7/17/2003

DATA EVALUATION RECORD

EPA Secondary Reviewer:

STUDY TYPE:	Product Identity and Composition (OPPTS 830.1550) Description of Beginning Materials (OPPTS 830.1600) Description of Formulation Process (OPPTS 830.1650) Discussion of Formation of Impurities (OPPTS 830.1670) Preliminary Analysis (OPPTS 830.1700) Certified Limits (OPPTS 830.1750) Enforcement Analytical Method (OPPTS 830.1800) Physical and Chemical Characteristics (OPPTS 830.6302-830.7950)
MRID NO:	46050901
DP BARCODE NO:	DP301227
CASE NO:	Not reported
SUBMISSION NO:	Not reported
TEST MATERIAL:	Triad (EPA Reg No. 69493-R; 2.41% by weight sodium metasilicate, a.i.)
PROJECT NO:	2003-1
SPONSOR:	Environmentally Safe Systems, Inc., Solvang, CA
TESTING FACILITY:	ChemReg International, LLC., Lake Ridge, VA
TITLE OF REPORT:	Triad Pesticide - Product Identity, Composition, and Analysis
AUTHORS:	Robert G. Butz, Ph.D.
STUDY COMPLETED:	July 17, 2003
GOOD LABORATORY PRACTICE:	Not GLP Compliant; discussion and presentation of information

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CONCLUSION: Triad Pesticide is an EP used as an insecticide and fungicide for a number of food crops and roses. The active ingredient is 2.41% by weight sodium metasilicate. The inerts are [redacted]. All ingredients are exempt from a tolerance. The beginning materials used to produce the product are adequately addressed. The manufacturing process of Triad Pesticide is a batch process performed by blending the active and inert ingredients and results in no chemical reactions or formation of new impurities. The impurities in Triad are the carryover impurities from the active ingredient sodium metasilicate. Preliminary analysis was not conducted, but a certificate of analysis for anhydrous metasilicate and a test report for sodium silicate are provided. Five certificates of analysis need to be submitted for the active ingredient from the supplier on the CSF. The upper and lower certified limits for all ingredients are within guidelines proposed in OPPTS 830.1750, except the lower certified limit for the active ingredient is slightly wider (-6% vs -5%). No explanation was given. Details of the ion chromatography method to determine silicon dioxide in detergent are included, but no references are made in the description to the product Triad. The physical/chemical properties of Triad were adequately addressed in MRID 45552402 with the exception of oxidation/reduction characteristics, explodability, and one year storage stability and corrosion characteristics.

CLASSIFICATION: **UNACCEPTABLE**, but upgradable if the registrant provides: 1) a clarification of the product content of [redacted] on the CSF and in the study report, 2) five certificates of analysis for sodium metasilicate from the supplier listed on the CSF, 3) an explanation of the wider lower certified limit of the active ingredient, 4) the enforcement analytical method specific for Triad, and 5) a one year storage stability and corrosion characteristics study. In addition, oxidation/reduction characteristics and explodability need to be addressed.

CONTAINS CONFIDENTIAL BUSINESS INFORMATION

Test Material: Triad (2.41% by weight sodium metasilicate, a.i.)

I. **PRODUCT IDENTITY AND COMPOSITION:** Triad Pesticide (EPA Reg. No. 69493-R) is an end-use product (EP) used as an insecticide and fungicide for almonds, apples, apricots, broccoli, citrus, head lettuce, wine grapes, nectarines, peaches, plums, and roses. The active ingredient is 2.41% by weight sodium metasilicate [CAS No. 6834-92-0, PC code 072604, 40 CFR 180.2(a), 40 CFR 180.1001(c)]. The inerts are [redacted] The product labels (master label and sub-label - wine grapes) agreed with the CSF.

Deficiencies: None

II. **DESCRIPTION OF BEGINNING MATERIALS:** The beginning materials used to produce the product are listed on p. 6 of appendix in MRID 46053901 as [redacted] The registrant needs to clarify this on the CSF.

Deficiencies: The CSF/text in MRID 46050901 needs to be adjusted to reflect the content of [redacted]

III. **DESCRIPTION OF PRODUCTION PROCESS:** The manufacturing process of Triad Pesticide is a batch process performed by blending the active and inert ingredients.

The formation of Triad Pesticide is briefly reported [redacted]

The CSF indicates that [redacted]

Deficiencies: None

IV. **DISCUSSION OF FORMATION OF IMPURITIES:** Triad Pesticide is a solution of anhydrous sodium metasilicate (S-25 grade) in [redacted]

[redacted] No chemical reactions occur and no new impurities are formed in the manufacturing process. No impurities are introduced from equipment used to produce the product. The impurities in Triad are the carryover impurities from the 2.41% active ingredient sodium metasilicate (95 to 99.5% pure). The major impurities in sodium metasilicate are [redacted]

Deficiencies: None

V. **PRELIMINARY ANALYSIS:** Preliminary analysis was not conducted, but a certificate of analysis for anhydrous sodium metasilicate from OxyChem and a test report for sodium silicate from [redacted] which is a different but related chemical, are provided.

Deficiencies: Five certificates of analysis for sodium metasilicate from the supplier [redacted] listed on the CSF are needed.

VI. **CERTIFIED LIMITS:** Table 1 lists the nominal concentrations and the upper and lower limits for the ingredients as given on the CSF. The lower and upper certified limits of the active ingredient are 2.27% and 2.48% by weight, respectively. The upper certified limit is within guidelines proposed in OPPTS 830.1750, but the lower certified limit is slightly wider (-6% vs -5%). The upper and lower certified limits for the inerts are within guidelines proposed in OPPTS 830.1750.

Deficiencies: The lower certified limit for sodium metasilicate is slightly wider (-6% vs -5%).

Table 1. Nominal concentrations and the upper and lower limits for the ingredients

Ingredients	Nominal	Upper Limit	Lower Limit
Active ingredient			
Sodium metasilicate	2.41%	2.48%	2.27%
Inert ingredients			
[redacted]			
Total	100.00%		

VII. **ENFORCEMENT ANALYTICAL METHOD:** The study report indicates that "determination of silicon dioxide in detergent formulations by ion chromatography" is used

to verify certified limits of the active ingredient. No specific reference is made as to whether the method is effective for the product Triad when used on raw agricultural commodities.

Deficiencies: Method provided was reported to determine silicon dioxide in detergent formulations. No specific reference is made to the product Triad.

VIII. PHYSICAL AND CHEMICAL CHARACTERISTICS:

The physical/chemical properties of Triad were not addressed in MRID 46050901, but in MRID 45552402 (previously reviewed by ORNL, BPPD Work Assignment No. 134) with the exception of oxidation/reduction characteristics, explodability, dielectric breakdown voltage, and one year storage stability and corrosion characteristics study. The methods were not reported for any characteristics.

Deficiencies: Methods are not provided for any characteristics in the study (MRID 45552402). Oxidation/reduction characteristics, explodability, dielectric breakdown voltage, and a one year storage stability need to be addressed. A better explanation for the results of the corrosion characteristics test is needed.

Table 1. Physical and chemical properties of Triad

Parameters	Results
Color	Brown
Physical State	Liquid
Odor	Mild organic
Melting Point	Not applicable
Boiling Point	Not applicable
Density/Specific Gravity	1.08 g/mL
Solubility	Not applicable
Vapor Pressure	Not applicable
pH	12.3
Stability	Not applicable
Flammability	Non-flammable
Storage Stability	Stable for greater than one year; based on no chemical change during blending and qualitative results from field trials over time
Viscosity	65/75 SUS @100°F 10.8/13.6 Centistoke@40°C
Miscibility	Readily miscible in water with agitation
Corrosion Characteristics	Non-corrosive