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

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

Date: 3/3/08

Subject: Myclobutanil. Amended Human-Health Risk Assessment for Proposed Use on Section 3 Requests for Use on Snap Bean, Mint, Papaya, Gooseberry, Currant, Caneberry, Bell and Non-Bell Pepper, Head and Leaf Lettuce, and Artichoke.

Regulatory Action: Section 3 Registration
Risk Assessment Type: Single Chemical Aggregate

PP#s: 7E4861, 7E4877, 3E6562, 8E4939, 6E7138, & 7E4866.
DP Num: 341689
PC Code: 128857
40 CFR: 180.443

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INTRODUCTION

The ARIA Team of the Office of Pesticide Programs (OPP) is charged with estimating the risk to human health from exposure to pesticides. The RD of OPP has requested that ARIA update the latst human health risk assessment for the pesticide myclobutanil [α-butyl-α-(4-chlorophenyl)-1*H*-1,2,4-triazole-1-propanenitrile] (PP#s: 7E4861, 7E4877, 3E6562, 8E4939, 6E7138, & 7E4866. DP Num: 341689, W. Cutchin, 11/1/07) to include updated percent crop treated (%CT) information on peppers. The updated information shows an increase the %CT for peppers from 10 to 50% (email, A. Grube to B. Madden, 2/15/08). This memorandum will address changes in the previous human health risk assessment as a result of this new information in the dietary exposure and aggregate risk assessments. No other changes are required.

Dietary Risks (Food and Drinking Water)

Acute (females 13-49 years old) and chronic dietary exposure (general U.S. population and all population subgroups) assessments were conducted using the Dietary Exposure Evaluation Model - Food Commodity Intake Database™ (DEEM-FCID™; ver. 2.03) program which incorporates consumption data from USDA's Continuing Surveys of Food Intakes by Individuals (CSFII), 1994-1996 and 1998. The 1994-96, 98 data are based on the reported consumption of more than 20,000 individuals over two non-consecutive survey days. Foods "as consumed" (*e.g.*, apple pie) are linked to EPA-defined food commodities (*e.g.* apples, peeled fruit - cooked; fresh or N/S; baked; or wheat flour - cooked; fresh or N/S, baked) using publicly available recipe translation files developed jointly by USDA and EPA. Consumption data are averaged for the entire U.S. population and within population subgroups for chronic exposure assessment, but are retained as individual consumption events for acute exposure assessment.

For chronic exposure and risk assessment, an estimate of the residue level in each food or food-form (*e.g.*, orange or orange juice) on the food commodity residue list is multiplied by the average daily consumption estimate for that food/food form. The resulting residue consumption estimate for each food/food form is summed with the residue consumption estimates for all other food/food forms on the commodity residue list to arrive at the total average estimated exposure. Exposure is expressed in mg/kg body weight/day and as a percent of the cPAD. This procedure is performed for each population subgroup.

For acute exposure assessments, individual one-day food consumption data are used on an individual-by-individual basis. The reported consumption amounts of each food item can be multiplied by a residue point estimate and summed to obtain a total daily pesticide exposure for a deterministic (Tier 1 or Tier 2) exposure assessment, or "matched" in multiple random pairings with residue values and then summed in a probabilistic (Tier 3/4) assessment. The resulting distribution of exposures is expressed as a percentage of the aPAD on both a user (*i.e.*, those who reported eating relevant commodities/food forms) and a per-capita (*i.e.*, those who reported eating the relevant commodities as well as those who did not) basis. In accordance with HED policy, per capita exposure and risk are reported for all tiers of analysis. However, for Tiers 1 and 2, significant differences in user vs. per capita exposure and risk are identified and noted in the risk assessment.

HED's level of concern is when the exposure is greater than 100% of the PAD. That is, estimated exposures above this level are of concern, while estimated exposures at or below this level are not of concern. The DEEM-FCID™ analysis estimates the dietary exposure of the U.S. population and 26 population subgroups. The results reported in Table 5.1.3.1 are for the U.S. population, all infants (<1 year old), children 1-2 years old, children 3-5 years old, children 6-12 years old, youth 13-19 years old, females 13-49 years old, males 20-49 years old, and adults 50+ years old.

Acute Dietary Exposure Estimates: An acute dietary exposure assessment was performed for females 13-49 years old (no endpoint was identified for the general U.S. population or any other population subgroup) using tolerance-level residues and 100% CT information for all registered

and proposed uses. Drinking water was incorporated directly in the dietary assessment using the acute (peak) concentration for surface water generated by the PRZM-EXAMS model. These assessments conclude that the acute dietary exposure estimates (95th percentile) are below HED's level of concern (<100% of the aPAD) for females 13-49 years old at 4% of the aPAD.

Chronic Dietary Exposure Estimates: A refined, chronic dietary exposure assessment was performed for the general U.S. population and various population subgroups using USDA PDP monitoring data for apple juice, bananas (not plantains) and milk, registered and proposed tolerance for all other commodities; average % CT information for apple (except juice), apricots, artichokes, asparagus, green beans, blackberry, broccoli, cantaloupe, cauliflower, cherry, cucumber, grape, hops, mint, nectarine, peach, peppers, plum, pumpkin, raspberry, soybeans, squash, strawberry, tomato, and watermelon; and 100% CT information for all other registered and proposed uses. Drinking water was incorporated directly into the dietary assessment using the chronic concentration for surface water generated by the PRZM-EXAMS model. This assessment concludes that the chronic dietary exposure estimates are below HED's level of concern (<100% of the cPAD) for the general U.S. population (20% of the cPAD) and all population subgroups. The most highly exposed population subgroup is children 1-2 years old at 30% of the cPAD.

Table 1 Summary of Dietary Exposure and Risk for Myclobutanil.

Population Subgroup	Acute Dietary[1]		Chronic Dietary[2]	
	Dietary Exposure (mg/kg/day)	% aPAD	Dietary Exposure (mg/kg/day)	% cPAD
U.S. Population (total)	NA		0.002013	20
All Infants (< 1 year old)			0.006268	25
Children 1-2 years old			**0.007569**	**30**
Children 3-5 years old			0.007005	28
Children 6-12 years old			0.005194	21
Youth 13-19 years old			0.004054	16
Adults 20-49 years old			0.004916	19
Adults 50+ years old			0.004733	19
Females 13-49 years old	**0.025927**	**4**	0.004892	19

[1] Acute dietary endpoints of 0.6 mg/kg/day for females 13-49 years old. No acute dietary endpoint was chosen for the general U.S. population, including infants and children.
[2] Chronic dietary endpoint of 0.025mg/kg/day applies to the general U.S. population and all population subgroups.

Aggregate Risk

Aggregate risk assessments were performed for acute (food and drinking water), short-term (food, drinking water and residential), intermediate-term (food, drinking water and residential), and chronic aggregate exposure (food and drinking water). Long-term and cancer aggregate risk assessments were not performed because, based on the current and proposed use patterns, HED does not expect residential exposure durations that would result in long-term exposures and myclobutanil is not carcinogenic. All potential exposure pathways were assessed in the aggregate risk assessment.

Acute Aggregate Risk Assessment (Food and Drinking Water)

The acute aggregate risk assessment takes into account exposure estimates from dietary consumption of myclobutanil (food and drinking water). Dermal, inhalation, and incidental oral exposures resulting from short-term residential applications are assessed separately. The acute dietary exposure estimates are below HED's level of concern (<100% aPAD) at the 95th exposure percentile for females 13-49 years old (4% of the aPAD; see Table 1). Therefore, the acute aggregate risk associated with the proposed uses of myclobutanil are not of concern to HED for females 13-49 years old.

Short-Term Aggregate Risk Assessment (Food, Drinking Water and Residential)

The short-term aggregate risk assessments estimate risks likely to result from 1-30 days of exposure to myclobutanil residues in food, drinking water, and residential pesticide uses. In aggregating short-term risk, HED considered background chronic dietary exposure (food and drinking water; see Table 1) and short-term, non-dietary oral and/or dermal exposures.

For adults, there is potential for short-term dermal and inhalation handler exposure, and short-term dermal post-application exposures from the residential uses of myclobutanil, including orchards, "pick your own" gardens, home fruit and vegetable gardens, and treated turf. However, the handler and post-application exposures were not combined as the likelihood of the residential homeowner experiencing both short-term handler and post-application exposure to myclobutanil is unlikely [it is current HED Science Advisory Council for Exposure (ExpoSAC) policy not to combine handler and post-application exposures for these scenarios due to the conservative nature of each assessment alone]. For children/toddlers, short-term dermal and non-dietary oral post-application exposures may result from dermal contact with treated turf as well as non-dietary ingestion/hand-to-mouth transfer of residues from turf grass.

For the general U.S. population and children/toddlers, the total food and residential short-term aggregate MOEs are listed in Table 2. For the general U.S. population and all population subgroup, including infants and children, all short-term MOEs are greater than 100; and, therefore, are not of concern to HED (MOE <100).

Intermediate-Term Aggregate Risk Assessment (Food, Drinking Water and Residential)

The intermediate-term aggregate risk assessment estimates risks likely to result from 1 to 6 months exposure to myclobutanil residues in food, drinking water, and residential pesticide scenarios. In aggregating intermediate-term risk, HED considered background chronic dietary exposure (food and drinking water; see Table 1) and intermediate-term, non-dietary oral and/or dermal exposures.

For adults, intermediate-term post-application exposures may result from dermal contact with treated fruits and vegetables at "pick your own" gardens, treated home fruit and vegetable gardens and treated turf. As mentioned previously, since myclobutanil is applied at 7- to 14-day intervals, only short-term exposure is expected for the residential handler. Therefore, no aggregate intermediate-term exposure for the adult handler was performed. For toddlers, intermediate-term dermal and non-dietary oral post-application exposures may result from dermal contact with treated turf as well as non-dietary ingestion/hand-to-mouth transfer of residues from turf grass. However, as the NOAEL (10 mg/kg/day) from a 2-generation reproduction toxicity study in rats was used for assessing short- and intermediate-term dermal, inhalation and incidental oral exposures, the short-and intermediate-term aggregate risk estimates from the post-application exposure scenarios are the same for the general U.S. population and children/toddlers

For the general U.S. population and children/toddlers, the total food and residential intermediatet-term aggregate MOEs are listed in Table 2. For the general U.S. population and all population subgroup, including infants and children, all intermediate-term MOEs are greater than 100; and, therefore, are not of concern to HED (MOE <100).

Table 2. Short- and Intermediate-Term Aggregate Risk Calculations for Myclobutanil.

Population Subgroups	Exposure Scenario	NOAEL (mg/kg/day)	Level of Concern[1]	Max Exposure[2] (mg/kg/day)	Average Dietary Exposure (mg/kg/day)	Residential Exposure[3] (mg/kg/day)	Aggregate MOE (dietary and residential)[4]
Short-Term Handler Exposures							
General U.S Population	Hose End Sprayer - Mix your own	10	100	0.1	0.005013	0.054	170
Short- and Intermediate-Term Post-Application Exposures							
General U.S Population	Home Gardens	10	100	0.1	0.005013	0.031	280
	"Pick Your Own" Fruit Trees					0.09	110

	Turf - Heavy Yardwork (0.62 lb ai/A rate)					0.076	120
	Turf -Playing Golf (0.62 lb ai/A rate)[5]					0.0052	980
Children 1-2 years old	Turf - Playing on Lawn (0.62 lb ai/A rate) [5]				0.007569	0.0695	130

[1] The level of concern (target MOE) includes 10X for interspecies extrapolation and 10X for intraspecies variation.

[2] Maximum Exposure (mg/kg/day) = NOAEL/Target MOE

[3] Residential Exposure = [Oral exposure + Dermal exposure + Inhalation Exposure].

[4] Aggregate MOE = [NOAEL ÷ (Avg Dietary Exposure + Residential Exposure)].

[5] The labels have been revised to include a maximum turf application rate of 0.62-0.68 lb ai/A. Although the residential exposure assessment was conducted using an application rate of 0.62 lb ai/A, the 0.68 lb ai/A application rate does not have a significant affect on the short-and intermediate term aggregate assessment. The MOEs are not of concern to HED.

Chronic Aggregate Risk Assessment (Food and Drinking Water)

The chronic aggregate risk assessment takes into account average exposure estimates from dietary consumption of myclobutanil (food and drinking water) and residential uses. However, due to the use patterns, no chronic residential exposures are expected. Therefore, the chronic aggregate risk assessment includes exposure from food and drinking water only. The chronic dietary exposure estimates are below HED's level of concern (<100% cPAD) for the general U.S. population (20% of the cPAD) and all population subgroups (see Table 1). The most highly exposed population subgroup is children 1-2 years old at 30% of the cPAD. Therefore, the chronic aggregate risk associated with the proposed uses of myclobutanil are not of concern to HED for the general U.S. population or any population subgroups.

Recommendations

The updated dietary exposure and aggregate risk assessments, which include the new %CT information on peppers, do not change the results of the original assessment. Pending receipt of the revised Section F (see below), the residue chemistry, toxicological and occupational/residential databases are adequate to support the permanent tolerances for the combined residues of myclobutanil and its alcohol metabolite α- (3-hydroxybutyl)-α- (4-chlorophenyl)-1*H*-1, 2,4-triazole-1-propanenitrile (free and bound) in

Commodity	Tolerance (ppm)
Fruiting vegetables (except cucurbits), crop group 8, except	4.0

tomato	
Okra	4.0
Leafy greens, crop subgroup 4A, except spinach	9.0
Cilantro	9.0
Artichoke	0.90
Papaya	3.0
Black sapote	3.0
Canistel	3.0
Mamey sapote	3.0
Mango	3.0
Sapodilla	3.0
Star apple	3.0

In addition, the submitted data supports the removal of the conditions of registrations for myclobutanil on bean, snap, succulent; peppermint and spearmint; gooseberry; current; and caneberry. Since the additional data does not exceed the established tolerances, no change in the existing tolerances is required.

Deficiencies

A revised Section F is required for the residues of myclobutanil on papaya, sapote, canistel, mamey sapote, mango, sapodilla, and star apple at 3.0 ppm.

A revised Section F is required for the residues of myclobutanil on fruiting vegetables (except cucurbits), crop group 8, except tomato at 4.0 ppm.

A revised Section F is required for the residues of myclobutanil on okra at 4.0 ppm.

A revised Section F is required for the residues of myclobutanil on leafy greens, crop subgroup 4A, except spinach at 9.0 ppm.

A revised Section F is required for the residues of myclobutanil on cilantro at 9.0 ppm.

ARIA suggests that the RD confirm or correct, as may be necessary, the 24-hour restricted entry interval (REI) listed on the product label.

The original human health risk assessment also included a requirement for the **c**ompletion of the triazole and metabolite risk assessment. That requirement has been fulfilled.