UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF
PREVENTION,
PESTICIDES
AND TOXIC
SUBSTANCES

February 19, 2009

MEMORANDUM

Subject: Efficacy Review for EPA Reg. No. 68660-RG, Interox 25% Hydrogen Peroxide; DP Barcode: 360304

From: Tajah L. Blackburn, Ph.D., Microbiologist
Efficacy Evaluation Team
Product Science Branch
Antimicrobials Division (7510P)
3/4/09

Thru: Michele Wingfield, Chief
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To: Marshall Swindell PM 33/ Demson Fuller
Regulatory Management Branch I
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Applicant: Solvay Chemicals, Inc.
3333 Richmond Avenue
Houston, TX 77098

Formulations from Label

Active Ingredient(s)	% by wt.
Hydrogen Peroxide.....	25.0%
Other Ingredients.....	75.0%
Total	100.0%

I BACKGROUND

The product, Interox 25% Hydrogen Peroxide, is a new product. The current data package was submitted to support sterilant registration for aseptic packaging and associated manufacturing/filling equipment. Interox 25% Hydrogen Peroxide is a more dilute version of Interox 35% Hydrogen Peroxide (EPA File Symbol 68660-RN). Per the registrant "hydrogen peroxide has previously been approved for the same uses requested for Interox 25% Hydrogen Peroxide (see product labels for EnviroSan EPA Reg. No. 1677-85, and VigorOx SP-15 Antimicrobial Agent EPA Reg. No. 65402-3). However, since the hydrogen peroxide use-rate is higher than previously approved for hydrogen peroxide this application is considered a new use" (Registrant's letter, dated November 15, 2008).

The current data package contains a letter from the registrant's representative (dated November 15, 2008), EPA Form 8570-4 (CSF), one efficacy study (MRID No. 474190-04), Statement of No Data Confidentiality Claims, GLP statement and the proposed label.

Note: According to the registrant's letter, "the use of hydrogen peroxide as a sterilant for aseptic packaging is subject to an FDA regulation under 21 CFR § 178.1005. In addition, the Antimicrobial Regulation Technical Corrections Act of 1998 (ARTCA) gives jurisdiction to FDA for regulating, under Section 409 of the Federal Food, Drug, and Cosmetic Act (FFCDA), residuals of an antimicrobial applied to food-packaging materials."

II USE DIRECTIONS

The product is intended for use in aseptic packaging in commercial sterilization for food contact surfaces and food processing equipment. Directions on the proposed label provided the following instructions for the preparation and use of the product:

Apply Interox Hydrogen Peroxide on the interior and/or exterior of food containers and closure systems (caps, seals, etc) or appropriate food processing equipment surfaces. Apply 250,000 ppm of hydrogen peroxide at a temperature of 80°C. The hydrogen peroxide solution must remain in contact with the surface for 20 seconds; contact times and temperatures may vary depending on the specific type of aseptic food processing line.

III AGENCY STANDARDS FOR PROPOSED CLAIMS

Sterilizers

The AOAC Sporicidal Test is required for substantiating sterilizing claims. The following information applies to all products represented as sporicidal or sterilizing agents. Sixty carriers, representing each of 2 types of surfaces (porcelain penicylinders and silk suture loops), must be tested against spores of both *Bacillus subtilis* (ATCC 19659) and *Clostridium sporogenes* (ATCC 3584) on 3 product samples representing 3 different product lots, one of which is at least 60 days old (240 carriers per sample; a

total of 720 carriers). Any sterilizing agent (liquid, vapor, or gas) that is recommended for use in a specific device must be tested by the AOAC Sporicidal Test in that specific device and according to the directions for use. Killing on all of the 720 carriers is required; no failures are permitted. Data to support sterilizing claims must be confirmed by tests conducted by a second, independent laboratory of the applicant's choice (other than the laboratory that developed the original data). The following minimal confirmatory data must be developed on one sample of the product: Thirty carriers with each of 2 types of surfaces (silk suture loops and porcelain penicylinders) against spores of both *Bacillus subtilis* and *Clostridium sporogenes* (a total of 120 carriers) by the AOAC Sporicidal Test. These Agency standards are presented in DIS/TSS-9.

IV SYNOPSIS OF SUBMITTED EFFICACY STUDY

1. MRID No. 476115-03, "Modification of the AOAC Sporicidal Method to Determine Efficacy of Products Used in Aseptic Filling Applications" against *Bacillus subtilis* (ATCC 19659) and *Clostridium sporogenes* (ATCC 3584) utilizing Interox AG Spray 25-S Hydrogen Peroxide by Anne Stemper, B.S. Study completion date—August 11, 2008. Project Number A06417.

Note: Interox 25% Hydrogen Peroxide is identical in composition to Interox AG Spray 25-S Hydrogen Peroxide.

This study was conducted against *Bacillus subtilis* (ATCC 19659) and *Clostridium sporogenes* (ATCC 3584). Three lots (Lot Nos. 80326691HP, 80425D06HP, and 80425D01HP) are product, Interox AG Spray 25-S Hydrogen Peroxide, were tested using modifications of the AOAC Sporicidal Activity method (SVY01020508.CUST.2). One product lot (Lot No. 80326691HP) was at least 60 days old at the time of testing. Stainless steel carriers were immersed for 15 minutes in either 72±4 hour old broth culture of *Clostridium sporogenes* or *Bacillus subtilis* spore suspension at a ratio of 1 carrier per 1.0 ml culture. Following inoculation, the carriers were placed into a Petri dish matted with filter paper. The contaminated carriers were transferred to a vacuum dessicator containing $CaCl_2$ and the vacuum was drawn to ≥69 Hg for the entire drying and storage period. The contaminated carriers were dried in the dessicator for 24 hours. The contaminated carriers used in test and controls, were dried for ~ 5 days prior to use. The test substance was received ready-to-use. Ten (10.0) ml of the test substance was aliquoted into individual sterile 25 x 150 mm tubes. The tubes were placed into a waterbath at 80±2°C for temperature equilibration. Each contaminated carrier was placed into separate tubes containing 10.0 ml of test substance at its use-dilution for a 20±1 second contact period at 80±2°C. Following the completion of the contact period, each medicated carrier was transferred by hook needle to primary subculture tubes containing 10 ml Fluid Thioglycollate Medium with 0.05% catalase. Carriers were transferred from primary subculture tubes into individual secondary subculture tubes containing Fluid Thioglycollate Medium. Subculture tubes were incubated for 21 days at 35-37°C. Following incubation, the subculture tubes were visually examined for growth. Tubes demonstrating growth were subcultured onto appropriate agar medium for confirmation of the test organism and incubated under appropriate conditions. A gram stain and a macroscopic examination of colony morphology was performed from the confirmation subculture plates. Tubes demonstrating no growth of the test organisms were heat shocked for 20 minutes at 80±2°C, and reincubated for 72±4 hours at 35-37°C. Following the 72±4 hour incubation, the subculture tubes from testing were

visually examined for growth upon completion of the incubation period. Controls included those for purity, sterility, viability, carrier counts, neutralization confirmation, and HCl resistance.

Protocol Amendment: Per Sponsor's request, this protocol is being amended to retest Interox AG Bath 35-S Lot No. 70705D10HP against stainless steel penicylinders inoculated with Clostridium sporogenes for potential false positives.

Note: The registrant included in the data package that Interox AG Bath 35-S is another designation for Interox 35% Hydrogen Peroxide. The composition is identical.

V RESULTS

Test Organism	Date Performed	CFU/carrier
Bacillus subtilis	7/2/08	3.7×10^6 CFU/carrier
Clostridium sporogenes		1.78×10^6 CFU/carrier

Lot No.	Test Date	Test Organism	Total Carriers Tested	Number of Carriers Showing Growth of the Test Organisms			
				1°	2°	1°HS	2°HS
#80326691HP	7-2-08	*B. subtilis*	60	0	0	0	0
		C. sporogenes	60	0	0	0	0
#80425D06HP		*B. subtilis*	60	0	0	0	0
		C. sporogenes	60	0	0	0	0
#80425D01HP		*B. subtilis*	60	0	0	0	0
		C. sporogenes	60	0	0	0	0

VI CONCLUSIONS

1. The submitted efficacy data support the use of the product, Interox 25% Hydrogen Peroxide, as a sterilant to achieve commercial sterility in validated facilities when used at 250,000 ppm of hydrogen peroxide at a temperature of 80°C for a contact time of 20 seconds when tested against *Bacillus subtilis* (ATCC 19656) and *Clostridium sporogenes* (ATCC 3584).

VII RECOMMENDATIONS

1. The proposed label claims are acceptable regarding the use of the product, Interox 25% Hydrogen Peroxide, as a sterilant for aseptic packaging in commercial sterility in validated facilities at a 250,000 ppm hydrogen peroxide at a temperature of 80°C for a contact time of 20 seconds. Data provided by the applicant support these claims.