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

3 JUN 1988

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Product Chemistry Data Submitted in Response to the
Mancozeb Registration Standard

ID NO(S). 4581-357
RCB NO(S). 2965
MRID NO(S). 403812-01, 02

FROM: H. Fonouni, Ph.D., Chemist *H. E. Fonouni*
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TO: Lois Rossi (PM-21)
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and

Amy S. Rispin, Ph.D., Chief
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THRU: William J. Boodee, Section Head
Residue Chemistry Branch
Hazard Evaluation Division (TS-769C) *WJB*

In response to the Mancozeb Registration Standard, requirement for submission of product chemistry data on the technical chemical (Guidance Document, April 1987), Pennwalt Corporation has submitted two reports on the unregistered technical chemical. The information/data provided and our conclusions are discussed below. In addition, Table A is included to reflect the remaining product chemistry data requirements.

61-1 Product Identity and Disclosure of Ingredients

a. Product Identity

Name : Penncozeb Technical
Company Code No. : 5950.05

b. Identity of the Active Ingredient
Common Name (ISO) : Mancozeb

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Chemical Name (IUPAC): Manganese ethylenebis(dithiocarbamate)
(polymeric) complex with zinc salt
Chemical Name (CA) : {[1,2-ethanediyibis(carbamodithioato)]
(2-)}-manganese mixture with {[1,2-
ethanediyibis(carbamodithioato)] (2-)}-
zinc
CAS Registry No. : 8018-01-7 (new)
8065-67-5 (old)
Empirical Formula : (C₄H₆N₂S₄Mn)_x(Zn)_y
Molecular Formula : (C₄H₆N₂S₄Mn)_x(Zn)_y
Structural Formula : E-S-C(S)-NH-CH₂-CH₂-NH-C(S)-S-Mn_x(Zn)_y
Relative Molecular Mass : 271.0

No additional information/data is required on this topic.

61-2 Description of Beginning Materials and Manufacturing Process

The information provided appears in Confidential Appendix A.

This data satisfies the requirement for this topic, no additional information is needed.

61-3 Discussion of Formation of Impurities

The registrant has provided a discussion on the formation of impurities, no additional information is needed.

62-2 Certification of Ingredient Limits

The registrant has provided upper and lower limits for the active ingredient, mancozeb, as well as upper limits for impurities in the product. Certified limits for mancozeb and all impurities ≥ 0.1 % should be submitted on EPA Form 8570-4 (Rev. 2-85).

A data gap remains here.

62-3 Analytical Methods to Verify Certified limits

The procedures employed to determine mancozeb and impurities were not submitted. Methodology which will determine the active ingredient as well as any impurities occurring at $\geq 0.1\%$ are required. These methods must be capable of distinguishing mancozeb from other potential carbon disulfide producing contaminants. The analytical methodologies used must be validated.

A data gap remains here.

63-Series Physical and Chemical Properties

The physical and chemical properties for mancozeb as reported by Pennwalt Corporation are as follows (MRID NO. 403812-02).

- 63-2 - Color: Greenish yellow
- 63-3 - Physical State: Powder
- 63-4 - Odor: Faint, noncharacteristic
- 63-5 - Melting Point: Slowly decomposes at room temperature. The rate of decomposition increases with increasing temperature.
- 63-7 - Density: 0.37 g/ml at 20 degrees C
- 63-8 - Solubility: 10.1 mg/l at 25 degrees C
- 63-9 - Vapor Pressure: N/A
- 63-10- Dissociation Constant: $pK = 8.9$ ($K = 1.4 \times 10^{-9}$) at 25 degrees C.
- 63-11- Octanol/water Partition Coefficient: $\text{LogP}_{\text{OW}} = 1.38$ at 25 degrees C.
- 63-12- pH: 7.0 at 20 degrees C (1% dispersion).

ATTACHMENTS:

Attachment I - Table A (2 pages)

cc: Mancozeb Registration Standard File, SF, Reviewer
(H. Fonouni), RBP, TOX (R. Coberly), PMSD/ISB (E. Eldredge),
PM 21 (L. Rossi)

Attachment II - Confidential Appendixes A and B (2 pages)

cc: Mancozeb Registration Standard File, SF, Reviewer
(H. Fonouni), RBP, TOX (R. Coberly), PMSD/ISB (E. Eldredge),
PM 21 (L. Rossi).

cc: Mancozeb Registration Standard File, SF, RF, Reviewer
(H. Fonouni), RBP, TOX (R. Coberly), PMSD/ISB (E. Eldredge),
PM 21 (L. Rossi), Circu.

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TABLE A
GENERIC DATA REQUIREMENTS FOR THE UNREGISTERED TECHNICAL MANCOZEB, PENNVALT CORPORATION

Guideline Citation and Name of Test	Test Substance	Guidelines Status	Are Additional Data Required? [Yes] [No]	Reference Citation (MIRD No.)
40 CFR 158.120 Product Chemistry				
Product Identity and Composition				
61-1 - Identity of Ingredients	TGAI	R	X	403812-01
61-2 - Materials and Process	TGAI	R	X	403812-01
61-3 - Formation of Impurities	TGAI	R	X	403812-01
Analysis and Certification of Product Ingredients				
62-1 - Preliminary Analysis	TGAI	R	X ¹	
62-2 - Certification of Ingredient Limits	TGAI	R	X	
62-3 - Analytical Methods to Verify Certified Limits	TGAI	R	X ¹	
Physical and Chemical Characteristics				
63-2 - Color	TGAI	R	X	403812-02
63-3 - Physical State	TGAI	R	X	403812-02
63-4 - Odor	TGAI	R	X	403812-02
63-5 - Melting Point	TGAI	R	X	403812-02
63-6 - Boiling Point	TGAI	N/A ²		
63-7 - Bulk Density	TGAI	R	X	403812-02
63-8 - Solubility	TGAI or PAI	R	X	403812-02
63-9 - Vapor Pressure	PAI	R	X	403812-02
63-10- Dissociation Constant	PAI	R	X	403812-02
63-11- Octanol/water Partition Coefficient	PAI	R	X	403812-02
63-12- PH	TGAI	R	X	403812-02

(Continued, footnotes follow)

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TABLE A
GENERIC DATA REQUIREMENTS FOR THE UNREGISTERED TECHNICAL MANCOZEB, PENNVALT CORPORATION

Guideline Citation and Name of Test	Test Substance	Guidelines Status	Are Additional		Reference Citation (MIRD No.)
			Data Required?		
			[Yes]	[No]	
<u>158.120 Product Chemistry (Cont'd)</u>					
<u>Physical and Chemical Characteristics</u>					
63-13- Stability	TGAI	R	X		
<u>Other Requirements</u>					
64-1 - Submittal of Samples	TGAI and PAI	CR ³		X	

TGAI = Technical Grade Active Ingredient (Technical Chemical); PAI = Purified Active Ingredient; R = Required; CR = Conditionally Required; N/A = Not Applicable.
1/ A complete description of each analytical method used to analyze the active ingredient and each impurity present at a level $\geq 0.1\%$ (w/w) of the product must be provided. The methods used for the analysis of the active ingredient must distinguish mancozeb from other potential carbon disulfide producing contaminants.
2/ Not applicable, since the product is a solid at room temperature.
3/ If samples are needed, the Agency will request them.

Mancozeb residue chemistry review

Page _____ is not included in this copy.

Pages 6 through 7 are not included in this copy.

The material not included contains the following type of information:

- ☐ Identity of product inert ingredients
 - ☐ Identity of product impurities
 - ☒ Description of the product manufacturing process
 - ☐ Description of product quality control procedures
 - ☐ Identity of the source of product ingredients
 - ☐ Sales or other commercial/financial information
 - ☐ A draft product label
 - ☐ The product confidential statement of formula
 - ☐ Information about a pending registration action
 - ☐ FIFRA registration data
 - ☐ The document is a duplicate of page(s) _____
 - ☐ The document is not responsive to the request
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The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.
