United States
Environmental Protection
Agency

Prevention, Pesticides
and Toxic Substances
(7510C)

EPA739-R-05-008
September 2005

# Reregistration Eligibility Decision for Trichloromelamine

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

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

**CERTIFIED MAIL**

Dear Registrant:

This is to inform you that the Environmental Protection Agency (EPA) has completed its review of the available data on the antimicrobial trichloromelamine. The enclosed Reregistration Eligibility Decision (RED) document was approved on September 23, 2005.

Based on its review, EPA is now publishing its Reregistration Eligibility Decision (RED) and risk management decision for trichloromelamine and its associated human health and environmental risks. A Notice of Availability will be published in the *Federal Register* announcing the publication of the RED.

The RED and supporting risk assessment for trichloromelamine are available to the public in EPA's Pesticide Docket **OPP-2005-0262** at: http://www.epa.gov/edockets.

Please note that the trichloromelamine risk assessment and the attached RED document concern only this particular pesticide. This RED presents the Agency's conclusions on the dietary, drinking water, occupational and ecological risks posed by exposure to trichloromelamine alone. This document also contains both generic and product-specific data that the Agency intends to require in Data Call-Ins (DCIs). Note that DCIs, with all pertinent instructions, will be sent to registrants at a later date. Additionally, for product-specific DCIs, the first set of required responses will be due 90 days from the receipt of the DCI letter. The second set of required responses will be due eight months from the receipt of the DCI letter.

As part of the RED, the Agency has determined that trichloromelamine will be eligible for reregistration provided that all the conditions identified in this document are satisfied. Sections IV and V of this RED document describe data requirements and necessary label amendments. Instructions for registrants on submitting the revised labeling can be found in the set of instructions for product-specific data that accompanies this document.

If you have questions on this document or the label changes relevant to this reregistration decision, please contact the Chemical Review Manager, Jennifer Slotnick, at (703) 305-0601. For questions about product reregistration and/or the Product DCI that accompanies this document, please contact Adam Heyward at (703) 308-6422.

Sincerely,

Frank T. Sanders
Director, Antimicrobials Division

**REREGISTRATION ELIGIBILITY**
**DECISION**
**for**
**TRICHLOROMELAMINE**
List C
CASE 3144

Approved By:

Frank T. Sanders
Director, Antimicrobials Division
September 23, 2005

Attachment

**Table of Contents**


**Trichloromelamine Reregistration Team…….……. i**
**Glossary of Terms and Abbreviations……... ii**
**Executive Summary……..... iv**

**I. Introduction…….. 1**
**II. Chemical Overview……... 3**
**A. Regulatory History……..... 3**
**B. Chemical Identification ……... 3**
**C. Use Profile……... 4**
**III. Summary of Trichloromelamine Risk Assessments…….. 5**
**A. Human Health Risk Assessment……... 5**
**1. Toxicity of Trichloromelamine …….. 5**
**2. FQPA Safety Factor…… 8**
**3. Population Adjusted Dose (PAD)……... 9**
**a. Acute PAD…… 9**
**b. Chronic PAD…… ... 9**
**4. Exposure Assumptions…… 9**
**5. Dietary Risk Assessment……. 9**
**a. Dietary Risk from Food…….. 9**
**b. Dietary Risk from Drinking Water …….. 11**
**6. Residential Risk Assessment…...…… 11**
**7. Aggregate Risk……. 11**
**8. Occupational Risk……... 12**
**a. Occupational Toxicity……. 12**
**b. Occupational Handler Exposure…… 13**
**c. Occupational Handler Risk Summary……... 13**
**B. Environmental Risk Assessment……... 15**
**1. Environmental Fate and Transport……... 15**
**2. Ecological Risk……. 15**
**a. Toxicity (Hazard) Assessment ...…… 16**
**b. Exposure and Risk ……. 16**
**c. Risk to Listed Species…….……. 16**

**IV. Risk Management, Reregistration, and Tolerance Reassessment Decision… 17**
**A. Determination of Reregistration Eligibility…… 17**
**B. Public Comments and Responses……. 17**
**C. Regulatory Position…… 17**
**1. Food Quality Protection Act Findings……... 17**
**a. "Risk Cup" Determination……. 17**
**b. Determination of Safety to U.S. Population……. 18**
**c. Determination of Safety to Infants and Children…… 18**
**d. Endocrine Disruptor Effects…….. 18**
**e. Cumulative Risks……. 19**
**2. Tolerance Summary…… 19**

**a. Tolerance Exemption Currently Listed and Tolerance Reassessment…… 20**
**b. Codex Harmonization…… 20**
**D. Regulatory Rationale…….. 20**
**1. Human Health Risk Management……. 20**
**2. Environmental Risk Management…….. 21**
**3. Other Labeling Requirements…… 21**
**4. Listed Species Considerations……..…….. 21**
**a. The Endangered Species Act…….……. 21**
**b. General Risk Mitigation……...…….. 22**

**V. What Registrants Need to Do…… 23**
**A. Manufacturing-Use Products…… 25**
**1. Additional Generic Data Requirements…… 25**
**2. Labeling for Technical and Manufacturing-Use Products…….. 25**
**B. End-Use Products……...…… 25**
**1. Additional Product-Specific Data Requirements……..... 25**
**2. Labeling for End-Use Products…….. 26**
**a. Label Changes Summary Table……. 27**

**VI. Appendices……. 28**
**A. Table of Use Patterns for Trichloromelamine …….. 29**
**B. Table of Generic Data Requirements and Studies Used to Make the Reregistration Decision…… 32**
**C. Technical Support Documents…….. 37**
**D. Bibliography Citations…… 38**
**E. Generic Data Call-In…… 43**
**F. Product Specific Data Call-In…….. 44**
**G. Batching of End-Use Products…… 45**
**H. List of All Registrants Sent the Data Call-In…… 48**
**I. List of Available Forms…… 49**

## Trichloromelamine Reregistration Team

Health Effects Risk Assessment
Laura Bailey
Timothy Leighton
Timothy McMahon
Najm Shamim

Ecological Risk Assessment
Genevieve Angle

Registration Support
Adam Heyward

Risk Management
Jennifer Slotnick
Ben Chambliss

**GLOSSARY OF TERMS AND ABBREVIATIONS**

| | |
|---|---|
| a.i. | Active Ingredient |
| aPAD | Acute Population Adjusted Dose |
| APHIS | Animal and Plant Health Inspection Service |
| ARTF | Agricultural Re-entry Task Force |
| BCF | Bioconcentration Factor |
| CDC | Centers for Disease Control |
| CDPR | California Department of Pesticide Regulation |
| CFR | Code of Federal Regulations |
| ChEI | Cholinesterase Inhibition |
| CMBS | Carbamate Market Basket Survey |
| cPAD | Chronic Population Adjusted Dose |
| CSFII | USDA Continuing Surveys for Food Intake by Individuals |
| CWS | Community Water System |
| DCI | Data Call-In |
| DEEM | Dietary Exposure Evaluation Model |
| DL | Double layer clothing {i.e., coveralls over SL} |
| DWLOC | Drinking Water Level of Comparison |
| EC | Emulsifiable Concentrate Formulation |
| EDSP | Endocrine Disruptor Screening Program |
| EDSTAC | Endocrine Disruptor Screening and Testing Advisory Committee |
| EEC | Estimated Environmental Concentration. The estimated pesticide concentration in an environment, such as a terrestrial ecosystem. |
| EP | End-Use Product |
| EPA | U.S. Environmental Protection Agency |
| EXAMS | Tier II Surface Water Computer Model |
| FDA | Food and Drug Administration |
| FFDCA | Federal Food, Drug, and Cosmetic Act |
| FIFRA | Federal Insecticide, Fungicide, and Rodenticide Act |
| FOB | Functional Observation Battery |
| FQPA | Food Quality Protection Act |
| FR | Federal Register |
| GL | With gloves |
| GPS | Global Positioning System |
| HIARC | Hazard Identification Assessment Review Committee |
| IDFS | Incident Data System |
| IGR | Insect Growth Regulator |
| IPM | Integrated Pest Management |
| RED | Reregistration Eligibility Decision |
| LADD | Lifetime Average Daily Dose |
| $LC_{50}$ | Median Lethal Concentration. Statistically derived concentration of a substance expected to cause death in 50% of test animals, usually expressed as the weight of substance per weight or volume of water, air or feed, e.g., mg/l, mg/kg or ppm. |
| LCO | Lawn Care Operator |
| $LD_{50}$ | Median Lethal Dose. Statistically derived single dose causing death in 50% of the test animals when administered by the route indicated (oral, dermal, inhalation), expressed as a weight of substance per unit weight of animal, e.g., mg/kg. |
| LOAEC | Lowest Observed Adverse Effect Concentration |
| LOAEL | Lowest Observed Adverse Effect Level |
| LOC | Level of Concern |
| LOEC | Lowest Observed Effect Concentration |
| mg/kg/day | Milligram Per Kilogram Per Day |
| MOE | Margin of Exposure |
| MP | Manufacturing-Use Product |
| MRID | Master Record Identification (number). EPA's system of recording and tracking studies submitted. |
| MRL | Maximum Residue Level |

| | |
|---|---|
| N/A | Not Applicable |
| NASS | National Agricultural Statistical Service |
| NAWQA | USGS National Water Quality Assessment |
| NG | No Gloves |
| NMFS | National Marine Fisheries Service |
| NOAEC | No Observed Adverse Effect Concentration |
| NOAEL | No Observed Adverse Effect Level |
| NPIC | National Pesticide Information Center |
| NR | No respirator |
| OP | Organophosphorus |
| OPP | EPA Office of Pesticide Programs |
| ORETF | Outdoor Residential Exposure Task Force |
| PAD | Population Adjusted Dose |
| PCA | Percent Crop Area |
| PDCI | Product Specific Data Call-In |
| PDP | USDA Pesticide Data Program |
| PF10 | Protections factor 10 respirator |
| PF5 | Protection factor 5 respirator |
| PHED | Pesticide Handler's Exposure Data |
| PHI | Pre-harvest Interval |
| ppb | Parts Per Billion |
| PPE | Personal Protective Equipment |
| PRZM | Pesticide Root Zone Model |
| RBC | Red Blood Cell |
| RED | Reregistration Eligibility Decision |
| REI | Restricted Entry Interval |
| RfD | Reference Dose |
| RPA | Reasonable and Prudent Alternatives |
| RPM | Reasonable and Prudent Measures |
| RQ | Risk Quotient |
| RTU | (Ready-to-use) |
| RUP | Restricted Use Pesticide |
| SCI-GROW | Tier I Ground Water Computer Model |
| SF | Safety Factor |
| SL | Single layer clothing |
| SLN | Special Local Need (Registrations Under Section 24C of FIFRA) |
| STORET | Storage and Retrieval |
| TEP | Typical End-Use Product |
| TGAI | Technical Grade Active Ingredient |
| TRAC | Tolerance Reassessment Advisory Committee |
| TTRS | Transferable Turf Residues |
| UF | Uncertainty Factor |
| USDA | United States Department of Agriculture |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| WPS | Worker Protection Standard |

## EXECUTIVE SUMMARY

The Environmental Protection Agency (hereafter referred to as EPA or the Agency) has completed its human health and environmental review for trichloromelamine and is issuing its risk management decision. The Agency has decided trichloromelamine is eligible for reregistration provided all measures outlined in this document are implemented. Trichloromelamine is a sanitizer and disinfectant with direct and indirect food uses, as well as non-food uses. It is used on hard surfaces and as a fruit and vegetable wash. End-use products are formulated as a soluble concentrate (in powder form). Trichloromelamine currently has a tolerance exemption as an antimicrobial pesticide when, ready for use, the end-use concentration does not exceed 200 ppm (40 CFR 180.940(c)) when applied to food processing equipment and utensils.

### *Overall Risk Summary*

The Agency's human heath risk assessment indicates no risks of concern. Acute and chronic dietary risk estimates were completed for the general U.S. population and all population subgroups. All dietary risk estimates are below the Agency's level of concern. As none of the uses associated with trichloromelamine are expected to impact either surface or ground water resources, no drinking water assessment was performed. When considering aggregate risk from dietary and residential exposures, risk estimates are below the Agency's level of concern.

To address occupational exposure, combined dermal and inhalation risks for handlers were assessed. All margins of exposures (MOE) are below the Agency's level of concern when workers are wearing baseline PPE (long-sleeved shirt and pants, no gloves). In cases such as this, where an oral endpoint is used to evaluate inhalation exposures, an additional 10x route-to-route extrapolation is used to determine if a confirmatory inhalation toxicity study is warranted. The inhalation MOE for either washing mess kits or fruits and vegetables in military mess halls falls below the MOE of 1,000. Therefore, an inhalation study will be required to confirm these findings.

Due to limited potential for environmental exposure, environmental risks are below the Agency's level of concern.

### *Dietary Risk*

Acute and chronic dietary (food) risks are below EPA's level of concern for the general U.S. population and all population subgroups. A screening-level acute dietary risk assessment (assumes 100% of fruits/vegetables consumed are treated with trichloromelamine and 100% transfer of residues from treated food-contact surfaces) was conducted. Risk estimates for the most highly exposed population subgroup, children, are 31.6% of the aPAD and, therefore, were not of concern.

Chronic dietary risk estimates were also made using the same assumptions. This assessment concludes that the chronic risk estimates are below the Agency's level of concern for the general U.S. population (<10% of the cPAD) and all population subgroups (<54% of the cPAD for children). Risks, therefore, are not of concern, and no mitigation measures are necessary.

### *Drinking Water Risk*

None of the uses associated with trichloromelamine are expected to impact either surface or ground water resources. Therefore, no drinking water assessment was performed.

### *Residential Risk*

A separate residential risk assessment was not performed, as the assessment for occupational handlers in restaurants is considered to be a conservative and protective surrogate for residential uses. Since a higher application rate is found on the label used to calculate occupational risks, these values are used to represent residential risks in the aggregate assessment and are an overestimate of the residential exposures and risks. These values are not being refined because the assessment shows no risks of concern.

### *Aggregate Risk*

The aggregate risk assessment integrates the assessments conducted for dietary and residential exposure. Using the Aggregate Risk Index (ARI) method, aggregate calculations were performed for adults only, as no residential exposure scenario exists for children. The ARIs are greater than 1.8 for males and females and below the Agency's level of concern (ARI<1). No mitigation measures are necessary to reduce risks from aggregate exposures.

### *Occupational Risk*

To address occupational exposure, combined dermal and inhalation risks for handlers were assessed. All margins of exposures (MOE) are below the Agency's level of concern when workers are wearing baseline PPE (long-sleeved shirt and pants; no gloves). However, since the inhalation MOE for either washing mess kits or fruits and vegetables in military mess halls falls below the MOE of 1,000, when the additional route-to-route extrapolation uncertainty factor is applied, an inhalation study will be required to confirm these findings.

### *Environmental and Ecological Risk*

The Agency conducted an environmental risk assessment to determine the potential impact of trichloromelamine use on non-target terrestrial and aquatic organisms. Environmental exposure modeling was not conducted for trichloromelamine because its limited use as a food surface disinfectant in restaurants and similar establishments is not likely to result in significant outdoor exposure. The uses of trichloromelamine considered in this RED make it unlikely that any appreciable exposure to terrestrial or aquatic organisms would occur. The Agency expects no effects to listed species or critical habitat and therefore makes a "No Effect" determination for trichloromelamine. However, the high toxicity of trichloromelamine to freshwater organisms is of concern in the event of a spill or misuse of the product.

### *Regulatory Decision*

The Agency has completed its review and has determined that the data are sufficient to support reregistration of all supported products containing trichloromelamine. The Agency is issuing this RED for trichloromelamine, as announced in a Notice of Availability published in

the *Federal Register*. The RED and supporting risk assessment for trichloromelamine are available to the public in EPA's Pesticide Docket OPP-2005-0262 at http://www.epa.gov/edockets. This RED document includes guidance and time frames for making any necessary label changes for products containing trichloromelamine.

***Summary of Mitigation Measures***

The Agency has determined that trichloromelamine is eligible for reregistration provided the label changes included in Table 12 in Section V of the RED are implemented. As there are no risks of concern, no mitigation measures are necessary.

***Data Requirements***

Additional confirmatory data are required to complete the reregistration of trichloromelamine. A complete list of data gaps is presented Section V and Appendix B (Table of Generic Data Requirements). In addition, product-specific data is required for all products containing trichloromelamine as described in Section V of this document.

## I. Introduction

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) was amended in 1988 to accelerate the reregistration of products with active ingredients registered prior to November 1, 1984 and amended again by the Pesticide Registration Improvement Act of 2003 to set time frames for the issuance of Reregistration Eligibility Decisions. The amended Act calls for the development and submission of data to support the reregistration of an active ingredient, as well as a review of all submitted data by the U.S. Environmental Protection Agency (EPA or the Agency). Reregistration involves a thorough review of the scientific database underlying a pesticide's registration. The purpose of the Agency's review is to reassess the potential hazards arising from the currently registered uses of the pesticide; to determine the need for additional data on health and environmental effects; and to determine whether or not the pesticide meets the "no unreasonable adverse effects" criteria of FIFRA.

On August 3, 1996, the Food Quality Protection Act of 1996 (FQPA) was signed into law. This Act amends FIFRA to require tolerance reassessment. The Agency has decided that, for those chemicals that have tolerances and are undergoing reregistration, the tolerance reassessment will be initiated through this reregistration process. The Act also requires that by 2006, EPA must review all tolerances in effect on the day before the date of the enactment of the FQPA. FQPA also amends the Federal Food, Drug, and Cosmetic Act (FFDCA) to require a safety finding in tolerance reassessment based on factors including consideration of cumulative effects of chemicals with a common mechanism of toxicity. This document presents the Agency's human health and ecological risk assessments and the Reregistration Eligibility Decision (RED) for trichloromelamine.

Trichloromelamine is used as an indirect food-contact sanitizer and disinfectant in or on: mess gear; food processing plants; eating establishments; industrial and institutional food service areas; food marketing, storage, and distribution equipment and utensils; food dispensing equipment; soft custard equipment; and household/domestic dwellings. Trichloromelamine is also used as a direct food-contact sanitizer in one product as a fresh fruit and vegetable wash. Trichloromelamine is used as a sanitizer on non-food contact premises and equipment in hospitals and nursing homes (non-critical areas) and institutional, commercial, and industrial settings.

The Agency has concluded that the FQPA Safety Factor for trichloromelamine should be removed (equivalent to 1X) based on: (1) the developmental toxicity studies both showed a lack of effects in offspring up to and including the highest doses tested in both studies; (2) the LOAELs for both studies were based on general systemic effects that were not considered severe; (3) both studies were well-designed and provided an adequate dose-response for trichloromelamine; and (4) the risk assessment does not underestimate the potential risk for infants and children.

Risks summarized in this document are those that result only from the use of the active ingredients trichloromelamine. The Food Quality Protection Act (FQPA) requires that the Agency consider available information concerning the cumulative effects of a particular pesticide's residues and other substances that have a common mechanism of toxicity. The reason for consideration of other substances is due to the possibility that low-level exposures to multiple chemical substances that cause a common toxic effect by a common toxic mechanism

could lead to the same adverse health effect that would occur at a higher level of exposure to any of the substances individually. Unlike other pesticides for which EPA has followed a cumulative risk approach based on a common mechanism of toxicity, EPA has not made a common mechanism of toxicity finding for trichloromelamine and any other substances. Trichloromelamine does not appear to produce a toxic metabolite produced by other substances. For the purposes of this action, therefore, EPA has not assumed that trichloromelamine has a common mechanism of toxicity with other substances. For information regarding EPA's efforts to determine which chemicals have a common mechanism of toxicity and to evaluate the cumulative effects of such chemicals, see the policy statements released by EPA's Office of Pesticide Programs concerning common mechanism determinations and procedures for cumulating effects from substances found to have a common mechanism on EPA's website at http://www.epa.gov/pesticides/cumulative.

This document presents the Agency's decision regarding the reregistration eligibility of the registered uses of trichloromelamine. In an effort to simplify the RED, the information presented herein is summarized from more detailed information which can be found in the technical supporting document for trichloromelamine referenced in this RED. The risk assessments and related addenda are not included in this document, but are available in the Public Docket OPP-2005-0262 at http://www.epa.gov/edocket.

This document consists of six sections. Section I is the introduction. Section II provides a chemical overview, a profile of the use and usage of trichloromelamine, and its regulatory history. Section III, Summary of Trichloromelamine Risk Assessments, gives an overview of the human health and environmental assessments, based on the data available to the Agency. Section IV, Risk Management, Reregistration, and Tolerance Reassessment Decision, presents the reregistration eligibility and risk management decisions. Section V, What Registrants Need to Do, summarizes the necessary label changes based on the risk mitigation measures outlined in Section IV. Finally, the Appendices list all use patterns eligible for reregistration, bibliographic information, related documents and how to access them, and Data Call-In (DCI) information.

## II. Chemical Overview

### A. Regulatory History

Trichloromelamine was first registered in the United States in 1959 as an active ingredient. Currently eight products (six end-use products and two technical-grade products) are registered under Section 3 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) for use as a disinfectant and sanitizer (primarily on food-contact surfaces).

### B. Chemical Identification

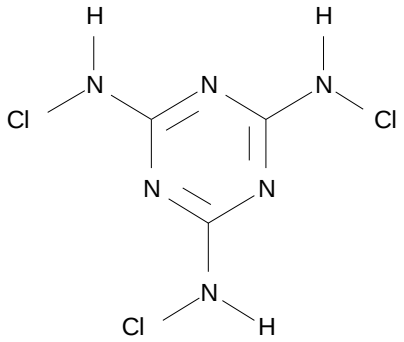


**Figure 1. Molecular Structure of Trichloromelamine**

| | |
|---|---|
| **Common name:** | Trichloromelamine |
| **Chemical name:** | 1,3,5-Triazine, N,N',N''-trichloro-2,4,6-triamino- |
| **Chemical family:** | Triazine |
| **Empirical formula:** | $C_3H_3Cl_3N_6$ |
| **CAS Registry No.:** | 7673-09-8 |
| **Case number:** | 3144 |
| **OPP Chemical Code:** | 077101 |
| **Molecular weight:** | 229.42 |
| **Other names:** | Decco Salt No. 5; 1,3,5-Triazine-2,4,6-triamine, N,N',N''-trichloro-; 2,4,6-Tris(chloroamine)triazine; Chloromelamine; Melamine, N2,N4,N6-trichloro-; Melamine, trichloro-; N,N',N''-Trichloro-2,4,6-triamine-1,3,5-triazine; TCM |
| **Basic manufacturer:** | JohnsonDiversey, Inc.; H & S Chemical Co., Inc.; DBK, Inc. |

**Chemical properties:** Trichloromelamine is in the form of a powder and is cream in color. It has a melting point above 300°C. The water solubility of trichloromelamine is 0.064 g/100 mL at 20°C. Trichloromelamine has a vapor pressure of 7.1 x $10^{-5}$ mm Hg at 25°C.

## C. Use Profile

The following is information on the currently registered uses of products that contain trichloromelamine as an active ingredient and an overview of use sites and application methods. A detailed table of the uses of trichloromelamine eligible for reregistration is contained in Appendix A.

**Type of Pesticide:** Algicide, Disinfectant, Microbiocide/Microbiostat (slime-forming bacteria), Bacteriocide/Bacteriostat, Sanitizer

**Summary of Use:**

Food: Trichloromelamine is used as an indirect food-contact sanitizer and disinfectant in or on: mess gear (used at oversees military bases); food processing plants; eating establishments (on equipment, utensils, dishware, glasses, surfaces, tabletops, countertops, floors, walls, sinks, and splashbacks); industrial and institutional food service areas (premises and equipment); food marketing, storage, and distribution equipment and utensils; food dispensing equipment; soft custard equipment; and household/domestic dwellings (food-contact surfaces). Trichloromelamine is also used as a direct food-contact sanitizer in one product as a fresh fruit and vegetable wash.

Non-Food: Trichloromelamine is used as a sanitizer on non-food contact premises and equipment in hospitals and nursing homes (non-critical areas) and institutional, commercial, and industrial settings.

**Target Pests:** Slime-Forming Bacteria, Animal Pathogenic Bacteria (g- and g+ vegetative), Bacteria (causing rot or decay), Algae

**Formulation Types**: All end-use products are powders and are soluble concentrates.

**Method and Rates of Application**:

Equipment: Applied to surfaces by immersion, wiping/swabbing, or spraying

Application Rates: The maximum labeled application rate for the direct food use (fruit and vegetable wash) is 0.0345% a.i. in solution (0.115 lbs. used daily). For indirect and non-food uses, the maximum labeled application rates are 0.0276% a.i. in solution and 0.115 lbs. used daily.

**Use Classification:** General use

## III. Summary of Trichloromelamine Risk Assessments

The purpose of this summary is to assist the reader by identifying the key features and findings of these risk assessments and to help the reader better understand the conclusions reached in the assessments. The human health and ecological risk assessment document listed in Appendix C was used to formulate the safety finding and regulatory decision for trichloromelamine. While the risk assessment is not included in this document, it is available from the OPP Public Docket and may also be accessed on the Agency's website at http://epa.gov/dockets. Hard copies of these documents may be found in the OPP public docket under docket number OPP-2005-0262. The OPP public docket is located in Room 119, Crystal Mall II, 1801 Bell Street, Arlington, VA, and is open Monday through Friday, excluding Federal holidays, from 8:30 a.m. to 4:00 p.m.

### A. Human Health Risk Assessment

#### 1. Toxicity of Trichloromelamine

A brief overview of the acute toxicity studies and those used for determining endpoints in the risk assessment are outlined below in Tables 1-3. Further details on the toxicity of trichloromelamine can be found in the "Trichloromelamine Risk Assessment for the Reregistration Eligibility Decision," dated September 15, 2005. This document is available on Agency's website in the EPA Docket at http://www/epa.gov/edockets.

The Agency has reviewed all toxicity studies submitted for trichloromelamine and has determined that the toxicological database is sufficient for reregistration. The studies have been submitted to support guideline requirements. Major features of the toxicology profile are presented below.

**Table 1. Summary of Acute Toxicity Data for Trichloromelamine**

| Guideline No. | Study Type | MRID #(s) | Results | Toxicity Category |
|---|---|---|---|---|
| **Acute Toxicity** | | | | |
| 81-1 | Acute Oral | 43165701 | $LD_{50}$ = 398 mg/kg | II |
| 81-2 | Acute Dermal | 43159901 | $LD_{50}$ > 2000 mg/kg | III |
| 81-3 | Acute Inhalation | 43368501 | $LC_{50}$ = 0.4 mg/L, males and 0.780 mg/L, females | II |
| 81-4 | Primary Eye Irritation | 43159902 | Severe conjunctival irritation | I |
| 81-5 | Primary Skin Irritation | 43159903 | Severe irritant | II |
| 81-6 | Dermal Sensitization | 43159904 | No sensitization reactions for group treated with 0.1% [w/v] solution | NA |

Notes: LC = Lethal Concentration; LD = Lethal Dose; NA = Not Applicable

The doses and toxicological endpoints selected for various exposure scenarios are summarized in Table 2 below. For the chronic dietary endpoint, the uncertainty factor (UF) of 300 includes a 10x interspecies extrapolation, 10x intraspecies variation, and 3x extrapolation

from a subchronic study to a chronic endpoint. The Agency chose the NOAEL of 30 mg/kg/day from the subchronic study in rats as a conservative endpoint for all exposure scenarios. Residues of trichloromelamine are likely to disappear quickly based on the chemistry of trichloromelamine, and subchronic and chronic exposures are likely to be very low.

**Table 2. Doses and Toxicological Endpoints Used in Exposure Scenarios**

| Exposure Scenario | Dose Used in Risk Assessment, UF | Special FQPA SF and Level of Concern for Risk Assessment | Study and Toxicological Effects |
|---|---|---|---|
| Acute Dietary (General Population including infants and children) | NOAEL = 30 mg/kg/day<br>UF = 100<br>Acute RfD = 0.3 mg/kg/day | FQPA SF = 1<br>aPAD = acute RfD / FQPA SF<br><br>= 0.3 mg/kg/day | 90-Day Oral Rodent Study (MRID 43064301)<br><br>LOAEL = 150 mg/kg/day<br><br>A NOAEL of 30 mg/kg/day was determined, based on histological lesions (engorgement of small blood vessels of the adrenal gland, brain, kidneys, liver, lung, and pituitary gland) observed at the next highest dose of 150 mg/kg/day. |
| Acute Dietary (Females 13+ years of age) | An appropriate endpoint for this sub-population was not identified in the hazard database | | |
| Chronic Dietary (All populations) | NOAEL = 30 mg/kg/day<br>UF = 300<br>Chronic RfD = 0.1 mg/kg/day | FQPA SF = 1<br>cPAD = chronic RfD / FQPA SF<br><br>= 0.1 mg/kg/day | 90-Day Oral Rodent Study (MRID 43064301)<br><br>LOAEL = 150 mg/kg/day<br><br>A NOAEL of 30 mg/kg/day was determined, based on histological lesions (engorgement of small blood vessels of the adrenal gland, brain, kidneys, liver, lung, and pituitary gland) observed at the next highest dose of 150 mg/kg/day. |
| Short-Term Incidental Oral (1-30 days) | NOAEL=30 mg/kg/day<br>UF = 100 | Target MOE = 100<br><br>Occupational = NA | See Chronic Dietary Endpoint |
| Intermediate-Term Incidental Oral (1- 6 months) | NOAEL=30 mg/kg/day<br>UF = 100 | Target MOE = 100<br><br>Occupational = NA | See Chronic Dietary Endpoint |

| Exposure Scenario | Dose Used in Risk Assessment, UF | Special FQPA SF and Level of Concern for Risk Assessment | Study and Toxicological Effects |
|---|---|---|---|
| Short-Term and Intermediate-Term Dermal Exposure | Oral Study<br>NOAEL= 30 mg/kg/day<br>UF = 100<br>Dermal Absorption=100% | Target MOE =100 | See Chronic Dietary Endpoint |
| Short-Term and Intermediate-Term Inhalation Exposure | No appropriate route-specific study was available. The oral endpoint of 30 mg/kg with a Margin of Exposure of 100 (10x inter-species extrapolation, 10x intra-species variation) is used. An additional 10x route-to-route extrapolation is used to determine if a confirmatory inhalation toxicity study is warranted. | | |

Notes: UF = uncertainty factor, FQPA SF = FQPA safety factor, NOAEL = no observed adverse effect level, LOAEL = lowest observed adverse effect level, PAD = population adjusted dose (a = acute, c = chronic) RfD = reference dose (NOAEL/UF), MOE = margin of exposure

## General Toxicity Observations

**Table 3. Summary of General Toxicity Data for Trichloromelamine**

| Guideline No. | Study Type | MRID #(s) | Results |
|---|---|---|---|
| **Subchronic Toxicity** | | | |
| 82-1(a) | 90-day Oral Study (Rodent) | 43064301 | NOAEL = 30 mg/kg/day<br>LOAEL = 150 mg/kg/day, based on the observation of histological lesions (engorgement of small blood vessels of the adrenal gland, brain, kidneys, liver, lung, and pituitary gland). |
| **Developmental Toxicity** | | | |
| 83-3 | Developmental Toxicity | 43614301 (Rabbit) | Systemic Toxicity NOAEL < 30 mg/kg/day and LOAEL ≤ 30 mg/kg/day, based on depressions in mean maternal body weights and decreased mean feed consumption values. |
| | | | Developmental toxicity NOAEL 120 mg/kg/day |
| | | 43614302 (Rat) | Maternal NOAEL < 62.5 mg/kg/day and LOAEL ≤ 62.5 mg/kg/day, based on clinical signs at several or all dose levels (alopecia, gasping, altered respiration, salivation, lethargy, chromodacryorrhea), reduction in body weight gains, and statistically significant trends for decreased food consumption at all dose levels. |
| | | | Developmental toxicity NOAEL = 500 mg/kg/day |

| Guideline No. | Study Type | MRID #(s) | Results |
|---|---|---|---|
| **Mutagenicity Studies** | | | |
| 84-2(a)<br>84-2(b)<br>84-2(c) | Gene Mutation | 42148801,<br>42021801,<br>42021701 | Positive result at 25 μg/plate for TA98 and at 50 μg/plate in Chinese hamster ovary cells, both with and without metabolic activation. Negative result in primary rat hepatocytes. |

Notes: NOAEL = no observed adverse effect level, LOAEL = lowest observed adverse effect level

Melamine Toxicity

Trichloromelamine is expected to rapidly break down into hypochlorous acid and melamine (EPA, 1994). A number of toxicity studies have been performed to characterize the hazard of melamine. The Agency has concluded that it is unlikely that melamine is a carcinogenic hazard to humans from the pesticidal usage of a pesticide product (EPA, 1988). They noted that "humans are not likely to be exposed to the high doses of melamine that produce the urinary tract toxicity that precedes and seems to lead to the carcinogenic response in rats" (EPA, 1993). This conclusion is based on the review of a number of studies, including a mouse carcinogenicity study in which no evidence of tumors were found due to exposure to melamine at the highest dose tested. In addition, the weight-of-evidence is not sufficient to reasonably anticipate that melamine will cause serious or irreversible chronic health effects (EPA, 1983).

Endocrine Disruption Potential

EPA is required under the Federal Food Drug and Cosmetic Act (FFDCA), as amended by FQPA, to develop a screening program to determine whether certain substances (including all pesticide active and other ingredients) "may have an effect in humans that is similar to an effect produced by a naturally occurring estrogen, or other such endocrine effects as the Administrator may designate." When the appropriate screening and/or testing protocols being considered under the Agency's Endocrine Disrupting Screening Program (EDSP) have been developed, trichloromelamine may be subjected to additional screening and/or testing to better characterize effects related to endocrine disruption.

### 2. FQPA Safety Factor

The FQPA Safety Factor (as required by the Food Quality Protection Act of 1996) is intended to provide an additional 10-fold safety factor (10X), to protect for special sensitivity in infants and children to specific pesticide residues in food, drinking water, or residential exposures, or to compensate for an incomplete database. The FQPA Safety Factor has been removed (i.e., reduced to 1X) for trichloromelamine based on: (1) the developmental toxicity studies both showed a lack of effects in offspring up to and including the highest doses tested in both studies; (2) the LOAELs for both studies were based on general systemic effects that were not considered severe; (3) both studies were well-designed and provided an adequate dose-response for trichloromelamine; and (4) the risk assessment does not underestimate the potential risk for infants and children. Based on the analysis of submitted developmental toxicity studies, the Agency determined that no special FQPA Safety Factor was needed since there were no residual uncertainties for pre- and/or postnatal toxicity.

### 3. Population Adjusted Dose (PAD)

Dietary risk is characterized in terms of the Population Adjusted Dose (PAD), which reflects the reference dose (RfD), either acute or chronic, that has been adjusted to account for the FQPA Safety Factor (SF). This calculation is performed for each population subgroup. A risk estimate that is less than 100% of the acute or chronic PAD is not of concern.

#### a. Acute PAD

Acute dietary risk for trichloromelamine is assessed by comparing acute dietary exposure estimates (in mg/kg/day) to the acute Population Adjusted Dose (aPAD). Acute dietary risk is expressed as a percent of the aPAD. The aPAD is the acute reference dose (0.3 mg/kg/day) modified by the FQPA safety factor. The acute reference dose was derived from a 90-day subchronic oral toxicity study in rats in which both the NOAEL (30 mg/kg/day) and the LOAEL (150 mg/kg/day) were determined. The trichloromelamine aPAD is 0.3 mg/kg/day based on a reference dose of 0.3 mg/kg/day, and incorporating the FQPA safety factor of 1X.

#### b. Chronic PAD

Chronic dietary risk for trichloromelamine is assessed by comparing chronic dietary exposure estimates (in mg/kg/day) to the chronic Population Adjusted Dose (cPAD). Chronic dietary risk is expressed as a percent of the cPAD. The cPAD is the chronic reference dose (0.1 mg/kg/day) modified by the FQPA safety factor (1X). The cPAD was derived from a 90-day subchronic oral toxicity study in rats in which both the NOAEL (30 mg/kg/day) and the LOAEL (150 mg/kg/day) were determined based on histopathological lesions. The trichloromelamine cPAD is 0.1 mg/kg/day based on a reference dose of 0.1 mg/kg/day, which includes the incorporation of the FQPA safety factor (1X) for the overall U.S. population or any population subgroups.

### 4. Exposure Assumptions

Acute and chronic dietary exposure assessments were conducted using FDA assumptions for the residues, migration, and surface area of exposure from indirect food-contact surfaces. The assessment for the fruit and vegetable rinse was conducted using food consumption data from the USDA's Continuing Surveys of Food Intakes by Individuals (CSFII) from 1994-1996 and 1998. The CSFII data are based on the reported food consumption by more than 20,000 individuals over two non-consecutive survey days. For exposure estimates, mean consumption data are used for adult male and female populations. It is assumed that children are not eating in military mess halls overseas.

### 5. Dietary Risk Assessment

#### a. Dietary Risk from Food

Generally, a dietary risk estimate that is less than 100% of the acute or chronic PAD does not exceed the Agency's risk concerns. A summary of acute and chronic risk estimates are shown in Table 4.

Screening-level dietary risk assessments were conducted for the direct and indirect food uses of trichloromelamine. The estimates dietary intake (EDI) for consumption of fruits and vegetables was based on a mean consumption estimate for males and females ages 20 and older in military mess halls from the CSFII data for both acute and chronic exposures. The dietary intake for fruits and vegetables is limited to subset of the general population, specifically members of the military; since this subpopulation is not representative of the general population, the 90th percentile was not used to calculate dietary risk. For disinfecting mess kits, FDA worst-case assumptions were used. The results of the assessment for military mess hall patrons showed risks to be 6.2% (males) and 7.1% (females) of the aPAD and 18.6% (males) and 21.3% (females) of the cPAD and, therefore, are not of concern.

The indirect food uses in eating establishments, disinfecting utensils and countertops, were also assessed using FDA worst-case assumptions. For both assessments, the product with highest percent of the active ingredient in solution (as diluted per label instructions) was used to estimate the worst case scenario. However, two labels state that additional quantities should be used if the diluted solution falls below 100 ppm available chlorine and list the amount of product required to achieve 200 ppm available chlorine. Although the Agency does not believe that these higher concentrations will be used often, as a conservative measure, they are assessed as an acute exposure. The results of the assessment for bar and restaurant patrons showed risks to be <32% of the aPAD and 53.7% of the cPAD for children, the most highly exposed population subgroup. Therefore, all risks are below the Agency's level of concern.

**Table 4. Summary of Dietary Exposure and Risk**

| Population | EDI[a] (mg/kg/day) | | | %PAD[b] | |
|---|---|---|---|---|---|
| **Military** | | | | | |
| | **Fruits/Vegetables** | **Mess Kits** | **Total** | **Acute** | **Chronic** |
| Adult Males | 0.00282 | 0.0158 | 0.0186 | 6.20% | 18.6% |
| Adult Females | 0.00290 | 0.0184 | 0.0213 | 7.10% | 21.3% |
| **Restaurant/Bar (Acute)** | | | | | |
| | **Food Utensil** | **Countertop** | **Total** | **Acute** | |
| Adult Males | 0.0135 | 0.00677 | 0.0203 | 6.77% | |
| Adult Females | 0.0158 | 0.0079 | 0.0237 | 7.90% | |
| Children | 0.0632 | 0.0316 | 0.0948 | 31.6% | |
| **Restaurant/Bar (Chronic)** | | | | | |
| | **Food Utensil** | **Countertop** | **Total** | **Chronic** | |
| Adult Males | 0.00669 | 0.00483 | 0.0115 | 11.5% | |
| Adult Females | 0.00780 | 0.00563 | 0.0134 | 13.4% | |
| Children | 0.0312 | 0.0225 | 0.0537 | 53.7% | |

EDI=Estimated Daily Intake; PAD=Population Adjusted Dose (acute or chronic)
[a] EDI=Intake (mg/person/day)/BW (adult male=70kg, adult female=60kg, and child=15kg)
[b] %PAD = EDI/aPAD or cPAD * 100, where aPAD=0.3 mg/kg/day and cPAD=0.1 mg/kg/day

### b. Dietary Risk from Drinking Water

None of the uses associated with trichloromelamine are expected to impact either surface or ground water resources. Therefore, no drinking water assessment was performed.

## 6. Residential Risk Assessment

A separate residential risk assessment was not performed, as the assessment for occupational handlers in restaurants is considered to be a conservative and protective surrogate for residential uses. Since a higher application rate is found on the label used to calculate occupational risks, these values are used to represent residential risks in the aggregate assessment and are an overestimate of the residential exposures and risks. These values are not being refined because the assessment shows no risks of concern.

## 7. Aggregate Risk

The Food Quality Protection Act amendments to the Federal Food, Drug, and Cosmetic Act (FFDCA, Section 408(b)(2)(A)(ii)) require "that there is a reasonable certainty that no harm will result from aggregate exposure to pesticide chemical residue, including all anticipated dietary exposures and other exposures for which there are reliable information." Aggregate exposure will typically include exposures from food, drinking water, residential uses of a pesticide, and other non-occupational sources of exposure. A short-/intermediate-term aggregate assessment was performed for adults exposed to trichloromelamine based on the following exposure scenarios: dietary exposure from eating food that has come into contact with treated surfaces, utensils, and glassware; dermal and inhalation exposure from opening and pouring of the trichloromelamine product in residential settings; and dermal and inhalation exposure from wiping the countertop in residential settings. No aggregate assessment was performed for children as they are not likely to have non-dietary exposures. Further, a long-term aggregate assessment is not necessary, as the residential exposure scenarios associated with trichloromelamine uses involve only short- and intermediate-term exposures.

Aggregate MOE calculations were performed using the Aggregate Risk Index (ARI) method (EPA, 2001). Generally, an ARI that is greater than 1 does not exceed the Agency's risk concerns. As shown in Table 5, no aggregate risks of concern were identified for either males or females, as the ARI value is above 1 for both. Further details on the aggregate risk assessment of trichloromelamine can be found in the "Trichloromelamine Risk Assessment for the Reregistration Eligibility Decision," dated September 15, 2005. This document is available on Agency's website in the EPA Docket at http://www/epa.gov/edockets.

**Table 5. Summary of Short- and Intermediate-Term (ST/IT) Aggregate Exposure and Risk Calculations**

| Population | Chronic Food Exposure mg/kg/day (MOE) | Opening and Pouring Inhalation Exposure mg/kg/day (MOE) | Opening and Pouring Dermal Exposure mg/kg/day (MOE) | Wiping Inhalation Exposure mg/kg/day (MOE) | Wiping Dermal Exposure mg/kg/day (MOE) | Aggregate Risk Index |
|---|---|---|---|---|---|---|
| Adult Males | 0.0115 (2610) | $1.72 \times 10^{-6}$ ($1.7 \times 10^{7}$) | $3.18 \times 10^{-3}$ (9400) | $1.16 \times 10^{-3}$ (26,000) | $1.20 \times 10^{-1}$ (250) | 1.89 |
| Adult Females | 0.0134 (2240) | $1.72 \times 10^{-6}$ ($1.7 \times 10^{7}$) | $3.18 \times 10^{-3}$ (9400) | $1.16 \times 10^{-3}$ (26,000) | $1.20 \times 10^{-1}$ (250) | 1.83 |

ARI = $1/((UF_1/MOE_1) + (UF_2/MOE_2) + (UF_3/MOE_3) + \ldots)$, where the UF = 300 for chronic dietary exposure and 100 for inhalation and dermal exposures. ARIs greater than 1 are not of concern.

## 8. Occupational Risk

Workers can be exposed to a pesticide through mixing, loading, and/or applying a pesticide. Occupational handlers of trichloromelamine include workers in military mess halls; restaurants and bars; food processing plants; institutional, commercial, and industrial sites; and hospitals and nursing homes. In this assessment, it is assumed that workers in military mess halls and restaurants represent the high-end exposure scenario for all workers exposed to trichloromelamine. Occupational risk for all of these potentially exposed populations is measured by a Margin of Exposure (MOE) which determines how close the occupational exposure comes to a No Observed Adverse Effect Level (NOAEL) from toxicological studies. In the case of trichloromelamine, MOEs greater than 100 are not of concern to the Agency. This MOE includes the standard safety factors of 10X for intraspecies variability (i.e. differences among humans) and 10X for interspecies extrapolation (differences between humans and animals).

Occupational risk is assessed for exposure at the time of application (termed "handler" exposure). Application parameters are generally defined by the physical nature of the formulation (e.g., formula and packaging), by the equipment required to deliver the chemical to the use site, and by the application rate required to achieve an efficacious dose. Occupational risks were assessed for exposures from powder formulations, as all products are in this form. For more information on the assumptions and calculations of potential risk of trichloromelamine to workers, see the Occupational Exposure Assessment (Section 5.1) in the "Trichloromelamine Risk Assessment for the Reregistration Eligibility Decision," dated September 15, 2005.

### a. Occupational Toxicity

The toxicological endpoints used in the assessment can be found in Table 2 above.

### b. Occupational Handler Exposure

Occupational handler risk estimates have been assessed for trichloromelamine using surrogate unit exposure data from the Chemical Manufacturers Association (CMA) database, application rates from labels, and EPA estimates of daily amount handled (MRID 42587501).

The Agency has determined that there are potential exposures to individuals who mix, load, apply, and otherwise handle trichloromelamine during the usual use patterns associated with the pesticide's use. Based on the use patterns, the following exposure scenarios were assessed:

(1) mixing/loading powder formulations (opening and pouring packets into water);
(2) applying by dipping mess kits into diluted solution;
(3) applying by dipping fruits and vegetables into diluted solution;

(4) applying by dipping food utensils into diluted solution; and
(5) applying by wiping countertops with diluted solution.

### c. Occupational Handler Risk Summary

Occupational Handler Exposure Assumptions

Exposure analyses were performed using the surrogate data from the Chemical Manufacturers Association (MRID 42587501) and the DERMAL model (U.S. EPA, 1997). A description of these and the calculations used are included in the Occupational Exposure Assessment (Section 5.1) in the "Trichloromelamine Risk Assessment for the Reregistration Eligibility Decision," dated September 15, 2005. Both inhalation and dermal exposures were assessed, and these exposures were combined because the endpoints were based on the same study. The target MOE is 100. Scenarios with an MOE less than 100 indicate a risk of concern.

The following assumptions and factors were used in order to complete the exposure and risk assessments for occupational handlers:

- It is assumed, for this assessment, that two 4.77 oz. packets are sufficient for the needs of an individual worker in a mess hall kitchen per day, either washing mess kits or washing fruits and vegetables;

- Labels for restaurant and bar use state that additional quantities should be used if the diluted solution falls below 100 ppm available chlorine. It is assumed, for this occupational assessment, that the available chlorine does not fall over the course of a day, and that the standard label rate is sufficient for the needs of one worker in a restaurant per day. The maximum typical rate from any label for this use was the basis for this assessment;

- The surrogate data from the Chemical Manufacturers Association (MRID 42587501) for 'solid pour' scenarios are representative to model dermal and inhalation exposure from

opening the packet and pouring the contents, as well as for 'wiping' scenarios are representative of inhalation exposure from standing over the containers with solution while washing mess kits, fruits and vegetables, countertops, and utensils;

- To calculate the dermal exposure for a worker treating mess kits, fruits, and vegetables, the DERMAL model was used (U.S. EPA, 1997);
- A body weight of 70 kg was assumed because the endpoint is not gender specific;
- The inhalation and dermal absorption rates are 100%;
- Baseline PPE includes long sleeve shirts, long pants and no gloves or respirator; and
- All trichloromelamine products are powders that are mixed with water per labeled instructions to form a diluted solution.

Summary of Risk Estimates for Handlers

All of the inhalation and dermal MOEs are above the target MOE of 100 with baseline PPE and, therefore, not of concern. No respiratory or dermal PPE is required. As a conservative measure, it is assumed that, because this is potentially a small-scale process, one person could mix the solution and use it immediately after. The combined risks from these exposures are below the Agency's level of concern. However, as the inhalation MOE for either washing mess kits or fruits and vegetables in military mess halls falls below the MOE of 1,000, when the additional route-to-route extrapolation uncertainty factor is applied, an inhalation study would be required to confirm these findings. The MOEs for handlers are summarized in Tables 6 and 7.

**Table 6. Occupational Handler Risk Summary**

| Exposure Scenario | Use site | Label Application Rate (lb a.i./day)[a] | Baseline Dermal MOE | Baseline Inhalation MOE |
|---|---|---|---|---|
| Mix/Load (Opening and Pouring) Powder | Mess Kits & Fruits/Vegetables (Military Mess Halls) | 0.115 | 240 | 440,000 |
| | Food Utensils & Hard Surfaces (Commercial/Institutional) | 0.00292 | 9400 | $1.7 \times 10^7$ |
| Washing | Mess Kits | 0.115 (0.0276% a.i.) | 5200 | 660 |
| | Fruits/Vegetables | 0.115 (0.0345% a.i.) | 4200 | 660 |
| | Food Utensils (Comm/Inst) | 0.00292 (0.0117% a.i.) | 6100 | 26,000 |
| Wiping | Commercial/Institutional Hard Surfaces | 0.00292 | 250 | 26,000 |

[a] For dermal calculations for washing mess kits; fruits and vegetables; and food utensils, the weight fraction of active ingredient in the product (after dilution) is used rather than the pounds of a.i. used daily.

**Table 7. Combined Occupational Handler Risk Summary**

| Exposure Scenario | Crop | Dermal MOE | Inhalation MOE | Aggregate MOE |
|---|---|---|---|---|
| Mix/Load (Opening and Pouring) Powder + Washing | Mess Kits | 230 | 660 | 170 |
| | Fruits/Vegetables | 230 | 660 | 170 |
| | Food Utensils | 3700 | 26,000 | 3200 |
| Mix/Load (Opening and Pouring) Powder + Wiping | Commercial/Institutional Hard Surfaces | 240 | 26,000 | 240 |

## B. Environmental Risk Assessment

A summary of the Agency's environmental risk assessment is presented below. Trichloromelamine has several registered use sites: fruits and vegetables, eating establishment utensils and glassware, and food and non-food contact surfaces. The following risk characterization is intended to describe the magnitude of the estimated environmental risks for trichloromelamine use sites and any associated uncertainties.

For detailed discussions of all aspects of the environmental risk assessment, see the Ecotoxicology and Environmental Risk Assessment (Section 8.0) in the "Trichloromelamine Risk Assessment for the Reregistration Eligibility Decision," dated September 15, 2005.

### 1. Environmental Fate and Transport

According to EPA's EPI Suite database used by OPPTS, a linear model on biodegradability predicts that trichlormelamine has a high probability of biodegrading in water within hours. The half-life in air for trichloromelamine, as determined through mediation of the hydroxy radical in the atmosphere, is about 16 days (based on a 12-hour day), and it appears to be moderately persistent in the atmosphere (EPA, 2005).

The half-life of trichloromelamine in soils has been estimated to be about 38 days and 150 days in sediments. With an estimated $K_{oc}$ of 150, it is likely to be immobile and persistent in soils and sediments and may not pose a concern for groundwater contamination. However, as trichloromelamine is immobile, it may pose a concern for surface water contamination due to soil erosion. Because use of trichloromelamine is limited to use as a food and food-contact surface sanitizer in restaurants and similar establishments, and in military mess halls, trichloromelamine is not expected to enter the environment and exposure to soil and water should be minimal.

### 2. Ecological Risk

The Agency's ecological risk assessment compares toxicity endpoints from ecological toxicity studies to estimated environmental concentrations based on environmental fate characteristics and pesticide use data.

### a. Toxicity (Hazard) Assessment

Information regarding the potential ecotoxicity of trichloromelamine is shown in Table 8. In addition, although the information currently available regarding melamine, a degradate of trichloromelamine, toxicity is insufficient for a hazard assessment, the Agency believes that there is sufficient evidence to conclude that melamine may be chronically toxic to fish and invertebrates, causing adverse effects on reproduction and embryonic development. It was noted that melamine may be more toxic, chronically, than the data reviewed indicate (EPA, 1983). Based on the structure-activity-relationship (SAR) of melamine to meta-phenylenediamine, the 96-hour $EC_{50}$ for melamine for green algae is expected to be 2.4 mg/L. The $LC_{50}$ for daphnids is expected to be 5.9 mg/L, and the MATC is expected to range between 0.05 and 0.09 mg/L.

**Table 8. Summary of Ecotoxicity Data (Trichloromelamine)**

| Endpoint Type | Species | Results | Reference/MRID# |
|---|---|---|---|
| Acute Avian Oral | Bobwhite quail (*Colinus virginianus*) | $LD_{50}$ > 5,000 mg/kg<br>NOEC = 5,000 mg/kg | 42250801 |
| Acute Avain Diet | Bobwhite quail (*Colinus virginianus*) | $LD_{50}$ > 2,150 mg/kg | 42280801 |
| Acute Avain Diet | Mallard duck (*Anas platyrhynchos*) | $LC_{50}$ > 5,000 mg/kg<br>NOEC = 2,500 mg/kg | 42247401 |
| Acute Fish Toxicity | Bluegill sunfish (*Lepomis macrochirus*) | $LC_{50}$ = 4.5 mg/L<br>NOEC = 1.0 mg/L | 41934901 |
| Acute Fish Toxicity | Rainbow Trout | LC50 = 4.0 mg a.i./L<br>NOEC = 0.56 mg a.i./L | 42010601 |
| Acute Aquatic Invertebrate Toxicity | Daphnia | EC50 = 0.80 mg ai/L<br>NOEC = 0.32 mg ai/L | 42020801 |

### b. Exposure and Risk

Environmental exposure modeling was not conducted for trichloromelamine. Because the use of trichloromelamine is limited to use as a food surface disinfectant in restaurants and similar establishments, significant outdoor exposure is not likely to result. The uses of trichloromelamine considered in this RED make it unlikely that any appreciable exposure to terrestrial or aquatic organisms would occur. However, the high toxicity of trichloromelamine to freshwater organisms is of concern in the event of a spill or misuse of the product.

### c. Risk to Listed Species

Due to the low likelihood of exposure and low toxicity of trichloromelamine, the Agency expects no effects to listed species or critical habitat and therefore makes a "No Effect" determination for this chemical.

## IV. Risk Management, Reregistration, and Tolerance Reassessment Decision

### A. Determination of Reregistration Eligibility

Section 4(g)(2)(A) of FIFRA calls for the Agency to determine, after submission of relevant data concerning an active ingredient, whether or not products containing the active ingredient are eligible for reregistration. The Agency has previously identified and required the submission of the generic (i.e., active ingredient-specific) data required to support reregistration of products containing trichloromelamine as an active ingredient. The Agency has completed its review of these generic data and has determined that the data are sufficient to support reregistration of all supported products containing trichloromelamine.

The Agency has completed its assessment of the dietary, occupational, drinking water, and ecological risks associated with the use of pesticide products containing the active ingredient trichloromelamine. Based on a review of these data, the Agency has sufficient information on the human health and ecological effects of trichloromelamine to make decisions as part of the tolerance reassessment process under FFDCA and reregistration process under FIFRA, as amended by FQPA. The Agency has determined that trichloromelamine-containing products are eligible for reregistration provided that: (i) current data gaps and confirmatory data needs are addressed and (ii) necessary label amendments are made. Label changes are described in Section V. Appendix A summarizes the uses of trichloromelamine that are eligible for reregistration. Appendix B identifies the generic data requirements that the Agency reviewed as part of its determination of reregistration eligibility of trichloromelamine and lists the submitted studies that the Agency found acceptable. Data gaps are identified as generic data requirements that have not been satisfied with acceptable data.

### B. Public Comments and Responses

Risk assessments for trichloromelamine were not issued for public comment per the Agency's public participation process because no risks of concern were identified. To ensure that an opportunity is presented to the public to comment on the risk assessments and risk management decisions for trichloromelamine, the Agency will implement a public comment period on this RED document.

### C. Regulatory Position

#### 1. Food Quality Protection Act Findings

##### a. "Risk Cup" Determination

As part of the FQPA tolerance reassessment process, EPA assessed the risks associated with trichloromelamine. The Agency has concluded that the exemption from the requirement of a tolerance for trichloromelamine meets the FQPA safety standards and that the risk from dietary exposure is within the "risk cup." An aggregate assessment was conducted for exposures through food and other residential uses. The Agency has determined that the human health risks

from these combined exposures are within acceptable levels. In reaching this determination, EPA has considered the available information on the special sensitivity of infants and children, as well as aggregate exposure from food and residential uses.

### b. Determination of Safety to U.S. Population

As part of the FQPA tolerance reassessment process, EPA assessed the risks associated with trichloromelamine. The Agency has determined that the established tolerance exemption for trichloromelamine meets the safety standards under the FQPA amendments to section 408(b)(2)(D) of the FFDCA, and that there is a reasonable certainty no harm will result to the general population or any subgroup from the use of trichloromelamine. In reaching this conclusion, the Agency has considered all available information on the toxicity, use practices and exposure scenarios, and the environmental behavior of trichloromelamine.

Dietary risk assessments were conducted for adults and children, with the highest risk (31.6% aPAD and 53.7%cPAD for children) being below the Agency's level of concern. Aggregate assessments were only conducted for adults, as no residential non-dietary exposure scenarios existed for children. The Aggregate Risk Index was above 1.8 for both adult males and females, which is above the Agency's level of concern (ARI≤1).

### c. Determination of Safety to Infants and Children

EPA has determined that the established tolerance exemption for trichloromelamine, with amendments and changes as specified in this document, meets the safety standards under the FQPA amendments to section 408(b)(2)(C) of the FFDCA, that there is a reasonable certainty of no harm for infants and children. The safety determination for infants and children considers factors of the toxicity, use practices, and environmental behavior noted above for the general population, but also takes into account the possibility of increased susceptibility to the toxic effects of trichloromelamine residues in this population subgroup.

No Special FQPA Safety Factor is necessary to protect the safety of infants and children. In determining whether or not infants and children are particularly susceptible to toxic effects from trichloromelamine residues, the Agency considered the completeness of the database for developmental and reproductive effects, the nature of the effects observed, and other information. The FQPA Safety Factor has been removed (i.e., reduced to 1X) for trichloromelamine based on: (1) the developmental toxicity studies both showed a lack of effects in offspring up to and including the highest doses tested in both studies; (2) the LOAELs for both studies were based on general systemic effects that were not considered severe; (3) both studies were well-designed and provided an adequate dose-response for trichloromelamine; and (4) the risk assessment does not underestimate the potential risk for infants and children.

### d. Endocrine Disruptor Effects

EPA is required under the FFDCA, as amended by FQPA, to develop a screening program to determine whether certain substances (including all pesticide active and other

ingredients) "may have an effect in humans that is similar to an effect produced by a naturally occurring estrogen, or other endocrine effects as the Administrator may designate." Following recommendations of its Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC), EPA determined that there was a scientific basis for including, as part of the program, the androgen and thyroid hormone systems, in addition to the estrogen hormone system. EPA also adopted EDSTAC's recommendation that EPA include evaluations of potential effects in wildlife. For pesticides, EPA will use FIFRA and, to the extent that effects in wildlife may help determine whether a substance may have an effect in humans, FFDCA authority to require the wildlife evaluations. As the science develops and resources allow, screening of additional hormone systems may be added to the Endocrine Disruptor Screening Program (EDSP).

When the appropriate screening and/or testing protocols being considered under the EDSP have been developed, trichloromelamine may be subject to additional screening and/or testing to better characterize effects related to endocrine disruption.

#### e. Cumulative Risks

Risks summarized in this document are those that result only from the use of trichloromelamine. The Food Quality Protection Act (FQPA) requires that the Agency consider "available information" concerning the cumulative effects of a particular pesticide's residues and "other substances that have a common mechanism of toxicity." The reason for consideration of other substances is due to the possibility that low-level exposures to multiple chemical substances that cause a common toxic effect by a common toxic mechanism could lead to the same adverse health effect as would a higher level of exposure to any of the substances individually. Unlike other pesticides for which EPA has followed a cumulative risk approach based on a common mechanism of toxicity, EPA has not made a common mechanism of toxicity finding for trichloromelamine. For information regarding EPA's efforts to determine which chemicals have a common mechanism of toxicity and to evaluate the cumulative effects of such chemicals, see the policy statements released by EPA's Office of Pesticide Programs concerning common mechanism determinations and procedures for cumulating effects from substances found to have a common mechanism on EPA's website at http://www.epa.gov/pesticides/cumulative/.

### 2. Tolerance Summary

A tolerance exemption is currently established for trichloromelamine in the 40CFR § 180.940(c) when used in accordance with good manufacturing practice as an ingredient in an antimicrobial pesticide formulation, provided that the substance is applied on a semi-permanent or permanent food-contact surface (other than being applied on food packaging) with adequate draining before contact with food. Trichloromelamine is currently exempted from the requirement of a tolerance when applied to food processing equipment and utensils, provided that, when ready for use, the end-use concentration does not exceed 200 ppm as total available chlorine.

Although there is a use for dairy processing on one of the labels (Reg. No. 6198-3), no tolerance exemption for this use has been established and this registrant has expressed its intention to remove this use from the label (Landman, 2005). Any registrant wishing to maintain this use site for trichloromelamine must petition the Agency for an exemption from the requirement of a tolerance under the 40CFR § 180.940(b). If no such petition is received by the Agency, any reference on a label to dairy processing facilities or dairies must be removed during product reregistration.

#### a. Tolerance Exemption Currently Listed Under 40 CFR §180.940 and Tolerance Reassessment

**Table 9. Tolerance Reassessment Summary for Trichloromelamine**

| Tolerance Exemption Listed Under 40 CFR § 180.940 (c) | | | |
|---|---|---|---|
| **Use Site** | **Current Limit (ppm)** | **Tolerance Reassessment (ppm)** | **Correct Definition/Comment** |
| Food processing equipment and utensils | 200 (as available chlorine) | 200 (as available chlorine) | Trichloromelamine is exempted from the requirement of a tolerance as an antimicrobial pesticide, provided that the substance is applied on a semi-permanent or permanent food-contact surface (other than being applied on food packaging) with adequate draining before contact with food, when applied to food processing equipment and utensils, as long as, when ready for use, the end-use concentration does not exceed 200 ppm as total available chlorine. Based on the evaluation of available data, the current tolerance of 200 ppm should remain. |

#### b. Codex Harmonization

Currently there are no Codex MRLs established for trichloromelamine.

### D. Regulatory Rationale

The Agency has determined that trichloromelamine is eligible for reregistration provided that additional required data confirm this decision and the necessary label amendments are made. Where labeling revisions are warranted, specific language is set forth in the summary table of Section V of this document.

#### 1. Human Health Risk Management

As the risk estimates resulting from dietary, residential, and occupational exposures are all below the Agency's level of concern, no risk mitigation measures are required to address human exposure to trichloromelamine.

### 2. Environmental Risk Management

As the uses of trichloromelamine considered in this RED make it unlikely that any appreciable exposure to terrestrial or aquatic organisms would occur, no risk mitigation measures are required to address environmental exposure to trichloromelamine.

### 3. Other Labeling Requirements

In order to be eligible for reregistration, various use and safety information will be included in the labeling of all end-use products containing trichloromelamine. As there are no mitigation measures being required, the only specific labeling statements (in Section V) are precautionary (in case of a spill) based on acute ecotoxicity data.

### 4. Listed Species Considerations

#### a. The Endangered Species Act

Section 7 of the Endangered Species Act, 16 U.S.C. Section 1536(a)(2), requires all federal agencies to consult with the National Marine Fisheries Service (NMFS) for marine and anadromous listed species, or the United States Fish and Wildlife Services (FWS) for listed wildlife and freshwater organisms, if they are proposing an "action" that may affect listed species or their designated habitat. Each federal agency is required under the Act to insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. To jeopardize the continued existence of a listed species means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of the species." 50 C.F.R. § 402.02.

To facilitate compliance with the requirements of the Endangered Species Act subsection (a)(2) the Environmental Protection Agency, Office of Pesticide Programs has established procedures to evaluate whether a proposed registration action may directly or indirectly reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of any listed species (U.S. EPA 2004). After the Agency's screening-level risk assessment is performed, if any of the Agency's Listed Species LOC Criteria are exceeded for either direct or indirect effects, a determination is made to identify if any listed or candidate species may co-occur in the area of the proposed pesticide use. If determined that listed or candidate species may be present in the proposed use areas, further biological assessment is undertaken. The extent to which listed species may be at risk then determines the need for the development of a more comprehensive consultation package as required by the Endangered Species Act.

For certain use categories, the Agency assumes there will be minimal environmental exposure, and only a minimal toxicity data set is required (Overview of the Ecological Risk Assessment Process in the Office of Pesticide Programs U.S. Environmental Protection Agency -

Endangered and Threatened Species Effects Determinations, 1/23/04, Appendix A, Section IIB, pg.81). Chemicals in these categories therefore do not undergo a full screening-level risk assessment, and are considered to fall under a “no effect” determination. Due to the low likelihood of exposure and low toxicity of trichloromelamine, the Agency expects no effects to listed species or critical habitat and therefore makes a "No Effect" determination for this chemical.

### b. General Risk Mitigation

Trichloromelamine end-use products (EPs) may also contain other registered pesticides. Although the Agency is not proposing any mitigation measures for products containing trichloromelamine specific to federally listed species, the Agency needs to address potential risks from other end-use products. Therefore, the Agency requires that users adopt all listed species risk mitigation measures for all active ingredients in the product. If a product contains multiple active ingredients with conflicting listed species risk mitigation measures, the more stringent measure(s) should be adopted.

## V. What Registrants Need to Do

The Agency has determined that trichloromelamine is eligible for reregistration provided that: (i) additional data that the Agency intends to require confirm this decision and (ii) necessary label amendments, set forth in the Label Changes Summary Table in Section B below (Table 12), are made. The additional data requirements that the Agency intends to obtain will include, among other things, submission of the following:

For trichloromelamine technical grade active ingredient products, the registrant needs to submit the following items:

**Within 90 days from receipt of the generic data call in (GDCI):**

1. completed response forms to the GDCI (i.e., DCI response form and requirements status and registrant's response form); and

2. submit any time extension and/or waiver requests with a full written justification.

**Within the time limit specified in the GDCI:**

1. cite any existing generic data which address data requirements or submit new generic data responding to the GDCI.

Please contact Jennifer Slotnick at (703) 305-0601 with questions regarding generic reregistration.

By US mail:
Document Processing Desk (GDCI/AD)
Jennifer Slotnick
Office of Pesticide Programs (7510C)
US EPA
1200 Pennsylvania Ave., NW
Washington, DC 20460

By express or courier service:
Document Processing Desk (GDCI/AD)
Jennifer Slotnick
Office of Pesticide Programs (7510C)
US EPA
Room 266A, Crystal Mall 2
1801 S. Bell Street
Arlington, VA 22202

For end-use products containing the active ingredient trichloromelamine, the registrant needs to submit the following items for each product.

**Within 90 days from the receipt of the product-specific data call-in (PDCI)**:

1. completed response forms to the PDCI (i.e., PDCI response form and requirements status and registrant's response form); and

2. submit any time extension or waiver requests with a full written justification.

**Within eight months from the receipt of the PDCI:**

1. two copies of the confidential statement of formula (EPA Form 8570-4);

2. a completed original application for reregistration (EPA Form 8570-1). Indicate on the form that it is an "application for reregistration";

3. five copies of the draft label incorporating all label amendments outlined in Table 12 of this document;

4. a completed form certifying compliance with data compensation requirements (EPA Form 8570-34);

5. if applicable, a completed form certifying compliance with cost share offer requirements (EPA Form 8570-32); and

6. the product-specific data responding to the PDCI.

Please contact Adam Heyward at (703) 308-6422 with questions regarding product reregistration and/or the PDCI. All materials submitted in response to the PDCI should be addressed as follows:

By US mail:
Document Processing Desk (PDCI/AD)
Adam Heyward
Office of Pesticide Programs (7510C)
US EPA
1200 Pennsylvania Ave., NW
Washington, DC 20460

By express or courier service:
Document Processing Desk (PDCI/AD)
Adam Heyward
Office of Pesticide Programs (7510C)
US EPA
Room 266A, Crystal Mall 2
1801 South Bell Street
Arlington, VA 22202

## A. Manufacturing-Use Products

### 1. Additional Generic Data Requirements

The generic database supporting the reregistration of trichloromelamine has been reviewed and determined to be substantially complete. However, the following additional data requirements have been identified by the Agency as confirmatory and included in the generic DCI for this RED.

The Agency has established an interim two-tiered system for toxicology testing requirements. Tier I toxicology data requirements would apply to all indirect food additives that result in residue concentrations ranging from 0-200ppb which applies to trichloromelamine. The requirements would consist of an acute toxicity testing battery, subchronic toxicity study in the rodent, a developmental toxicity study in the rat, and a mutagenicity testing battery. Each of these data requirements has been fulfilled for trichloromelamine.

The risk assessment noted deficiencies in the surrogate dermal and inhalation exposure data available from the Chemical Manufacturers Association (CMA) data base. Therefore, the Agency is requiring confirmatory data to support the uses assessed with the CMA exposure data within this risk assessment. The risk assessment also noted that many of the use parameters (e.g., amount handled and duration of use) were based on professional judgments. Therefore, descriptions of human activities associated with the uses assessed are required as confirmatory.

**Table 10. Confirmatory Data Requirements for Reregistration**

| Guideline Study Name | New OPPTS Guideline No. | Old Guideline No. |
|---|---|---|
| 28-Day Inhalation Toxicity Study-Rat[a] | 870.3465 | 82-4 |
| Dermal Indoor Exposure | 875.1200, 875.1600 | 233 |
| Inhalation Indoor Exposure | 875.1400, 875.1600 | 234 |
| Descriptions of Human Activity | 875.2800 | 133-1 |

[a]Study duration must be at least 28 days.

### 2. Labeling for Technical and Manufacturing-Use Products

To ensure compliance with FIFRA, technical and manufacturing-use product (MP) labeling should be revised to comply with all current EPA regulations, PR Notices and applicable policies. The Technical and MP labeling should bear the labeling contained in Table 12, Label Changes Summary Table.

## B. End-Use Products

### 1. Additional Product-Specific Data Requirements

Section 4(g)(2)(B) of FIFRA calls for the Agency to obtain any needed product-specific data regarding the pesticide after a determination of eligibility has been made. The Registrant

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

A product-specific data call-in, outlining specific data requirements, will be sent to registrants at a later date. The efficacy studies the Agency intends to call-in are listed in Table 11 below.

**Table 11. Efficacy Data Requirements for Reregistration**

| Claim | Use Pattern | EPA Reg. Nos. | Guideline Study Name | New OPPTS Guideline No. | Old Guideline No. |
|---|---|---|---|---|---|
| Disinfectant | Hard inanimate surfaces | 40510-1<br>65169-1 | AOAC Use Dilution Test (Hard water and organic soil) **or**<br>AOAC Germicidal Spray Test **or**<br>AOAC Hard Surface Carrier Test (Distilled water only) | 810.2100 (c), (d), (e) | 91-2 (b), (c), (d) |
| Disinfectant | Fruits and vegetables | 40510-1 | Special Study[a] | NA | NA |
| Sanitizer | Non-food contact surfaces (non-residual) | 65169-1<br>70627-28 | Sanitizer Test for Hard Inanimate Non-Food Contact Surfaces | 810.2100 (l) | 91-2 (j) |
| Sanitizer | Previously cleaned food-contact surfaces (non-residual) | 6198-3<br>8160-1<br>65169-1<br>70627-26<br>70627-28 | AOAC Germicidal<br>and Detergent Sanitizers Method | 810.2100 (m)(2) | 91-2 (l)(2) |

NA=Not Applicable
[a] The registrant for this use will need to work with the Agency to establish an acceptable protocol for this study.

### 2. Labeling for End-Use Products

Labeling changes are necessary to protect the environment in case of a spill. Specific language to incorporate these changes is specified in Table 12.

Registrants may generally distribute and sell products bearing old labels/labeling for 26 months from the date of the issuance of this Reregistration Eligibility Decision document. Persons other than the registrant may generally distribute or sell such products for 52 months from the approval of labels reflecting the labeling changes described in this RED. However, existing stocks time frames will be established case-by-case, depending on the number of products involved, the number of label changes, and other factors. Refer to "Existing Stocks of Pesticide Products; Statement of Policy," *Federal Register*, Volume 56, No. 123, June 26, 1991.

### a. Label Changes Summary Table

In order to be eligible for reregistration, amend all product labels to incorporate the language in the following table.

**Table 12. Labeling Changes Summary Table**

| Summary of Labeling Changes for Trichloromelamine | | |
|---|---|---|
| **Description** | **Amended Labeling Language** | **Placement on Label** |
| Environmental Hazards Statements Required by the RED and Agency Label Policies | If more than 50 pounds or 5 gallons of product is sold in one package:<br>"Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollution Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA." | Precautionary Statements |
| Environmental Hazards | "This chemical is toxic to aquatic organisms." | Precautionary Statements immediately following the User Safety Recommendations |

# VI. APPENDICES

**Appendix A. Table of Use Patterns for Trichloromelamine**

| Use Site | Formulation | Method of Application | Application Rate (Range)[1] | Use Limitations |
|---|---|---|---|---|
| **Food handling/storage establishments premises and equipment** | | | | |
| Eating/Drinking Establishments (Premises and Equipment: Hard Surfaces) | Powder (Soluble Concentrate) | Immerse Surfaces (Reg. 6198-3) | 0.012%-0.024% | Never use soap when prewashing. Never towel dry sanitized items. |
| | | Wipe/Swab Surfaces (Reg. 8160-1; 65169-1; 70627-28) | 0.0117%-0.0169% | Never use soap when prewashing. Never towel dry sanitized items. Do not reuse solution the next day. |
| | | Spray Surfaces (Reg. 8160-1) | 0.0169% | Never towel dry sanitized items. Do not reuse solution the next day. |
| Eating/Drinking Establishments (Utensils, Dishes, and Glassware) | Powder (Soluble Concentrate) (Reg. 6198-3; 65169-1; 70627-26) | Immerse Surfaces | 0.0114%-0.024% | Never use soap when prewashing. Never towel dry sanitized items. |
| Dairy Processing Plants | Powder (Soluble Concentrate) (Reg. 6198-3) | Immerse Surfaces | 0.012%-0.024% | Never use soap when prewashing. Never towel dry sanitized items. |
| Food Processing Plants | Powder (Soluble Concentrate) (Reg. 6198-3; 70627-28) | Immerse Surfaces; Wipe or Swap Surfaces | 0.012%-0.024% | Never use soap when prewashing. Never towel dry sanitized items. Do not reuse solution the next day. |

[1] Application rate is given in terms of percent of active ingredient in diluted solution following label directions for dilution.

| Use Site | Formulation | Method of Application | Application Rate (Range)[1] | Use Limitations |
|---|---|---|---|---|
| Foodservice Equipment (including soft-serve, yogurt, shake, and slush) | Powder (Soluble Concentrate) (Reg. 70627-26) | Immerse Surfaces | 0.0114%-0.0227% | Never use soap when prewashing. Never towel dry sanitized items. Do not reuse solution the next day. |
| Mess Gear | Powder (Soluble Concentrate) (Reg. 40510-1) | Immerse Surfaces | 0.0276% | Use only when hot water rinse is not available. Allow mess gear to air dry. Do not reuse solution after disinfecting 100 mess kits. |
| Fresh Fruits and Vegetables | Powder (Soluble Concentrate) (Reg. 40510-1) | Wash and Completely Immerse | 0.0345% | Do not cut or peel fruits or vegetables before disinfecting. After immersion, rinse with potable water. Solutions are not to be reused. |
| **Commercial, institutional and industrial premises and equipment** | | | | |
| Commercial Premises | Powder (Soluble Concentrate) (Reg. 8160-1) | Wipe Surfaces | 0.0169% | Never towel dry sanitized items. Do not reuse solution the next day. |
| | | Spray Surfaces | 0.0169% | Never towel dry sanitized items. Do not reuse solution the next day. |
| Schools | Powder (Soluble Concentrate) (Reg. 8160-1; 70627-28) | Wipe Surfaces | 0.0136-0.0169% | Never towel dry sanitized items. Do not reuse solution the next day. |
| | | Spray Surfaces | 0.0169% | Never towel dry sanitized items. Do not reuse solution the next day. |
| Institutional/Industrial Food Service Areas | Powder (Soluble Concentrate) (Reg. 70627-28) | Wipe Surfaces | 0.0136% | Never towel dry sanitized items. Do not reuse solution the next day. |

| Use Site | Formulation | Method of Application | Application Rate (Range)[a] | Use Limitations |
|---|---|---|---|---|
| **Residential and public access premises** | | | | |
| Residential Premises | Powder (Soluble Concentrate) (Reg. 8160-1) | Wipe Surfaces | 0.0169% | Never towel dry sanitized items. Do not reuse solution the next day. |
| | | Spray Surfaces | 0.0169% | Never towel dry sanitized items. Do not reuse solution the next day. |
| **Medical premises and equipment** | | | | |
| Nursing homes and hospitals (non-critical areas) | Powder (Soluble Concentrate) (Reg. 70627-28) | Wipe Surfaces | 0.0136% | Never towel dry sanitized items. Do not reuse solution the next day. |

## Appendix B. Table of Generic Data Requirements and Studies Used to Make the Reregistration Decision

**Guide to Appendix B**

Appendix B contains listing of data requirements which support the reregistration for active ingredients within case #3144 (trichloromelamine) covered by this RED. It contains generic data requirements that apply to trichloromelamine in all products, including data requirements for which a "typical formulation" is the test substance.

The data table is organized in the following formats:

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

2. Use Pattern (Column 4). This column indicates the use patterns for which the data requirements apply. The following letter designations are used for the given use patterns.

(1) Agricultural premises and equipment
(2) Food handling/ storage establishments premises and equipment
(3) Commercial, institutional and industrial premises and equipment
(4) Residential and public access premises
(5) Medical premises and equipment
(6) Human water systems
(7) Materials preservatives
(8) Industrial processes and water systems
(9) Antifouling coatings
(10) Wood preservatives
(11) Swimming pools
(12) Aquatic areas

3. Bibliographic Citation (Column 5). If the Agency has acceptable data in its files, this column list the identify number of each study. This normally is the Master Record Identification (MRID) number, but may be a "GS" number if no MRID number has been assigned. Refer to the Bibliography appendix for a complete citation of the study.

| DATA REQUIREMENT | | | | CITATION(S) |
|---|---|---|---|---|
| **New Guideline Number** | **Old Guideline Number** | **Study Title** | **Use Pattern** | **MRID Number** |
| **PRODUCT CHEMISTRY** | | | | |
| 830.1550 | 61-1 | Product Identity and Composition | All | 42385101, 42283401, 42131101[2] |
| 830.1600<br>830.1620<br>830.1650 | 61-2a | Starting Materials and Manufacturing Process | All | 42385101, 42283401, 42131101 |
| 830.1670 | 61-2b | Formation of Impurities | All | 43350301, 42131101 |
| 830.1700 | 62-1 | Preliminary Analysis | All | 43350302, 42131101 |
| 830.1750 | 62-2 | Certification of Limits | All | 43350302, 42131101 |
| 830.1800 | 62-3 | Analytical Method | All | 43350302, 42131101 |
| 830.6302 | 63-2 | Color | All | 42385101, 42131101 |
| 830.6303 | 63-3 | Physical State | All | 42385101, 42131101 |
| 830.6304 | 63-4 | Odor | All | 42131101 |
| 830.7050 | None | UV/Visible Absorption | All | Waived[3] |
| 830.7200 | 63-5 | Melting Point | All | 42385101, 42131101 |
| 830.7220 | 63-6 | Boiling Point | All | Not Applicable |
| 830.7300 | 63-7 | Density | All | 42385101, 42131101 |
| 830.7840<br>830.7860 | 63-8 | Solubility | All | 42385101, 42131101 |
| 830.7950 | 63-9 | Vapor Pressure | All | Not Applicable |
| 830.7370 | 63-10 | Dissociation Constant in Water | All | 43350303 |

[2] MRID 42131101 was also submitted to fulfill old guideline 160-5, Chemical Identity.
[3] The study is waived because, based on the chemical structure, it is not likely to provide useful information in the UV region.

| DATA REQUIREMENT | | | | CITATION(S) |
|---|---|---|---|---|
| **New Guideline Number** | **Old Guideline Number** | **Study Title** | **Use Pattern** | **MRID Number** |
| 830.7550<br>830.7560<br>830.7570 | 63-11 | Partition Coefficient (Octanol/Water) | All | Not Applicable |
| 830.7000 | 63-12 | pH | All | 42385101, 42131101 |
| 830.6313 | 63-13 | Stability | All | 43395401, 42131101 |
| 830.6314 | 63-14 | Oxidizing/Reducing Action | All | Not Applicable |
| 830.6315 | 63-15 | Flammability | All | Not Applicable |
| 830.6316 | 63-16 | Explodability | All | Not Applicable |
| 830.6317 | 63-17 | Storage Stability | All | Not Applicable |
| 830.7100 | 63-18 | Viscosity | All | Not Applicable |
| 830.6319 | 63-19 | Miscibility | All | Not Applicable |
| 830.6320 | 63-20 | Corrosion Characteristics | All | Not Applicable |
| 830.6321 | 63-21 | Dielectric breakdown voltage | All | Not Applicable |
| **ECOLOGICAL EFFECTS** | | | | |
| 850.2100 | 71-1 | Avian Acute Oral Toxicity Test | All | 42250801 |
| 850.2200 | 71-2 | Avian Dietary Toxicity | All | 42280801 (quail), 42247401 (duck) |
| 850.1075 | 72-1 | Fish Acute Toxicity - Freshwater | All | 41934901 (bluegill), 42010601 (rainbow trout) |
| 850.1010 | 72-2 | Acute Aquatic Invertebrate Toxicity | All | 42020801 |
| **TOXICOLOGY** | | | | |
| 870.1100 | 81-1 | Acute Oral - Rat | All | 43165701 |
| 870.1200 | 81-2 | Acute Dermal - Rabbit | All | 43159901 |
| 870.1300 | 81-3 | Acute Inhalation - Rat | All | 43368501 |

| DATA REQUIREMENT | | | | CITATION(S) |
|---|---|---|---|---|
| **New Guideline Number** | **Old Guideline Number** | **Study Title** | **Use Pattern** | **MRID Number** |
| 870.2400 | 81-4 | Primary Eye Irritation - Rabbit | All | 43159902 |
| 870.2500 | 81-5 | Primary Dermal Irritation - Rabbit | All | 43159903 |
| 870.2600 | 81-6 | Dermal Sensitization | All | 43159904 |
| 870.3100 | 82-1a | 90-Day Feeding-Rodent | All | 43064301 |
| 870.3100 | 82-1b | 90-Day Feeding-Non-Rodent | All | Waived[4] |
| 870.3200 | 82-2 | 21/28-Day Dermal Toxicity - Rat | All | Waived[5] |
| 870.3250 | 82-3 | 90-day Dermal Toxicity - Rodent | | Waived[6] |
| 870.3465 | 82-4 | 90-Day Inhalation - Rat | | Data gap |
| 870.3700 | 83-3 | Developmental Toxicity | All | 43614302 (rat), 43614301 (rabbit) |
| 870.3800 | 83-4 | Reproduction and Fertility Effects - 2 Generation Repro | All | Waived[7] |
| 870.4100 | 83-1a | Chronic Feeding Toxicity - Rodent | | Waived[8] |
| | 83-1b | Chronic Feeding Toxicity - Non-Rodent (dog) | | Waived[7] |
| 870.4200 | 83-2a | Oncogenicity - Rat | | Waived[7] |
| 870.4200 | 83-2b | Oncogenicity - Mouse | | Waived[7] |
| 870.4300 | 83-5 | Combined Chronic Toxicity/Carcinogenicity | | Waived[7] |
| 870.5265 | 84-2 | Bacterial Reverse Mutation Assay | All | 42148801 (Structural Chromosomal Aberration) |
| 870.5385 | 84-2 | Micronucleus Assay | All | Not Required[9] |

[4] The 90-feeding study in the rodent is sufficient to cover this guideline.
[5] This study is waived because the risks are below the Agency's level of concern using the conservative 100% dermal absorption factor and an oral endpoint.
[6] This requirement was waived because the registrants committed to submitting a 90-day feeding study in its place.
[7] This study is waived because risk levels are acceptable using conservative assumptions.
[8] These studies are waived because melamine, a degradate of trichloromelamine, is the chemical of concern for any potential chronic effects, as trichloromelamine rapidly breaks down into hypochlorous acid and melamine.
[9] Only one of the 2 studies, 870.5385 or 870.5375, is necessary. MRID 42021801 satisfies this requirement under guideline 870.5375.

| DATA REQUIREMENT | | | | CITATION(S) |
|---|---|---|---|---|
| **New Guideline Number** | **Old Guideline Number** | **Study Title** | **Use Pattern** | **MRID Number** |
| 870.5375 | 84-2 | Cytogenic assay with human lymphocytes | All | 42021801 |
| 870.5550 | 84-2 | UDS Assay | All | 42021701 |
| 870.7485 | 85-1 | General Metabolism | | Waived[10] |
| 870.7600 | 85-2 | Dermal Absorption | | Waived[11] |
| **OCCUPATIONAL/RESIDENTIAL EXPOSURE** | | | | |
| 875.2400<br>875.2900 | 133-3 | Dermal Passive Dosimetry | All | Waived[12] |
| 875.2500<br>875.2900 | 133-4 | Inhalation Passive Dosimetry | All | Waived[11] |
| 875.1200<br>875.1600 | 233 | Dermal Indoor Exposure | All | Data Gap |
| 875.1400<br>875.1600 | 234 | Inhalation Indoor Exposure | All | Data Gap |
| **ENVIRONMENTAL FATE** | | | | |
| 835.2120 | 161-1 | Hydrolysis | | Not Applicable |

[10] Metabolism data are not required for the registered uses of trichloromelamine. In addition, trichloromelamine rapidly degrades to hypochlorous acid and melamine. Melamine is rapidly eliminated in urine after oral dosing and has been found to be not of toxicological concern.
[11] The risks are below the Agency's level of concern assuming 100% dermal absorption. This study is waived as no refinements are needed to the assessment.
[12] As trichloromelamine breaks down rapidly into melamine, the post-application exposure studies are waived.

## Appendix C. Technical Support Documents

Additional documentation in support of this RED is maintained in the OPP docket, located in room 119, Crystal Mall #2, 1801 Bell St., Arlington, VA 22202. It is open Monday through Friday, excluding legal holidays, from 8:30 AM to 4:00 PM.

The RED and supporting document, in hard copy form, may be viewed in the OPP docket room or downloaded or viewed via the Internet at the following sites:

http://www.epa.gov/pesticides/antimicrobials
http://www.epa.gov/edockets

The RED technical support document is the risk assessment:

- Trichloromelamine Risk Assessment for the Reregistration Eligibility Decision, PC Code 077101, Case 3144, Antimicrobials Division, 9/15/05.

**Appendix D. Citations Considered to be Part of the Data Base Supporting the Reregistration Decision (Bibliography)**

1. MRID Studies


| MRID# | Citation |
|---|---|
| 41934901 | Bowman, J. (1986) Acute Toxicity of Trichloromelamine to Bluegill Sunfish (Lepomis macrochirus): Lab Project Number: 34811. Unpublished study prepared by ABC Labs, Inc. 17 p. |
| 42010601 | Bowman, J. (1986) Acute Oral Toxicity Trichloromelamine to Rainbow Trout (Salmo gairdneri): Lab Project Number: 34812. Unpublished study prepared by Analytical Bio-chemistry Laboratories, Inc. 17 p. |
| 42020801 | Burgess, D.; Frazier, S.; Schoen, L. (1991) Acute Toxicity Trichloromelamine to Daphnia magna: Lab Project Number: 34813. Unpublished study prepared by ABC Laboratories, Inc. 15 p. |
| 42021701 | Cifone, M. (1986) Evaluation of Trichloromelamine in the Rat Hepatocyte Unscheduled DNA Synthesis Assay: Lab Project Number: 20991 Unpublished study prepared by Hazleton Laboratories America, Inc. 25 p. |
| 42021801 | Ivett, J. (1986) Clastogenic Evaluation of Trichloromelamine in an In Vitro Cytogenic Assay Measuring Chromosomal Aberration Freq- uencies in Chinese Hamster Ovary (CHO) Cells: Lab Project Number: 20990. Unpublished study prepared by Hazelton Laboratories America, Inc. 33 p. |
| 42131101 | Leifheit, B. (1990) Product Chemistry for Trichloromelamine, Technical Grade. Unpublished study prepared by Drackett Co. 8 p. |
| 42148801 | Jagannath, D. (1987) Evaluation of Trichloromelamine, (...) in Ames Salmonella/ Microsome Reverse Mutation Assay: Lab Project Number: 20988. Unpublished study prepared by Hazleton Labs., America, Inc. 26 p. |
| 42247401 | Fletcher, D.; Pedersen, C. (1988) Trichloromelamine: 8-Day Acute Dietary LC50 Study in Mallard Ducklings: Lab Project Number: 88 DC 109. Unpublished study prepared by Bio-Life Associates, Ltd. 26 p. |
| 42250801 | Fletcher, D.; Pedersen, C. (1988) Trichloromelamine: 21-Day Acute Dietary LD50 Study in Bobwhite Quail: Lab Project Number: BLAL 88 QD 109. Unpublished study prepared by Bio-Life Assocs. 31 p. |
| 42280801 | Fletcher, D.; Pedersen, C. (1988) Trichloromelamine: 8-Day Acute Dietary LC50 Study in Bobwhite Quail: Lab Project Number: BLAL 88 QC 110. Unpublished |

study prepared by Bio-Life Associates, Ltd. 25 p.

42283401 DBK Incorporated (1992) Trichloromelamine & DBK Food Contact Sanitizer: Product Chemistry Data. Unpublished study. 35 p.

42385101 Schneder, D. (1992) Trichloromelamine--Efficacy Data "Replacement Study": Lab Project Number: TCM-EFF. Unpublished study prepared by H & S Chemical Co. Inc. 25 p.

42587501 Popendorf, W.; Selim, M.; Kross, B. (1992) Chemical Manufacturers Association Antimicrobial Exposure Assessment Study: Second Replacement to MRID 41761201: Lab Project Number: Q626. Unpublished study prepared by The University of Iowa. 316 p.

43064301 Michie, M. (1989) Trichloromelamine--90-Day Subchronic Study in Rats: Lab Project Number: 75-51-0743-88: 40-0743-88. Unpublished study prepared by U.S. Army Environmental Hygiene Agency. 1177 p.

43159901 Glaza, S. (1994) Acute Dermal Toxicity Study in Trichloromelamine (TCM), #14468W46 in Rabbits: Final Report: Lab Project Number: HWI 31102386: TP3016. Unpublished study prepared by Hazleton Wisconsin, Inc. 31 p.

43159902 Glaza, S. (1994) Primary Eye Irritation Study of Trichloromelamine (TCM), #14468W46 in Rabbits: Final Report: Lab Project Number: HWI 31102388: TP3015. Unpublished study prepared by Hazleton Wisconsin, Inc. 26 p.

43159903 Glaza, S. (1994) Primary Dermal Irritation Study of Trichloromelamine (TCM), #14468W46 in Rabbits: Final Report: Lab Project Number: HWI 31102387: TP3014. Unpublished study prepared by Hazleton Wisconsin, Inc. 24 p.

43159904 Glaza, S. (1994) Dermal Sensitization Study of Trichloromelamine (TCM), #14468W46 in Guinea Pigs--Closed Patch Technique: Final Report: Lab Project Number: HWI 31102389: TP2008. Unpublished study prepared by Hazleton Wisconsin, Inc. 38 p.

43165701 Glaza, S. (1994) Acute Oral Toxicity Study of Trichloromelamine (TCM), #14468W46 in Rats: Final Report: Lab Project Number: HWI/31102385. Unpublished study prepared by Hazleton Wisconsin, Inc. 44 p.

43350301 Schneider, D. (1994) Trichloromelamine--Series 61-3: Product Chemistry: Lab Project Number: TCM-61-3. Unpublished study prepared by H&S Chemical Co., Inc. 5 p.

43350302 Schneider, D. (1994) Trichloromelamine--Series 62-1,2: Product Chemistry: Lab Project Number: TCM-62-1,2. Unpublished study prepared by H&S Chemical

Co., Inc. 6 p.

43350303 Schneider, D. (1994) Trichloromelamine--Series 63-9, 10, 11: Product Chemistry: Lab Project Number: TCM-63-9, 10, 11. Unpublished study prepared by H&S Chemical Co., Inc. 8 p.

43368501 Viau, A. (1994) An Evaluation of the Acute Toxicity of Inhaled Trichloromelamine Dry Powder Formulation in the Albino Rat: Lab Project Number: 90906. Unpublished study prepared by Bio- Research Lab., Ltd. 190 p.

43395401 Lee, H. (1994) Physical and Chemical Characteristics of Trichloromelamine: Lab Project Number: 7673/09/08/A1: 233A1. Unpublished study prepared by S.C. Johnson & Son, Inc. 17 p.

43614301 Tyl, R.; Marr, M.; Myers, C. (1995) Developmental Toxicity Evaluation of Trichloromelamine Administered by Gavage to New Zealand White Rabbits: Final Report: Lab Project Number: 65C-5742-300/400. Unpublished study prepared by Research Triangle Institute. 215 p.

43614302 Tyl, R.; Marr, M.; Myers, C. (1995) Developmental Toxicity Evaluation of Trichloromelamine Administered by Gavage to CD (Sprague-Dawley) Rats: Final Report: Lab Project Number: 65C-5742-100/200. Unpublished study prepared by Research Triangle Institute. 246 p.

45012316 Walls, C.; Watters, J. (1999) Exposure and Risk Assessments for Sodium Lauryl Sulfate: Lab Project Number: 99-02: 99-01. Unpublished study prepared by Novigen Sciences, Inc. 153 p.

2. Website References

EPA, 2001. "General Principles for Performing Aggregate Exposure and Risk Assessments." US Environmental Protection Agency, Office of Pesticide Programs. November 28, 2001. http://www.epa.gov/pesticides/trac/science/aggregate.pdf.

EPA, 2004a. Overview of the Ecological Risk Assessment Process in the Office of Pesticide Programs U.S. Environmental Protection Agency - Endangered and Threatened Species Effects Determinations, Appendix A, Section IIB, pg.81. US Environmental Protection Agency. January 24, 2004. http://www.epa.gov/oppfead1/endanger/consultation/ecorisk-overview.pdf.

EPA, 2004b. USEPA/OPP Pesticide Products Database Query - Updated Weekly. US Environmental Protection Agency. http://www.cdpr.ca.gov/docs/epa/m2.htm. Accessed July, 2004.

EPA, 2005. Estimation Program Interface (EPI) Suite. US Environmental Protection Agency.

http://www.epa.gov/oppt/exposure/docs/episuite.htm. Accessed 2005.

European Chemicals Bureau, 2004. European Inventory of Existing Commercial Substances. http://ecb.jrc.it/ EINECS# 231-648-4. Accessed 2004.

FDA, 2003. "Sanitizing Solutions: Chemistry Guidelines for Food Additive Petitions." US Food and Drug Administration. January, 1993. http://www.cfsan.fda.gov/~dms/opa-cg3a.html. Last accessed June 9, 2003.

H&S Chemical Co., Inc, 2004. Material Safety Data Sheet. http://www.hschem.com/tccmmsds.html. Accessed 2004.

USDA, Agricultural Resarch Service, 1999. "Food and Nutrient Intakes by Children 1994-96, 1998." ARS Food Surveys Research Group, US Department of Agriculture, available under "Products" at http://www.barc.usda.gov/bhnrc/foodsurvey/home.htm. Last accessed July 28, 2004.

Wilson JW, CW Enns, JD Goldman, KS Tippett, JH Mickle, LE Cleveland, and PS Chahil, 1997. "Data tables: Combined results from USDA's 1994 and 1995 Continuing Survey of Food Intakes by Individuals and 1994 and 1995 Diet and Health Knowledge Survey." ARS Food Surveys Research Group, available under "Releases" at http://www.barc.usda.gov/bhnrc/foodsurvey/home.htm. Last accessed July 28, 2004.

4. Supporting Documents

Environmental Protection Agency, 1983. Meeting with FDA Toxicology Department concerning their evaluation of pituitary tumor incidence in male Fischer 344 rats and bone marrow leukemia incidence in female F 344 rats in the 30-month melamine study submitted by American Cyanamin (1983). Memorandum from Stephanie April, Toxicology Branch, to Tim Gardner, Registration Division. December 14, 1983.

Environmental Protection Agency, 1984. Melamine Studies. Memorandum from Stephanie April, Toxicology Branch, to James Davis, Pesticide and Toxic Substances. May 2, 1984.

Environmental Protection Agency, 1988. Data waiver request for Trichloromelamine; EPA I.D. No. 8029-5; Proj. No. 8-0169A; Caswell No. 877. Memorandum from James Rowe, Toxicology Branch, HED, to Quang Bui, Section Head of Section V, Toxicology Branch, HED. July 6, 1988.

Environmental Protection Agency, 1993. Carcinogenicity Peer Review of Melamine. Memorandum from Stephen C. Dapson, Senior Pharmacologist, HED, and Esther Rinde, Manager of Carcinogenicity Peer Review Committee, HED, to Phil Hutton, Insecticide-Rodenticide Branch, Registration Division. July 21, 1993.

Environmental Protection Agency, 1994. Trichloromelamine: Review of Acute Toxicity Studies Submitted in Response to DCI. Memorandum from Jess Rowland, Toxicologist, HED, to K. Davis and B. Alder, Product Managers, Reregistration Division. July 21, 1994.

Environmental Protection Agency, 1997. Standard Operating Procedures (SOPs) for Residential Exposure Assessments. Prepared for the Office of Pesticide Programs, Health Effects Division. Contract No. 68

Environmental Protection Agency, 2000. Review of the Proctor & Gamble Submission for Registration of the Product, FIT, to Wash Fruits and Vegetables. Memorandum from Robert Quick, Chemist, RASSB, to Velma Noble, Product Manager Team, RMB I. DP Barcode D262976.

Environmental Protection Agency, 2004. Residue Chemistry Comments on the Trichloromelamine Preliminary Risk Assessment. Electronic Correspondence from Robert Quick, Chemist, RASSB, to L. Bailey, Senior Environmental Scientist, Antimicrobial Division, Immediate Office. August 24, 2004.

Landman, LC, 2005. "Reference to use in Dairies, B-T-F Chloromelamine Sanitizer, EPA Reg. No. 6198-3." Correspondence from Dr. L. Charles Landman, National Chemicals, Inc. to Adam Heyward, Antimicrobials Division. September 22, 2005.

## Appendix E. Generic Data Call-In

The Agency intends to issue a Generic Data Call-In at a later date. See Chapter V of the trichloromelamine RED for a list of studies that the Agency plans to require.

## Appendix F. Product Specific Data Call-In

The Agency intends to issue a Product Specific Data Call-In at a later date.

## Appendix G. Batching of Trichloromelamine Products for Meeting Acute Toxicity Data Requirements for Reregistration

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

Using available information, batching has been accomplished by the process described in the preceding paragraph. Notwithstanding the batching process, the Agency reserves the right to require, at any time, acute toxicity data for an individual product should the need arise.

Registrants of products within a batch may choose to cooperatively generate, submit or cite a single battery of six acute toxicological studies to represent all the products within that batch. It is the registrants' option to participate in the process with all other registrants, only some of the other registrants, only their own products within a batch, or to generate all the required acute toxicological studies for each of their own products. <u>If a registrant chooses to generate the data for a batch, he/she must use one of the products within the batch as the test material.</u> <u>If a registrant chooses to rely upon previously submitted acute toxicity data, he/she may do so provided that the data base is complete and valid by today's standards (see partial list of acceptance criteria attached), the formulation tested is considered by EPA to be similar for acute toxicity,</u> and the formulation has not been significantly altered since submission and acceptance of the acute toxicity data. The Agency must approve any new or canceled formulations (that were presented to the Agency after the completion of the RED) before data derived from them can be used to cover other products in a batch. Regardless of whether new data is generated or existing data is referenced, <u>registrants must clearly identify the test material by EPA Registration Number.</u> If more than one confidential statement of formula (CSF) exists for a product, the registrant must indicate the formulation actually tested by identifying the corresponding CSF.

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

data, he/she must choose among: Cost Sharing (Option 2), Offers to Cost Share (Option 3) or Citing an Existing Study (Option 6). If a registrant does not want to participate in a batch, the choices are Options 1, 4, 5 or 6. However, a registrant should know that choosing not to participate in a batch does not preclude other registrants in the batch from citing his/her studies and offering to cost share (Option 3) those studies.

If a registrant would like to have the batching status of a product reconsidered, he/she must submit detailed information on the product, including a detailed rationale for the inclusion of the product into a batch. An MSDS for each "inert" ingredient should be included where possible. A current version of the Confidential Statement of Formula (CSF) is to be included in the submission. However, registrants and manufacturers should realize that the more unusual their formulation is, the less likely it is to be able to batch that product.

Table 1.
Batches for Products Containing The Active Ingredient Trichloromelamine

| Batch | Registration Number | Percent Active Ingredient | |
|---|---|---|---|
| 1 | 8160-1 | Trichloromelamine | 18.0% |
| | 65169-1 | Trichloromelamine | 18.7% |
| | 70327-26 | Trichloromelamine | 18.2% |

No Batch Group: The following products were not considered similar enough to any of the other products to be placed in a batch. These products are not batched.

| No Batch Group | | |
|---|---|---|
| **Registration Number** | **Percent Active Ingredient** | |
| 6198-3 | Trichloromelamine | 9.5% |
| 40510-1 | Trichloromelamine<br>Potassium Iodide | 19.3%<br>28.6% |
| 65146-1 | Trichloromelamine | 98.0% |
| 70627-27 | Trichloromelamine | 91.0% |
| 70627-28 | Trichloromelamine | 18.2% |

Please note that while products may have the same percent active ingredient as another product, the composition of their inert ingredients may vary greatly.

MINIMUM ACUTE TOXICITY ACCEPTANCE CRITERIA

| | | |
|---|---|---|
| 1 | _____ | Does the study report clearly identify the test material? That is, is the test material identified by EPA Registration Number, product name, or, is the product listed as technical grade? |
| 2 | _____ | Does the report state that the study was conducted in concurrence with the (1984) 40 CFR §160.12? |
| 3 | _____ | Is the test species identified? |
| 4 | _____ | Are the test animals the proper weight? (Rats approximately 200-300 grams, rabbits approximately 2.0 - 3.0 kg.) |
| 5 | _____ | Acute oral, dermal and inhalation toxicity: Did the observation period last for 14 days, or, until the test subjects appeared normal? |
| 6 | _____ | Primary eye irritation: Did the observation period continue for 21 days, or, until all irritation subsided? Studies displaying excessive irritation (toxicity category I) may be stopped before 21 days. |
| 7 | _____ | Primary skin irritation: Did the observation period continue for 14 days, or, until all irritation subsided? Studies displaying excessive irritation (toxicity category I) may be stopped before 14 days. |
| 8 | _____ | Acute inhalation toxicity: Were the test subjects exposed to the material for at least 4 hours (if there was no mortality during the exposure)? |
| 9 | _____ | Acute inhalation toxicity: Was particle size determined at least twice during the exposure? Was the MMAD between 1 and 4 microns (micrometers)? |
| 10 | _____ | Acute inhalation toxicity: Was the particle concentration determined at least twice during the study? |

Studies that do not meet each (1-10) of the criteria listed above will be rejected. Please be informed that EPA's guidelines change from year to year. A study that was accepted 25 or more years ago may not be currently acceptable.

Please refer to the following documents for more information.

1. Health Effects Test Guidelines, Series 870, EPA 712-C-98-189, August 1998.
2. Conduct of Acute Toxicity Studies, EPA 737-R-97-002, September 1997.

## Appendix H. List of All Registrants Sent the Data Call-In

A list of registrants sent the data call-in will be posted at a later date.

## Appendix I. List of Available Related Documents and Electronically Available Forms

Pesticide Registration Forms are available at the following EPA internet site: http://www.epa.gov/opprd001/forms/.

Pesticide Registration Forms (These forms are in PDF format and require the Acrobat reader)

**Instructions**

1. Print out and complete the forms. (Note: Form numbers that are bolded can be filled out on your computer then printed.)

2. The completed form(s) should be submitted in hardcopy in accord with the existing policy.

3. Mail the forms, along with any additional documents necessary to comply with EPA regulations covering your request, to the address below for the Document Processing Desk.

DO NOT fax or e-mail any form containing 'Confidential Business Information' or 'Sensitive Information.'

If you have any problems accessing these forms, please contact Nicole Williams at (703) 308-5551 or by e-mail at williams.nicole@epamail.epa.gov.

The following Agency Pesticide Registration Forms are currently available via the internet at the following locations:

| | | |
|---|---|---|
| 8570-1 | Application for Pesticide Registration/Amendment | http://www.epa.gov/opprd001/forms/8570-1.pdf |
| 8570-4 | Confidential Statement of Formula | http://www.epa.gov/opprd001/forms/8570-4.pdf |
| 8570-5 | Notice of Supplemental Registration of Distribution of a Registered Pesticide Product | http://www.epa.gov/opprd001/forms/8570-5.pdf |
| 8570-17 | Application for an Experimental Use Permit | http://www.epa.gov/opprd001/forms/8570-17.pdf |
| 8570-25 | Application for/Notification of State Registration of a Pesticide To Meet a Special Local Need | http://www.epa.gov/opprd001/forms/8570-25.pdf |
| 8570-27 | Formulator's Exemption Statement | http://www.epa.gov/opprd001/forms/8570-27.pdf |
| 8570-28 | Certification of Compliance with Data Gap Procedures | http://www.epa.gov/opprd001/forms/8570-28.pdf |
| 8570-30 | Pesticide Registration Maintenance Fee Filing | http://www.epa.gov/opprd001/forms/8570-30.pdf |
| 8570-32 | Certification of Attempt to Enter into an Agreement with other Registrants for Development of Data | http://www.epa.gov/opprd001/forms/8570-32.pdf |
| 8570-34 | Certification with Respect to Citations of Data (in PR Notice 98-5) | http://www.epa.gov/opppmsd1/PR_Notices/pr98-5.pdf |
| 8570-35 | Data Matrix (in PR Notice 98-5) | http://www.epa.gov/opppmsd1/PR_Notices/pr98-5.pdf |
| 8570-36 | Summary of the Physical/Chemical Properties (in PR Notice 98-1) | http://www.epa.gov/opppmsd1/PR_Notices/pr98-1.pdf |
| 8570-37 | Self-Certification Statement for the Physical/Chemical Properties (in PR Notice 98-1) | http://www.epa.gov/opppmsd1/PR_Notices/pr98-1.pdf |

**Pesticide Registration Kit**
www.epa.gov/pesticides/registrationkit/

Dear Registrant:

For your convenience, we have assembled an online registration kit that contains the following pertinent forms and information needed to register a pesticide product with the U.S. Environmental Protection Agency's Office of Pesticide Programs (OPP):

1. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug and Cosmetic Act (FFDCA) as Amended by the Food Quality Protection Act (FQPA) of 1996.

2. Pesticide Registration (PR) Notices

   a. 83-3 Label Improvement Program—Storage and Disposal Statements

   b. 84-1 Clarification of Label Improvement Program

   c. 86-5 Standard Format for Data Submitted under FIFRA

   d. 87-1 Label Improvement Program for Pesticides Applied through Irrigation Systems (Chemigation)

   e. 87-6 Inert Ingredients in Pesticide Products Policy Statement

   f. 90-1 Inert Ingredients in Pesticide Products; Revised Policy Statement

   g. 95-2 Notifications, Non-notifications, and Minor Formulation Amendments

   h. 98-1 Self Certification of Product Chemistry Data with Attachments (This document is in PDF format and requires the Acrobat reader.)

Other PR Notices can be found at http://www.epa.gov/opppmsd1/PR_Notices.

3. Pesticide Product Registration Application Forms (These forms are in PDF format and will require the Acrobat reader.)

   a. EPA Form No. 8570-1, Application for Pesticide Registration/Amendment

   b. EPA Form No. 8570-4, Confidential Statement of Formula

   c. EPA Form No. 8570-27, Formulator's Exemption Statement

   d. EPA Form No. 8570-34, Certification with Respect to Citations of Data

   e. EPA Form No. 8570-35, Data Matrix

4. General Pesticide Information (Some of these forms are in PDF format and will require the Acrobat reader.)

   a. Registration Division Personnel Contact List

   b. Biopesticides and Pollution Prevention Division (BPPD) Contacts

   c. Antimicrobials Division Organizational Structure/Contact List

   d. 53 F.R. 15952, Pesticide Registration Procedures; Pesticide Data Requirements (PDF format)

   e. 40 CFR Part 156, Labeling Requirements for Pesticides and Devices (PDF format)

   f. 40 CFR Part 158, Data Requirements for Registration (PDF format)

   g. 50 F.R. 48833, Disclosure of Reviews of Pesticide Data (November 27, 1985)

Before submitting your application for registration, you may wish to consult some additional sources of information. These include:

1. The Office of Pesticide Programs' Web Site

2. The booklet "General Information on Applying for Registration of Pesticides in the United States", PB92-221811, available through the National Technical Information Service (NTIS) at the following address:

   National Technical Information Service (NTIS)
   5285 Port Royal Road
   Springfield, VA 22161

The telephone number for NTIS is (703) 605-6000. Please note that EPA is currently in the process of updating this booklet to reflect the changes in the registration program resulting from the passage of the FQPA and the reorganization of the Office of Pesticide Programs. We anticipate that this publication will become available during the Fall of 1998.

3. The National Pesticide Information Retrieval System (NPIRS) of Purdue University's Center for Environmental and Regulatory Information Systems. This service does charge a fee for subscriptions and custom searches. You can contact NPIRS by telephone at (765) 494-6614 or through their Web site.

4. The National Pesticide Telecommunications Network (NPTN) can provide information on active ingredients, uses, toxicology, and chemistry of pesticides. You can contact NPTN by telephone at (800) 858-7378 or through their Web site: ace.orst.edu/info/nptn.

The Agency will return a notice of receipt of an application for registration or amended registration, experimental use permit, or amendment to a petition if the applicant or petitioner

encloses, with his submission, a stamped, self-addressed postcard. The postcard must contain the following entries to be completed by OPP:

Date of receipt
EPA identifying number
Product Manager assignment

Other identifying information may be included by the applicant to link the acknowledgment of receipt to the specific application submitted. EPA will stamp the date of receipt and provide the EPA identifying File Symbol or petition number for the new submission. The identifying number should be used whenever you contact the Agency concerning an application for registration, experimental use permit, or tolerance petition.

To assist us in ensuring that all data you have submitted for the chemical are properly coded and assigned to your company, please include a list of all synonyms, common and trade names, company experimental codes, and other names which identify the chemical (including "blind" codes used when a sample was submitted for testing by commercial or academic facilities). Please provide a CAS number if one has been assigned.