UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

December 5, 2003

MEMORANDUM:

Subject: Efficacy Review for Hype-Wipe®, EPA Reg. No.: 70590-1; DP Barcode: 294133

From: Tajah Blackburn, Ph.D., Microbiologist 12/5/03
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Applicant: Current Technologies, Inc.
P.O. Box 21
Crawfordsville, IN 47933

Formulation From Label:

Active Ingredient(s)	%by wt
Sodium Hypochlorite	0.94%
Other Ingredient(s)	99.06%
Total	100.00%

I BACKGROUND

The product, Hype-Wipe® (EPA Reg. No. 70590-1), is an EPA-approved disinfectant wipe (bactericide) for use on hard, non-porous surfaces in industrial, animal care, and hospital or medical environments. The label claims that the product is a "one-step" disinfectant (i.e., effective in the presence of an organic soil load). The applicant requested an amendment to

the registration of the product to reflect the effectiveness of the product against additional microorganisms, specifically Coronavirus, Hepatitis A virus, Herpes simplex type II, HIV-I, Poliovirus I, Rotavirus, *Enterococcus faecium* (VRE), TB (i.e., *Mycobacterium bovis*), *Staphylococcus aureus* (MRSA), and *Streptococcus pyogenes*. The applicant also requested that the product label be amended to reflect shorter contact times (i.e., previously 5 minutes on the last accepted label) for the following microorganisms: *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Salmonella choleraesuis*. Studies included in this data package were conducted at MicroBioTest, Inc., located at 105B Carpenter Drive in Sterling, VA 20164.

This data package contained a letter from the applicant to EPA (dated August 28, 2003), two studies (MRID Nos. 460666-01 through 460666-02), Statements of No Data Confidentiality Claims for both studies, and the proposed label.

Note: The applicant indicated (in their letter dated August 28, 2003) that additional supporting data for the product, Hype-Wipe®, was submitted for EPA Reg. No. 70590-2. The virucidal efficacy studies for Coronavirus, Hepatitis A virus, Herpes simplex type II, HIV-I, Poliovirus I, and Rotavirus are included in the data package assigned D294132.

II USE DIRECTIONS

The product is designed to be used fo disinfecting hard, non-porous environmental surfaces including stainless steel, plastics, glass, glazed ceramics, tile, linoleum, laminated plastic countertops, enamel, glazed porcelain and grout in clinical/research/industrial labs, blood banks, physician/dental offices, emergency units, nursing homes, veterinarian facilities, wards, hospitals environments, dialysis clinics, restrooms, and wastewater facilities.

Directions on the proposed label provided the following information regarding the use of the product as a disinfectant: Remove all gross filth and heavy soil from surfaces. Open pouch and remove towel. Use towel and excess liquid to wipe surface fro 2 minutes. Wipe dry or allow to air dry. Discard towel in appropriate waste container. The label also indicated that the product is effective against the following three organisms for a contact time of 1 minute: Coronavirus, Hepatitis A, Herpes Simplex type II, HIV-1, TB, *Pseudomonas aeruginosa*, Poliovirus I, Rotavirus, *Salmonella choleraesuis*, and *Streptococcus pyogenes*.

III AGENCY STANDARDS FOR PROPOSED CLAIMS

Confirmatory Efficacy Data Requirements– Disinfectants for Use on Hard Surfaces Using Presaturated or Impregnated Towelettes

Towelette products represent a unique combination of antimicrobial chemical and applicator, pre-packaged as a unit in fixed proportions. As such, the complete product, as offered for sale, should be tested according to the directions for use to ensure the product's effectiveness in disinfecting hard surfaces. The standard test methods available for hard surface disinfectants (i.e., AOAC Use-Dilution Method, AOAC Germicidal Spray Products as Disinfectants Method), if followed exactly, would not closely simulate the way a towelette product is used. Agency guidelines recommend that a simulated-use test be conducted by modifying the AOAC Germicidal Spray Products as Disinfectants Method. Agency guidelines further recommend that instead of spraying the inoculated surface of the glass slide, the

further recommend that instead of spraying the inoculated surface of the glass slide, the product should be tested by wiping the surface of the glass slide with the saturated towelette, and then subculturing the slides after a specified holding time. Liquid expressed from the used towelette should also be subcultured. The above Agency standards are presented in DIS/TSS-01 and EPA Pesticide Assessment Guidelines, Subdivision G, §91-2(h), Pre-saturated or impregnated towelettes.

Confirmatory Efficacy Data Requirements – Disinfectants for Use in Hospital or Medical Environments

Under certain circumstances, an applicant is permitted to rely on previously submitted efficacy data to support an application or amendment for registration of a product and to submit only minimal confirmatory efficacy data on his own product to demonstrate his ability to produce an effective formation. This includes a minor formulation change (e.g., a change in an inert ingredient) in a registered product. Confirmatory data must be developed on the applicant's own finished product. For hospital disinfectants, 10 carriers on each of 2 samples representing 2 different batches of product must be tested against *Salmonella choleraesuis* (ATCC 10708), *Staphylococcus aureus* (ATCC 6538), and *Pseudomonas aeruginosa* (ATCC 15442) using either the AOAC Use-Dilution Method or the AOAC Germicidal Spray Products as Disinfectants Method. Killing on all carriers (for both the slide subculture and the expressed liquid from the towelette) is required. The above Agency standards are presented in DIS/TSS-5.

Effectiveness of disinfectants against specific microorganisms other than those named in the AOAC Use-Dilution Method, AOAC Germicidal Spray Products as Disinfectants Method, AOAC Fungicidal Test, and AOAC Tuberculocidal Activity Method, but not including viruses, must also be determined by the modified version of the AOAC Germicidal Spray Products as Disinfectants Method. Ten carriers must be tested against each specific microorganism with each of 2 product samples, representing 2 different batches. To support products labeled as "disinfectants" for specific microorganisms (other than those microorganisms named in the above test methods), killing of the specific microorganism on all carriers (for both the slide subculture and the expressed liquid from the towelette) is required. In addition, plate count data must be submitted for each microorganism to demonstrate that a concentration of at least 10^4 microorganisms survived the carrier-drying step. These Agency standards are also presented in DIS/TSS-01.

Disinfectants for Use as Tuberculocides (Using the AOAC Tuberculocidal Activity Test Method or the AOAC Germicidal Spray Products as Disinfectants Method)

Disinfectants may bear additional label claims of effectiveness as tuberculocides when supported by appropriate tuberculocidal effectiveness data. Certain chemical classes (i.e., glutaraldehyde and quaternary ammonium compounds) are required to undergo validation testing in addition to basic testing. Products that are formulated with other chemical groups do not require validation testing. Products may be tested using one of four recommended methods: the AOAC Tuberculocidal Test Method, Tuberculocidal Activity of Disinfectants Test Method with significant modification of the standard test conditions of contact time and/or temperature, Quantitative Tuberculocidal Activity Test Method, and AOAC Germicidal Spray Products as Disinfectants Method.

When using the existing or modified AOAC Tuberculocidal Activity Test Methods, or the AOAC Germicidal Spray Products as Disinfectants Method, 10 carriers for each of 2 samples, representing 2 different batches of product, must be tested against *Mycobacterium bovis* BCG (a member of the *Mycobacterium tuberculosis* species complex). When using the existing or modified AOAC Tuberculocidal Activity Test Method, or the AOAC Germicidal Spray Products as Disinfectants Method, killing on all carriers (for both the slide subculture and the expressed liquid from the towelette) as demonstrated in Modified Proskauer-Beck Broth, and no growth in any of the inoculated tubes of 2 additional media (i.e., Middlebrook 7H9 Broth Difco B, Kirchners Medium, and/or TB Broth Base) is required. Agency standards are presented in EPA DIS/TSS-6, Subdivision G Guidelines, and "EPA Data Call-in Notice for Tuberculocidal Claims," dated June 13, 1986.

Supplemental Claims

Products that are represented as "one-step" cleaner-disinfectants, "one-step" cleaner-sanitizers, or as effective in the presence of organic soil must be tested with an appropriate organic soil load, such as 5 percent serum. This Agency standard is presented in DIS/TSS-2.

IV COMMENTS ON THE SUBMITTED EFFICACY STUDIES

1. MRID 460666-01 "Testing Pre-Saturated or Impregnated Towelettes for Hard Surface Disinfection Confirmatory (*S. aureus, P. aeruginosa, S. choleraesuis, S. aureus* (MRSA), *E. faecium* (VRE) and *S. pyogenes*) for Hype-Wipe®," by Angela L. Hollingsworth. Study conducted at MicroBioTest, Inc. Study completion date – May 16, 2003.

This study was conducted against *Staphylococcus aureus* (ATCC 6538), *Pseudomonas aeruginosa* (ATCC 15442), *Salmonella choleraesuis* (ATCC 10708), *Staphylococcus aureus* (MRSA) (ATCC 33591), *Enterococcus faecium* (VRE) (ATCC 51559), and *Streptococcus pyogenes* (ATCC 19615). Two lots (Lot Nos. HW031403 and HW032003) of the product, Hype-Wipe®, were tested using the AOAC Germicidal Spray Products as Disinfectants Method as described in the AOAC Official Methods of Analysis, 16th Edition, 1995, and information contained in the EPA Notice of Efficacy Requirements for Pre-Saturated or Impregnated Towelettes for Hard Surface Disinfection. The product was received ready-to-use. Heat-inactivated horse serum was added to the cultures to achieve a 5% organic soil load. Twenty (20) glass slide carriers were tested per product lot (i.e., 10 carriers at a contact time of 1 minute and 10 carriers at a contact time of 2 minutes). A 0.01 mL aliquot of a 48-54 culture was transferred onto a one square inch area on each carrier (in Petri dishes) for each organism. The carriers were dried for 20-40 minutes at 37±2°C. Each carrier was wiped three times from right to left and then wiped three times up and down. One towelette was used to treat 6 carriers. After 1 minute at 23-25°C, 10 carriers per organism per product lot were transferred to neutralizer tubes (Tryptic Soy Broth containing 5% defibrinated sheep's blood and 0.2% $Na_2S_2O_3$ for *Streptococcus pyogenes*, and Letheen Broth containing 0.2% $Na_2S_2O_3$ for all other organisms.) Where possible, some of the liquid remaining in the towelette was expressed into individual sterile Petri dishes and 0.1 mL aliquots were cultured into tubes containing the appropriate neutralizer as listed above. The remaining 10 carriers were neutralized after an additional 1 minute (2 minutes exposure time total). All subcultures were incubated for 48±2

hours at 37±2°C and scored for the presence or absence of growth. All test and control tubes containing Tryptic Soy Broth were streaked onto Tryptic Soy Agar containing 5% defibrinated sheep's blood and incubated for 24±2 hours at 37±2°C. No growth on these plates negated bacteriostasis as the cause for lack of growth in the test tubes. Controls included viability, bacteriostasis, carrier counts, neutralizer effectiveness, sterility, and confirmation of the challenge microorganisms.

Note: Protocol deviations/amendments reported in the study were reviewed and found to be acceptable.

Note: Antibiotic resistance profiles were verified by the laboratory. The measured zones of inhibition (i.e., measuring 0 mm) confirmed antibiotic resistance of *Staphylococcus aureus* (MRSA) to oxacillan and *Enterococcus faecium* (VRE) to vancomycin. See page 15 of the laboratory report.

2. MRID 460666-02 "Testing Pre-Saturated or Impregnated Towelettes for Tuberculocidal Effectiveness (*Mycobacterium bovis*, BCG [Organon Teknika]) for Hype-Wipe®," by Angela L. Hollingsworth. Study conducted at MicroBioTest, Inc. Study completion date – August 1, 2003. Study/Project ID Number 504-102.

This study was conducted against *Mycobacterium bovis*, BCG. Two lots (Lot Nos. HW031403 and HW032003) of the product, Hype-Wipe®, were tested using the AOAC Confirmative in vitro Test for Determining Tuberculocidal Activity Method as described in the AOAC Official Methods of Analysis (edition not specified), and information contained in the EPA Notice of Efficacy Requirements for Pre-Saturated or Impregnated Towelettes for Hard Surface Disinfection. The product was received ready-to-use. Heat-inactivated horse serum was added to the cultures to achieve a 5% organic soil load. Twenty (20) glass slide carriers were tested per product lot (i.e., 10 carriers at a contact time of 1 minute and 10 carriers at a contact time of 2 minutes). A 0.01 mL aliquot of each culture was transferred onto a one square inch area on each carrier (in Petri dishes). The carriers were dried for 20-40 minutes at 37±2°C. Each carrier was wiped three times horizontally and then wiped three times vertically. This procedure was repeated for 25 seconds. One towelette was used to treat 6 carriers. After 1 minute at 24-25°C, 10 carriers per product lot were transferred to tubes containing 20 mL of Modified Proskauer Beck Medium containing 0.1% $Na_2S_2O_3$ (MPBM+). After at least 10 minutes in MPBM+, each carrier was transferred to a tube containing 20 mL of Modified Proskauer Beck Medium (MPBM). From each tube of MPBM+, a 2.0 mL aliquot of the tube contents was subcultured to a tube containing 20 mL of Kirchner's Medium, and a 2.0 mL aliquot of the tube contents was transferred to a tube containing 20 mL of Middlebrook 7H9 Broth. The remaining 10 carriers were neutralized after an additional 1 minute (2 minutes exposure time total) with the same distribution between neutralizers. Where possible, some of the liquid remaining in each towelette was expressed into individual sterile Petri dishes and 0.1 mL aliquots were cultured into tubes containing MPBM+. All subcultures were incubated for 60 days at 37±2°C and scored for the presence or absence of growth. When no growth was observed, tubes were incubated an additional 30 days. Controls included viability, carrier counts, neutralizer effectiveness, sterility, and confirmation of the challenge microorganism.

Note: Protocol deviations/amendments reported in the study were reviewed and found to be acceptable.

V RESULTS

Note: Studies were conducted for both a 1 minute and 2 minute contact time. In this section of the report, results have been presented for the times specified on the proposed product label.

A. 1 Minute Contact Time

MRID Number	Organism	No. Exhibiting Growth/Total No. Tested				Dried Carrier Count (CFU/ carrier)
		Lot No. HW031403		Lot No. HW032003		
		Carrier	Exp. Liquid	Carrier	Exp. Liquid	
460666-01	*Pseudomonas aeruginosa*	0/10	0/2	0/10	0/2	7.1×10^5
	Salmonella choleraesuis	0/10	0/2	0/10	0/2	6.7×10^4
	Streptococcus pyogenes	0/10	0/2	0/10	0/2	1.8×10^5
460666-02	*Mycobacterium bovis*, BCG (at 90 days)					5.2×10^5
	MPBM+	0/10	0/2	0/10	0/2	
	MPBM	0/10		0/10		
	Kirchner's Medium	0/10		0/10		
	Middlebrook 7H9 Broth	0/10		0/10		

B. 2-Minute Contact Time

MRID Number	Organism	No. Exhibiting Growth/Total No. Tested				Dried Carrier Count (CFU/ carrier)
		Lot No. HW031403		Lot No. HW032003		
		Carrier	Exp. Liquid	Carrier	Exp. Liquid	
460666-01	*Staphylococcus aureus*	0/10	0/2	0/10	0/2	8.8×10^5
	Staphylococcus aureus (MRSA)	0/10	0/2	0/10	0/2	9.4×10^5
	Enterococcus faecium (VRE)	0/10	0/2	0/10	0/2	8.8×10^5

VI CONCLUSIONS

1. The submitted efficacy data support the use of the product, Hype-Wipe®, as a disinfectant with bactericidal activity against the following microorganisms on hard, non-porous surfaces in the presence of a 5% organic soil load for the contact times listed:

Mycobacterium bovis, BCG	1 minute	MRID No. 460666-02
Pseudomonas aeruginosa	1 minute	MRID No. 460666-01
Salmonella choleraesuis	1 minute	MRID No. 460666-01
Streptococcus pyogenes	1 minute	MRID No. 460666-01
Enterococcus faecium (VRE)	2 minutes	MRID No. 460666-01
Staphylococcus aureus	2 minutes	MRID No. 460666-01
Staphylococcus aureus (MRSA)	2 minutes	MRID No. 460666-01

No growth was observed in the subcultures or expressed liquid of the required number of carriers tested against the required number of product lots (i.e., two). No growth was observed in the inoculated tubes prepared as part of the *Mycobacterium bovis*, BCG study. According to the laboratory reports, "all of the controls met the criteria established for a valid test." Dried carrier counts were at least 10^4. Neutralizer effectiveness testing showed positive growth of the organisms. Viability controls were positive for growth. Sterility controls did not show growth.

VII RECOMMENDATIONS

1. The proposed label claims are acceptable regarding the use of the product, Hype-Wipe®, as a disinfectant against the following microorganisms on hard, non-porous surfaces in the presence of a 5% organic soil load for the contact times listed:

Mycobacterium bovis, (BCG)	1 minute	MRID No. 460666-02
Pseudomonas aeruginosa	1 minute	MRID No. 460666-01
Salmonella choleraesuis	1 minute	MRID No. 460666-01
Streptococcus pyogenes	1 minute	MRID No. 460666-01
Enterococcus faecium (VRE)	2 minutes	MRID No. 460666-01
Staphylococcus aureus	2 minutes	MRID No. 460666-01
Staphylococcus aureus (MRSA)	2 minutes	MRID No. 460666-01

2. The proposed label now includes disinfectant claims against the following viruses:

Coronavirus
Hepatitis A virus
Herpes simplex type II virus
HIV-I
Poliovirus I
Rotavirus

The data package provided did not include efficacy data to support these claims. The applicant's letter to EPA (dated August 28, 2003) indicated that EPA should rely on efficacy data submitted on behalf of the spray product, Disinfecting Spray with Bleach (EPA Reg. No. 70590-2). Reliance on efficacy data developed on the liquid product which is used to saturate the Hype-Wipe® towelettes is not acceptable. The applicant must submit efficacy data developed on the towelette product, Hype-Wipe® against these viruses, or delete all references to use of the product as a virucide.

3. The proposed label contains two errors, which the applicant needs to change.

– On pages 1 and 2, "*Staphylococcus aureus* (MSRA)" should read "*Staphylococcus aureus* (MRSA)."

– On page 2, "Coronavirus ATCC VR-70" should read "Coronavirus ATCC VR-740."

4. The proposed label [see page 1 of the proposed label] indicates that the product may be used on grout, which is a porous surface. The applicant should remove the label reference to use of the product on grout.