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

APR 28 1995

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: OCCUPATIONAL AND RESIDENTIAL EXPOSURE ASSESSMENT FOR THE DIFLUBENZURON REREGISTRATION ELIGIBILITY DOCUMENT (RED)

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Please find the OREB review of ....

DP Barcode: D209025, D209030

Pesticide Chemical Code: 108201

EPA Reg. No.: 37100-1,7,8,9,11,16,27,54

EPA MRID No.: N/A

Review Time: 15 days

PHED: 1.1

DIFLUBENZURON

(RED SECTION III - TOXICITY, EXPOSURE, AND RISK)

(EXPOSURE)

An occupational and/or residential exposure assessment is required for an active ingredient if (1) certain toxicological criteria are triggered and (2) there is potential exposure to handlers (mixers, loaders, applicators, etc.) during use or to persons entering treated sites after application is complete.

Use Summary

Use Patterns

Diflubenzuron is an insect growth inhibitor that is very toxic to aquatic invertebrates. For this reason, it is a RESTRICTED USE PESTICIDE. Labels having use directions for outdoor applications bear this restriction. Formulations of diflubenzuron are applied to agricultural crops (including mushrooms), ornamental crops (including greenhouse grown crops), forests and shelterbelts, aquatic systems, and livestock. Many of these uses are part of the wide-area general outdoor applications used to control gypsy moths and to control mosquitoes.

Wettable powder formulations (25%) are applied to cherries, citrus, cotton, soybeans, mushrooms, forests, and ornamentals. The wettable powders are also mixed with oil and sand and used as granular applications for mosquito and midge larvae control in aquatic systems.

Oil-based flowable concentrate formulations (2 lb/gal) are applied to cotton, forests, and ornamental trees and shrubs. An aqueous based flowable concentrate formulation is also applied to forests, and ornamental trees and shrubs.

Aqueous-based flowable concentrate formulations (4 lb/gal) are applied to forests and ornamental trees and shrubs.

Oral bolus doses of diflubenzuron (9.7% Pelleted/Tableted) are administered to beef and dairy cattle to control horn flies, face flies, and to suppress populations of stable flies and house flies developing in manure.

Occupational-Use and Homeowner-Use Products

There are no known products containing diflubenzuron that are intended for use by homeowners. All known diflubenzuron uses are intended primarily for occupational use. However, some end-use products are applied by occupational users to residential

sites (trees in residential areas treated with diflubenzuron for gypsy moth).

Summary of Toxicity Concerns Impacting Occupational and Residential Exposures

Acute Toxicity

Diflubenzuron technical is classified as Toxicity Category IV, for acute oral toxicity, inhalation toxicity, and skin irritation potential and as Toxicity Category III for acute dermal toxicity and eye irritation potential. This chemical is negative for skin sensitization.

Other Endpoints of Concern

Since the Reregistration Standard was issued, additional toxicological endpoints regarding occupational exposure have been identified. For short-term occupational exposure, an NOEL of 40 mg/kg/day was identified from an oral study in mice showing methemoglobinemia and sulfhemoglobinemia with increased Hienz bodies. For intermediate term occupational exposure, an NOEL of 2 mg/kg/day was chosen from chronic studies showing a steady state of met- and sulfhemoglobinemia. These endpoints are presented and discussed in detail, in the Diflubenzuron Toxicology Endpoint Selection Document dated 3/16/95.

According to the endpoint selection document, there are no acceptable dermal absorption studies available. Thus, for risk assessment purposes, 100% dermal absorption is to be assumed. This is based on data from an oral rat metabolism study and other information in the toxicology database showing similar tares of oral and dermal absorption for diflubenzuron.

Diflubenzuron has been classified as a Group E carcinogen (non-carcinogenic for humans) by the HED RfD/Peer Review Committee on March 16, 1995. Also at that time, the metabolite para-chloroanaline (PCA) was recommended to be classified as a Group B2 carcinogen (probable human carcinogen), based on induced tumors in rats and mice. This metabolite has reportedly been identified in mushrooms and ruminants. Because there are no chemical specific exposure data, OREB cannot determine if PCA forms on plant surfaces or forms in the spray tank during application. Because of these uncertainties, OREB was not directed to conduct an exposure assessment. Therefore, a risk assessment regarding the adverse effects of PCA will not be conducted.

Handler Exposures & Assumptions

EPA has determined that there is an exposure potential for mixers, loaders, applicators, or other handlers during usual use-

patterns associated with diflubenzuron. Handler exposure scenarios are as follows:

Mixing/loading for the use of diflubenzuron as wide-area outdoor applications (forests, shelterbelts, aquatic systems), orchard crop applications (citrus, cherries, walnuts), field crop applications (soybeans, cotton, mushroom compost and casing soil treatments, greenhouse and field grown ornamental treatments (chrysanthemums). Other applications include those to pine trees, and other ornamentals.

Applicator exposure via the use of aerial, ground-boom, airblast, and hand-held equipment.

Flaggers supporting aerial applications.

Dispensing of the oral bolus doses administered to livestock.

Mixer/loader/applicator (M/L/A) exposure data for diflubenzuron were not required during Phase IV of the reregistration process, since no toxicological criteria had been triggered at that time. Data for most of the M/L/A scenarios discussed above, are provided in the Pesticide Handlers Exposure Database (PHED).

Post-Application Exposures & Assumptions

EPA has determined that there is an exposure potential for persons entering treated sites after application is complete. the potential exposure scenarios are as follows:

Harvesters reentering treated citrus orchards.

Scouts and other crop advisors reentering treated soybeans and cotton fields.

Harvesters and persons disbudding treated chrysanthemums.

Mushroom house workers handling treated compost and casing soil.

Mushroom harvesters.

Swimmers in treated lakes, ponds, and reservoirs.

People in residential locations being treated by wide-area gypsy moth control programs.

Post-application exposure data were not required during Phase IV of the reregistration process, since no toxicological

criteria had been triggered at that time. Consequently, there are no data available to estimate these exposures.

(RISK SECTION OF RED SECTION THREE)

Occupational and Residential

The toxicological endpoints of concern for occupational and residential exposure are systemic toxicity resulting from short-term and intermediate-term exposure.

A NOEL of 40 mg/kg/day based on increased sulfhemoglobinemia was used to estimate MOE's for short term exposure (one to seven days of exposure). This NOEL was identified in a 14-day oral study in mice. In that study, methemoglobinemia and increased percentages of erythrocytes with Hienz bodies were also observed at higher dosages (1000 mg/kg/day).

A NOEL of 2 mg/kg/day based on a steady state for methemoglobinemia was used to estimate MOE's for intermediate term exposure (one week to several months of exposure). This NOEL was identified in a 13 week dog feeding study.

Because dermal absorption data are not available, 100% dermal absorption will be used to estimate occupational exposure as recommended by the Less-than-Lifetime Committee, March 16, 1995.

Short Term Exposure MOE =

$$\frac{\text{NOEL}}{\text{Dose}} = \frac{40 \text{ mg/kg/day}}{\text{Daily Exposure}}$$

Intermediate Term Exposure MOE =

$$\frac{\text{NOEL}}{\text{Dose}} = \frac{2 \text{ mg/kg/day}}{\text{Daily Exposure}}$$

The daily exposure is calculated using the following formula:

Daily exposure (mg ai/kg bw/day)

$$= \frac{\text{unit exposure (mg ai/lb ai handled)} \times \text{lb ai/A} \times \text{daily acres treated}}{\text{body weight (70 kg)}}$$

Risk From Sprayer Exposures

Wide-Area Treatments:

There are two types of wide-area treatments; 1) for the control of tree insects (gypsy moths, forest tent caterpillars, tussock moths, etc.), and 2) for the control of larval stages of mosquitoes and midges in aquatic sites. For both treatments,

short term and intermediate term exposures appear likely for handlers.

Tree Insects:

The treatment of trees and shrubs for insect pests (gypsy moth, Nantucket pine tip moth) includes the treatment of:

Residential, municipal and shade tree areas;

Recreational areas such as campgrounds, golf courses, parks, parkways;

Ornamental, shade-tree, and forest nurseries;

Forests;

Shelterbelts;

Rights-of-way and other easements.

These treatments are made by using aircraft, airblast equipment, and hydraulic ground equipment (hand-gun). Exposure estimates for these handlers are provided in a Table titled "Tree Insects Uses, Summary Exposure/Risk Values for Handlers Using Diflubenzuron While Wearing Long-Sleeved Shirt, Long Pants, and Chemical Resistant Gloves."

Margins of Exposure (MOE) are acceptable for handlers, for short-term exposure, while wearing long-sleeved shirts, long pants, and chemical resistant gloves. However, for intermediate-term exposure, some MOEs are low for mixer/loaders handling wettable powders and liquid formulations, particularly, those mixer/loaders supporting aerial applications. Potential exposure mitigation measures include the use of closed mixing/loading systems, the use of water soluble packets for wettable powders, and the use of two layers of PPE (coveralls worn over another layer of clothing). MOEs for those mitigation measures are also presented in the table. Application-rate reduction, or limiting the amount of active ingredient handled per day may also be a possible mitigation measure.

Aqu[redacted]

These treatments are applied as granulars using aerial and ground equipment. The wettable powder formulations are mixed with oil and sand to carry the pesticide through vegetation into the water. Exposure estimates for these handlers are provided in a Table titled "Aquatic Uses, Summary Exposure/Risk Values for Handlers Using Diflubenzuron While Wearing Long-Sleeved Shirt, Long Pants, and Chemical Resistant Gloves."

Margins of Exposure (MOE) are acceptable for handlers, for short-term exposure, while wearing long-sleeved shirts, long pants, and chemical resistant gloves (except for mixer/loaders supporting aerial applications). This exception is due to the high rate (0.25 lb ai/A), which is limited to one 24c registration (CA-870049). Otherwise, MOEs would be greater than 100 for short term exposure. For intermediate exposure, MOEs for mixer/loaders are below 100. For these uses it is not clear if the use of water soluble packets is feasible. Thus, mitigation measures include the use of coveralls worn over long-sleeve shirt and long pants, chemical resistant gloves, and respirators (and not water soluble packaging). The need for the high rate and whether handlers are exposed for lengths greater than one week needs to be resolved.

There is also a California 24c registration for the treatment of anchor worms in ponds containing ornamental, bait, or aquarium feeder fish. Because each treatment lasts for 30 to 60 days and because of the limited scope of the operations, exposures should be far less than the commercial applications discussed in the above mentioned table.

Agricultural/Horticultural:

Exposure estimates for these handlers are provided in a Table titled "Agricultural/Horticultural Uses, Summary Exposure/Risk Values for Handlers Using Diflubenzuron While Wearing Long-Sleeved Shirt, Long Pants, and Chemical Resistant Gloves." The only applications not covered in this table are for ultra low volume (ULV) applications, mushroom applications, and administering the oral bolus dose. There are no data to evaluate these uses. However, for the mushroom use, it was assumed that the exposure is similar to (or less than) that of a mixer/loader. Assuming that a mushroom applicator would treat 5000 square feet per treatment, MOEs are greater than 100 for both short-term and intermediate-term exposure. For the oral bolus treatment, it is assumed that applicator exposure is low due to the use of balling guns to administer the pesticide. The ULV applications are assumed to be equal or less than airblast applications.

For the agricultural/horticultural applications, it is assumed that intermediate-term exposure applies to aerial applicators and those mixer/loaders supporting those aerial applications. Intermediate-term exposure is also expected to be of concern for commercial applicators treating cotton and soybeans with ground equipment. Again, MOEs for short-term exposure are greater than 100 for handlers wearing long-sleeved shirts, long pants, and chemical resistant gloves. And again, intermediate-term MOEs for mixer/loaders supporting aerial applications are below 100. Possible mitigation measures for mixers and loaders include the use of water soluble packets for

Risk From Post-Application Exposures

There are no data available to address postapplication exposure for persons reentering areas treated with diflubenzuron. Because most postapplication exposures are intermediate-term exposures (greater than 1 week), these exposures are of concern. Thus, until postapplication data are generated, the 12 hour interim REI set by the Worker Protection Standard is to be increased to 48 hours.

There are no data available to estimate swimmer exposure. It appears that most of the sites treated with diflubenzuron would not be used for swimming. However, based on the toxicologic concerns for diflubenzuron, a swimmer restriction needs to be added to current labeling.

There are no data available to evaluate exposures for people in residential locations or forests treated with diflubenzuron. However, based on very low residues detected in forestry dissipation studies, substantial exposure, outside of contact with direct sprays is unlikely. Because tree vegetation may not be similar to that of the tree vegetation found residential locations, the registrant should address this exposure potential with respect to the intermediate endpoint.

DATA REQUIREMENTS:

The following data are required to support the reregistration of diflubenzuron:

Handler

mixer/loader/applicator exposure data for ULV applications using ground equipment (§231 and 232);

Worker

postapplication reentry exposure (§132-1a, 133-3, and 133-4) for citrus, chrysanthemums (greenhouse), cotton (or soybeans;

postapplication reentry exposure (132-1a, 132-1b, 133-3, and 133-4) for mushrooms;

Residential

postapplication reentry exposure (§132-1a, 133-3, and 133-4) for the application of diflubenzuron in residential locations.

(APPENDIX FOR INCLUSION IN SECTION IV-REGULATORY POSITION AND LABELING RATIONALE)

Occupational/Residential Labeling Rationale/Risk Mitigation

The Worker Protection Standard (WPS)

Scope of the WPS

The 1992 Worker Protection Standard for Agriculture Pesticides (WPS) established certain worker-protection requirements (personal protective equipment, restricted entry intervals, etc.) to be specified on the label of all products that contain uses within the scope of the WPS. Uses within the scope of the WPS include all commercial (non-homeowner) and research uses on farms, forests, nurseries, and greenhouses to produce agricultural plants (including food, feed, and fiber plants, trees, turf grass, flowers, shrubs, ornamentals, and seedlings). Uses within scope include not only uses on plants, but also uses to the soil or planting medium the plants are (or will be) grown in.

Some of the registered uses of diflubenzuron are within the scope of the Worker Protection Standard and some uses are outside the scope of the WPS. Those that are outside the scope of the WPS include use:

- for mosquito abatement, gypsy moth control, or similar government-sponsored wide-area public pest control programs;
- on aquatic sites for mosquito control;
- on plants that are in ornamental gardens, parks, golf courses, and public or private lawns and grounds and that are intended only for decorative or environmental benefit;
- in a manner not directly related to the production of agricultural plants, including, for example, control of vegetation along rights-of-way, in hedgerows and ditcherows and in other noncrop areas.

Compliance With The WPS

Any products whose labeling reasonably permits use in the production of an agricultural plant on any 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 label 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.

Personal Protective Equipment/Engineering Controls for Handlers

Occupational-Use Products (WPS and NonWPS Uses)

The PPE requirements will pertain to both the WPS and nonWPS uses by occupational handlers, since the potential exposure to occupational handlers is similar for WPS and nonWPS uses.

For each occupational end-use product, PPE requirements for pesticide handlers will be set during reregistration in one of two ways:

1. If EPA has no special concerns about the acute or other adverse effects of an active ingredient, the PPE for pesticide handlers will be based on the acute toxicity of the end-use product. For occupational-use products, PPE will be established using the process described in PR Notice 93-7 or more recent EPA guidelines.

2. If EPA has special concerns about an active ingredient due to very high acute toxicity or to certain other adverse effects, such as allergic effects or delayed effects (cancer, developmental toxicity, reproductive effects, etc):

- In the RED for that active ingredient, EPA may establish minimum or "baseline handler PPE requirements that pertain to all or most occupational end-use products containing that active ingredient.

- These minimum PPE requirements must be compared with the PPE that would be designated on the basis of the acute toxicity of each end-use product.

Oral bolus Pellet or Tablet Formulations

There are no special risk concerns that warrant the establishment of active-ingredient-based minimum (baseline) PPE for handlers of oral bolus formulations.

Wettable Powder Formulations

For the **wettable powder** formulations, there are no special risk concerns that warrant the establishment of active-ingredient-based minimum PPE requirements for handlers based on their potential for **short-term** exposure. The MOEs for **short-term** exposures were calculated as being acceptable for mixers, loaders, flaggers, and applicators of such formulations (except mixer/loaders supporting the aquatic site aerial applications) when chemical resistant gloves were worn with long-sleeve shirts and long pants. For mixers and loaders supporting aquatic-site aerial applications, respirators as well as coveralls worn over long-sleeved shirt and long pants, and chemical resistant gloves are recommended.

For **intermediate-term** exposure, there are special risk concerns for mixers and loaders that warrant the establishment of active ingredient-based PPE as well as additional mitigating measures. The MOEs for mixer/loaders supporting aerial **agricultural/horticultural** AND **tree insect** applications are not acceptable unless water soluble packaging is used along with chemical-resistant gloves and long-sleeve shirt and long pants. For mixer/loaders supporting ground applications for **tree insect** uses, chemical resistant gloves plus coveralls worn over long-sleeved shirts and long pants will provide for acceptable MOEs. Because the use of water soluble packaging does not appear feasible for the aquatic use (diflubenzuron is mixed with oil and sand), a respirators in addition to chemical-resistant gloves and coveralls worn over long-sleeved shirt and long pants, is needed to adequately mitigate exposures. A few 24c labels permit the use of high rates that result in low MOEs. The need for these high rates needs to be evaluated.

For **the liquid/flowable** formulations, there are no special risk concerns that warrant the establishment of active-ingredient-based minimum PPE requirements for handlers based on their potential for **short-term** exposure. The MOEs for **short-term** exposures were calculated as being acceptable for mixers, loaders, flaggers, and applicators of such formulations.

For **intermediate-term** exposure, there are special risk concerns that warrant the establishment of active-ingredient-

AGRICULTURAL/HORTICULTURAL USES

ummary Exposure/Risk Values for Handlers Using Diflubenzuron While Wearing Long-Sleeved Shirt, Long Pants, and Chemical Resistant Gloves

Exposure Scenario (Scen. #)	Dermal Exposure (mg/lb ai)	Inhalation Exposure (μg/lb ai)	Application Rate (lb ai/cycle)	Daily Amt. Treated	Daily Dermal Dose (mg/kg/day)	Daily Inhalation Exposure (mg/kg/day)	MOEs for combined dermal and inhalation exposureg (mg/kg/day)		Additional Mitigation MOE's	
							Short-Term MOE	Intermediate -Term MOE	Short-Term MOE	Intermediate-Term MOE
Mixer/Loader Exposure										
Wettable Powders-open bag (Fixed Wing Aerial Application for field crop treatments)	0.21	43.3	0.062 - 0.125 ai/A	350 acres	0.065 - 0.13	0.013 - 0.077	193 - 571	10 - 26	–	Water Soluble Packets) 294 - 645
Wettable Powders-open bag (Rotary Wing Aerial Applications for field crop treatments)	0.21	43.3	0.062 - 0.125 ai/A	200 acres	0.037 - 0.07	18 - 45	364 - 909	18 - 45	–	Water Soluble Packets 512 - 1053
Wettable Powders-open bag (Airblast Application for the control of non-bearing citrus pests)	0.21	43.3	0.31 - 0.62 ai/A	5 acres	0.005 - 0.009	–	>1000	–	–	–
Wettable Powders-open bag (Airblast Application for the control of citrus pests)	0.21	43.3	0.31 ai/A	20 acres	0.02	0.004	–	–	–	–
Wettable Powders-open bag (Airblast Postharvest Application for the control of cherry pests)	0.21	43.3	0.125 - 0.25 ai/A	20 acres	0.0075 - 0.015	0.0015 - 0.003	>1000	–	–	–
Wettable Powders-open bag (Airblast Application for the control of walnut pests)	0.21	43.3	0.25 - 0.5 ai/A	20 acres	0.015 - 0.03	0.003 - 0.006	>1000	–	–	–
Wettable Powders-open bag (Ground application using ground-boom sprayers)	0.21	43.3	0.062 - 0.125 ai/A	100 acres	0.0186 - 0.038	0.004 - 0.008	870 - 2105	43 - 105	–	Water Soluble Packets >1000
Liquids/Flowable-open pour (Fixed Wing Aerial Application for cotton applications)	0.047	1.2	0.062 - 0.125 ai/A	350 acres	0.014 - 0.029	–	[illegible]	68 - 142	–	Coveralls 142 - 286
Liquids/Flowables-open pour (Rotary Wing Aerial Applications for cotton applications)	0.047	1.2	0.062 - 0.125 ai/A	200 acres	0.008 - 0.016	–	>1000	125 - 250	–	–
Liquids/Flowables-open pour (Ground-boom applications to cotton)	0.047	1.2	0.062 - 0.125 ai/A	100 acres	0.004 - 0.008	–	>1000	250 - 500	–	–

Flaggers in perimeter of treatment area	0.04	0.3	0.062 - 0.125	350 acres	0.012 - 0.025	–	>1000	–	–	–
Flaggers in treatment area	0.5	0.3	0.062 - 0.125	350 acres	0.155 - 0.31	–	129 - 258	–	–	–
Applicator Exposure										
Aerial Application - fixed wing	0.009	0.09	0.062 - 0.125 ai/A	350 acres	0.0028 - 0.006	–	>1000	333 - 714	–	–
Aerial Application - rotary wing	0.009	0.09	0.062 - 0.125 ai/A	200 acres	0.0016 - 0.0034	–	>1000	588 - 1250	–	–
Airblast Application - open cab	0.3	4.5	0.062 - 0.125 ai/A	20 acres	0.0053 - 0.011	–	>1000	–	–	–
Airblast Application - closed cab	0.03	4.5	0.062 - 0.125 ai/A	20 acres	0.0005 - 0.001	–	>1000	–	–	–
Ground-boom sprayer - open cab	0.026	0.7	0.062 - 0.125 ai/A	100 acres	0.002 - 0.005	–	>1000	400 - 1000	–	–
Ground-boom sprayer - closed cab	0.008	0.04	0.062 - 0.125 ai/A	100 acres	0.0007 - 0.0014	–	>1000	>1000	–	–
High Pressure Hand Wand - greenhouse	0.61	79	0.125 - 0.25 ai/A	2 acres	0.002 - 0.004	–	>1000	–	–	–
Mixer/Loader/Applicator										
Low Pressure Handwand	2.8	31	0.125 - 0.25 ai/A	2 acres	0.01 - 0.02	–	>1000	–	–	–
Backpack/Knapsack	2.5	30	0.125 - 0.25 ai/A	2 acres	0.01 - 0.02	–	>1000	–	–	–

TREE INSECT USES

Summary Exposure/Risk Values for Handlers Using Diflubenzuron While Wearing Long-Sleeved Shirt, Long Pants, and Chemical Resistant Gloves

Exposure Scenario (Scen. #)	Dermal Exposure (mg/lb ai)	Inhalation Exposure (μg/lb ai) Not reported if less than 3 decmil places	Application Rate (lb ai/cycle)	Daily Amt. Treated	Daily Dermal Dose (mg/kg/day)	Daily Inhalation Exposure (mg/kg/day) Not reported if less than 3 decmil places.	MOEs for combined dermal and inhalation exposure (mg/kg/day)		Additional Mitigation MOEs	
							Short-Term MOE	Intermediate -Term MOE	Short-Term MOE	Intermediate Term MOE
Mixer/Loader Exposure										
Wettable Powders-open bag (Fixed Wing Aerial Application for wide-area forestry treatments)	0.21	43.3	0.0156 - 0.125 ai/A	1000 acres	0.047 - 0.375	0.01 - 0.077	88 - 701	4 - 35	--	Water Soluble Packets 100 - 800
Wettable Powders-open bag (Rotary Wing Aerial Applications for wide-area forestry treatments)	0.21	43.3	0.0156 - 0.125 ai/A	350 acres	0.016 - 0.13	0.003 - 0.03	250 - 2105	13 - 105	--	Water Soluble Packets 286 - 2000
Wettable Powders-open bag (Airblast Application for the control of forestry pests in forest nurseries and on Christmas tree plantations)	0.21	43.3	0.0156 - 0.125 ai/A	20 acres	0.001 - 0.0075	0.0002 - 0.002	>1000	200 - 1666	--	--
Wettable Powders-open bag (Ground application using hand-gun type sprayers)	0.21	43.3	0.0156 - 0.125 ai/A	100 acres	0.0047 - 0.038	0.001 - 0.008	>1000	53 - 351	--	Coveralls 105 - 851
Liquids/Flowable-open pour (Fixed Wing Aerial Application for wide-area forestry treatments)	0.047	1.2	0.0156 - 0.125 ai/A	1000 acres	0.01 - 0.084	0.0003 - 0.002	476 - 4000	23 - 200	--	Coveralls 45 - 377 Closed Systems 100 - 800
Liquids/Flowables-open pour (Rotary Wing Aerial Applications for wide-area forestry treatments)	0.047	1.2	0.0156 - 0.125 ai/A	350 acres	0.0036 - 0.029	--	>1000	69 - 555	--	Coveralls 137 - 1111 Closed System 286 - 2000
Liquids/Flowables-open pour (Airblast Application for the control of forestry pests in forest nurseries and on Christmas tree plantations)	0.047	1.2	0.0156 - 0.125 ai/A	20 acres	0.0002 - 0.0017	--	>1000	>1000	--	--
Liquids/Flowables-open pour (Ground application using hand-gun type sprayers)	0.047	1.2	0.0156 - 0.125 ai/A	100 acres	0.001 - 0.0084	--	>1000	238 - 2000	--	--
Applicator Exposure										

Aerial Application - fixed wing	0.009	0.09	0.0156 - 0.125 ai/A	1000 acres	0.002 - 0.016	--	>1000	125 -1000	--	--
Aerial Application - rotary wing	0.009	0.09	0.0156 - 0.125 ai/A	350 acres	0.0007 - 0.006	--	>1000	333 - 2857	--	--
Airblast Application - open cab	0.3	4.5	0.0156 - 0.125 ai/A	20 acres	0.0013 - 0.011	--	>1000	182 - 1538	--	--
Airblast Application - closed cab	0.03	4.5	0.0156 - 0.125 ai/A	20 acres	0.00013 - 0.001	--	>1000	>1000	--	--
Hand Gun	0.41	3.9	0.0156 - 0.125 ai/A	25 acres	0.0023 - 0.018	--	>1000	111 - 870	--	--
Mixer/Loader/Applicator										
Low Pressure Handwand	2.8	31	0.0156 - 0.125 ai/A	2 acres	0.001 - 0.01	--	>1000	200 - 2000	--	--
Backpack/Knapsack	2.5	30	0.0156 - 0.125 ai/A	2 acres	0.001 - 0.01	--	>1000	200 - 2000	--	--

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AQUATIC USES

Summary Exposure/Risk Values for Handlers Using Diflubenzuron while Wearing Long-Sleeved Shirt, Long Pants, and Chemical Resistant Gloves

Exposure Scenario (Scen. #)	Dermal Exposure (mg/lb ai)	Inhalation Exposure (µg/lb ai) not reported if less than 3 decimal places	Application Rate (lb ai/cycle)	Daily Amt. Treated	Daily Dermal Dose (mg/kg/day)	Daily Inhalation Exposure (mg/kg/day)	MOE's for combined dermal and inhalation exposure (mg/kg/day)		Additional Mitigation MOEs	
							Short-Term MOE	Intermediate-Term MOE	Short-Term MOE	Intermediate-Term MOE
Mixer/Loader Exposure										
Wettable Powders-open bag (Fixed Wing Aerial Application for wide-area aquatic treatments)	0.21	43.3	0.025 - 0.25 ai/A	1000 acres	0.075 - 0.75	0.015 - 0.15	44 - 444	2 - 22	Coveralls and Respirators 114 - 1142	Coveralls and Respirators 6 - 57*
Wettable Powders-open bag (Rotary Wing Aerial Applications for wide-area aquatic treatments)	0.21	43.3	0.025 - 0.25 ai/A	350 acres	0.026 - 0.26	0.005 - 0.05	129 - 1290	6 - 65	--	Coveralls and Respirators 143 - 1492*
Wettable Powders-open bag (Tractor Drawn Granular Spreader for the control of mosquitoes and midges for wide-area aquatic treatments)	0.21	43.3	0.025 - 0.25 ai/A	100 acres	0.0075 - 0.075	0.0015 - 0.015	444 - 4444	22 - 222	--	Coveralls and Respirators 513 - 5128*
Applicator Exposure										
Aerial Application - fixed wing	0.009	0.09	0.025 - 0.25 ai/A	1000 acres	0.003 - 0.032	--	>1000	63 - 625	--	*
Aerial Application - rotary wing	0.009	0.09	0.025 - 0.25 ai/A	350 acres	0.001 - 0.01	--	>1000	200 - 2000	--	--
Tractor Drawn Granular Spreader - open cab	0.011 single layer, no gloves	4.5	0.025 - 0.25 ai/A	100 acres	0.001 - 0.014	--	>1000	142 - 1429	--	--
Tractor Drawn Granular Spreader - closed cab	0.003	4.5	0.025 - 0.25 ai/A	100 acres	0.0001 - 0.001	--	>1000	>1000	--	--
Mixer/Loader/Applicator										
Granular Hand Gun	0.3	0.05	0.025 - 0.25	2 acres	0.0002 - 0.002	--	>1000	--**	--	--
Belly Grinder	12.9	61.8	0.025 - 0.25 ai/A	2 acres	0.009 - 0.09	--	444 - 4444	--**	--	--

* These uses are from Section 24c registrations. Of those, the majority of use rates range from 0.025 to 0.05. One label, CA-870049 has a high rate of 0.1 -0.25 lb ai/Acre. Based on the low intermediate-term, MOE's at the high rate, this use needs to be reevaluated.

** This scenario appears unlikely.

ATTACHMENT A - MOE TABLES FOR HANDLERS

based minimum PPE for mixers and loaders. Such includes respirators as well as chemical-resistant gloves and coveralls worn over long-sleeved shirt and long pants. These PPE result in enough exposure-reduction to increase estimated MOEs to greater than 100 except for one scenario. The MOEs remain unacceptable (ranging from 45 to 377) for mixers and loaders supporting fixed wing aerial applications for wide area forestry (tree insect) treatments, even when maximum PPE is worn (respirators, chemical-resistant gloves, and coveralls worn over long-sleeve shirt and long pants). For these uses a closed mixing and loading system is necessary to adequately mitigate the potential risks.

Homeowner-Use Products

There are at this time no known formulations of diflubenzuron intended for the home use.

Post-Application/Entry Restrictions

Occupational-Use Products (WPS Uses)

Restricted-Entry Interval: Under the Worker Protection Standard (WPS), interim restricted entry intervals (REI) for all uses within the scope of the WPS are established on the basis of the acute toxicity of the active ingredient. The toxicity categories of the active ingredient for acute dermal toxicity, eye irritation potential, and skin irritation potential are used to determine the interim WPS REI. If one or more of the three acute toxicity effects are in toxicity category I, the interim WPS REI is established at 48 hours. If none of the acute toxicity effects are in category I, but one or more of the three is classified as category II, the interim WPS REI is established at 24 hours. If none of the three acute toxicity effects are in category I or II, the interim WPS RED is established at 12 hours. A 48 hour REI is increased to 72 hours when an organophosphate pesticide is applied outdoors in arid areas. In addition, the WPS specifically retains two types of REI's established by the Agency prior to the promulgation of the WPS: product-specific REI's established on the basis of adequate data and interim REI's a that are longer than those that would be established under the WPS.

For occupational end-use products containing diflubenzuron as an active ingredient, EPA is increasing the interim 12 hour restricted-entry interval to 48 hours for each use of the product that is within the scope of the Worker Protection Standard (WPS). The basis for this recommendation is that diflubenzuron had a toxicological endpoint of concern for systemic toxicity for intermediate exposure. This interim REI shall be in effect until specific reentry data are submitted and reviewed. EPA notes that the WPS places very specific restrictions on entry during restricted-entry intervals when that entry involves contact with

treated surfaces. EPA believes that these existing WPS protections are sufficient to mitigate post-application exposures of workers who contact surfaces treated with diflubenzuron. EPA believes this 48-REI will not adversly effect crop advisors as the effects of diflubenzuron are not observable until 3 to 5 days after treatment

The WPS interim REI in effect until now was 12 hours (based on acute dermal Toxicity Category III). The WPS interim REI was established through labeling modifications specified in PR Notice 93-7, which implemented the labeling requirements of the 1992 Worker Protection Standard.

Early-Entry PPE: The WPS establishes very specific restrictions on entry by workers to areas that remain under a restricted-entry by workers if the entry involves contact with treated surfaces. Among those restrictions are a prohibition of routine entry to perform hand labor tasks and requirement that personal protective equipment be worn. Personal protective equipment requirements for persons who must enter areas that remain under a restricted-entry interval are based on the toxicity concerns about the active ingredient. The requirements are set in one of two ways.

1. If the Agency has no special concerns about the acute or other adverse effects of an active ingredient, it establishes the early-entry PPE requirements based on the acute dermal toxicity, skin irritation potential, and eye irritation potential of the active ingredient.

2. If the Agency has special concerns about an active ingredient due to very high acute toxicity or to certain other adverse effects, such as allergic effects, cancer, developmental toxicity, or reproductive effects, it may establish early-entry PPE requirements that are more stringent than would be established otherwise.

There are special risk concerns about both formulations of diflubenzuron since it has a toxicological endpoint of concern for systemic toxicity and low MOEs for some handlers. In addition, there are no data to evaluate the post-application risk to this chemical. Therefore, EPA is establishing PPE for dermal protection that is more stringent than the PPE that would otherwise be established based on the acute toxicity of the active ingredient. Since diflubenzuron is classified as category III for eye irritation potential, protective eyewear is not required.

Occupational-Use Products (NonWPS Uses)

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The Agency is establishing entry restrictions for all nonWPS occupational uses of diflubenzuron end-use products. For specific language, refer to Section V of this document.

Additional Labeling Requirements

The Agency is requiring additional labeling statements to be located on all end-use products containing diflubenzuron. For specific language, refer to Section V of this document.

(APPENDIX FOR INCLUSION IN RED SECTION V - LABELING REQUIREMENTS)

LABELING REQUIREMENTS FOR END-USE PRODUCTS

Occupational Labeling

PPE Requirements for Pesticide Handlers

Sole-active-ingredient end-use products that contain diflubenzuron must be revised to adopt the handler personal protective equipment requirements set forth in this section. Any conflicting PPE requirements on their current labeling must be removed.

Multiple-active-ingredient end-use products that contain diflubenzuron must compare the handler personal protective equipment requirements set forth in this section to the PPE requirements on their current labeling and retain the more protective. For guidance on which PPE is considered more protective, see PR Notice 93-7.

Products intended Primarily for Occupational Use

Minimum (baseline) PPE requirements -- Some of the registered uses of diflubenzuron are within the scope of the WPS and some are outside the scope of the WPS. The minimum (baseline) PPE requirements pertain to both the WPS and nonWPS uses by occupational handlers, since the potential exposure is similar for WPS and nonWPS uses.

Oral Bolus Pellet/Tablet Formulations

There are no minimum (baseline) PPE requirements for diflubenzuron end-use products formulated as oral bolus pellets or tablets.

Wettable Powder Formulations

The minimum (baseline) PPE for **applicators and other handlers (other than mixers and loaders)** for all occupational uses of diflubenzuron end-use products formulated as wettable powders [redacted]

"Applicators and other handlers (other than mixers and loaders must wear:
--Long-sleeved shirt and long pants
--Chemical-resistant gloves
--Shoes plus socks"

The minimum **mixer/loader** (baseline) PPE requirements for occupational uses of diflubenzuron end-use products formulated as wettable powders in water soluble packets:

"Mixers and loaders must wear:
--Long-sleeved shirt and long pants
--Chemical-resistant gloves
--Shoes plus socks
--Chemical-resistant apron

The minimum **mixer/loader** (baseline) PPE requirements for occupational uses of diflubenzuron end-use products formulated as wettable powders and labeled for use in aquatic sites (therefore, water soluble packets not feasible):

"Mixers and loaders must wear:
--Coveralls over long-sleeved shirt and long pants
--Chemical-resistant gloves
--Chemical-resistant footwear plus socks
--Chemical-resistant headgear for overhead exposure
--Chemical-resistant apron
--Respirator"

Liquid and Flowable Formulations

The minimum (baseline) PPE for **applicators and other handlers (other than mixers and loaders)** for occupational uses of diflubenzuron end-use products formulated as liquids or flowables is:

"Applicators and other handlers (other than mixers and loaders must wear:
--Long-sleeved shirt and long pants
--Chemical-resistant gloves
--Shoes plus socks"

The minimum **mixer/loader** (baseline) PPE requirements for occupational uses of diflubenzuron end-use products formulated as liquids or flowables is:

"Mixers and loaders must wear:
--Coveralls over long-sleeved shirt and long pants
--Chemical-resistant gloves
--Chemical-resistant footwear plus socks
--Chemical-resistant headgear for overhead exposure
--Chemical-resistant apron

Actual end-use product PPE requirements -- The PPE that would otherwise be established based on the acute toxicity of each end-use product must be compared to the minimum (baseline) personal protective equipment, if any, specified above. The more protective PPE must be placed on the product labeling. For guidance on which PPE is considered more protective, see PR Notice 93-7.

Placement in labeling -- The personal protective equipment must be placed on the end-use product labeling in the location specified in PR Notice 93-7 and the format and language of the PPE requirements must be the same as is specified in PR Notice 93-7.

Products Intended Primarily for Homeowner Use

-- not applicable --

Products Intended primarily for Occupational Use

WPS uses

Restricted-entry interval -- a 48-hour restricted entry interval (REI) is required for uses within the scope of the WPS (see PR Notice 93-7) on all end-use products with WPS uses(see tests in PR Notices 93-7 and 93-11).

Early-entry personal protective equipment (PPE) --
The PPE required for early entry following applications of both the wettable powder and flowable concentrate formulations is:
--Coveralls over long-sleeved shirt, long pants,
--Chemical-resistant gloves,
--Chemical-resistant footwear plus socks,
--Chemical-resistant headgear for overhead exposures.

Placement in labeling -- The REI must be inserted into the standardized REI statement required by Supplement Three of PR Notice 93-7. The PPE required for early entry must be inserted into the standardized early entry PPE statement required by Supplement Three of PR Notice 93-7.

NonWPS uses

Entry restrictions --

For Liquid and Wettable Powder applications (except aquatic sites and wide-area government-sponsored pest control programs, such as for mosquito or gypsy-moth control):

"Do not enter or allow others to enter the treated area until sprays have dried."

Placement in labeling --

If WPS uses are also on the label: Follow the instructions in PR Notice 93-7 for establishing a Non-Agricultural Use Requirements box and place the appropriate nonWPS entry restriction in that box.

If no WPS uses are on the label: Add the appropriate nonWPS entry restriction to the labels of all end-use products, except products primarily intended for homeowner use, in a section in the Directions For Use with the heading: "Entry Restrictions:"

Products Intended Primarily for Home Use

--Not Applicable--

Other Labeling Requirements

Products Intended Primarily for Occupational Use

The Agency is requiring the following labeling statements to be located on all end-use products containing diflubenzuron that are intended primarily for occupational use.

Application Restrictions (except wide-area government-sponsored pest control programs, such as for mosquito or gypsy-moth control):

"Do not apply this product in a way that will contact workers of other persons, either directly or through drift. Only protected handlers may be in the area during application."

"Dot not apply this product to bodies of water where swimming is likely."

Engineering Controls:

--For wettable powder formulations:

"Mixers and loaders supporting aerial applications of wettable powder formulations are required to use closed systems (water-soluble bags are considered to be closed systems). The closed system must be used in a manner that meets the requirements listed in the Worker Protection Standard (WPS) (40 CFR 170.240(d)(4).

--For liquid or flowable formulations:

"Mixers and loaders supporting fixed-wing aerial applications liquid or flowable formulations are required to use closed handling systems. The closed system must be used in a manner that meets the requirements listed in the Worker Protection Standard (WPS) (40 CFR 170.240(d) (4)."

--For all formulations:

"When handlers use closed systems (including water soluble bags), enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.240(d)(4-6), the handler PPE requirements may be reduced or modified as specified in the WPS."

User Safety Requirements:

"Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washable, use detergent and hot water. Keep and wash PPE separately from other laundry."

User Safety Recommendations:

- "Users should was hands before eating, drinking, chewing gum, using tobacco, or using the toilet."
- "Users should remove clothing immediately if pesticide gets inside. The wash thoroughly and put on clean clothing."
- "Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing."

Respirator Type:

The following type of respirator is appropriate to mitigate diflubenzuron inhalation concerns:

"A dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C)

cc: J. Evans, OREB
K. Whitby, RCAB (7509C)
T. Meyers, RCAB (7509C)
S. Jennings, (7508W)
L. Schnaubelt, SRRD (7508W)
Correspondence File
Chemical File (108201)

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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP 1F2507. DRES Dietary Exposure and Risk Estimates for Use of **Diflubenzuron** on Orange, Grapefruit, and Tangerine.

FROM: Richard Griffin
Registration Section
Risk Characterization and Analysis Branch
Richard Griffin 4/20/95

THROUGH: Debra Edwards, Chief
Risk Characterization and Analysis Branch
Health Effects Division (7509C)
Debra Edwards 4/20/95

TO: P. Schroeder/D. Edwards, PM Team 19
Insecticide-Rodenticide Branch
Registration Division (7505C)

Risk Estimates are based on the following:

TOXICOLOGY/ENDPOINTS:

Diflubenzuron:

- Reference Dose: DRES chronic exposure estimates are compared to an RfD of 0.02 mg/kg body weight/day, based on the NOEL (2.0 mg/kg/day) of a one-year dog feeding (which demonstrated changes in blood chemistry) and an uncertainty factor of 100. (RfD Peer Review discussion 3/16/95).

- Carcinogenicity: Diflubenzuron is classified as a Group E carcinogen.

P-Chloroaniline:

- Carcinogenicity: Based on an NTP study (1988), p-chloroaniline is classified by HED as a Group B2 carcinogen with a carcinogenic potency factor (Q_1^*) of 6.38×10^{-2} $(mg/kg/day)^{-1}$ (B. Fisher memo, 11/28/94).

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CHEMISTRY/RESIDUE:

- Tolerances are established under 40 CFR 180.377 for diflubenzuron in/on walnuts, mushrooms, cottonseed, soybean, and associated livestock commodities (summary attached).

- CBTS (J.B. Stokes memo, 3/24/95) has recommended tolerances of 0.5 ppm for the raw agricultural commodities tangerine, orange, and grapefruit.

- Diflubenzuron anticipated residue estimates for orange, grapefruit, and tangerine (0.05 ppm, with no concentration in juice) are taken from an HED Chemistry memo (S. Malak 2/12/95).

- In preparation for an HED Metabolism Committee decision, CBRS (S.A. Knizner memo, 3/22/95) estimated anticipated residue levels for diflubenzuron (DFB) in livestock commodities (DFB anticipated residue estimates were not calculated for walnuts, mushrooms, cottonseed, soybean, or citrus).

  Anticipated residue estimates for mushrooms, milk, and ruminant liver, were calculated for combined DFB metabolites including p-chloroaniline (PCA), chlorophenylurea (CPU), and p-chloroacetaniline (PCAA) based on the assumption that PCA related compounds should be assumed to have equal carcinogenic potential unless evidence of non-carcinogenicity is determined (see R. Engler memo to the HED Metabolism Committee, 2/14/94).

PERCENT CROP TREATED (CT):

Anticipated residue (livestock commodities) and dietary exposure estimates are based on the following percent crop treated estimates from BEAD (A. Grube memo, 4/10/95):

Grass/rangeland:	1%
Cottonseed:	3%
Soybean:	1%
Cattle bolus:	5%

Other commodities (orange, grapefruit, tangerine, walnuts, and mushrooms) are assumed to be 100 percent treated.

EXPOSURE AND RISK ESTIMATES:

Diflubenzuron:

Published uses: Tolerance / 100% CT (TMRC)

Overall U.S. population:	0.000719 mg/kg/day	(4% RfD)
Non-nursing infants:	0.003538	(18%)
Children, 1-6:	0.001915	(10%)

Diflubenzuron cont:

Orange, tangerine, grapefruit: (TMRC)

Overall U.S. population:	0.001181 mg/kg/day	(6% RfD)
Non-nursing infants:	0.002515	(13%)
Children, 1-6:	0.003251	(16%)

Published uses: Anticipated residue / % CT data (ARC)

Overall U.S. population:	0.000010 mg/kg/day	(<1% RfD)
Non-nursing infants:	0.000023	(<1%)
Children, 1-6:	0.000021	(<1%)

Orange, grapefruit, tangerine: Ant. res. / 100% CT

Overall U.S. population:	0.000070 mg/kg/day	(<1% RfD)
Non-nursing infants:	0.000140	(<1%)
Children, 1-6:	0.000190	(1%)

Total % RfD - Published and citrus: Ant. res. / % CT data

Overall U.S. population:	0.000080 mg/kg/day	(<1% RfD)
Non-nursing infants:	0.000163	(<1%)
Children, 1-6:	0.000211	(1%)

Cancer risk from consumption of PCA and related metabolites:

Mushrooms: 0.69 ppm / 100% CT

Overall U.S.: 0.000015 mg/kg/day (9.4E-07 Carcinogenic Risk)

Milk/Liver: anticipated residue / % CT data

Overall U.S.: 0.000004 mg/kg/day (2.7E-07 Carcinogenic Risk)

In vivo: Based on the results of a rat metabolism study, an assumption of a 2.0 percent conversion of DFB to PCA in humans is assumed for PCA risk assessment (see H. Spencer memo, 3/21/94).

Using the above exposure estimate for citrus and published uses (0.000080 mg/kg/day) the carcinogenic risk estimate (overall U.S. population) is 1.0E-07.

Total cancer risk estimate for PCA and related metabolites:

Overall U.S.: 1.3E-06

cc: DES/SAB
RS/RCAB
CBTS

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CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Diflubenzuron (Dimilin) Caswell #346A CAS No. 35367-38-5 A.I. CODE: 108201 CFR No. 180.377	1yr feeding- dog NOEL= 2.0000 mg/kg 0.00 ppm LEL= 10.0000 mg/kg 0.00 ppm ONCO: Negative- 2 species	Increases in met and sulf hemoglobin. Doses given by capsule. No evidence of oncogenicity in rats or mice.	ADI UF -->100 OPP RfD= 0.020000 EPA RfD= 0.020000	No data gaps.	WHO last reviewed 1985 HED complete 07/11/86 EPA verified 08/05/86 On IRIS.

FOOD CODE	FOOD NAME	PETITION NUMBER	TOLERANCE (PPM) NEW	PENDING	PUBLISHED
02002AA	GRAPEFRUIT-UNSPECIFIED	1F2507	0.500000		
02002AB	GRAPEFRUIT-PULP	1F2507	0.500000		
02002JA	GRAPEFRUIT-JUICE	1F2507	0.500000		
02006AA	ORANGES-UNSPECIFIED	1F2507	0.500000		
02006AB	ORANGES-PULP	1F2507	0.500000		
02006HA	ORANGES-PEEL	1F2507	0.500000		
02006JA	ORANGES-JUICE	1F2507	0.500000		
02008AA	TANGERINES	1F2507	0.500000		
02008JA	TANGERINE-JUICE	1F2507	0.500000		
03009AA	WALNUTS	8E3582			0.100000
16003AA	MUSHROOMS	2E2731			0.200000
27003OA	COTTONSEED-OIL	7F1898			0.200000
27003MA	COTTONSEED-MEAL	7F1898			0.200000
27010OA	SOYBEANS-OIL	6F1832			0.050000
28023AA	SOYBEANS-UNSPECIFIED	6F1832			0.050000
28023AB	SOYBEANS-MATURE,SEEDS DRY	6F1832			0.050000
28023MA	SOYBEANS-FLOUR, FULL FAT	6F1832			0.050000
28023MB	SOYBEANS-FLOUR, LOW FAT	6F1832			0.050000
28023MC	SOYBEANS-FLOUR,DEFATTED	6F1832			0.050000
50000DB	MILK-NON-FAT SOLIDS	6F1832			0.050000
50000FA	MILK-FAT SOLIDS	6F1832			0.050000
50000SA	MILK SUGAR (LACTOSE)	6F1832			0.050000
53001BA	BEEF-MEAT BYPRODUCTS	6F1832			0.050000
53001BB	BEEF(ORGAN MEATS)-OTHER	6F1832			0.050000
53001DA	BEEF-DRIED	6F1832			0.050000
53001FA	BEEF(BONELESS)-FAT (BEEF TALLOW)	6F1832			0.050000
53001KA	BEEF(ORGAN MEATS)-KIDNEY	6F1832			0.050000
53001LA	BEEF(ORGAN MEATS)-LIVER	6F1832			0.050000
53001MA	BEEF(BONELESS)-LEAN (W/O REMOVEABLE FAT)	6F1832			0.050000
53002BA	GOAT-MEAT BYPRODUCTS	6F1832			0.050000
53002BB	GOAT(ORGAN MEATS)-OTHER	6F1832			0.050000
53002FA	GOAT(BONELESS)-FAT	6F1832			0.050000
53002KA	GOAT(ORGAN MEATS)-KIDNEY	6F1832			0.050000
53002LA	GOAT(ORGAN MEATS)-LIVER	6F1832			0.050000
53002MA	GOAT(BONELESS)-LEAN (W/O REMOVEABLE FAT)	6F1832			0.050000
53003AA	HORSE	6F1832			0.050000
53005BA	SHEEP-MEAT BYPRODUCTS	6F1832			0.050000
53005BB	SHEEP(ORGAN MEATS)-OTHER	6F1832			0.050000
53005FA	SHEEP(BONELESS)-FAT	6F1832			0.050000
53005KA	SHEEP(ORGAN MEATS)-KIDNEY	6F1832			0.050000

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Diflubenzuron (Dimilin) Caswell #346A CAS No. 35367-38-5 A.I. CODE: 108201 CFR No. 180.377	1yr feeding- dog NOEL= 2.0000 mg/kg 0.00 ppm LEL= 10.0000 mg/kg 0.00 ppm ONCO: Negative- 2 species	Increases in met and sulf hemoglobin. Doses given by capsule. No evidence of oncogenicity in rats or mice.	ADI UF -->100 OPP RfD= 0.020000 EPA RfD= 0.020000	No data gaps.	WHO last reviewed 1985 HED complete 07/11/86 EPA verified 08/05/86 On IRIS.

FOOD CODE	FOOD NAME	PETITION NUMBER	TOLERANCE (PPM) NEW	PENDING	PUBLISHED
53005LA	SHEEP(ORGAN MEATS)-LIVER	6F1832			0.050000
53005MA	SHEEP(BONELESS)-LEAN (W/O REMOVEABLE FAT	6F1832			0.050000
53006BA	PORK-MEAT BYPRODUCTS	6F1832			0.050000
53006BB	PORK(ORGAN MEATS)-OTHER	6F1832			0.050000
53006FA	PORK(BONELESS)-FAT (INCLUDING LARD)	6F1832			0.050000
53006KA	PORK(ORGAN MEATS)-KIDNEY	6F1832			0.050000
53006LA	PORK(ORGAN MEATS)-LIVER	6F1832			0.050000
53006MA	PORK(BONELESS)-LEAN (W/O REMOVEABLE FAT)	6F1832			0.050000
55008BA	TURKEY-BYPRODUCTS	6F1832			0.050000
55008LA	TURKEY-GIBLETS (LIVER)	6F1832			0.050000
55008MA	TURKEY-FLESH(W/O SKIN, W/O BONES)	6F1832			0.050000
55008MB	TURKEY-FLESH(+SKIN,W/O BONES)	6F1832			0.050000
55008MC	TURKEY-UNSPECIFIED	6F1832			0.050000
55013BA	POULTRY,OTHER-BYPRODUCTS	6F1832			0.050000
55013LA	POULTRY,OTHER-GIBLETS(LIVER)	6F1832			0.050000
55013MA	POULTRY,OTHER-FLESH (+SKIN,W/O BONES)	6F1832			0.050000
55014AA	EGGS-WHOLE	6F1832			0.050000
55014AB	EGGS-WHITE ONLY	6F1832			0.050000
55014AC	EGGS-YOLK ONLY	6F1832			0.050000
55015BA	CHICKEN-BYPRODUCTS	6F1832			0.050000
55015LA	CHICKEN-GIBLETS(LIVER)	6F1832			0.050000
55015MA	CHICKEN-FLESH(W/O SKIN,W/O BONES)	6F1832			0.050000
55015MB	CHICKEN-FLESH(+SKIN,W/O BONES)	6F1832			0.050000

ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 346A DATE: 04/20/95 PAGE: 1

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Diflubenzuron (Dimilin) Caswell #346A CAS No. 35367-38-5 A.I. CODE: 108201 CFR No. 180.377	1yr feeding- dog NOEL= 2.0000 mg/kg 0.00 ppm LEL= 10.0000 mg/kg 0.00 ppm ONCO; Negative- 2 species	Increases in met and sulf hemoglobin. Doses given by capsule. No evidence of oncogenicity in rats or mice.	ADI UF -->100 OPP RfD= 0.020000 EPA RfD= 0.020000	No data gaps.	WHO last reviewed 1985 HED complete 07/11/86 EPA verified 08/05/86 On IRIS.

FOOD CODE	FOOD	FOOD FORM	PET.#	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
02002AA	GRAPEFRUIT-UNSP	00 NOT SPECIFIED	1F2507	N 0.500000	0.050000		100.00	0.050000
02002AB	GRAPEFRUIT-PULP	10 RAW-FRESH OR NFS	1F2507	N 0.500000	0.050000		100.00	0.050000
02002AB	GRAPEFRUIT-PULP	21 COOKED-NFS	1F2507	N 0.500000	0.050000		100.00	0.050000
02002JA	GRAPEFRUIT-JUICE	15 RAW-FRESH OR CANNED	1F2507	N 0.500000	0.050000C		100.00	0.050000
02002JA	GRAPEFRUIT-JUICE	31 COOKED-FRESH OR CANNED	1F2507	N 0.500000	0.050000C		100.00	0.050000
02006AA	ORANGES-UNSPEC	00 NOT SPECIFIED	1F2507	N 0.500000	0.050000		100.00	0.050000
02006AB	ORANGES-PULP	10 RAW-FRESH OR NFS	1F2507	N 0.500000	0.050000		100.00	0.050000
02006AB	ORANGES-PULP	21 COOKED-NFS	1F2507	N 0.500000	0.050000		100.00	0.050000
02006HA	ORANGES-PEEL	21 COOKED-NFS	1F2507	N 0.500000	0.050000		100.00	0.050000
02006HA	ORANGES-PEEL	22 COOKED-FRESH-BAKED	1F2507	N 0.500000	0.050000		100.00	0.050000
02006HA	ORANGES-PEEL	31 COOKED-FRESH OR CANNED	1F2507	N 0.500000	0.050000C		100.00	0.050000
02006JA	ORANGES-JUICE	15 RAW-FRESH OR CANNED	1F2507	N 0.500000	0.050000C		100.00	0.050000
02006JA	ORANGES-JUICE	31 COOKED-FRESH OR CANNED	1F2507	N 0.500000	0.050000		100.00	0.050000
02008AA	TANGERINES	10 RAW-FRESH OR NFS	1F2507	N 0.500000	0.050000C		100.00	0.050000
02008JA	TANGERINE-JUICE	15 RAW-FRESH OR CANNED	8E3582	P 0.100000	0.100000		100.00	0.100000
03009AA	WALNUTS	10 RAW-FRESH OR NFS	8E3582	P 0.100000	0.100000		100.00	0.100000
03009AA	WALNUTS	21 COOKED-NFS	8E3582	P 0.100000	0.100000		100.00	0.100000
03009AA	WALNUTS	22 COOKED-FRESH-BAKED	2E2731	P 0.200000	0.200000		100.00	0.200000
16003AA	MUSHROOMS	10 RAW-FRESH OR NFS	2E2731	P 0.200000	0.200000		100.00	0.200000
16003AA	MUSHROOMS	21 COOKED-NFS	2E2731	P 0.200000	0.200000		100.00	0.200000
16003AA	MUSHROOMS	31 COOKED-FRESH OR CANNED	2E2731	P 0.200000	0.200000		100.00	0.200000
16003AA	MUSHROOMS	53 COOKED-CANNED-BOILED	7F1898	P 0.200000	0.200000		3.00	0.006000
27003OA	COTTONSEED-OIL	18 PROCESSED OIL	7F1898	P 0.200000	0.200000		3.00	0.006000
27003MA	COTTONSEED-MEAL	18 PROCESSED OIL	6F1832	P 0.050000	0.050000		1.00	0.000500
27010OA	SOYBEANS-OIL	18 PROCESSED OIL	6F1832	P 0.050000	0.050000		1.00	0.000500
28023AA	SOYBEANS-UNSPEC	21 COOKED-NFS	6F1832	P 0.050000	0.050000		1.00	0.000500
28023AB	SOYBEANS-DRY	10 RAW-FRESH OR NFS	6F1832	P 0.050000	0.050000		1.00	0.000500
28023AB	SOYBEANS-DRY	21 COOKED-NFS	6F1832	P 0.050000	0.050000		1.00	0.000500
28023AB	SOYBEANS-DRY	23 COOKED-FRESH-BOILED	6F1832	P 0.050000	0.050000		1.00	0.000500
28023AB	SOYBEANS-DRY	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.050000		1.00	0.000500
28023AB	SOYBEANS-DRY	31 COOKED-FRESH OR CANNED	6F1832	P 0.050000	0.050000		1.00	0.000500
28023MA	SOY-FL, FULL FAT	21 COOKED-NFS	6F1832	P 0.050000	0.050000		1.00	0.000500
28023MA	SOY-FL, FULL FAT	22 COOKED-FRESH-BAKED	6F1832	P 0.050000	0.050000		1.00	0.000500
28023MA	SOY-FL, FULL FAT	31 COOKED-FRESH OR CANNED	6F1832	P 0.050000	0.050000		1.00	0.000500
28023MB	SOY-FL, LOW FAT	21 COOKED-NFS	6F1832	P 0.050000	0.050000		1.00	0.000500
28023MC	SOY-FL,DEFAT	10 RAW-FRESH OR NFS	6F1832	P 0.050000	0.050000		1.00	0.000500
28023MC	SOY-FL,DEFAT	21 COOKED-NFS	6F1832	P 0.050000	0.050000		1.00	0.000500
28023MC	SOY-FL,DEFAT	22 COOKED-FRESH-BAKED	6F1832	P 0.050000	0.050000		1.00	0.000500
28023MC	SOY-FL,DEFAT	51 COOKED-CANNED	6F1832	P 0.050000	0.050000		1.00	0.000500
28023MC	SOY-FL,DEFAT	53 COOKED-CANNED-BOILED						

B

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Diflubenzuron (Dimilin) Caswell #346A CAS No. 35367-38-5 A.I. CODE: 108201 CFR No. 180.377	1yr feeding- dog NOEL= 2.0000 mg/kg 0.00 ppm LEL= 10.0000 mg/kg 0.00 ppm ONCO: Negative- 2 species	Increases in met and sulf hemoglobin. Doses given by capsule. No evidence of oncogenicity in rats or mice.	ADI UF -->100 OPP RfD= 0.020000 EPA RfD= 0.020000	No data gaps.	WHO last reviewed 1985 HED complete 07/11/86 EPA verified 08/05/86 On IRIS.

FOOD CODE	FOOD	FOOD FORM	PET.#	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
500000B	MILK-NON-FAT SOL	10 RAW-FRESH OR NFS	6F1832	P 0.050000	0.000300		100.00	0.000300
500000B	MILK-NON-FAT SOL	21 COOKED-NFS	6F1832	P 0.050000	0.000300		100.00	0.000300
500000B	MILK-NON-FAT SOL	51 COOKED-CANNED	6F1832	P 0.050000	0.000300		100.00	0.000300
50000FA	MILK-FAT SOLIDS	10 RAW-FRESH OR NFS	6F1832	P 0.050000	0.000300		100.00	0.000300
50000FA	MILK-FAT SOLIDS	21 COOKED-NFS	6F1832	P 0.050000	0.000300		100.00	0.000300
50000FA	MILK-FAT SOLIDS	51 COOKED-CANNED	6F1832	P 0.050000	0.000300		100.00	0.000300
50000SA	MILK SUG (LACT)	21 COOKED-NFS	6F1832	P 0.050000	0.000300		100.00	0.000300
50000SA	MILK SUG (LACT)	51 COOKED-CANNED	6F1832	P 0.050000	0.000300		100.00	0.000300
53001BA	BEEF-MEAT BYP	21 COOKED-NFS	6F1832	P 0.050000	0.017300		100.00	0.017300
53001BA	BEEF-MEAT BYP	26 COOKED-FRESH-PICKLED,CORNED,OR CURED	6F1832	P 0.050000	0.017300		100.00	0.017300
53001BB	BEEF-OTH ORGAN	21 COOKED-NFS	6F1832	P 0.050000	0.017300		100.00	0.017300
53001BB	BEEF-OTH ORGAN	51 COOKED-CANNED	6F1832	P 0.050000	0.017300		100.00	0.017300
53001DA	BEEF-DRIED	21 COOKED-NFS	6F1832	P 0.050000	0.000070		100.00	0.000070
53001FA	BEEF-FAT	10 RAW-FRESH OR NFS	6F1832	P 0.050000	0.000300		100.00	0.000300
53001FA	BEEF-FAT	21 COOKED-NFS	6F1832	P 0.050000	0.000300		100.00	0.000300
53001FA	BEEF-FAT	22 COOKED-FRESH-BAKED	6F1832	P 0.050000	0.000300		100.00	0.000300
53001FA	BEEF-FAT	23 COOKED-FRESH-BOILED	6F1832	P 0.050000	0.000300		100.00	0.000300
53001FA	BEEF-FAT	24 COOKED-FRESH-BROILED	6F1832	P 0.050000	0.000300		100.00	0.000300
53001FA	BEEF-FAT	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000300		100.00	0.000300
53001KA	BEEF-KIDNEY	21 COOKED-NFS	6F1832	P 0.050000	0.017300		100.00	0.017300
53001LA	BEEF-LIVER	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.017300		100.00	0.017300
53001LA	BEEF-LIVER	31 COOKED-FRESH OR CANNED	6F1832	P 0.050000	0.017300		100.00	0.017300
53001MA	BEEF-LEAN	10 RAW-FRESH OR NFS	6F1832	P 0.050000	0.000070		100.00	0.000070
53001MA	BEEF-LEAN	21 COOKED-NFS	6F1832	P 0.050000	0.000070		100.00	0.000070
53001MA	BEEF-LEAN	22 COOKED-FRESH-BAKED	6F1832	P 0.050000	0.000070		100.00	0.000070
53001MA	BEEF-LEAN	23 COOKED-FRESH-BOILED	6F1832	P 0.050000	0.000070		100.00	0.000070
53001MA	BEEF-LEAN	24 COOKED-FRESH-BROILED	6F1832	P 0.050000	0.000070		100.00	0.000070
53002BA	GOAT-MEAT BYP	00 NOT SPECIFIED	6F1832	P 0.050000	0.017300		100.00	0.017300
53002BB	GOAT-OTH ORGAN	00 NOT SPECIFIED	6F1832	P 0.050000	0.017300		100.00	0.017300
53002FA	GOAT-FAT	23 COOKED-FRESH-BOILED	6F1832	P 0.050000	0.000300		100.00	0.000300
53002FA	GOAT-FAT	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000300		100.00	0.000300
53002KA	GOAT-KIDNEY	00 NOT SPECIFIED	6F1832	P 0.050000	0.017300		100.00	0.017300
53002LA	GOAT-LIVER	00 NOT SPECIFIED	6F1832	P 0.050000	0.017300		100.00	0.017300
53002MA	GOAT-LEAN	23 COOKED-FRESH-BOILED	6F1832	P 0.050000	0.000070		100.00	0.000070
53002MA	GOAT-LEAN	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000070		100.00	0.000070
53003AA	HORSE	00 NOT SPECIFIED	6F1832	P 0.050000	0.000070		100.00	0.000070
53005BA	SHEEP-MEAT BYP	21 COOKED-NFS	6F1832	P 0.050000	0.017300		100.00	0.017300
53005BB	SHEEP-OTH ORGAN	21 COOKED-NFS	6F1832	P 0.050000	0.017300		100.00	0.017300
53005FA	SHEEP-FAT	21 COOKED-NFS	6F1832	P 0.050000	0.000300		100.00	0.000300
53005KA	SHEEP-KIDNEY	21 COOKED-NFS	6F1832	P 0.050000	0.017300		100.00	0.017300

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Diflubenzuron (Dimilin) Caswell #346A CAS No. 35367-38-5 A.I. CODE: 108201 CFR No. 180.377	1yr feeding- dog NOEL= 2.0000 mg/kg 0.00 ppm LEL= 10.0000 mg/kg 0.00 ppm ONCO: Negative- 2 species	Increases in met and sulf hemoglobin. Doses given by capsule. No evidence of oncogenicity in rats or mice.	ADI UF -->100 OPP RfD= 0.020000 EPA RfD= 0.020000	No data gaps.	WHO last reviewed 1985 HED complete 07/11/86 EPA verified 08/05/86 On IRIS.

FOOD CODE	FOOD	FOOD FORM	PET.#	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
53005LA	SHEEP-LIVER	00 NOT SPECIFIED	6F1832	P 0.050000	0.017300		100.00	0.017300
53005MA	SHEEP-LEAN	21 COOKED-NFS	6F1832	P 0.050000	0.000070		100.00	0.000070
53005MA	SHEEP-LEAN	31 COOKED-FRESH OR CANNED	6F1832	P 0.050000	0.000070		100.00	0.000070
53006BA	PORK-MEAT BYP	21 COOKED-NFS	6F1832	P 0.050000	0.017300		100.00	0.017300
53006BB	PORK-OTH ORGAN	21 COOKED-NFS	6F1832	P 0.050000	0.017300		100.00	0.017300
53006BB	PORK-OTH ORGAN	26 COOKED-FRESH-PICKLED,CORNED,OR CURED	6F1832	P 0.050000	0.017300		100.00	0.017300
53006FA	PORK-FAT	10 RAW-FRESH OR NFS	6F1832	P 0.050000	0.000300		100.00	0.000300
53006FA	PORK-FAT	21 COOKED-NFS	6F1832	P 0.050000	0.000300		100.00	0.000300
53006FA	PORK-FAT	23 COOKED-FRESH-BOILED	6F1832	P 0.050000	0.000300		100.00	0.000300
53006FA	PORK-FAT	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000300		100.00	0.000300
53006FA	PORK-FAT	26 COOKED-FRESH-PICKLED,CORNED,OR CURED	6F1832	P 0.050000	0.000300		100.00	0.000300
53006KA	PORK-KIDNEY	21 COOKED-NFS	6F1832	P 0.050000	0.017300		100.00	0.017300
53006LA	PORK-LIVER	21 COOKED-NFS	6F1832	P 0.050000	0.017300		100.00	0.017300
53006LA	PORK-LIVER	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.017300		100.00	0.017300
53006MA	PORK-LEAN	21 COOKED-NFS	6F1832	P 0.050000	0.000070		100.00	0.000070
53006MA	PORK-LEAN	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000070		100.00	0.000070
53006MA	PORK-LEAN	26 COOKED-FRESH-PICKLED,CORNED,OR CURED	6F1832	P 0.050000	0.000070		100.00	0.000070
55008BA	TURKEY-BYP	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55008BA	TURKEY-BYP	26 COOKED-FRESH-PICKLED,CORNED,OR CURED	6F1832	P 0.050000	0.000000		100.00	0.000000
55008LA	TURKEY ORGAN	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55008LA	TURKEY ORGAN	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000000		100.00	0.000000
55008MA	TURKEY W/O SKIN	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55008MA	TURKEY W/O SKIN	31 COOKED-FRESH OR CANNED	6F1832	P 0.050000	0.000000		100.00	0.000000
55008MA	TURKEY W/O SKIN	62 COOKED-FRESH OR FROZEN-BAKED	6F1832	P 0.050000	0.000000		100.00	0.000000
55008MB	TURKEY+SKIN	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55008MB	TURKEY+SKIN	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000000		100.00	0.000000
55008MC	TURKEY-UNSPEC	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55013BA	POULTRY,OTH-BYP	00 NOT SPECIFIED	6F1832	P 0.050000	0.000000		100.00	0.000000
55013LA	POULTRY,ORGAN	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000000		100.00	0.000000
55013MA	POULTRY,OTHER	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AA	EGGS-WHOLE	10 RAW-FRESH OR NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AA	EGGS-WHOLE	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AA	EGGS-WHOLE	22 COOKED-FRESH-BAKED	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AA	EGGS-WHOLE	23 COOKED-FRESH-BOILED	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AA	EGGS-WHOLE	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AB	EGGS-WHITE ONLY	10 RAW-FRESH OR NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AB	EGGS-WHITE ONLY	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AB	EGGS-WHITE ONLY	22 COOKED-FRESH-BAKED	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AB	EGGS-WHITE ONLY	62 COOKED-FRESH OR FROZEN-BAKED	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AB	EGGS-WHITE ONLY	81 COOKED-FROZEN	6F1832	P 0.050000	0.000000		100.00	0.000000

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Diflubenzuron (Dimilin) Caswell #346A CAS No. 35367-38-5 A.I. CODE: 108201 CFR No. 180.377	1yr feeding- dog NOEL= 2.0000 mg/kg 0.00 ppm LEL= 10.0000 mg/kg 0.00 ppm ONCO: Negative- 2 species	Increases in met and sulf hemoglobin. Doses given by capsule. No evidence of oncogenicity in rats or mice.	ADI UF -->100 OPP RfD= 0.020000 EPA RfD= 0.020000	No data gaps.	WHO last reviewed 1985 HED complete 07/11/86 EPA verified 08/05/86 On IRIS.

FOOD CODE	FOOD	FOOD FORM	PET.#	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
55014AC	EGGS-YOLK ONLY	10 RAW-FRESH OR NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AC	EGGS-YOLK ONLY	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AC	EGGS-YOLK ONLY	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000000		100.00	0.000000
55014AC	EGGS-YOLK ONLY	31 COOKED-FRESH OR CANNED	6F1832	P 0.050000	0.000000		100.00	0.000000
55015BA	CHICKEN-BYP	00 NOT SPECIFIED	6F1832	P 0.050000	0.000000		100.00	0.000000
55015LA	CHICKEN-ORGAN	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55015LA	CHICKEN-ORGAN	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000000		100.00	0.000000
55015LA	CHICKEN-ORGAN	26 COOKED-FRESH-PICKLED,CORNED,OR CURED	6F1832	P 0.050000	0.000000		100.00	0.000000
55015MA	CHICKEN-W/O SKIN	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55015MA	CHICKEN-W/O SKIN	22 COOKED-FRESH-BAKED	6F1832	P 0.050000	0.000000		100.00	0.000000
55015MA	CHICKEN-W/O SKIN	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000000		100.00	0.000000
55015MA	CHICKEN-W/O SKIN	31 COOKED-FRESH OR CANNED	6F1832	P 0.050000	0.000000		100.00	0.000000
55015MA	CHICKEN-W/O SKIN	53 COOKED-CANNED-BOILED	6F1832	P 0.050000	0.000000		100.00	0.000000
55015MB	CHICKEN+SKIN	21 COOKED-NFS	6F1832	P 0.050000	0.000000		100.00	0.000000
55015MB	CHICKEN+SKIN	25 COOKED-FRESH-FRIED	6F1832	P 0.050000	0.000000		100.00	0.000000

ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 061501 DATE: 04/19/95 PAGE: 1

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
PCACPU Caswell #061501 CAS No. A.I. CODE: 061501 CFR No. NO NO	NOEL= 0.0000 mg/kg 0.00 ppm LEL= 0.0000 mg/kg 0.00 ppm ONCO: B2		UF -->0 OPP RfD= 1.000000 EPA RfD= 1.000000 q*: 0.06380		

FOOD CODE	FOOD	FOOD FORM	PET.#	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
16003AA	MUSHROOMS	10 RAW-FRESH OR NFS		N 0.200000	0.690000		100.00	0.690000
16003AA	MUSHROOMS	21 COOKED-NFS		N 0.200000	0.690000		100.00	0.690000
16003AA	MUSHROOMS	31 COOKED-FRESH OR CANNED		N 0.200000	0.690000		100.00	0.690000
16003AA	MUSHROOMS	53 COOKED-CANNED-BOILED		N 0.200000	0.690000		100.00	0.690000
50000DB	MILK-NON-FAT SOL	10 RAW-FRESH OR NFS		N 1.000000	0.000400		100.00	0.000400
50000DB	MILK-NON-FAT SOL	21 COOKED-NFS		N 1.000000	0.000400		100.00	0.000400
50000DB	MILK-NON-FAT SOL	51 COOKED-CANNED		N 1.000000	0.000400		100.00	0.000400
50000FA	MILK-FAT SOLIDS	10 RAW-FRESH OR NFS		N 1.000000	0.000400		100.00	0.000400
50000FA	MILK-FAT SOLIDS	21 COOKED-NFS		N 1.000000	0.000400		100.00	0.000400
50000FA	MILK-FAT SOLIDS	51 COOKED-CANNED		N 1.000000	0.000400		100.00	0.000400
50000SA	MILK SUG (LACT)	21 COOKED-NFS		N 1.000000	0.000400		100.00	0.000400
50000SA	MILK SUG (LACT)	51 COOKED-CANNED		N 1.000000	0.000400		100.00	0.000400
53001LA	BEEF-LIVER	25 COOKED-FRESH-FRIED		N 1.000000	0.003700		100.00	0.003700
53001LA	BEEF-LIVER	31 COOKED-FRESH OR CANNED		N 1.000000	0.003700		100.00	0.003700
53002LA	GOAT-LIVER	00 NOT SPECIFIED		N 1.000000	0.003700		100.00	0.003700
53005LA	SHEEP-LIVER	00 NOT SPECIFIED		N 1.000000	0.003700		100.00	0.003700
53006LA	PORK-LIVER	21 COOKED-NFS		N 1.000000	0.003700		100.00	0.003700
53006LA	PORK-LIVER	25 COOKED-FRESH-FRIED		N 1.000000	0.003700		100.00	0.003700