Statement of practical treatment*—(A) *Toxicity Category I.* A statement of practical treatment (first aid or other) shall appear on the front panel of the label of all pesticides falling into Toxicity Category I on the basis of oral, inhalation or dermal toxicity. The Agency may, however, permit reasonable variations in the placement of the statement of practical treatment is some reference such as "See statement of practical treatment on back panel" appears on the front panel near the word "Poison" and the skull and crossbones.

(B) *Other toxicity categories.* The statement of practical treatment is not required on the front panel except as described in paragraph (h)(1)(iii)(A) of this section. The applicant may, however, include such a front panel statement at his option. Statements of practical treatment are, however, required elsewhere on the label in accord with paragraph (h)(2) of this section if they do not appear on the front panel.

(iv) *Placement and prominence.* All the require front panel warning statements shall be grouped together on the label, and shall appear with sufficient prominence relative to other front panel text and graphic material to make them unlikely to be overlooked under customary conditions of purchase and use. The following table shows the minimum type size requirements for the front panel warning statements on various sizes of labels:

Size of label front panel in square inches	Points	
	Required signal word, all capitals	"Keep out of reach of children"
5 and under	6	6
Above 5 to 10	10	6
Above 10 to 15	12	8
Above 15 to 30	14	10
Over 30	18	12

(2) *Other required warnings and precautionary statements.* The warnings and precautionary statements as required below shall appear together on the label under the general heading "Precautionary Statements" and under appropriate subheadings of "Hazard to Humans and Domestic Animals," "Environmental Hazard" and "Physical or Chemical Hazard."

(i) *Hazard to humans and domestic animals.* (A) Where a hazard exists to humans or domestic animals, precautionary statements are required indicating the particular hazard, the route(s) of exposure and the precautions to be taken to avoid accident, injury or damage. The precautionary paragraph shall be immediately preceded by the appropriate hazard signal word.

(B) The following table depicts typical precautionary statements. These statements must be modified or expanded to reflect specific hazards.

Toxicity category	Precautionary statements by toxicity category	
	Oral, inhalation, or dermal toxicity	Skin and eye local effects
I	Fatal (poisonous) if swallowed [inhaled or absorbed through skin]. Do not breathe vapor [dust or spray mist]. Do not get in eyes, on skin, or on clothing [or front panel statement of practical treatment required.].	Corrosive, causes eye and skin damage [or skin irritation]. Do not get in eyes, on skin, or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful or fatal if swallowed. [Appropriate first aid statement required.]
II	May be fatal if swallowed [inhaled or absorbed through the skin]. Do not breathe vapors [dust or spray mist]. Do not get in eyes, on skin, or on clothing. [Appropriate first aid statements required.].	Causes eye [and skin] irritation. Do not get in eyes, on skin, or on clothing. Harmful if swallowed. [Appropriate first aid statement required.]
III	Harmful if swallowed [inhaled or absorbed through the skin]. Avoid breathing vapors [dust or spray mist]. Avoid contact with skin [eyes or clothing]. [Appropriate first aid statement required.].	Avoid contact with skin, eyes or clothing. In case of contact immediately flush eyes or skin with plenty of water. Get medical attention if irritation persists.
IV	[No precautionary statements required.]	[No precautionary statements required.]

(ii) *Environmental hazards.* Where a hazard exists to non target organisms excluding humans and domestic animals, precautionary statements are required stating the nature of the hazard and the appropriate precautions to avoid potential accident, injury or damage. Examples of the hazard statements and the circumstances under which they are required follow:

(A) If a pesticide intended for outdoor use contains an active ingredient with a mammalian acute oral LD_{50} of 100 or less, the statement "This Pesticide is Toxic to Wildlife" is required.

(B) If a pesticide intended for outdoor use contains an active ingredient with a fish acute LC_{50} of 1 ppm or less, the statement "This Pesticide is Toxic to Fish" is required.

(C) If a pesticide intended for outdoor use contains an active ingredient with an avian acute oral LD_{50} of 100 mg/kg or less, or a subacute dietary LC_{50} of 500 ppm or less, the statement "This Pesticide is Toxic to Wildlife" is required.

(D) If either accident history or field studies demonstrate that use of the pesticide may result in fatality to birds, fish or mammals, the statement "This pesticide is extremely toxic to wildlife (fish)" is required.

(E) For uses involving foliar application to agricultural crops, forests, or shade trees, or for mosquito abatement treatments, pesticides toxic to pollinating insects must bear appropriate label cautions.

(F) For all outdoor uses other than aquatic applications the label must bear the caution "Keep out of lakes, ponds or streams. Do not contaminate water by cleaning of equipment or disposal of wastes."

(iii) *Physical or chemical hazards.* Warning statements on the flammability or explosive characteristics of the pesticide are required as follows:

Flash point	Required text
(A) Pressurized Containers	
Flash point at or below 20° F; if there is a flashback at any valve opening.	Extremely flammable. Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130° F may cause bursting.
Flash point above 20° F and not over 80° F or if the flame extension is more than 18 in long at a distance of 6 in from the flame.	Flammable. Contents under pressure. Keep away from heat, sparks, and open flame. Do not puncture or incinerate container. Exposure to temperatures above 130° F may cause bursting.
All other pressurized containers	Contents under pressure. Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130° F may cause bursting.
(B) Nonpressurized Containers	
At or below 20° F	Extremely flammable. Keep away from fire, sparks, and heated surfaces.
Above 20° F and not over 80° F	Flammable. Keep away from heat and open flame.
Above 80° F and not over 150° F	Do not use or store near heat or open flame.

(i) *Directions for Use*—(1) *General requirements*—(i) *Adequacy and clarity of directions.* Directions for use must be stated in terms which can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. When followed, directions must be adequate to protect the public from fraud and from personal injury and to prevent unreasonable adverse effects on the environment.

(ii) *Placement of directions for use.* Directions may appear on any portion of the label provided that they are conspicuous enough to be easily read by the user of the pesticide product. Directions for use may appear on printed or graphic matter which accompanies the pesticide provided that:

(A) If required by the Agency, such printed or graphic matter is securely attached to each package of the pesticide, or placed within the outside wrapper or bag;

(B) The label bears a reference to the directions for use in accompanying leaflets or circulars, such as "See directions in the enclosed circular:" and

(C) The Administrator determines that it is not necessary for such directions to appear on the label.

(iii) *Exceptions to requirement for direction for use*—(A) Detailed directions for use may be omitted from labeling of pesticides which are intended for use only by manufacturers of products other than pesticide products in their regular manufacturing processes, provided that:

(*1*) The label clearly shows that the product is intended for use only in manufacturing processes and specifies the type(s) of products involved.

(*2*) Adequate information such as technical data sheets or bulletins, is available to the trade specifying the type of product involved and its proper use in manufacturing processes;

(*3*) The product will not come into the hands of the general public except after incorporation into finished products; and

(*4*) The Administrator determines that such directions are not necessary to prevent unreasonable adverse effects on man or the environment.

(B) Detailed directions for use may be omitted from the labeling of pesticide products for which sale is limited to physicians, veterinarians, or druggists, provided that:

(*1*) The label clearly states that the product is for use only by physicians or veterinarians;

(*2*) The Administrator determines that such directions are not necessary to prevent unreasonable adverse effects on man or the environment; and

(*3*) The product is also a drug and regulated under the provisions of the Federal Food, Drug and Cosmetic Act.

(C) Detailed directions for use may be omitted from the labeling of pesticide products which are intended for use only by formulators in preparing pesticides for sale to the public, provided that:

(*1*) There is information readily available to the formulators on the composition, toxicity, methods of use, applicable restrictions or limitations, and effectiveness of the product for pesticide purposes;

(*2*) The label clearly states that the product is intended for use only in manufacturing, formulating, mixing, or repacking for use as a pesticide and specifies the type(s) of pesticide products involved;

(*3*) The product as finally manufactured, formulated, mixed, or repackaged is registered; and

(*4*) The Administrator determines that such directions are not necessary to prevent unreasonable adverse effects on man or the environment.

(2) *Contents of Directions for Use.* The directions for use shall include the following, under the headings "Directions for Use":

(i) The statement of use classification as prescribed in paragraph (j) of this section immediately under the heading "Directions for Use."

(ii) Immediately below the statement of use classification, the statement "It is a violation of Federal law to use this product in a manner inconsistent with its labeling."

(iii) The site(s) of application, as for example the crops, animals, areas, or objects to be treated.

(iv) The target pest(s) associated with each site.

(v) The dosage rate associated with each site and pest.

(vi) The method of application, including instructions for dilution, if required, and type(s) of application apparatus or equipment required.

(vii) The frequency and timing of applications necessary to obtain effective results without causing unreasonable adverse effects on the environment.

(viii) Specific limitations on reentry to areas where the pesticide has been applied, meeting the requirements concerning reentry provided by 40 CFR Part 170.

(ix) Specific directions concerning the storage and disposal of the pesticide and its container, meeting the requirements of 40 CFR Part 165. These instructions shall be grouped and appear under the heading "Storage and Disposal." This heading must be set in type of the same minimum sizes as required for the child hazard warning. (See Table in § 162.10(h)(1)(iv))

(x) Any limitations or restrictions on use required to prevent unreasonable adverse effects, such as:

(A) Required intervals between application and harvest of food or feed crops.

(B) Rotational crop restrictions.

(C) Warnings as required against use on certain crops, animals, objects, or in or adjacent to certain areas.

(D) [Reserved]

(E) For restricted use pesticides, a statement that the pesticide may be applied under the direct supervision of a certified applicator who is not physically present at the site of application but nonetheless available to the person applying the pesticide, unless the Agency has determined that the pesticide may only be applied under the direct supervision of a certified applicator who is physically present.

(F) Other pertinent information which the Administrator determines to be necessary for the protection of man and the environment.

(j) *Statement of Use Classification.* By October 22, 1976, all pesticide products must bear on their labels a statement of use classification as described in paragraphs (j) (1) and (2) of this section. Any pesticide product for which some uses are classified for general use and others for restricted use shall be separately labeled according to the labeling standards set forth in this subsection, and shall be marketed as separate products with different registration numbers, one bearing directions only for general use(s) and the other bearing directions for restricted use(s) except that, if a product has both restricted use(s) and general use(s), both of these uses may appear on a product labeled for restricted use. Such products shall be subject to the provisions of paragraph (j)(2) of this section.

(1) *General Use Classification.* Pesticide products bearing directions for use(s) classified general shall be labeled with the exact words "General Classification" immediately below the heading "Directions for Use." And reference to the general classification that suggests or implies that the general utility of the pesticide extends beyond those purposes and uses contained in the Directions for Use will be considered a false or misleading statement under the statutory definitions of misbranding.

(2) *Restricted Use Classification.* Pesticide products bearing direction for use(s) classified restricted shall bear statements of restricted use classification on the front panel as described below:

(i) *Front panel statement of restricted use classification.* (A) At the top of the front panel of the label, set in type of the same minimum sizes as required for human hazard signal words (see table in paragraph (h)(1)(iv) of this section), and appearing with sufficient prominence relative to other text and graphic material on the front panel to make it unlikely to be overlooked under customary conditions of purchase and use, the statement "Restricted Use Pesticide" shall appear.

(B) Directly below this statement on the front panel, a summary statement of the terms of restriction imposed as a precondition to registration shall appear. If use is restricted to certified applicators, the following statement is required: "For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification." If, however, other regulatory restrictions are imposed, the Administrator will define the appropriate wording for the terms of restriction by regulation.

[40 FR 28268, July 3, 1975; 40 FR 32329, Aug. 1, 1975; 40 FR 36571, Aug. 21, 1975, as amended at 43 FR 5786, Feb. 9, 1978. Redesignated and amended at 53 FR 15991, 15999, May 4, 1988]

APPENDIX F

Generic Data Call-In

No generic data are being called in for daminozide

APPENDIX G

Product Specific Data Call-In

DATA CALL-IN NOTICE

CERTIFIED MAIL

Dear Sir or Madam:

This Notice requires you and other registrants of pesticide products containing the active ingredient identified in Attachment A of this Notice, the Data Call-In Chemical Status Sheet, to submit certain product specific data as noted herein to the U.S. Environmental Protection Agency (EPA, the Agency). These data are necessary to maintain the continued registration of your product(s) containing this active ingredient. Within 90 days after you receive this Notice you must respond as set forth in Section III below. Your response must state:

1. How you will comply with the requirements set forth in this Notice and its Attachments A through G; or

2. Why you believe you are exempt from the requirements listed in this Notice and in Attachment C, Requirements Status and Registrant's Response Form, (see section III-B); or

3. Why you believe EPA should not require your submission of product specific data in the manner specified by this Notice (see section III-D).

If you do not respond to this Notice, or if you do not satisfy EPA that you will comply with its requirements or should be exempt or excused from doing so, then the registration of your product(s) subject to this Notice will be subject to suspension. We have provided a list of all of your products subject to this Notice in Attachment B, Data Call-In Response Form, as well as a list of all registrants who were sent this Notice (Attachment F).

The authority for this Notice is section 3(c)(2)(B) of the Federal Insecticide, Fungicide and Rodenticide Act as amended (FIFRA), 7 U.S.C. section 136a(c)(2)(B). Collection of this information is authorized under the Paperwork Reduction Act by OMB Approval No. 2070-0107 (expiration date 3-31-96).

This Notice is divided into six sections and seven Attachments. The Notice itself contains information and instructions applicable to all Data Call-In Notices. The Attachments contain specific chemical information and instructions. The six sections of the Notice are:

Section I - Why You Are Receiving This Notice
Section II - Data Required By This Notice
Section III - Compliance With Requirements Of This Notice
Section IV - Consequences Of Failure To Comply With This Notice
Section V - Registrants' Obligation To Report Possible Unreasonable Adverse Effects
Section VI - Inquiries And Responses To This Notice

The Attachments to this Notice are:

A - Data Call-In Chemical Status Sheet
B - Product-Specific Data Call-In Response Form
C - Requirements Status and Registrant's Response Form
D - EPA Grouping of End-Use Products for Meeting Acute Toxicology Data Requirements for Reregistration
E - EPA Acceptance Criteria
F - List of Registrants Receiving This Notice
G - Cost Share and Data Compensation Forms, and Product Specific Data Report Form

SECTION I. WHY YOU ARE RECEIVING THIS NOTICE

The Agency has reviewed existing data for this active ingredient and reevaluated the data needed to support continued registration of the subject active ingredient. The Agency has concluded that the only additional data necessary are product specific data. No additional generic data requirements are being imposed. You have been sent this Notice because you have product(s) containing the subject active ingredient.

SECTION II. DATA REQUIRED BY THIS NOTICE

II-A. DATA REQUIRED

The product specific data required by this Notice are specified in Attachment C, Requirements Status and Registrant's Response Form. Depending on the results of the studies required in this Notice, additional testing may be required.

II-B. SCHEDULE FOR SUBMISSION OF DATA

You are required to submit the data or otherwise satisfy the data requirements specified in Attachment C, Requirements Status and Registrant's Response Form, within the timeframes provided.

II-C. TESTING PROTOCOL

All studies required under this Notice must be conducted in accordance with test standards outlined in the Pesticide Assessment Guidelines for those studies for which guidelines have been established.

These EPA Guidelines are available from the National Technical Information Service (NTIS), Attn: Order Desk, 5285 Port Royal Road, Springfield, Va 22161 (tel: 703-487-4650).

Protocols approved by the Organization for Economic Cooperation and Development (OECD) are also acceptable if the OECD-recommended test standards conform to those specified in the Pesticide Data Requirements regulation (40 CFR § 158.70). When using the OECD protocols, they should be modified as appropriate so that the data generated by the study will satisfy the requirements of 40 CFR § 158. Normally, the Agency will not extend deadlines for complying with data requirements when the studies were not conducted in accordance with acceptable standards. The OECD protocols are available from OECD, 1750 Pennsylvania Avenue N.W., Washington, D.C. 20006.

All new studies and proposed protocols submitted in response to this Data Call-In Notice must be in accordance with Good Laboratory Practices [40 CFR Part 160.3(a)(6)].

II-D. REGISTRANTS RECEIVING PREVIOUS SECTION 3(c)(2)(B) NOTICES ISSUED BY THE AGENCY

Unless otherwise noted herein, this Data Call-In does not in any way supersede or change the requirements of any previous Data Call-In(s), or any other agreements entered into with the Agency pertaining to such prior Notice. Registrants must comply with the requirements of all Notices to avoid issuance of a Notice of Intent to Suspend their affected products.

SECTION III. COMPLIANCE WITH REQUIREMENTS OF THIS NOTICE

III-A. SCHEDULE FOR RESPONDING TO THE AGENCY

The appropriate responses initially required by this Notice for product specific data must be submitted to the Agency within 90 days after your receipt of this Notice. Failure to adequately respond to this Notice within 90 days of your receipt will be a basis for issuing a Notice of Intent to Suspend (NOIS) affecting your products. This and other bases for issuance of NOIS due to failure to comply with this Notice are presented in Section IV-A and IV-B.

III-B. OPTIONS FOR RESPONDING TO THE AGENCY

The options for responding to this Notice for product specific data are: (a) voluntary cancellation, (b) agree to satisfy the product specific data requirements imposed by this notice or (c) request a data waiver(s).

A discussion of how to respond if you chose the Voluntary Cancellation option is presented below. A discussion of the various options available for satisfying the product specific data requirements of this Notice is contained in Section III-C. A discussion of options relating to requests for data waivers is contained in Section III-D.

There are two forms that accompany this Notice of which, depending upon your response, one or both must be used in your response to the Agency. These forms are the Data-Call-In Response Form, and the Requirements Status and Registrant's Response Form, Attachment B and Attachment C. The Data Call-In Response Form must be submitted as part of every response to this Notice. In addition, one copy of the Requirements Status and Registrant's Response Form must be submitted for each product listed on the Data Call-In Response Form unless the voluntary cancellation option is selected or unless the product is identical to another (refer to the instructions for completing the Data Call-In Response Form in Attachment B). Please note that the company's authorized representative is required to sign the first page of the Data Call-In Response Form and Requirements Status and Registrant's Response Form (if this form is required) and initial any subsequent pages. The forms contain separate detailed instructions on the response options. Do not alter the printed material. If you have questions or need assistance in preparing your response, call or write the contact person(s) identified in Attachment A.

1. Voluntary Cancellation - You may avoid the requirements of this Notice by requesting voluntary cancellation of your product(s) containing the active ingredient that is the subject of this Notice. If you wish to voluntarily cancel your product, you must submit a completed Data Call-In Response Form, indicating your election of this option. Voluntary cancellation is item number 5 on the Data Call-In Response Form. If you choose this option, this is the only form that you are required to complete.

If you chose to voluntarily cancel your product, further sale and distribution of your product after the effective date of cancellation must be in accordance with the Existing Stocks provisions of this Notice which are contained in Section IV-C.

2. Satisfying the Product Specific Data Requirements of this Notice There are various options available to satisfy the product specific data requirements of this Notice. These options are discussed in Section III-C of this Notice and comprise options 1 through 6 on the Requirements Status and Registrant's Response Form and item numbers 7a and 7b on the Data Call-In Response Form. Deletion of a use(s) and the low volume/minor use option are not valid options for fulfilling product specific data requirements.

3. Request for Product Specific Data Waivers. Waivers for product specific data are discussed in Section III-D of this Notice and are covered by option 7 on the Requirements Status and Registrant's Response Form. If you choose one of these options, you must submit both forms as well as any other information/data pertaining to the option chosen to address the data requirement.

III-C SATISFYING THE DATA REQUIREMENTS OF THIS NOTICE

If you acknowledge on the Data Call-In Response Form that you agree to satisfy the product specific data requirements (i.e. you select item number 7a or 7b), then you must select one of the six options on the Requirements Status and Registrant's Response Form related to data production for each data requirement. Your option selection should be entered under item number 9, "Registrant Response." The six options related to data production are the first six options discussed under item 9 in the instructions for completing the Requirements Status and Registrant's Response Form. These six options are listed immediately below with information in parentheses to guide registrants to additional instructions provided in this Section. The options are:

(1) I will generate and submit data within the specified timeframe (Developing Data)
(2) I have entered into an agreement with one or more registrants to develop data jointly (Cost Sharing)
(3) I have made offers to cost-share (Offers to Cost Share)
(4) I am submitting an existing study that has not been submitted previously to the Agency by anyone (Submitting an Existing Study)
(5) I am submitting or citing data to upgrade a study classified by EPA as partially acceptable and upgradeable (Upgrading a Study)
(6) I am citing an existing study that EPA has classified as acceptable or an existing study that has been submitted but not reviewed by the Agency (Citing an Existing Study)

Option 1, Developing Data -- If you choose to develop the required data it must be in conformance with Agency deadlines and with other Agency requirements as referenced herein and in the attachments. All data generated and submitted must comply with the Good Laboratory Practice (GLP) rule (40 CFR Part 160), be conducted according to the Pesticide Assessment Guidelines (PAG), and be in conformance with the requirements of PR Notice 86-5.

The time frames in the Requirements Status and Registrant's Response Form are the time frames that the Agency is allowing for the submission of completed study reports. The noted deadlines run from the date of the receipt of this Notice by the registrant. If the data are not submitted by the deadline, each registrant is subject to receipt of a Notice of Intent to Suspend the affected registration(s).

If you cannot submit the data/reports to the Agency in the time required by this Notice and intend to seek additional time to meet the requirements(s), you must submit a request to the Agency which includes: (1) a detailed description of the expected difficulty and (2) a proposed schedule including alternative dates for meeting such requirements on a step-by-step basis. You must explain any technical or laboratory difficulties and provide documentation from the laboratory performing the testing. While EPA is considering your request, the original deadline remains. The Agency will respond to your request in writing. If EPA does not grant your request, the original deadline remains. Normally, extensions can be requested only in cases of extraordinary testing problems beyond the expectation or control of the registrant. Extensions will not be given in submitting the 90-day responses. Extensions will not be considered if the request for extension is not made in a

timely fashion; in no event shall an extension request be considered if it is submitted at or after the lapse of the subject deadline.

Option 2, Agreement to Share in Cost to Develop Data -- Registrants may only choose this option for acute toxicity data and certain efficacy data and only if EPA has indicated in the attached data tables that your product and at least one other product are similar for purposes of depending on the same data. If this is the case, data may be generated for just one of the products in the group. The registration number of the product for which data will be submitted must be noted in the agreement to cost share by the registrant selecting this option. If you choose to enter into an agreement to share in the cost of producing the required data but will not be submitting the data yourself, you must provide the name of the registrant who will be submitting the data. You must also provide EPA with documentary evidence that an agreement has been formed. Such evidence may be your letter offering to join in an agreement and the other registrant's acceptance of your offer, or a written statement by the parties that an agreement exists. The agreement to produce the data need not specify all of the terms of the final arrangement between the parties or the mechanism to resolve the terms. Section 3(c)(2)(B) provides that if the parties cannot resolve the terms of the agreement they may resolve their differences through binding arbitration.

Option 3, Offer to Share in the Cost of Data Development -- This option only applies to acute toxicity and certain efficacy data as described in option 2 above. If you have made an offer to pay in an attempt to enter into an agreement or amend an existing agreement to meet the requirements of this Notice and have been unsuccessful, you may request EPA (by selecting this option) to exercise its discretion not to suspend your registration(s), although you do not comply with the data submission requirements of this Notice. EPA has determined that as a general policy, absent other relevant considerations, it will not suspend the registration of a product of a registrant who has in good faith sought and continues to seek to enter into a joint data development/cost sharing program, but the other registrant(s) developing the data has refused to accept your offer. To qualify for this option, you must submit documentation to the Agency proving that you have made an offer to another registrant (who has an obligation to submit data) to share in the burden of developing that data. You must also submit to the Agency a completed EPA Form 8570-32, Certification of Offer to Cost Share in the Development of Data, Attachment G. In addition, you must demonstrate that the other registrant to whom the offer was made has not accepted your offer to enter into a cost-sharing agreement by including a copy of your offer and proof of the other registrant's receipt of that offer (such as a certified mail receipt). Your offer must, in addition to anything else, offer to share in the burden of producing the data upon terms to be agreed or failing agreement to be bound by binding arbitration as provided by FIFRA section 3(c)(2)(B)(iii) and must not qualify this offer. The other registrant must also inform EPA of its election of an option to develop and submit the data required by this Notice by submitting a Data Call-In Response Form and a Requirements Status and Registrant's Response Form committing to develop and submit the data required by this Notice.

In order for you to avoid suspension under this option, you may not withdraw your offer to share in the burdens of developing the data. In addition, the other registrant must fulfill its commitment to develop and submit the data as required by this Notice. If the other registrant fails to develop the data or for some other reason is subject to suspension, your registration as well as

that of the other registrant will normally be subject to initiation of suspension proceedings, unless you commit to submit, and do submit the required data in the specified time frame. In such cases, the Agency generally will not grant a time extension for submitting the data.

Option 4, Submitting an Existing Study -- If you choose to submit an existing study in response to this Notice, you must determine that the study satisfies the requirements imposed by this Notice. You may only submit a study that has not been previously submitted to the Agency or previously cited by anyone. Existing studies are studies which predate issuance of this Notice. Do not use this option if you are submitting data to upgrade a study. (See Option 5).

You should be aware that if the Agency determines that the study is not acceptable, the Agency will require you to comply with this Notice, normally without an extension of the required date of submission. The Agency may determine at any time that a study is not valid and needs to be repeated.

To meet the requirements of the DCI Notice for submitting an existing study, all of the following three criteria must be clearly met:

a. You must certify at the time that the existing study is submitted that the raw data and specimens from the study are available for audit and review and you must identify where they are available. This must be done in accordance with the requirements of the Good Laboratory Practice (GLP) regulation, 40 CFR Part 160. As stated in 40 CFR 160.3(j) " '[r]aw data' means any laboratory worksheets, records, memoranda, notes, or exact copies thereof, that are the result of original observations and activities of a study and are necessary for the reconstruction and evaluation of the report of that study. In the event that exact transcripts of raw data have been prepared (e.g., tapes which have been transcribed verbatim, dated, and verified accurate by signature), the exact copy or exact transcript may be substituted for the original source as raw data. 'Raw data' may include photographs, microfilm or microfiche copies, computer printouts, magnetic media, including dictated observations, and recorded data from automated instruments." The term "specimens", according to 40 CFR 160.3(k), means "any material derived from a test system for examination or analysis."

b. Health and safety studies completed after May 1984 must also contain all GLP-required quality assurance and quality control information, pursuant to the requirements of 40 CFR Part 160. Registrants must also certify at the time of submitting the existing study that such GLP information is available for post-May 1984 studies by including an appropriate statement on or attached to the study signed by an authorized official or representative of the registrant.

c. You must certify that each study fulfills the acceptance criteria for the Guideline relevant to the study provided in the FIFRA Accelerated Reregistration Phase 3 Technical Guidance and that the study has been conducted according to the Pesticide Assessment Guidelines (PAG) or meets the purpose of the PAG (both available from NTIS). A study not conducted according to the PAG may be submitted to the Agency for consideration if the registrant believes that the study clearly meets the purpose of the PAG. The registrant is referred to 40 CFR 158.70 which states the Agency's policy regarding acceptable protocols. If you wish to submit the

study, you must, in addition to certifying that the purposes of the PAG are met by the study, clearly articulate the rationale why you believe the study meets the purpose of the PAG, including copies of any supporting information or data. It has been the Agency's experience that studies completed prior to January 1970 rarely satisfied the purpose of the PAG and that necessary raw data are usually not available for such studies.

If you submit an existing study, you must certify that the study meets all requirements of the criteria outlined above.

If you know of a study pertaining to any requirement in this Notice which does not meet the criteria outlined above but does contain factual information regarding unreasonable adverse effects, you must notify the Agency of such a study. If such study is in the Agency's files, you need only cite it along with the notification. If not in the Agency's files, you must submit a summary and copies as required by PR Notice 86-5.

Option 5, Upgrading a Study -- If a study has been classified as partially acceptable and upgradeable, you may submit data to upgrade that study. The Agency will review the data submitted and determine if the requirement is satisfied. If the Agency decides the requirement is not satisfied, you may still be required to submit new data normally without any time extension. Deficient, but upgradeable studies will normally be classified as supplemental. However, it is important to note that not all studies classified as supplemental are upgradeable. If you have questions regarding the classification of a study or whether a study may be upgraded, call or write the contact person listed in Attachment A. If you submit data to upgrade an existing study you must satisfy or supply information to correct all deficiencies in the study identified by EPA. You must provide a clearly articulated rationale of how the deficiencies have been remedied or corrected and why the study should be rated as acceptable to EPA. Your submission must also specify the MRID number(s) of the study which you are attempting to upgrade and must be in conformance with PR Notice 86-5.

Do not submit additional data for the purpose of upgrading a study classified as unacceptable and determined by the Agency as not capable of being upgraded.

This option should also be used to cite data that has been previously submitted to upgrade a study, but has not yet been reviewed by the Agency. You must provide the MRID number of the data submission as well as the MRID number of the study being upgraded.

The criteria for submitting an existing study, as specified in Option 4 above, apply to all data submissions intended to upgrade studies. Additionally your submission of data intended to upgrade studies must be accompanied by a certification that you comply with each of those criteria as well as a certification regarding protocol compliance with Agency requirements.

Option 6, Citing Existing Studies -- If you choose to cite a study that has been previously submitted to EPA, that study must have been previously classified by EPA as acceptable or it must be a study which has not yet been reviewed by the Agency. Acceptable

toxicology studies generally will have been classified as "core-guideline" or "core minimum." For all other disciplines the classification would be "acceptable." With respect to any studies for which you wish to select this option you must provide the MRID number of the study you are citing and, if the study has been reviewed by the Agency, you must provide the Agency's classification of the study.

If you are citing a study of which you are not the original data submitter, you must submit a completed copy of EPA Form 8570-31, Certification with Respect to Data Compensation Requirements.

Registrants who select one of the above 6 options must meet all of the requirements described in the instructions for completing the Data Call-In Response Form and the Requirements Status and Registrant's Response Form, as appropriate.

III-D REQUESTS FOR DATA WAIVERS

If you request a waiver for product specific data because you believe it is inappropriate, you must attach a complete justification for the request, including technical reasons, data and references to relevant EPA regulations, guidelines or policies. (Note: any supplemental data must be submitted in the format required by PR Notice 86-5). This will be the only opportunity to state the reasons or provide information in support of your request. If the Agency approves your waiver request, you will not be required to supply the data pursuant to section 3(c)(2)(B) of FIFRA. If the Agency denies your waiver request, you must choose an option for meeting the data requirements of this Notice within 30 days of the receipt of the Agency's decision. You must indicate and submit the option chosen on the Requirements Status and Registrant's Response Form. Product specific data requirements for product chemistry, acute toxicity and efficacy (where appropriate) are required for all products and the Agency would grant a waiver only under extraordinary circumstances. You should also be aware that submitting a waiver request will not automatically extend the due date for the study in question. Waiver requests submitted without adequate supporting rationale will be denied and the original due date will remain in force.

SECTION IV. CONSEQUENCES OF FAILURE TO COMPLY WITH THIS NOTICE

IV-A NOTICE OF INTENT TO SUSPEND

The Agency may issue a Notice of Intent to Suspend products subject to this Notice due to failure by a registrant to comply with the requirements of this Data Call-In Notice, pursuant to FIFRA section 3(c)(2)(B). Events which may be the basis for issuance of a Notice of Intent to Suspend include, but are not limited to, the following:

1. Failure to respond as required by this Notice within 90 days of your receipt of this Notice.

2. Failure to submit on the required schedule an acceptable proposed or final protocol when such is required to be submitted to the Agency for review.

3. Failure to submit on the required schedule an adequate progress report on a study as required by this Notice.

4. Failure to submit on the required schedule acceptable data as required by this Notice.

5. Failure to take a required action or submit adequate information pertaining to any option chosen to address the data requirements (e.g., any required action or information pertaining to submission or citation of existing studies or offers, arrangements, or arbitration on the sharing of costs or the formation of Task Forces, failure to comply with the terms of an agreement or arbitration concerning joint data development or failure to comply with any terms of a data waiver).

6. Failure to submit supportable certifications as to the conditions of submitted studies, as required by Section III-C of this Notice.

7. Withdrawal of an offer to share in the cost of developing required data.

8. Failure of the registrant to whom you have tendered an offer to share in the cost of developing data and provided proof of the registrant's receipt of such offer or failure of a registrant on whom you rely for a generic data exemption either to:

   a. inform EPA of intent to develop and submit the data required by this Notice on a Data Call-In Response Form and a Requirements Status and Registrant's Response Form;

   b. fulfill the commitment to develop and submit the data as required by this Notice; or

   c. otherwise take appropriate steps to meet the requirements stated in this Notice, unless you commit to submit and do submit the required data in the specified time frame.

9. Failure to take any required or appropriate steps, not mentioned above, at any time following the issuance of this Notice.

IV-B. BASIS FOR DETERMINATION THAT SUBMITTED STUDY IS UNACCEPTABLE

The Agency may determine that a study (even if submitted within the required time) is unacceptable and constitutes a basis for issuance of a Notice of Intent to Suspend. The grounds for suspension include, but are not limited to, failure to meet any of the following:

1. EPA requirements specified in the Data Call-In Notice or other documents incorporated by reference (including, as applicable, EPA Pesticide Assessment Guidelines, Data Reporting Guidelines, and GeneTox Health Effects Test Guidelines) regarding the design, conduct, and reporting of required studies. Such requirements include, but are not limited to, those relating to test material, test procedures, selection of species, number of animals, sex and distribution of animals, dose and effect levels to be tested or attained, duration of test, and, as applicable,

Good Laboratory Practices.

2. EPA requirements regarding the submission of protocols, including the incorporation of any changes required by the Agency following review.

3. EPA requirements regarding the reporting of data, including the manner of reporting, the completeness of results, and the adequacy of any required supporting (or raw) data, including, but not limited to, requirements referenced or included in this Notice or contained in PR 86-5. All studies must be submitted in the form of a final report; a preliminary report will not be considered to fulfill the submission requirement.

IV-C EXISTING STOCKS OF SUSPENDED OR CANCELLED PRODUCTS

EPA has statutory authority to permit continued sale, distribution and use of existing stocks of a pesticide product which has been suspended or cancelled if doing so would be consistent with the purposes of the Act.

The Agency has determined that such disposition by registrants of existing stocks for a suspended registration when a section 3(c)(2)(B) data request is outstanding would generally not be consistent with the Act's purposes. Accordingly, the Agency anticipates granting registrants permission to sell, distribute, or use existing stocks of suspended product(s) only in exceptional circumstances. If you believe such disposition of existing stocks of your product(s) which may be suspended for failure to comply with this Notice should be permitted, you have the burden of clearly demonstrating to EPA that granting such permission would be consistent with the Act. You must also explain why an "existing stocks" provision is necessary, including a statement of the quantity of existing stocks and your estimate of the time required for their sale, distribution, and use. Unless you meet this burden the Agency will not consider any request pertaining to the continued sale, distribution, or use of your existing stocks after suspension.

If you request a voluntary cancellation of your product(s) as a response to this Notice and your product is in full compliance with all Agency requirements, you will have, under most circumstances, one year from the date your 90 day response to this Notice is due, to sell, distribute, or use existing stocks. Normally, the Agency will allow persons other than the registrant such as independent distributors, retailers and end users to sell, distribute or use such existing stocks until the stocks are exhausted. Any sale, distribution or use of stocks of voluntarily cancelled products containing an active ingredient for which the Agency has particular risk concerns will be determined on case-by-case basis.

Requests for voluntary cancellation received after the 90 day response period required by this Notice will not result in the Agency granting any additional time to sell, distribute, or use existing stocks beyond a year from the date the 90 day response was due unless you demonstrate to the Agency that you are in full compliance with all Agency requirements, including the requirements of this Notice. For example, if you decide to voluntarily cancel your registration six months before a 3 year study is scheduled to be submitted, all progress reports and other information necessary

to establish that you have been conducting the study in an acceptable and good faith manner must have been submitted to the Agency, before EPA will consider granting an existing stocks provision.

SECTION V. REGISTRANTS' OBLIGATION TO REPORT POSSIBLE UNREASONABLE ADVERSE EFFECTS

Registrants are reminded that FIFRA section 6(a)(2) states that if at any time after a pesticide is registered a registrant has additional factual information regarding unreasonable adverse effects on the environment by the pesticide, the registrant shall submit the information to the Agency. Registrants must notify the Agency of any factual information they have, from whatever source, including but not limited to interim or preliminary results of studies, regarding unreasonable adverse effects on man or the environment. This requirement continues as long as the products are registered by the Agency.

SECTION VI. INQUIRIES AND RESPONSES TO THIS NOTICE

If you have any questions regarding the requirements and procedures established by this Notice, call the contact person(s) listed in Attachment A, the Data Call-In Chemical Status Sheet.

All responses to this Notice (other than voluntary cancellation requests and generic data exemption claims) must include a completed Data Call-In Response Form and a completed Requirements Status and Registrant's Response Form (Attachment B for generic data and Attachment C for product specific data) and any other documents required by this Notice, and should be submitted to the contact person(s) identified in Attachment A. If the voluntary cancellation or generic data exemption option is chosen, only the Data Call-In Response Form need be submitted.

The Office of Compliance Monitoring (OCM) of the Office of Pesticides and Toxic Substances (OPTS), EPA, will be monitoring the data being generated in response to this Notice.

Sincerely yours,

Daniel M. Barolo, Director
Special Review and
Reregistration Division

Attachments

A - Data Call-In Chemical Status Sheet
B - Product-Specific Data Call-In Response Form
C - Requirements Status and Registrant's Response Form for the Product Specific Data Call-In

D - EPA Grouping of End-Use Products for Meeting Acute Toxicology Data Requirements for Reregistration

E - EPA Acceptance Criteria

F - List of Registrants Receiving This Notice

G - Cost Share and Data Compensation Forms, and Product Specific Data Report Form

ATTACHMENT A

Product Specific DCI Chemical Status Sheet

DAMINOZIDE: DATA CALL-IN CHEMICAL STATUS SHEET

INTRODUCTION

You have been sent this Product Specific Data Call-In Notice because you have product(s) containing daminozide.

This Product Specific Data Call-In Chemical Status Sheet, contains an overview of data required by this notice, and point of contact for inquiries pertaining to the reregistration of daminozide. This attachment is to be used in conjunction with (1) the Product Specific Data Call-In Notice, (2) the Product Specific Data Call-In Response Form (Attachment B), (3) the Requirements Status and Registrant's Form (Attachment C), (4) the Agency's Grouping of End-Use Products for Meeting Acute Toxicology Data Requirement (Attachment D), (5) the EPA Acceptance Criteria (Attachment E), (6) a list of registrants receiving this DCI (Attachment F) and (7) the Cost Share and Data Compensation Forms in replying to this daminozide Product Specific Data Call-In (Attachment G). Instructions and guidance accompany each form.

DATA REQUIRED BY THIS NOTICE

The additional data requirements needed to complete the database for daminozide are contained in the Requirements Status and Registrant's Response, Attachment C. The Agency has concluded that additional data on daminozide are needed for specific products. These data are required to be submitted to the Agency within the time frame listed. These data are needed to fully complete the reregistration of all eligible daminozide products.

INQUIRIES AND RESPONSES TO THIS NOTICE

If you have any questions regarding the generic database of daminozide, please contact Mr. Andrew Ertman at (703) 308-8063.

If you have any questions regarding the product specific data requirements and procedures established by this Notice, please contact Franklin Gee at (703) 308-8008.

All responses to this Notice for the Product Specific data requirements should be submitted to:

Franklin Gee
Special Review and Reregistration Division (H7508W)
Office of Pesticide Programs
U.S. Environmental Protection Agency
Washington, D.C. 20460

RE: Daminozide

ATTACHMENT B

Product Specific Data Call-In Response Forms (Form A)
plus Instructions

INSTRUCTIONS FOR COMPLETING THE "DATA CALL-IN RESPONSE" FORM FOR PRODUCT SPECIFIC DATA

Item 1-4. Already completed by the Agency.

Item 5. If you wish to voluntarily cancel your product, answer "yes". If you choose this option, you will not have to provide the data required by the Data Call-In Notice and you will not have to complete any other forms. Further sale and distribution of your product after the effective date of cancellation must be in accordance with the Existing Stocks provision of the Data Call-In Notice (Section IV-C).

Item 6. Not applicable since this form calls in product specific data only. However, if your product is identical to another product and you qualify for a data exemption, you must respond with "yes" to Item 7a (MUP) or 7B (EUP) on this form, provide the EPA reregistration numbers of your source (s); you would not complete the requirements status and registrant's response" form. Examples of such products include repackaged products and Special Local Needs (Section 24c) products which are identical to federally registered products.

Item 7a. For each manufacturing use product (MUP) for which you wish to maintain registration, you must agree to satisfy the data requirements by responding "yes."

Item 7b. For each end use product (EUP) for which you wish to maintain registration, you must agree to satisfy the data requirements by responding "yes." if you are requesting a data waiver, answer "yes" here; in addition, on the "Requirements Status and Registrant's Response" form under Item 9, you must respond with option 7 (Waiver Request) for each study for which you are requesting a waiver. See item 6 with regard to identical products and data exemptions.

Items 8-11.Self-explanatory.

Note: You may provide additional information that does not fit on this form in a signed letter that accompanies this form. For example, you may wish to report that your product has already been transferred to another or that you have already voluntarily cancelled this product. For these cases, please supply all relevant details so that the Agency can ensure that its records are correct.

United States Environmental Protection Agency
Washington, D. C. 20460

DATA CALL-IN RESPONSE

Form Approved
OMB No. 2070-0107
2070-0057
Approval Expires 03-31-96

INSTRUCTIONS: Please type or print in ink. Please read carefully the attached instructions and supply the information requested on this form. Use additional sheet(s) if necessary.

1. Company name and Address	2. Case # and Name	3. Date and Type of DCI
SAMPLE COMPANY NO STREET ADDRESS NO CITY, XX 00000	0032 Daminozide	PRODUCT SPECIFIC

4. EPA Product Registration	5. I wish to cancel this product registration voluntarily.	6. Generic Data		7. Product Specific Data	
		6a. I am claimimg a Generic Data Exemption because I obtain the active ingredient from the source EPA registration number listed below.	6b. I agree to satisfy Generic Data requirements as indicated on the attached form entitled "Requirements Status and Registrant's Response."	7a. My product is a MUP and I agree to satisfy the MUP requirements on the attached form entitled "Requirements Status and Registrant's Response."	7b. My product is an EUP and I agree to satisfy the EUP requirements on the attached form entitled "Requirements Status and Registrant's Response."
NNNNNN-NNNNN		N.A.	N.A.		

8. Certification

I certify that the statements made on this form and all attachments are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine, imprisonment or both under applicable law.

Signature and Title of Company's Authorized Representative_____

9. Date

10. Name of Company Contact

11. Phone Number

ATTACHMENT C

Product Specific Data Call-In Requirements Status and Registrant's Response Forms (Form B) plus Instructions

INSTRUCTIONS FOR COMPLETING THE "REQUIREMENTS STATUS AND REGISTRANT'S RESPONSE" FORM FOR PRODUCT SPECIFIC DATA

Item 1-3 Completed by the Agency. Note the unique identifier number assigned by the Agency in item 3. This number must be used in the transmittal document for any data submissions in response to this Data Call-In Notice.

Item 4. The guidelines reference numbers of studies required to support the product's continued registration are identified. These guidelines, in addition to the requirements specified in the Notice, govern the conduct of the required studies. Note that series 61 and 62 in product chemistry are now listed under 40 CFR 158.155 through 158.180, Subpart c.

Item 5. The study title associated with the guideline reference number is identified.

Item 6. The use patters (s) of the pesticide associated with the product specific requirements is (are) identified. For most product specific data requirements, all use patterns are covered by the data requirements. In the case of efficacy data, the required studies only pertain to products which have the use sites and/ or pests indicated.

Item 7. The substance to be tested is identified by the Agency. For product specific data, the product as formulated for sale and distribution is the test substance, except in rare cases.

Item 8. The due date for submission of each study is identified. It is normally based on 8 months after issuance of the Reregistration Eligibility Decisions unless the Agency determines that a longer time period is necessary.

Item 9. Enter Only one of the following response codes for each data requirement to show how you intend to comply with the data requirements listed in this table. Fuller descriptions of each option are contained in the Data Call-In Notice.

1. I will generate and submit data by the specified due date (Developing Data). By indicating that I have chosen this option, I certify that I will comply with all the requirements pertaining to the conditions for submittal of this study as outlined in the Data Call-In Notice.

2. I have entered into an agreement with one or more registrants to develop data jointly (Cost Sharing). I am submitting a copy of this agreement. I understand that this option is available on for acute toxicity or certain efficacy data and only if the Agency indicates in an attachment to this notice that my product is similar. Enough to another product to qualify for this option. I certify that another party in the agreement is committing to submit or provide the required data; if the required study is not submitted on time, my product my be subject to suspension.

3. I have made offers to share in the cost to develop data (Offers to Cost Share). I understand that

this option is available only for acute toxicity or certain efficacy data and only if the Agency indicates in an attachment to this Data Call-In Notice that my product is similar enough to another product to qualify for this option. I am submitting evidence that I have made an offer to another registrant (who has an obligation to submit data) to share in the cost of that data. I am also submitting a completed " Certification of offer to Cost Share in the Development Data" form. I am including a copy of my offer and proof of the other registrant's receipt of that offer. I am identifying the party which is committing to submit or provide the require data; if the required study is not submitted on time, my product may be subject to suspension. I understand that other terms under Option 3 in the Data Call-In Notice (Section III-C.1.) apply as well.

4. By the specified due date, I will submit an existing study that has not been submitted previously to the Agency by anyone (submitting an Existing Study). I certify that this study will meet all the requirements for submittal of existing data outlined in option 4 in the Data Call-In Notice (Section III-C.1.) and will meet the attached acceptance criteria (for acute toxicity and product chemistry data). I will attach the needed supporting information along with this response. I also certify that I have determined that this study will fill the data requirement for which I have indicated this choice.

5. By the specified due date, I will submit or cite data to upgrade a study classified by the Agency as partially acceptable and upgrade (upgrading a study). I will submit evidence of the Agency's review indicating that the study may be upgraded and what information is required to do so. I will provide the MRID or Accession number of the study at the due date. I understand that the conditions for this Option outlined Option 5 in the Data Call-In Notice (Section III-C.1.) apply.

6. By the specified due date, I will cite an existing study that the Agency has classified as acceptable or an existing study that has been submitted but not reviewed by the Agency (Citing an Existing Study). If I am citing another registrant's study, I understand that this option is available only for acute toxicity or certain efficacy data and only if the cited study was conducted on my product, an identical product or a product which the Agency has "grouped" with one or more other products for purposes of depending on the same data. I may also choose this option if I am citing my own data. In either case, I will provide the MRID or Accession number (s) number (s) for the cited data on a "Product Specific Data Report" form or in a similar format. If I cite another registrant's data, I will submit a completed "Certification With Respect To Data Compensation Requirements" form.

7. I request a waiver for this study because it is inappropriate for my product (Waiver Request). I am attaching a complete justification for this request, including technical reasons, data and references to relevant EPA regulations, guidelines or policies. [Note: any supplemental data must be submitted in the format required by P.R. Notice 86-5]. I understand that this is my only opportunity to state the reasons or provide information in support of my request. If the Agency approves my waiver request, I will not be require to supply the data pursuant to Section 3(c) (2) (B) of FIFRA. If the Agency denies my waiver request, I must choose a method of

meeting the data requirements of this Notice by the due date stated by this Notice. In this case, I must, within 30 days of my receipt of the Agency's written decision, submit a revised "Requirements Status chosen. I also understand that the deadline for submission of data as specified by the original data cal-in notice will not change.

Items 10-13. Self-explanatory.

NOTE: You may provide additional information that does not fit on this form in a signed letter that accompanies this form. For example, you may wish to report that your product has already been transferred to another company or that you have already voluntarily cancelled this product. For these cases, please supply all relevant details so that the Agency can ensure that its records are correct.

United States Environmental Protection Agency
Washington, D. C. 20460

REQUIREMENTS STATUS AND REGISTRANT'S RESPONSE

Form Approved
OMB No. 2070-0107
2070-0057
Approval Expires 03-31-96

INSTRUCTIONS: Please type or print in ink. Please read carefully the attached instructions and supply the information requested on this form. Use additional sheet(s) if necessary.

1. Company name and Address	2. Case # and Name	3. Date and Type of DCI
SAMPLE COMPANY NO STREET ADDRESS NO CITY, XX 00000	0032 Daminozide EPA Reg. No. NNNNNN-NNNNN	PRODUCT SPECIFIC ID# NNNNNN-RD-NNNN

4. Guideline Requirement Number	5. Study Title	PROTOCOL	Progress Reports 1	2	3	6. Use Pattern	7. Test Substance	8. Time Frame	9. Registrant Response
	Prod Chem - Regular Chemical								
61-1	Product identity & composition (1)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
61-2(a)	Descrip of starting materials, production & formulation proc (1,2)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
61-2(b)	Discussion of formation of impurities (1,3)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
62-1	Preliminary analysis (1,4)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
62-2	Certification of limits (1,5)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
62-3	Analytical method (1)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
63-2	Color					ABCDEFGHIJKLMNO	MP	8 mos.	
63-3	Physical state					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
63-4	Odor					ABCDEFGHIJKLMNO	MP	8 mos.	
63-7	Density					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
63-12	pH (9)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
63-14	Oxidizing or reducing action (10)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	

10. Certification

I certify that the statements made on this form and all attachments are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine, imprisonment or both under applicable law.

Signature and Title of Company's Authorized Representative_____

11. Date

12. Name of Company Contact

13. Phone Number

United States Environmental Protection Agency
Washington, D. C. 20460

REQUIREMENTS STATUS AND REGISTRANT'S RESPONSE

Form Approved
OMB No. 2070-0107
2070-0057
Approval Expires 03-31-96

INSTRUCTIONS: Please type or print in ink. Please read carefully the attached instructions and supply the information requested on this form. Use additional sheet(s) if necessary.

1. Company name and Address	2. Case # and Name	3. Date and Type of DCI
SAMPLE COMPANY NO STREET ADDRESS NO CITY, XX 00000	0032 Daminozide EPA Reg. No. NNNNNN-NNNNN	PRODUCT SPECIFIC ID# NNNNNN-RD-NNNN

4. Guideline Requirement Number	5. Study Title		PROTOCOL	Progress Reports 1	2	3	6. Use Pattern	7. Test Substance	8. Time Frame	9. Registrant Response
63-15	Flammability	(11)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
63-16	Explodability	(12)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
63-17	Storage stability						ABCDEFGHIJKLMNO	MP/EP	8 mos.	
63-18	Viscosity	(13)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
63-19	Miscibility	(14)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
63-20	Corrosion characteristics						ABCDEFGHIJKLMNO	MP/EP	8 mos.	
63-21	Dielectric breakdown voltage	(15)					ABCDEFGHIJKLMNO	EP	8 mos.	
	Acute Toxic - Regular Chemical									
81-1	Acute oral toxicity-rat	(1,36,37)					ABCDEFGHIJKLMNO	MP/EP and TGAI	8 mos.	
81-2	Acute dermal toxicity-rabbit/rat	(1,2,37)					ABCDEFGHIJKLMNO	MP/EP and TGAI	8 mos.	
81-3	Acute inhalation toxicity-rat	(3)					ABCDEFGHIJKLMNO	MP/EP and TGAI	8 mos.	
81-4	Primary eye irritation-rabbit	(2)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
81-5	Primary dermal irritation	(1,2)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	
81-6	Dermal sensitization	(4)					ABCDEFGHIJKLMNO	MP/EP	8 mos.	

Initial to irdicate certification as to information on this page (full text of certification is on page one).

Date

United States Environmental Protection Agency
Washington, D. C. 20460

FOOTNOTES AND KEY DEFINATIONS FOR GUIDELINE REQUIREMENTS

Case # and Name: 0032 Daminozide

Key: MP = manufacturing-use product; EP = end-use product; provided formulators purchase their active ingredient(s) from a registered source, they need not submit or cite data pertaining to the purchased product. [NOTE: If a product is a 100 percent repackage of another registered product that is purchased, and any use for the product does not differ from those of the purchased and registered source, users are not subject to any data requirements identified in the tables.]; TEP = typical end-use product; TGAI = technical grade of the active ingredient; PAI = "pure" active ingredient; PAIRA = "pure" active ingredient, radiolabeled.

Use Categories Key:

A - Terrestrial food crop	B - Terrestrial food feed crop	C - Terrestrial nonfood crop	D - Aquatic food crop	E - Aquatic nonfood outdoor
F - Aquatic nonfood Industrial	G - Aquatic nonfood residential	H - Greenhouse food crop	I - Greenhouse nonfood crop	J - Forestry
K - Residential outdoor	L - Indoor food	M - Indoor nonfood	N - Indoor Medical	O - Indoor residential

Footnotes: [The following notes are referenced in column two (5. Study Title) of the REQUIREMENTS STATUS AND REGISTRANT'S RESPONSE form.]

Prod Chem - Regular Chemical

1 Requirements pertaining to product identity, composition, analysis, and certification of ingredients are detailed further in the following sections: *158.155 for product identity and composition (61-1); *158.160, 158.162, and 158.165 for description of starting materials and manufacturing process (61-2); *158.167 for discussion of formation of impurities (61-3); *158.170 for preliminary analysis (62-1); *158.175 for certification of limits (62-2); and *158.180 for enforcement analytical methods (62-3).
2 A schematic diagram and/or brief description of the production process will suffice if the pesticide is not already under full scale production and an experimental use permit is being sought.
3 If the pesticide is not already under full scale production and an experimental use permit is sought, a discussion of unintentional ingredients shall be submitted to the extent this information is available.
4 To support registration of an MP or EP, whether produced by an integrated system or not, the technical grade of Active Ingredient must be analyzed. If the technical grade of Active Ingredient cannot be isolated, a statement of composition of the practical equivalent of the technical grade of Active Ingredient must be submitted. Data on EPs or MPs will be required on a case-by-case basis.
5 Certified limits are not required for inert ingredients in products proposed for experimental use.
9 Required if test substances are dispersible with water.
10 Required if product contains an oxidizing or reducing agent.
11 Required if product contains combustible liquids.
12 Required if product is potentially explosive.
13 Required if product is a liquid.
14 Required if product is an emulsifiable liquid and is to be diluted with petroleum solvents.
15 Required if end-use product is liquid and is to be used around electrical equipment.

Acute Toxic - Regular Chemical

1 Not required if test material is a gas or highly volatile.
2 Not required if test material is corrosive to skin or has pH less than 2 or greater than 11.5; such a product will be classified as Toxicity Category I on the basis of potential eye and dermal irritation effects.
3 Required if the product consists of, or under conditions of use will result in, an inhalable material (e. g., gas, volatile substances, or aerosol/particulate).
4 Required unless repeated dermal exposure does not occur under conditions of use.
36 Special testing (acute, subchronic, and/or chronic) is required for organophospates, and may be required for other cholinesterase inhibitors and other pesticides

United States Environmental Protection Agency
Washington, D. C. 20460

FOOTNOTES AND KEY DEFINATIONS FOR GUIDELINE REQUIREMENTS

Case # and Name: 0032 Daminozide

Footnotes (cont.):

which have demonstrated a potential to adversely affect the visual system. Registrants should consult with the agency for development of protocols and methodology prior to initiation of studies.

37 Testing of the EP dilution is required if it can be reasonably anticipated that the results of such testing may meet the criteria for restriction to use by certified applicators specified in 40 CFR 152.170(b) or the criteria for initiation of special review specified in 40 CFR 154.7 (a)(1).

ATTACHMENT D

EPA's Grouping of End-Use Products for Meeting Acute Toxicology Data Requirements for Reregistration

ATTACHMENT D

EPA'S BATCHING OF DAMINOZIDE [BUTANEDIOIC ACID MONO (2,2-DIMETHYL HYDRAZIDE)] END-USE PRODUCTS FOR MEETING ACUTE TOXICITY DATA REQUIREMENTS FOR REREGISTRATION

In an effort to reduce the time, resources and number of animals needed to fulfill the acute toxicity data requirements for reregistration of end-use products containing the active ingredient Daminozide [butanedioic acid mono (2,2-dimethylhydrazide)], the Agency has batched products which can be considered similar for purposes of acute toxicity. Factors considered in the sorting process include each product's active and inert ingredients (identity, percent composition and biological activity), type of formulation (e.g., emulsifiable concentrate, aerosol, wettable powder, granular, etc.), and labeling (e.g., signal word, use classification, precautionary labeling, etc.). Note that the Agency is not describing batched products as "substantially similar" since some products within a batch may not be considered chemically similar or have identical use patterns.

Batching has been accomplished using the readily available information described above. Frequently acute toxicity data on individual end-use products has been found to be incomplete. Notwithstanding the batching process, the Agency reserves the right to require, at any time, acute toxicity data for an individual end-use product should the need arise.

The registrant of the end-use products within a batch may choose to generate, submit or cite a single battery of six acute toxicological studies to represent all the products within that batch. If a registrant chooses to generate the data for a batch, he/she must use one of the products within the batch as the test material. If a registrant chooses to rely upon previously submitted acute toxicity data, he/she may do so provided that the data base is complete and valid by today's standards (see acceptance criteria attached), the formulation tested is considered by the Agency to be similar for acute toxicity, and the formulation has not been significantly altered since submission and acceptance of the acute toxicity data. Regardless of whether new data is generated or existing data is cited, the registrant must clearly identify the material tested by its EPA registration number.

In deciding how to meet the product specific data requirements, the registrant must follow the directions given in the Data Call-In Notice and its attachments appended to the RED document. The DCI Notice contains two response forms which are to be completed and submitted to the Agency within 90 days of receipt. The first form, "Data Call-In Response," asks whether the registrant will meet the data requirements for each product. The second form, "Requirements Status and Registrant's Response," lists the product specific data required for each product, including the standard six acute toxicity tests. If the registrant supplies the data to support a batch of products, he/she must select one of the following options: Developing Data (Option 1), Submitting an Existing Study (Option 4), Upgrading an Existing Study (Option 5) or Citing an Existing Study (Option 6).

The following table (Table I) lists 1 batch containing 2 products containing Daminozide.

Table I.

Batch Number	EPA Registration Number	% Daminozide [butanedioic acid mono (2,2-dimethylhydrazide)]	Formulation Type
1	400-69	85.0	Soluble Concentrate
	400-110	85.0	Soluble Concentrate

The following table (Table II) lists two products that were considered not to be similar for purposes of acute toxicity, and were not placed in any batch. The registrant is responsible for meeting the acute toxicity data requirements for each product.

Table II.

EPA Registration Number	% Daminozide [butanedioic acid mono (2,2-dimethylhydrazide)]	Formulation Type
400-79	85.0	Formulation Intermediate
400-117	99.0	Technical

ATTACHMENT E

EPA Acceptance Criteria

SUBDIVISION D

Guideline	Study Title
Series 61	Product Identity and Composition
Series 62	Analysis and Certification of Product Ingredients
Series 63	Physical and Chemical Characteristics

61 Product Identity and Composition

ACCEPTANCE CRITERIA

Does your study meet the following acceptance criteria?

1.___ Name of technical material tested (include product name and trade name, if appropriate)
2.___ Name, nominal concentration, and certified limits (upper and lower) for each active ingredient and each intentionally-added inert ingredient
3.___ Name and upper certified limit for each impurity or each group of impurities present at ≥ 0.1% by weight and for certain toxicologically significant impurities (e.g., dioxins, nitrosamines) present at <0.1%
4.___ Purpose of each active ingredient and each intentionally-added inert
5.___ Chemical name from Chemical Abstracts index of Nomenclature and Chemical Abstracts Service (CAS) Registry Number for each active ingredient and, if available, for each intentionally-added inert
6.___ Molecular, structural, and empirical formulas, molecular weight or weight range, and any company assigned experimental or internal code numbers for each active ingredient
7.___ Description of each beginning material in the manufacturing process
   ____ EPA Registration Number if registered; for other beginning materials, the following:
   ____ Name and address of manufacturer or supplier
   ____ Brand name, trade name or commercial designation
   ____ Technical specifications or data sheets by which manufacturer or supplier describes composition, properties or toxicity
8.___ Description of manufacturing process
   ____ Statement of whether batch or continuous process
   ____ Relative amounts of beginning materials and order in which they are added
   ____ Description of equipment
   ____ Description of physical conditions (temperature, pressure, humidity) controlled in each step and the parameters that are maintained
   ____ Statement of whether process involves intended chemical reactions

8. (continued)

____ Flow chart with chemical equations for each intended chemical reaction
____ Duration of each step of process
____ Description of purification procedures
____ Description of measures taken to assure quality of final product

9.___ Discussion of formation of impurities based on established chemical theory addressing (1) each impurity which may be present at $\geq$ 0.1% or was found at $\geq$ 0.1% by product analyses and (2) certain toxicologically significant impurities (see #3)

61 Product Identity and Composition

GUIDANCE FOR SUMMARIZING STUDIES

The following criteria apply to the technical grade of the active ingredient being reregistered. Items 1, 2, 3, and 5 can be satisfied for most registered products by submission of the Certified Statement of Formula Ingredients Page (EPA Form 8570-4). Items 7 and 8 can be satisfied for most technical grade active ingredients (TGAIs) by submission of a flow chart with chemical equations for each intended chemical reaction. The flow chart should include complete chemical structures and names for each reactant and product of all the reactions.

1. Name of technical material (include product name and trade name, if appropriate).
2. Description of each active and intentionally-added inert ingredient, including name, concentration, and certified limits.
3. Name and upper limit for all impurities present at $\geq$ 0.1% and those toxicologically significant impurities present at <0.1%.
4. The purpose of each active and intentionally-added inert ingredient.
5. Chemical name and Registry Number for each active and intentionally-added inert ingredient (if available).
6. Molecular, structural, and empirical formulas, molecular weight, and any experimental or internal code number for each active ingredient.
7. Description of each beginning material in the manufacturing process.
8. Description of manufacturing process.
9. Discussion of formation of impurities based on established chemical theory.

62 Analysis and Certification of Product Ingredients

ACCEPTANCE CRITERIA

The following criteria apply to the technical grade of the active ingredient being reregistered. Use a table to present the information in items 6, 7, and 8.

Does your study meet the following acceptance criteria?

1.___ Five or more representative samples (batches in case of batch process) analyzed for each active ingredient and all impurities present at ≥ 0.1%
2.___ Degree of accountability or closure ≥ ca 98%
3.___ Analyses conducted for certain trace toxic impurities at lower than 0.1% (examples, nitrosamines in the case of products containing dinitroanilines or containing secondary or tertiary amines/alkanolamines plus nitrites; polyhalogenated dibenzodioxins and dibenzofurans) [Note that in the case of nitrosamines both fresh and stored samples must be analyzed.]
4.___ Complete and detailed description of each step in analytical method used to analyze above samples
5.___ Statement of precision and accuracy of analytical method used to analyze above samples
6.___ Identities and quantities (including mean and standard deviation) provided for each analyzed ingredient
7.___ Upper and lower certified limits proposed for each active ingredient and intentionally added inert along with explanation of how the limits were determined
8.___ Upper certified limit proposed for each impurity present at ≥ 0.1% and for certain toxicologically significant impurities at <0.1% along with explanation of how limit determined
9.___ Analytical methods to verify certified limits of each active ingredient and impurities (latter not required if exempt from requirement of tolerance or if generally recognized as safe by FDA) are fully described
10.___ Analytical methods (as discussed in #9) to verify certified limits validated as to their precision and accuracy

62 Analysis and Certification of Product Ingredients

GUIDANCE FOR SUMMARIZING STUDIES

The following criteria apply to the technical grade of the active ingredient being reregistered.

1. Number of representative samples analyzed for all active ingredients and all impurities at ≥ 0.1%.
2. Degree of accountability or closure in analyses in item #1.
3. Chemical names of toxic impurities which were analyzed for levels <0.1%.
4. Brief description(s) of analytical method(s) used to measure active ingredients and impurities in items #1 and #3.
5. Statement of precision and accuracy of method(s) in item #4.
6. Chemical name and quantities observed (range, mean, standard deviation) for each ingredient (actives and impurities) analyzed in item #1.
7. Proposed upper and lower certified limits for each active ingredient and intentionally added inert with brief explanation of how limits were determined.
8. Proposed upper certified limit for each impurity present at >=0.1% and certain toxicologically significant impurities at <0.1% with brief explanation of how limits were determined.
9. Brief description of analytical method(s) used to verify certified limits (if same methods as item #4, may reference latter).
10. Statement of precision and accuracy of method(s) in item #9 (may reference item #5 if applicable).

63 Physical and Chemical Characteristics

ACCEPTANCE CRITERIA

The following criteria apply to the technical grade of the active ingredient being reregistered.

Does your study meet the following acceptance criteria?

63-2 Color
- ___ Verbal description of coloration (or lack of it)
- ___ Any intentional coloration also reported in terms of Munsell color system

63-3 Physical State
- ___ Verbal description of physical state provided using terms such as "solid, granular, volatile liquid"
- ___ Based on visual inspection at about 20-25° C

63-4 Odor
- ___ Verbal description of odor (or lack of it) using terms such as "garlic-like, characteristic of aromatic compounds"
- ___ Observed at room temperature

63-5 Melting Point
- ___ Reported in C°
- ___ Any observed decomposition reported

63-6 Boiling Point
- ___ Reported in C°
- ___ Pressure under which B.P. measured reported
- ___ Any observed decomposition reported

63-7 Density, Bulk Density, Specific Gravity
- ___ Measured at about 20-25° C
- ___ Density of technical grade active ingredient reported in g/ml or the specific gravity of liquids reported with reference to water at 20° C. [Note: Bulk density of registered products may be reported in lbs/ft^3 or lbs/gallon.]

63-8 Solubility

___ Determined in distilled water and representative polar and non-polar solvents, including those used in formulations and analytical methods for the pesticide
___ Measured at about 20-25° C
___ Reported in g/100 ml (other units like ppm acceptable if sparingly soluble)

63-9 Vapor Pressure

___ Measured at 25° C (or calculated by extrapolation from measurements made at higher temperature if pressure too low to measure at 25° C)
___ Experimental procedure described
___ Reported in mm Hg (torr) or other conventional units

63-10 Dissociation Constant

___ Experimental method described
___ Temperature of measurement specified (preferably about 20 - 25° C)

63-11 Octanol/water Partition Coefficient

___ Measured at about 20-25° C
___ Experimentally determined and description of procedure provided (preferred method-45 Fed. Register 77350)
___ Data supporting reported value provided

63-12 pH

___ Measured at about 20 - 25° C
___ Measured following dilution or dispersion in distilled water

63-13 Stability

___ Sensitivity to metal ions and metal determined
___ Stability at normal and elevated temperatures
___ Sensitivity to sunlight determined

63 Physical and Chemical Characteristics

GUIDANCE FOR SUMMARIZING STUDIES

The following criteria apply to the technical grade of the active ingredient being reregistered.

1. Description of color.
2. Description of physical state.
3. Description of odor.
4. Indication of melting point (in C°).
5. Indication of boiling point (in C°).
6. Indication of density, bulk density, and specific gravity.
7. Indication of solubility.
8. Indication of vapor pressure.
9. Indication of dissociation constant.
10. Indication of octanol/water partition coefficient.
11. Indication of PH.
12. Description of stability.

SUBDIVISION F

Guideline	Study Title
81-1	Acute Oral Toxicity in the Rat
81-2	Acute Dermal Toxicity in the Rat, Rabbit or Guinea Pig
81-3	Acute Inhalation Toxicity in the Rat
81-4	Primary Eye Irritation in the Rabbit
81-5	Primary Dermal Irritation Study
81-6	Dermal Sensitization in the Guinea Pig
81-7	Acute Neurotoxicity in the Hen

81-1 Acute Oral Toxicity in the Rat

ACCEPTANCE CRITERIA

Does your study meet the following acceptance criteria?

1.____ Identify material tested (technical, end-use product, etc)
2.____ At least 5 young adult rats/sex/group
3.____ Dosing, single oral may be administered over 24 hrs.
4.*___ Vehicle control if other than water.
5.____ Doses tested, sufficient to determine a toxicity category or a limit dose (5000 mg/kg).
6.____ Individual observations at least once a day.
7.____ Observation period to last at least 14 days, or until all test animals appear normal whichever is longer.
8.____ Individual daily observations.
9.____ Individual body weights.
10.____ Gross necropsy on all animals.

Criteria marked with a * are supplemental and may not be required for every study.

81-1 Acute Oral Toxicity in the Rat

GUIDANCE FOR SUMMARIZING STUDIES

1. The form of pesticide tested, e.g. solid, liquid, percent AI in technical, end-use product, etc.
2. The number of animals/dose/sex tested.
3. Dosing route and regimen.
4. Vehicle used
5. Doses tested and results
6. Individual observations on day of dosing and for at least 14 days.
7. Summarization of body weights
8. Summarization of gross necropsy
9. Significance of changes from the Acceptance Criteria

81-2 Acute Dermal toxicity in the Rat, Rabbit or Guinea Pig

ACCEPTANCE CRITERIA

Does your study meet the following acceptance criteria?

1._____ Identify material tested (technical, end-use product, etc)

2._____ At least 5 animals/sex/group
3.*____ Rats 200-300 gm, rabbits 2.0-3.0 kg or guinea pigs 350-450 gm.
4._____ Dosing, single dermal.
5._____ Dosing duration at least 24 hours.
6.*____ Vehicle control, only if toxicity of vehicle is unknown.
7._____ Doses tested, sufficient to determine a toxicity category or a limit dose (2000 mg/kg).
8._____ Application site clipped or shaved at least 24 hours before dosing
9._____ Application site at least 10% of body surface area.
10._____ Application site covered with a porous nonirritating cover to retain test material and to prevent ingestion.
11._____ Individual observations at least once a day.
12._____ Observation period to last at least 14 days.
13._____ Individual body weights.
14._____ Gross necropsy on all animals.

Criteria marked with a * are supplemental and may not be required for every study.

81-2 Acute Dermal Toxicity in the Rat, Rabbit or Guinea Pig

GUIDANCE FOR SUMMARIZING STUDIES

1. The form of pesticide tested, e.g., solid, liquid, percent AI in technical, end-use product, etc.
2. The number of animals/sex/dose
3. Weight range of animals
4. Verification of single, dermal exposure
5. Duration of dermal exposure
6. Statement of vehicle control
7. Doses tested and results
8. Preparation of application site
9. Area of application site (percent body surface)
10. Occlusion of test material on application site
11. Individual observations on day of dosing and for at least 14 days or until all animals appear normal (whichever is longer).
12. Summarization of body weights
13. Summarization of gross necropsy
14. Significance of changes from Acceptance Criteria

81-3 Acute Inhalation Toxicity in the Rat

ACCEPTANCE CRITERIA

Does your study meet the following acceptance criteria?

1.____ Identify material tested (technical, end-use product, etc)
2.____ Product is a gas, a solid which may produce a significant vapor hazard based on toxicity and expected use or contains particles of inhalable size for man (aerodynamic diameter 15 um or less).
3.____ At least 5 young adult rats/sex/group
4.____ Dosing, at least 4 hours by inhalation.
5.____ Chamber air flow dynamic, at least 10 air changes/hour, at least 19% oxygen content.
6.____ Chamber temperature, 22° C (±2), relative humidity 40-60%.
7.____ Monitor rate of air flow
8.____ Monitor actual concentrations of test material in breathing zone.
9.____ Monitor aerodynamic particle size for aerosols.
10.____ Doses tested, sufficient to determine a toxicity category or a limit dose (5 mg/L actual concentration of respirable substance).
11.____ Individual observations at least once a day.
12.____ Observation period to last at least 14 days.
13.____ Individual body weights.
14.____ Gross necropsy on all animals.

81-3 Acute Inhalation Toxicity in the Rat

GUIDANCE FOR SUMMARIZING STUDIES

1. The form of pesticide tested, e.g., solid, liquid, percent AI in technical, end-use product, etc.
2. Statement of the inhalability of test substance
3. The number of animals/sex/dose
4. Duration of inhalation exposure
5. Number of chamber air changes/hour and the percent oxygen content of chamber air
6. Ranges for chamber air temperature and relative humidity
7. Air flow rate
8. Analytical concentrations of test material in breathing zone
9. Results of aerosol particle-size determination
10. Doses tested (or limit dose of 5mg/L or highest attainable)
11. Individual observations on day of dosing and for at least 14 days.
12. Summarization of body weights
13. Summarization of gross necropsy
14. Significance of changes from Acceptance Criteria

81-4 Primary Eye Irritation in the Rabbit

ACCEPTANCE CRITERIA

Does your study meet the following acceptance criteria?

1.____ Identify material tested (technical, end-use product, etc)
2.____ Study not required if material is corrosive, causes severe dermal irritation or has a pH of ≤ 2 or ≥ 11.5.
3.____ 6 adult rabbits
4.____ Dosing, instillation into the conjunctival sac of one eye per animal.
5.____ Dose, 0.1 ml if a liquid; 0.1 ml or not more than 100 mg if a solid, paste or particulate substance.
6.____ Solid or granular test material ground to a fine dust.
7.____ Eyes not washed for at least 24 hours.
8.____ Eyes examined and graded for irritation before dosing and at 1, 24, 48 and 72 hr, then daily until eyes are normal or 21 days (whichever is shorter).
9.*___ individual daily observations.

Criteria marked with a * are supplemental and may not be required for every study.

81-4 Primary Eye Irritation in the Rabbit

GUIDANCE FOR SUMMARIZING STUDIES

1. The form of pesticide tested, e.g., solid, liquid, percent AI in technical, end-use product, etc.
2. State if material is corrosive, cause severe dermal irritation or has a pH of <2 or >11.5
3. Number of adult rabbits tested
4. State method of dosing, i.e., instillation into the conjunctival sac of one eye per animal
5. Dose administered
6. Note whether solid or granular test material has been ground to a fine dust
7. State whether eyes were washed and at what time post instillation (not less than 24 hours)
8. State whether eyes were examined and graded for irritation before dosing and at what periods after dosing
9. Individual daily observations afterwards, until eyes are normal or for 21 days
10. Significance of changes from Acceptance Criteria

81-5 Primary Dermal Irritation Study

ACCEPTANCE CRITERIA

Does your study meet the following acceptance criteria?

1._____ Identify material tested (technical, end-use product, etc)
2._____ Study not required if material is corrosive or has a pH of ≤ 2 or ≥ 11.5.
3._____ 6 adult animals.
4._____ Dosing, single dermal.
5._____ Dosing duration 4 hours.
6._____ Application site shaved or clipped at least 24 hours prior to dosing
7._____ Application site approximately 6 cm.
8._____ Application site covered with a gauze patch held in place with nonirritating tape
9._____ Material removed, washed with water, without trauma to application site
10._____ Application site examined and graded for irritation at 1, 24, 48 and 72 hr, then daily until normal or 14 days (whichever is shorter).
11.*____ Individual daily observations.

Criteria marked with a * are supplemental and may not be required for every study.

81-5 Primary Dermal Irritation Study

GUIDANCE FOR SUMMARIZING STUDIES

1. The form of pesticide tested, e.g., solid, liquid, percent AI in technical, end-use product, etc.
2. State if material is corrosive, has a pH <2 or >11.5, or has a dermal LD 50 <200 mg/kg
3. Number of adult animals tested
4. Amount applied
5. Duration of dermal exposure
6. Preparation of application site (shaved or clipped at specified time before dosing)
7. Area of application site
8. Method for occlusion of application site
9. Note removal of test material and if skin was washed with water
10. State times post application when site was graded for irritation
11. Individual observations for day of dosing and individual daily observations thereafter
12. Significance of changes from Acceptance Criteria.

81-6 Dermal Sensitization in the Guinea Pig

ACCEPTANCE CRITERIA

dose your study meet the following acceptance criteria?

1.____ Identify material tested (technical, end-use product, etc)
2.____ Study not required if material is corrosive or has a pH of ≤ 2 or ≥ 11.5.
3.____ One of the following methods is utilized;
- _____ Freund's complete adjuvant test
- _____ Guinea pig maximization test
- _____ Split adjuvant technique
- _____ Buehler test
- _____ Open epicutaneous test
- _____ Mauer optimization test
- _____ Footpad technique in guinea pig

4.____ Complete description of test
5.*___ Reference for test.
6.____ Test followed essentially as described in reference document.
7.____ Positive control included (may provide historical data conducted within the last 6 months)

Criteria marked with a * are supplemental and may not be required for every study.

81-6 Dermal Sensitization in the Guinea Pig

GUIDANCE FOR SUMMARIZING STUDIES

1. The form of pesticide tested, e.g., solid, liquid, percent AI in technical, end-use product, etc.
2. State if material is corrosive or has pH <2 or >11.5.
3. State specific method utilized
4. Complete description of specific method
5. Reference for the specific method employed
6. Note adherence of the protocol to that in the reference for the specific method utilized
7. State the positive control tested
8. Significance of changes from Acceptance Criteria

81-7 Acute Neurotoxicity in the Hen

ACCEPTANCE CRITERIA

Does your study meet the following acceptance criteria?

1.____ Study performed on an organophosphate cholinesterase inhibiting compound.
2.____ Technical form of the active ingredient tested.
3.*___ Positive control utilized.
4.____ Species utilized, domestic laying hen 8-14 months of age.
5.____ Dosing oral by gavage or capsule (dermal or inhalation may be used).
6.____ An acute oral LD is determined.
7.____ Dose tested equal to an acute oral LD or a limit test of 5000 mg/kg.
8.*___ Dosed animals may be protected with atropine and/or 2-PAM.
9.____ Sufficient test animals so that at least 6 survive.
10.____ Negative (vehicle) control group of at least 6 hens
11.*___ Positive control of at least 4 hens. (if used)
12.____ Test dose repeated if no signs of delayed neurotoxicity observed by 21 days after dosing.
13.____ Observation period 21 days after each dose.
14.____ Individual daily observations.
15.____ Individual body weights.
16.____ Individual necropsy not required.
17.____ Histopathology performed on all animals. Tissue to be fixed in sin preferably using whole animal perfusion techniques. At least three sections of each of the following tissues:
_____brain, including medulla oblongata
_____spinal cord; upper cervical, mid-thoracic and lumbro-sacral regions
_____tibial nerve; proximal regions and branches
_____sciatic nerve

Criteria marked with a * are supplemental and may not be required for every study.

ATTACHMENT F

List of Registrants sent this DCI

United States Environmental Protection Agency
Washington, D. C. 20460

LIST OF ALL REGISTRANTS SENT THIS DATA CALL-IN NOTICE

Case # and Name: 0032 Daminozide

Co. Nr.	Company Name	Additional Name	Address	City & State	Zip
000400	UNIROYAL CHEMICAL CO INC		74 AMITY RD	BETHANY CT	06524

ATTACHMENT G

Product Specific Data Call-In Cost Share and Data Compensation Forms

United States Environmental Protection Agency
Washington, DC 20460

CERTIFICATION OF OFFER TO COST SHARE IN THE DEVELOPMENT OF DATA

Form Approved
OMB No. 2070-0107
2070-0057
Approval Expires 3-31-96

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, DC 20460; and to the Office of Management and Budget, Paperwork Reduction Project (2070-0106), Washington, DC 20503.

Please fill in blanks below.

Company Name	Company Number
Product Name	**EPA Reg. No.**

I Certify that:

My company is willing to develp and submit the data required by EPA under the authority of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), if necessary. However, my company would prefer to enter into an agreement with one or more registrants to develop jointly or share in the cost of developing data.

My firm has offered in writing to enter into such an agreement. That offer was irrevocable and included an offer to be bound by arbitration decision under section 3(c)(2)(B)(iii) of FIFRA if final agreement on all terms could not be reached otherwise. This offer was made to the following firm(s) on the following date(s):

Name of Firm(s)	Date of Offer

Certification:

I certify that I am duly authorized to represent the company name above, and that the statements that I have made on this form and all attachments therein are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Signature of Company's Authorized Representative	Date
Name and Title (Please Type or Print)	

EPA

United States Environmental Protection Agency
Washington, DC 20460

CERTIFICATION WITH RESPECT TO DATA COMPENSATION REQUIREMENTS

Form Approved
OMB No. 2070-0107
2070-0057
Approval Expires 3-31-96

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, DC 20460; and to the Office of Management and Budget, Paperwork Reduction Project (2070-0106), Washington, DC 20503.

Please fill in blanks below.

Company Name	Company Number
Product Name	EPA Reg. No.

I Certify that:

1. For each study cited in support of registration or reregistration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) that is an exclusive use study, I am the original data submitter, or I have obtained the written permission of the original data submitter to cite that study.

2. That for each study cited in support of registration or reregistration under FIFRA that is NOT an exclusive use study, I am the original data submitter, or I have obtained the written permission of the original data submitter, or I have notified in writing the company(ies) that submitted data I have cited and have offered to: (a) Pay compensation for those data in accordance with sections 3(c)(1)(D) and 3(c)(2)(D) of FIFRA; and (b) Commence negotiation to determine which data are subject to the compensation requirement of FIFRA and the amount of compensation due, if any. The companies I have notified are: (check one)

   [ ] The companies who have submitted the studies listed on the back of this form or attached sheets, or indicated on the attached "Requirements Status and Registrants' Response Form."

3. That I have previously complied with section 3(c)(1)(D) of FIFRA for the studies I have cited in support of registration or reregistration under FIFRA.

Signature	Date
Name and Title (Please Type or Print)	

GENERAL OFFER TO PAY: I hereby offer and agree to pay compensation to other persons, with regard to the registration or reregistration of my products, to the extent required by FIFRA sections 3(c)(1)(D) and 3(c)(2)(D).

Signature	Date
Name and Title (Please Type or Print)	