TECHNICAL SUPPORT SECTION EFFICACY REVIEW - I

Disinfectants Branch

09-15-86,
IN 01-29-87 OUT 03-31-87

Dennis G. Guse WEC 4-3-87

Reviewed By Dennis G. Guse Date 03-31-87

EPA Reg. No. or File Symbol 46781-1

EPA Petition or EUP No. None

Date Division Received 08-29-86 & 12-17-86

Type Product Hospital Sterilant/Disinfectant

Data Accession No(s). 264914 & Unaccessioned (New Data)

Product Manager 31 (Lee)

Product Name Metricide MX-1400 Activated Dialdehyde Solution

Company Name Metrex Research Corporation

Submission Purpose Additional Virucidal Data & Response to Tuberculocidal Data Call-In (Data)

Type Formulation Two-Component Activated Alkaline Glutaraldehyde Solution

Active Ingredient(s):	%
Glutaraldehyde	2.0

200.0 Introduction

200.1 Refer to the latest accepted label with comments, dated 03-20-86, attached.

200.2 Background & Amount/Type of Data Submitted

The virucidal data were submitted in response to deficiencies cited in previous reviews by TSS (Efficacy) dated 03-17-86 and 06-23-86 and transmitted to the registrant in EPA letters dated 03-20-86 and 07-08-86.

The tuberculocidal data were submitted in response to the Tuberculocidal Data Call-In Notice and are intended to support effectiveness of the product under the following conditions of reuse:

Effectiveness as a tuberculocide for the activated, undiluted solution at a contact time of 10 minutes at 25°C on previously cleaned, hard surfaces after 14 days reuse in manual systems (Modified AOAC Tuberculocidal Activity Method performed by Shaldra Biotest on 2 batches).

200.3 Efficacy data were previously submitted and accepted for this product in a review by TSS (Efficacy), dated 03-17-86, to support a tuberculocidal claim under the following conditions of reuse:

Effectiveness as a tuberculocide for the activated, undiluted solution at a contact time of 10 minutes at 20°C on previously cleaned, hard surfaces after 14 days reuse in manual systems (Standard AOAC Tuberculocidal Activity Method performed by Shaldra Biotest on 2 batches). However, the validity of these data was considered questionable.

200.4 Under the Tuberculocidal Data Call-In Notice, for glutaraldehyde products results by the Standard AOAC Tuberculocidal Activity Method in 10 minutes contact time at 20°C, as previously submitted, require validation by testing from a second laboratory. As an alternative, data by either the Modified AOAC Tuberculocidal Activity Method (with longer contact time or higher temperature) or the New Quantitative Tuberculocidal Activity Method may be submitted. The registrant chose to submit data by the alternative Modified AOAC Tuberculocidal Activity Method (with higher temperature).

201.0 Data Summary - Virucidal Data (Reused Solution)

201.1 Brief Description of Tests

"Schedule of Bioburden Tests for Project No. M10 - M1400L, Lot #244851, Act. #1816." Report by Kyle H. Sibinovic, Shaldra Biotest, Inc., W. Bethesda, MD 20817, dated 03-03-86 to 03-17-86 (Accession No. 264914).

201.2 Test Summaries

The schedule for reuse stressing of the batch of Metricide MX-1400, Lot # 244851, employed for virucidal testing vs. Coxsackie B5a, including the bioburden tasks, was provided.

201.3 Test Conclusions

The data fulfil the deficiency indicated in the TSS (Efficacy) review dated 06-23-86, which was conveyed in the EPA letter dated 07-08-86.

202.0 Data Summary - Tuberculocidal Data (Reused Solution)

202.1 Brief Description of Tests

"Efficacy Tests Using Two Lots of Metricide M1400 Disinfectant Sterilant Tested after 14 Days of Reuse Stress - Tested in AOAC Tuberculocidal Tests Modified to 25°C Exposure Time." Report by Kyle H. Sibinovic, Shaldra Biotest, Inc., W. Bethesda, MD 20817, with letter dated 12-16-86 (Not Accessioned).

202.2 Test Summaries

a. Reuse Protocol

1. Type & Duration: Manual reuse for up to 14 days as a sterilant and/or disinfectant in a bucket system.

2. Test Samples: "Metricide M1400", activated solution from 2 different batches, Lots ID M1400Q (#037861) and M1400R (#042861), manufactured 02-06-86 and 02-11-86, respectively. Activator Lot #2214. Reuse period from 09-01-86 to 09-14-86. Solution volume = 5 gallons/batch (18925 ml).

3. Use Cycles & Equipment: 3 simulated use cycles/day, each cycle consisting of a washing step w/soap or detergent, a water rinse, and a soaking step in the test solution. Equipment consisted of 2 anesthesia sets/5 gallons, each set containing 2 sections corrugated rubber tubing (each 3-4 feet long), 1 rebreathing bag (2-3 liter capacity), 1 endotracheal tube, 1 "Y" connector, and 1 face mask.

4. Microbiological Bioburden: Stainless steel cylinders containing Staphylococcus aureus ATCC 6538, Salmonella choleraesuis ATCC 10708, and Pseudomonas aeruginosa ATCC 15442; and porcelain cylinders containing spores of Bacillus subtilis ATCC 19659 and Clostridium sporogenes ATCC 3584. A set of 60 carriers with one of each of the above organisms were added to 1 liter of the solution removed from the bucket after the third cycle each day and soaked for 1 hour (vegetative bacteria) or overnight (spores). The carriers were then removed and the sample returned to the bucket, except when retained for testing. The addition schedule was as follows (Option II):

Daily: 60 carriers/liter (1000 ml)/day, except on test days.

Test Days: 180 carriers/liter on day 14; then samples are retained and not returned to the bucket.

Cumulative Bioburden (Option II): For 14 days,

$$K = \frac{13 \times 60}{13 \times 18925} + \frac{1 \times 180}{14 \times 1000} = 0.0032 + 0.0129 \text{ carriers/ml}$$

$$= 0.0161 \text{ carriers/ml}$$

5. Dilution: Undiluted.

6. Significant Modifications: None reported.

7. Chemical Determinations: Data previously furnished.

8. Conclusions: The reuse protocol meets the required specifications.

b. Tuberculocidal Tests

1. Method: Modified AOAC Tuberculocidal Activity Method (II. Confirmative In Vitro Test).

2. Modifications: Exposure temperature of 25°C was used instead of 20°C as specified in the method.

3. Samples: Same as in 202.2(a)(2) above, tested after 14 days manual reuse.

4. Dilution: Undiluted.

5. Exposure: 10 minutes at 25°C.

6. Test Organism: Mycobacterium bovis BCG. Phenol resistance: No growth @ 1:50 in 10 minutes @ 20°C or 25°C; growth @ 1:70 in 10 minutes @ 20°C or 25°C.

7. Subculture Media/Neutralizer: 4% $NaHSO_3$ as neutralizer (10 minutes); modified Proskauer-Beck broth (MPB), Middlebrook 7H9 broth (7H9), and TB broth (TBB) as subculture media.

8. Incubation: 90 days @ 37°C.

9. Results:

Test Organism	Test Batch	Reuse (Days)	Positive/Total Carriers		
			MPB	7H9	TBB
M. bovis BCG	037861	14	0/10	0/10	0/10
" " "	042861	"	0/10	0/10	0/10

10. Conclusions: No failures reported with exposure of 10 minutes at at 25°C for the undiluted solution from 2 batches of product after reuse in a manual system for 14 days.