Caswell 497E

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

FEB 16 1995

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

**MEMORANDUM**

SUBJECT: Dietary Exposure Analysis for Imidacloprid (NTN) through the Use on Fruiting Vegetables and *Brassica* Leafy Vegetables Crop Groups, Lettuce, Grapes, Tomato Processed Commodities; Meat, Milk, Poultry and Eggs (PP#3F4231/3H5675).

FROM: Jennifer M. Wintersteen
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TO: Dennis Edwards, PM Team 19
Insecticide-Rodenticide Branch
Registration Division (7505C)

THROUGH: Elizabeth A. Doyle, Section Head
Dietary Risk Evaluation Section
SAB/Health Effects Division

**Action Requested**

Provide a Dietary Risk Evaluation System (DRES) analysis of the dietary exposure for imidacloprid through the proposed uses on various raw agricultural commodities (RACs). The following tolerances are being assessed in this analysis:

| | |
|---|---|
| · Fruiting Vegs Crop Group | 1.00 ppm |
| · *Brassica* Vegs Crop Group | 3.50 ppm |
| · Grapes | 1.00 ppm |
| · Lettuce | 3.50 ppm |
| · Tomato paste | 6.00 ppm |
| · Tomato puree | 3.00 ppm |
| · meat, fat and byproducts of cattle, horses, sheep, goats and hogs | 0.30 ppm |
| · meat, fat and meat byproducts of poultry | 0.05 ppm |
| · eggs | 0.02 ppm |
| · milk | 0.10 ppm |

**Discussion**

1.Toxicological Endpoint: The chronic analysis used a Reference Dose (RfD) of 0.057 mg/kg body weight/day, based on a no observed effect level (NOEL) of 5.7 mg/kg bwt/day and an uncertainty factor of 100. The NOEL is based on a chronic toxicity study in rats that demonstrated increased thyroid lesions in males as an endpoint effect. The HED RfD Peer Review Committee also classified imidacloprid as a Group E carcinogen (G. Ghali memo, 11/10/93).

An acute dietary assessment is required by the Toxicology Endpoint Selection Document for Imidacloprid (M. Ottley and K. Baetcke memo, 4/18/94). The endpoint for acute dietary risk assessment is 24 mg/kg/day from the rabbit developmental study. The LEL (72 mg/kg/day) was based upon decreased body weight, and increased resorptions, abortion and increased skeletal abnormalities.

2.Residue Information: Food uses evaluated in this analysis were the published tolerances listed in 40 CFR §180.472 and the proposed new uses as recommended in a CBTS memo by F. Griffith dated 1/19/95. Hops is included in this analysis as a published commodity with an expiration date of 6/28/95.

Meat and milk tolerances, 0.3 and 0.1 ppm, respectively, for imidacloprid have recently been published. These published tolerances are equal to the proposed meat and milk tolerances in this petition.

No information has been provided for refinement of percent of crop treated or anticipated residues for either chronic or acute analyses. A summary of the residue information used in the analysis is attached as Table 1.

3.Results: A DRES chronic exposure analysis was performed using tolerance level residues and 100 percent crop treated information to estimate the Theoretical Maximum Residue Contribution (TMRC) for the general population and 22 subgroups.

Summaries of the TMRCs and their representations as percentages of the RfD for imidacloprid are attached as Table 2.

The following table provides exposure information for the U.S. population and the most highly exposed subgroup, children one to six years old. Exposure and percent of the Reference Dose for each proposed commodity is given in the table as well.

**TMRC Exposure Estimates for Imidacloprid**

| Commodity Type | U.S. Population (TMRC) (µg/kg/day) | U.S. Population (%RfD) | Children (1-6 yrs) (TMRC) (µg/kg/day) | Children (1-6 yrs) (%RfD) |
|---|---|---|---|---|
| **Published Uses** | | | | |
| - hops | | | | |
| - meat | | | | |
| - milk | | | | |
| - cottonseed | | | | |
| - potatoes | | | | |
| - apples | | | | |
| - sorghum | | | | |
| - TOTAL | 2.594130 | 5 | 6.577375 | 12 |
| **Proposed Uses** | | | | |
| - Fruiting Vegs | 3.682286 | 6 | 7.797148 | 14 |
| - *Brassica* Vegs | 0.718137 | 1 | 0.887115 | 2 |
| - Grapes | 0.265345 | 0.5 | 0.772070 | 1 |
| - Poultry | 0.025334 | 0.04 | 0.051560 | 0.09 |
| - Eggs | 0.011607 | 0.02 | 0.025999 | 0.05 |
| - Tomato paste/puree[1] | 2.964333 | 5 | 6.619601 | 12 |
| - Lettuce | 0.790699 | 1 | 0.623376 | 1 |
| **Total** | 8.087994 | 14 | 16.734728 | 29 |

[1] Tomatoes are part of the Fruiting Vegetables Crop Group. The exposure due to tomato paste and puree listed here is also reflected in the exposure from this crop group. Total exposure was calculated with tomato commodities included only once.

**Acute Exposure**

The DRES detailed acute exposure analysis evaluates individual food consumption as reported by respondents in the USDA 77-78 Nationwide Food Consumption Survey (NFCS) and estimates the distribution of single day exposures through the diet for the U.S. population and certain subgroups. The analysis assumes uniform distribution of imidacloprid in the commodity supply. Since the toxicological effect to which high end exposure is being compared in this analysis is developmental toxicity, the DRES subgroup of concern is females (13+ years) which approximates women of child-bearing age.

The Margin of Exposure (MOE) is a measure of how closely the high end exposure comes to the NOEL (the highest dose at which no effects were observed in the laboratory study), and is calculated as the ratio of the NOEL to the exposure (NOEL/exposure = MOE). For substances whose acute NOEL is based on animal studies, the Agency is not generally concerned unless the MOE is below 100.

In the analysis, tolerance level residues were used to calculate the high-end exposure for the females (13+ years) subgroup. Although the analysis considered only those individuals who consumed any of the commodities in the DRES data file for imidacloprid, the consuming population represents approximately 99% of the surveyed individuals. High end exposure was compared to the NOEL of 24 mg/kg bwt/day from the rabbit developmental study to get a high end Margin of Exposure. The MOE for females was calculated in the attached table and the results are as follows:

Females (13+ years) High End Exposure = 0.048 mg/kg/day
NOEL/Exposure = 24 mg/kg/day ÷ 0.048 mg/kg/day = 500

Using the given endpoints, the MOE is not of concern for the subgroup females (13+ years) with an estimated MOE above 100. See attached Table 3 for a distribution of acute exposure.

**Discussion**

To the extent that this analysis used tolerance level residues and 100 percent-crop-treated assumptions, it is considered a "worst-case" picture of the dietary risk from imidacloprid. The chronic dietary risk from exposure of imidacloprid appears to be of minimal concern, with all DRES subgroups having TMRC values well below the Reference Dose.

The acute dietary analysis of imidacloprid is not of concern for females of child-bearing age considering the proposed tolerances.

There appears to be no dietary concern for the tolerances on the recommended commodities found on page 1 of this memo.

Attachments

cc: DRES, Caswell #497E, Tox I (M. Ottley), CBTS (Griffith)

# Table 1.

CHEMICAL INFORMATION FOR CASWELL NUMBER 497E  DATE: 02/13/95  PAGE: 1

| CHEMICAL | STUDY TYPE | EFFECTS | REFERENCE DOSES | DATA GAPS/COMMENTS | STATUS |
|---|---|---|---|---|---|
| Imidacloprid<br>Caswell #497E<br>CAS No. 105827-78-9<br>A.I. CODE: 129099<br>CFR No. | 2yr feeding- rat<br>NOEL= 5.7000 mg/kg<br>100.00 ppm<br>LEL= 16.9000 mg/kg<br>300.00 ppm<br>ONCO: E (RfD/PR Committee) | Increased incidence of mineralized particles in thyroid colloid.<br><br>No evidence of oncogenicity in rats or mice. | ADI UF -->100<br>OPP RfD= 0.057000<br>EPA RfD= 0.000000 | No data gaps. | RfD/PR reviewed 04/22/93 |

| FOOD CODE | FOOD NAME | PETITION NUMBER | TOLERANCE (PPM) NEW | PENDING | PUBLISHED |
|---|---|---|---|---|---|
| 01013AA | GRAPES-FRESH | 3F4231 | 1.000000 | | |
| 01014DA | GRAPES-RAISINS | 3F4231 | 1.000000 | | |
| 01014JA | GRAPES-JUICE | 3F4231 | 1.000000 | | |
| 04001AA | APPLES-FRESH | 3F4169 | | | 0.500000 |
| 04001DA | APPLES-DRIED | 3F4169 | | | 0.500000 |
| 04001JA | APPLES-JUICE | 3F4169 | | | 0.500000 |
| 06007AA | MANGOES | 4F4285 | | 0.200000 | |
| 08020AA | HOPS | 300343 | | | 3.000000 |
| 11001AA | EGGPLANT | 3F4231 | 1.000000 | | |
| 11003AA | PEPPERS,SWEET,GARDEN | 3F4231 | 1.000000 | | |
| 11003AB | CHILI PEPPERS | 3F4231 | 1.000000 | | |
| 11003AD | PEPPERS-OTHER | 3F4231 | 1.000000 | | |
| 11004AA | PIMIENTOS | 3F4231 | 1.000000 | | |
| 11005AA | TOMATOES-WHOLE | 3F4231 | 1.000000 | | |
| 11005JA | TOMATOES-JUICE | 3F4231 | 1.000000 | | |
| 11005RA | TOMATOES-PUREE | 3F4231 | 3.000000 | | |
| 11005TA | TOMATOES-PASTE | 3F4231 | 6.000000 | | |
| 11005UA | TOMATOES-CATSUP | 3F4231 | 1.000000 | | |
| 13005AA | BROCCOLI | 3F4231 | 3.500000 | | |
| 13006AA | BRUSSEL SPROUTS | 3F4231 | 3.500000 | | |
| 13007AA | CABBAGE-GREEN AND RED | 3F4231 | 3.500000 | | |
| 13008AA | CAULIFLOWER | 3F4231 | 3.500000 | | |
| 13009AA | COLLARDS | 3F4231 | 3.500000 | | |
| 13010AA | CABBAGE-CHINESE/CELERY, INC. BOK CHOY | 3F4231 | 3.500000 | | |
| 13011AA | KALE | 3F4231 | 3.500000 | | |
| 13012AA | KOHLRABI | 3F4231 | 3.500000 | | |
| 13013AA | LETTUCE-LEAFY VARIETIES | 3F4231 | 3.500000 | | |
| 13020AA | LETTUCE-UNSPECIFIED | 3F4231 | 3.500000 | | |
| 13021AA | MUSTARD GREENS | 3F4231 | 3.500000 | | |
| 13045AA | LETTUCE-HEAD VARIETIES | 3F4231 | 3.500000 | | |
| 14013AA | POTATOES(WHITE)-WHOLE | 3F4169 | | | 0.300000 |
| 14013AB | POTATOES(WHITE)-UNSPECIFIED | 3F4169 | | | 0.300000 |
| 14013AC | POTATOES(WHITE)-PEELED | 3F4169 | | | 0.300000 |
| 14013DA | POTATOES(WHITE)-DRY | 3F4169 | | | 0.300000 |
| 14013HA | POTATOES(WHITE)-PEEL ONLY | 3F4169 | | | 0.300000 |
| 24006AA | SORGHUM (INCLUDING MILO) | 4F4337 | | | 0.050000 |
| 27003OA | COTTONSEED-OIL | 4F4169 | | | 6.000000 |
| 27003WA | COTTONSEED-MEAL | 4F4169 | | | 9.000000 |
| 43058AA | WINE AND SHERRY | 3F4231 | 1.000000 | | |
| 50000DB | MILK-NON-FAT SOLIDS | 4F4169 | | | 0.100000 |

Table 1.

CHEMICAL INFORMATION FOR CASWELL NUMBER 497E DATE: 02/13/95 PAGE: 2

| CHEMICAL | STUDY TYPE | EFFECTS | REFERENCE DOSES | DATA GAPS/COMMENTS | STATUS |
|---|---|---|---|---|---|
| Imidacloprid<br>Caswell #497E<br>CAS No. 105827-78-9<br>A.I. CODE: 129099<br>CFR No. | 2yr feeding- rat<br>NOEL= 5.7000 mg/kg<br>100.00 ppm<br>LEL= 16.9000 mg/kg<br>300.00 ppm<br>ONCO: E (RfD/PR Committee) | Increased incidence of mineralized particles in thyroid colloid.<br><br>No evidence of oncogenicity in rats or mice. | ADI UF -->100<br>OPP RfD= 0.057000<br>EPA RfD= 0.000000 | No data gaps. | RfD/PR reviewed 04/22/93 |

| FOOD CODE | FOOD NAME | PETITION NUMBER | TOLERANCE (PPM) NEW | PENDING | PUBLISHED |
|---|---|---|---|---|---|
| 50000FA | MILK-FAT SOLIDS | 4F4169 | | | 0.100000 |
| 50000SA | MILK SUGAR (LACTOSE) | 4F4169 | | | 0.100000 |
| 53001BA | BEEF-MEAT BYPRODUCTS | 4F4169 | | | 0.300000 |
| 53001BB | BEEF(ORGAN MEATS)-OTHER | 4F4169 | | | 0.300000 |
| 53001DA | BEEF-DRIED | 4F4169 | | | 0.300000 |
| 53001FA | BEEF(BONELESS)-FAT (BEEF TALLOW) | 4F4169 | | | 0.300000 |
| 53001KA | BEEF(ORGAN MEATS)-KIDNEY | 4F4169 | | | 0.300000 |
| 53001LA | BEEF(ORGAN MEATS)-LIVER | 4F4169 | | | 0.300000 |
| 53001MA | BEEF(BONELESS)-LEAN (W/O REMOVEABLE FAT) | 4F4169 | | | 0.300000 |
| 53002BA | GOAT-MEAT BYPRODUCTS | 4F4169 | | | 0.300000 |
| 53002BB | GOAT(ORGAN MEATS)-OTHER | 4F4169 | | | 0.300000 |
| 53002FA | GOAT(BONELESS)-FAT | 4F4169 | | | 0.300000 |
| 53002KA | GOAT(ORGAN MEATS)-KIDNEY | 4F4169 | | | 0.300000 |
| 53002LA | GOAT(ORGAN MEATS)-LIVER | 4F4169 | | | 0.300000 |
| 53002MA | GOAT(BONELESS)-LEAN (W/O REMOVEABLE FAT) | 4F4169 | | | 0.300000 |
| 53003AA | HORSE | 4F4169 | | | 0.300000 |
| 53005BA | SHEEP-MEAT BYPRODUCTS | 4F4169 | | | 0.300000 |
| 53005BB | SHEEP(ORGAN MEATS)-OTHER | 4F4169 | | | 0.300000 |
| 53005FA | SHEEP(BONELESS)-FAT | 4F4169 | | | 0.300000 |
| 53005KA | SHEEP(ORGAN MEATS)-KIDNEY | 4F4169 | | | 0.300000 |
| 53005LA | SHEEP(ORGAN MEATS)-LIVER | 4F4169 | | | 0.300000 |
| 53005MA | SHEEP(BONELESS)-LEAN (W/O REMOVEABLE FAT | 4F4169 | | | 0.300000 |
| 53006BA | PORK-MEAT BYPRODUCTS | 4F4169 | | | 0.300000 |
| 53006BB | PORK(ORGAN MEATS)-OTHER | 4F4169 | | | 0.300000 |
| 53006FA | PORK(BONELESS)-FAT (INCLUDING LARD) | 4F4169 | | | 0.300000 |
| 53006KA | PORK(ORGAN MEATS)-KIDNEY | 4F4169 | | | 0.300000 |
| 53006LA | PORK(ORGAN MEATS)-LIVER | 4F4169 | | | 0.300000 |
| 53006MA | PORK-LEAN | 4F4169 | | | 0.300000 |
| 55008BA | TURKEY-BYPRODUCTS | 3F4231 | 0.050000 | | |
| 55008LA | TURKEY-GIBLETS (LIVER) | 3F4231 | 0.050000 | | |
| 55008MA | TURKEY-FLESH(W/O SKIN, W/O BONES) | 3F4231 | 0.050000 | | |
| 55008MB | TURKEY-FLESH(+SKIN,W/O BONES) | 3F4231 | 0.050000 | | |
| 55008MC | TURKEY-UNSPECIFIED | 3F4231 | 0.050000 | | |
| 55013BA | POULTRY,OTHER-BYPRODUCTS | 3F4231 | 0.050000 | | |
| 55013LA | POULTRY,OTHER-GIBLETS(LIVER) | 3F4231 | 0.050000 | | |
| 55013MA | POULTRY,OTHER-FLESH (+SKIN,W/O BONES) | 3F4231 | 0.050000 | | |
| 55014AA | EGGS-WHOLE | 3F4231 | 0.020000 | | |
| 55014AB | EGGS-WHITE ONLY | 3F4231 | 0.020000 | | |
| 55014AC | EGGS-YOLK ONLY | 3F4231 | 0.020000 | | |
| 55015BA | CHICKEN-BYPRODUCTS | 3F4231 | 0.050000 | | |

Table 1.

CHEMICAL INFORMATION FOR CASWELL NUMBER 497E DATE: 02/13/95 PAGE: 3

| CHEMICAL | STUDY TYPE | EFFECTS | REFERENCE DOSES | DATA GAPS/COMMENTS | STATUS |
|---|---|---|---|---|---|
| Imidacloprid<br>Caswell #497E<br>CAS No. 105827-78-9<br>A.I. CODE: 129099<br>CFR No. | 2yr feeding- rat<br>NOEL= 5.7000 mg/kg<br>100.00 ppm<br>LEL= 16.9000 mg/kg<br>300.00 ppm<br>ONCO: E (RfD/PR Committee) | Increased incidence of mineralized particles in thyroid colloid.<br><br>No evidence of oncogenicity in rats or mice. | ADI UF -->100<br>OPP RfD= 0.057000<br>EPA RfD= 0.000000 | No data gaps. | RfD/PR reviewed 04/22/93 |

| FOOD CODE | FOOD NAME | PETITION NUMBER | TOLERANCE (PPM) NEW | PENDING | PUBLISHED |
|---|---|---|---|---|---|
| 55015LA | CHICKEN-GIBLETS(LIVER) | 3F4231 | 0.050000 | | |
| 55015MA | CHICKEN-FLESH(W/O SKIN,W/O BONES) | 3F4231 | 0.050000 | | |
| 55015MB | CHICKEN-FLESH(+SKIN,W/O BONES) | 3F4231 | 0.050000 | | |

## Table 2: Imidacloprid on Petition 3F4231/3H5675

| CHEMICAL INFORMATION | STUDY TYPE | EFFECTS | REFERENCE DOSES | DATA GAPS/COMMENTS | STATUS |
|---|---|---|---|---|---|
| Imidacloprid<br>Caswell #497E<br>CAS No. 105827-78-9<br>A.I. CODE: 129099<br>CFR No. | 2yr feeding- rat<br>NOEL= 5.7000 mg/kg<br>100.00 ppm<br>LEL= 16.9000 mg/kg<br>300.00 ppm<br>ONCO: E (RfD/PR Committee) | Increased incidence of mineralized particles in thyroid colloid.<br><br>No evidence of oncogenicity in rats or mice. | ADI UF -->100<br>OPP RfD= 0.057000<br>EPA RfD= 0.000000 | No data gaps. | RfD/PR reviewed 04/22/93 |

| POPULATION SUBGROUP | TOTAL TMRC (MG/KG BODY WEIGHT/DAY) CURRENT TMRC* | NEW TMRC** | NEW TMRC AS PERCENT OF RFD | DIFFERENCE AS PERCENT OF RFD | EFFECT OF ANTICIPATED RESIDUES ARC | %RFD |
|---|---|---|---|---|---|---|
| U.S. POPULATION - 48 STATES | 0.002594 | 0.008088 | 14.189463 | 9.638358 | | |
| U.S. POPULATION - SPRING SEASON | 0.002430 | 0.007688 | 13.487042 | 9.223460 | | |
| U.S. POPULATION - SUMMER SEASON | 0.002499 | 0.007728 | 13.557321 | 9.173293 | | |
| U.S. POPULATION - FALL SEASON | 0.002744 | 0.008459 | 14.840837 | 10.027309 | | |
| U.S. POPULATION - WINTER SEASON | 0.002699 | 0.008457 | 14.836598 | 10.101014 | | |
| NORTHEAST REGION | 0.002722 | 0.008410 | 14.754535 | 9.978268 | | |
| NORTH CENTRAL REGION | 0.002667 | 0.008291 | 14.545756 | 9.867540 | | |
| SOUTHERN REGION | 0.002332 | 0.007284 | 12.779346 | 8.688951 | | |
| WESTERN REGION | 0.002764 | 0.008722 | 15.301900 | 10.452581 | | |
| HISPANICS | 0.003044 | 0.008528 | 14.961621 | 9.621442 | | |
| NON-HISPANIC WHITES | 0.002609 | 0.008210 | 14.403633 | 9.827302 | | |
| NON-HISPANIC BLACKS | 0.002271 | 0.006994 | 12.270568 | 8.286121 | | |
| NON-HISPANIC OTHERS | 0.002667 | 0.008576 | 15.046021 | 10.367528 | | |
| NURSING INFANTS (< 1 YEAR OLD) | 0.004831 | 0.005485 | 9.623265 | 1.146958 | | |
| NON-NURSING INFANTS (< 1 YEAR OLD) | 0.011653 | 0.014746 | 25.870911 | 5.427146 | | |
| FEMALES (13+ YEARS, PREGNANT) | 0.001790 | 0.006714 | 11.778432 | 8.637902 | | |
| FEMALES 13+ YEARS, NURSING | 0.002142 | 0.007632 | 13.388868 | 9.630498 | | |
| CHILDREN (1-6 YEARS OLD) | 0.006577 | 0.016735 | 29.359172 | 17.819918 | | |
| CHILDREN (7-12 YEARS OLD) | 0.004040 | 0.012404 | 21.760947 | 14.673144 | | |
| MALES (13-19 YEARS OLD) | 0.002675 | 0.008391 | 14.721891 | 10.028779 | | |
| FEMALES (13-19 YEARS OLD, NOT PREG. OR NURSING) | 0.002151 | 0.007105 | 12.464561 | 8.691330 | | |
| MALES (20 YEARS AND OLDER) | 0.001790 | 0.006156 | 10.800475 | 7.659696 | | |
| FEMALES (20 YEARS AND OLDER, NOT PREG. OR NURS) | 0.001533 | 0.005993 | 10.514782 | 7.824637 | | |

*Current TMRC does not include new or pending tolerances.
**New TMRC includes new, pending, and published tolerances.

## Table 3: Acute Exposure Distribution for Imidacloprid

NOEL = 24.0 mg/kg bwt/day

DETAILED ACUTE ANALYSIS INCLUDING AR'S: ALL STATISTICS BASED ON USERS' DAILY CONSUMPTION 10:35 Friday, February 10, 1995 9

| *NAME: IMIDACLOPRID | | STUDY | RDV | NOEL | SF | STUDY TYPE | SPECIES | EFF. LEV. | CORE GRADE | DOC. NO.* |
|---|---|---|---|---|---|---|---|---|---|---|
| *CASWELL NO: 497E | CFR NO: CFR . | A | | | | | | | | * |
| *CAS NO: 12909-90-0 | SHAUGHNESSY NO: 129099 | B | | | | | | | | * |
| *STATUS CODES: | | C | | | | | | | | * |

*RDV INFO: The LD value used in this analysis is 0.0024 MG/KG of BODY WEIGHT/DAY

*FILE INFO: No Tolerance Data Are Used--Without User Modifications. AR DATA: No User Modifications*

FEMALES(13+ YRS)

| ESTIMATES BASED ON | ESTIMATED % OF POTENTIAL: PERSON DAYS THAT ARE USER-DAYS | MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY: MG/KG BODY WEIGHT/DAY | AS PERCENT OF RDV |
|---|---|---|---|
| TOLERANCES: | 0.00 | 0.000000 | 0.00 |
| ANTICIPATED RESIDUES: | 99.82 | 0.006277 | 261.53 |

ESTIMATED % OF POPULATION USER-DAYS WITH RESIDUE CONTRIBUTION EXCEEDING X TIMES THE RDV, FOR X=

| | 0 | .2 | .4 | .6 | .8 | 1 | 1.2 | 1.4 | 1.6 | 1.8 | 2 | 3 | 4 | 5 | 10 | 15 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOLERANCES: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ANTICIPATED RESIDUES: | 100 | 96 | 89 | 81 | 73 | 66 | 60 | 54 | 49 | 45 | 41 | 27 | 19 | 14 | 4 | 1 | 0 |

**Exposure = RDV x X = 0.0024 x 20 = 0.048 mg/kg/day**

**NOEL / Exposure = 24 mg/kg/day / 0.048 mg/kg/day = 500**