



BioShield[®] 75 is totally water based. Once applied to a surface (porous or non-porous) the BioShield[®] 75 molecule bonds strongly with the surface. The BioShield[®] 75 molecule sets up molecular spikes similar to a “bed of nails”. Microbes that land on this “bed of nails” are impaled, rupturing the cell wall and causing the demise of the microbe. These microbial swords are about one thousandth the width of a human hair. No poisons or toxic chemicals are utilized that can cause mutation or adaptive changes in the microbes. The end result is a reduced risk of cross contamination and microbial growth. The cleaning process is improved and enhanced over an extended period of time.

What is creating the need?

According to World Health Organization, infection is the #1 cause of death worldwide and the #3 cause of death in the United States. Twenty-five years ago 90% of infections could be controlled by antibiotics. Today that number is less than 50%. US News and World Report says \$50 billion or more is spent each year by US business due to absenteeism. Today’s chemicals, disinfectants, and sterilants are causing microorganisms to mutate creating “superbugs”. Mold is now considered a greater threat than asbestos and is far more prevalent. The CDC tells us that 80% of infection is passed by human hands.

Protectant nanotechnology represents a paradigm shift in chemical thinking. BioShield[®]75 offers the first safe and effective long term antimicrobial protection.



Touch-Points & Microbial Attack

Touch-Points are places touched by several persons multiple times per day. Control of contamination and surface damage caused by bacteria, mold, and mildew are a serious concern for industry. Touch-points (human contact), floors, ceilings, overhead pipes, passageways, process walls, and doors, are reservoirs for damaging bacteria. It is a known fact that these microbes can live on surfaces that appear to be clean. Microbial growth can be activated by high moisture or temperature elevations. Standard cleaning and sanitizing protocols are often ineffective in controlling the growth of these microorganisms. There are two problems that are often caused by common cleaning chemicals: first is the adaptive nature of microorganisms to chemical attack. These microbes are becoming increasingly more difficult to destroy. The surviving microbes begin reproducing rapidly. Secondly, chemical residues and dead microbes become a food source for new microbes to feed upon and grow exponentially.

How BioShield®75 Works

TODAY
BioShield®75 Registered
by US EPA
and USDA Accepted

IndusCo, Ltd. has introduced **BioShield® 75**, a patented, EPA Registered and USDA accepted, revolutionary new product. **BioShield® 75** prevents the growth of an amazingly wide array of bacteria, mold, mildew, algae and yeast. **BioShield® 75** acts like a bed of microscopic spikes that pierce the cell walls of microbes. **BioShield® 75** is a totally new approach to providing long lasting Antimicrobial Protection.

2000's
Technology Granted 5
US Patents, 3 Pending

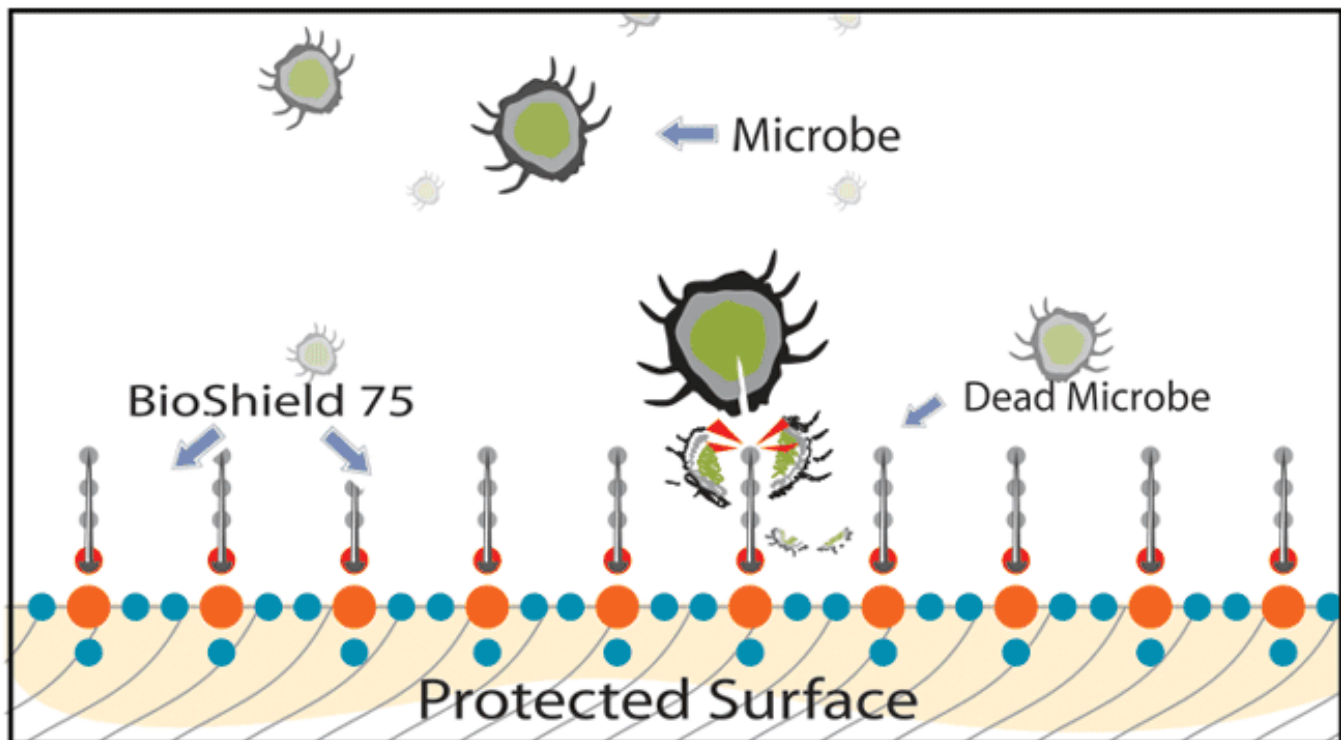
BioShield® 75 is unique. One end of its molecule creates a strong bond with a multitude of surfaces, porous and non-porous, forming a highly durable protective coating. The other end of the molecule forms a microscopic bed of spikes that punctures microbes like a bed of nails. **BioShield® 75** physically ruptures the cell walls of these microbes, without the use of poisons. Since **BioShield® 75's** methodology is mechanical instead of a poison, it does not create "superbugs", which are microbes that build up a resistance to treatment.

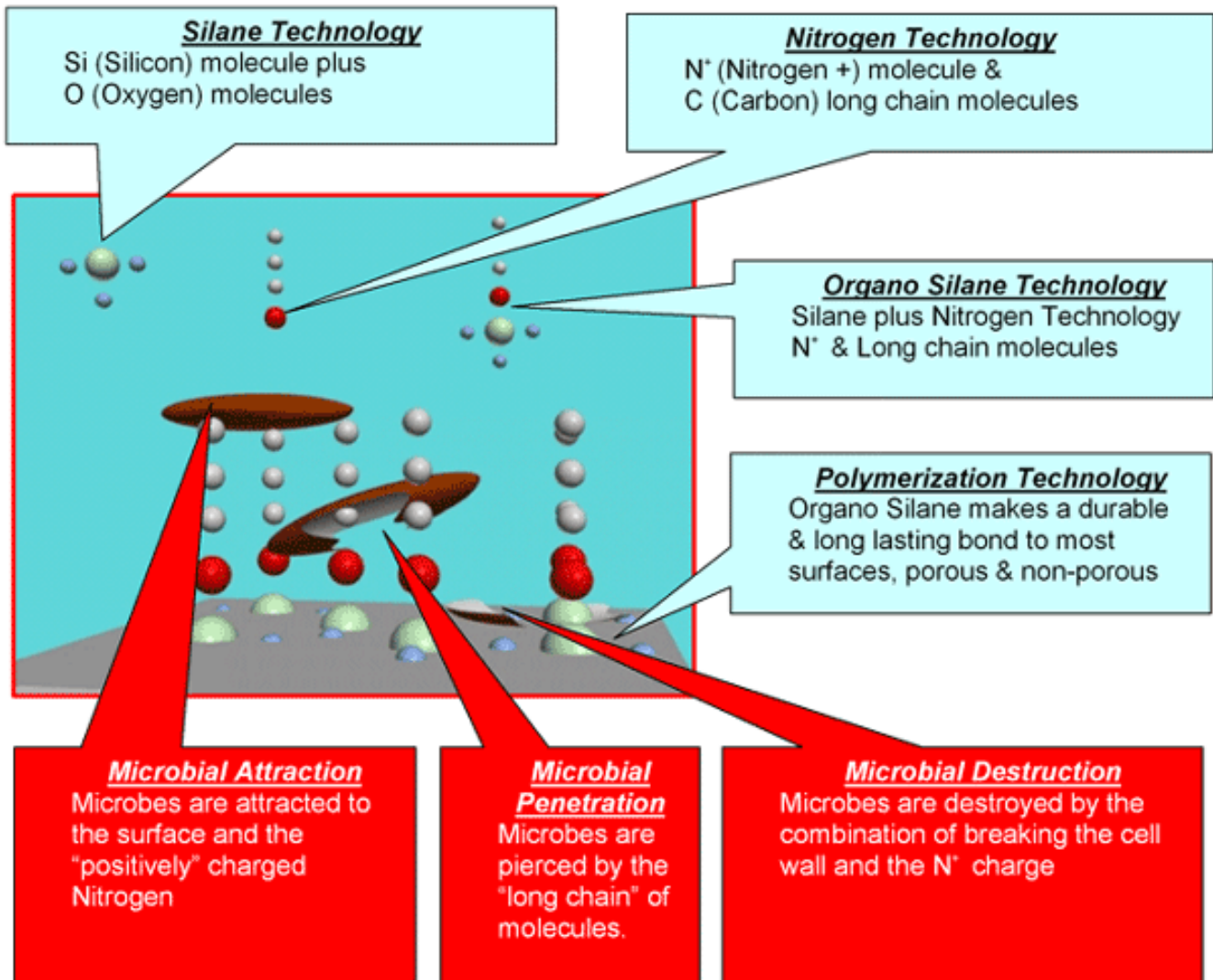
1990's
Technology Re-engineered
into a water-based product

1980's
Technology wins
National Awards

BioShield® 75's molecular spikes are long chains of atoms that are large enough to pierce the cell walls of various microbes. Being only about one thousandth the diameter of a human hair, they are too small to harm large cells in mammals. These chains of atoms carry a strong positive charge that attracts negatively charged bacteria. **BioShield® 75** has been found in independent testing to be effective against a wide array of microbes, including Staphylococcus aureus, E. coli, various Salmonella strains, black mold, athlete's foot, Influenza A, skin infections, and others.

1970's
Technology developed as
an antimicrobial and
mold inhibitor





- EPA Registered / USDA Accepted
- Effectively protects against mold, mildew, algae, and bacteria on porous and non-porous surfaces
- Protects against odor causing microbes, microbial deterioration, and discoloration
- Provides an invisible, durable, microbiostatic finish
- **BioShield®75** lasts for 30 days or longer on practically any surface
- Dries quickly after application
- Withstands temperatures up to 360° F
- Non-leaching properties provide safe protection



Organosilane quaternary amine

BioShield®75 is a stable aqueous solution of a patented technology which produces a durable microbiostatic coating on a broad range of textiles and many other surfaces.

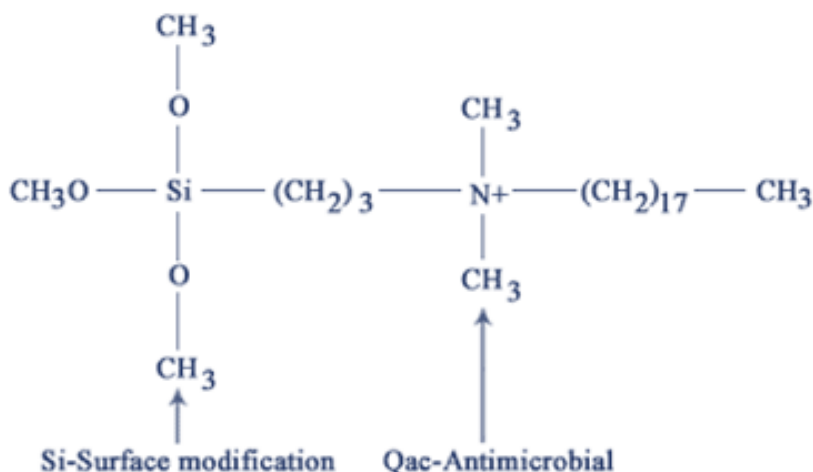
The chemistry of **BioShield®75** is unique. A conventional quaternary ammonium salt (organo) is chemically spliced to a silane molecule, resulting in a highly active molecule (3-trimethoxysilylpropyldimethyloctadecyl ammonium chloride) that has both tenacious bonding capabilities as well as excellent antimicrobial properties. Once applied to a target surface, it initially bonds to the surface on all available receptor sites (principally H⁺).

Afterward, stable bonds between remaining OH- sites on the molecule and the positive charge on the nitrogen atoms (N⁺) form, resulting in the creation of a large co-polymer involving the target and **BioShield®75**. Since there is no unfixed organosilane once the water evaporates, there is no dislodgeable residue and no odor, leaching, off-gassing, migration or diffusion of the molecule.

POWERFUL COMBINATION (SiQac)

Organosilane quaternary amine

Molecular Structure:



All other conventional legal antimicrobials including quats, bleach, peroxides, phenols, triclosan, formaldehydes, paint formulations, etc., work on the basis of diffusion away from the treated surface. This promotes microbial adaptation, loss of effectiveness, and leaching of poisons into the environment.

MATERIAL SAFETY DATA SHEET
ISSUE DATE: 09/01/06

I. IDENTIFICATION:

MANUFACTURER..... IndusCo, Ltd.
2319 Joe Brown Drive
Greensboro, NC 27405
(336) 375-7555
EMERGENCY PHONE NUMBER Chemtrec (800) 424-9300 (day/night)
PRODUCT NAME..... ENVIROSYSTEMS® BioShield® 75
EPA Reg# 75497-5-53053
CHEMICAL FAMILY Organosilane

II. PHYSICAL DATA

BOILING POINT >210°F
VAPOR PRESSURE N/A
VAPOR DENSITY N/A
% VOLATILES ND
pH of PRODUCT 4.0 – 7.0
SOLUBILITY (WATER) Soluble
ODOR..... Mild
APPEARANCE Clear liquid
EVAPORATION RATE..... (water =1) :
SPECIFIC GRAVITY 1.003

III. CHEMICAL COMPONENTS

<u>COMPONENT / C.A.S.#</u>	<u>HAZARD</u>	<u>from% - to%</u>	<u>T.L.V.</u>
(1) 3-(Trimethoxysilyl)propyldimethyloctadecyl ammonium	Irritant	0.75	None

(2)

IV. FIRE AND EXPLOSION DATA

FLASH POINT (°F)..... N/A
FLAMMABLE LIMITS: (upper) N/A (lower) N/A
EXTINGUISHING MEDIA ...Dry chemicals, foam, carbon dioxide, water spray.
SPECIAL FIRE-FIGHTING PROCEDURES.....Must be equipped with self contained breathing apparatus.
Cool heated drums with water spray to prevent bursting.
UNUSUAL FIRE AND EXPLOSION HAZARDS... None

V. HEALTH HAZARD DATA

TLV NO ACGIH TLV PUBLISHED PEL..... NO OSHA PEL PUBLISHED
EYES Prolonged contact may cause irritation.
SKIN..... Prolonged contact may cause irritation.
INHALATION Harmful if inhaled.
INGESTION .. Harmful if swallowed.
EFFECTS OF OVEREXPOSURE...Not known

***** FIRST AID *****

EYES: Flush with plenty of water for at least 15 minutes. If irritation persist, get medical attention.

SKIN: Wash with soap and water, if irritation persists, get medical attention.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration.

INGESTION: Do not induce vomiting. Call a poison control center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow.

ENVIROSYSTEMS® BioShield® 75

VI. REACTIVITY DATA

STABILITY STABLE

CONDITIONS TO AVOID Do not mix with cleaners, do not freeze, and avoid heat.

INCOMPATIBILITY Sodium oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS:

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID:

VII. SPILL OR LEAK PROCEDURES

<input checked="" type="checkbox"/> STOP FLOW	<input checked="" type="checkbox"/> AVOID SKIN CONTACT	<input type="checkbox"/> BURY IN REMOTE AREA
<input type="checkbox"/> NEUTRALIZE	<input type="checkbox"/> ELIMINATE ALL SOURCES	<input checked="" type="checkbox"/> OBSERVE FEDERAL
<input checked="" type="checkbox"/> ABSORB OR SCRAPE	<input type="checkbox"/> OF IGNITION OR FLAME	<input type="checkbox"/> SPILL & WATER
<input type="checkbox"/> UP MATERIAL	<input type="checkbox"/> WASH AWAY WITH WATER	<input type="checkbox"/> QUALITY REGULATIONS
<input checked="" type="checkbox"/> AVOID INHALATION	<input type="checkbox"/> VACUUM UP	<input type="checkbox"/> USE AS LANDFILL

WASTE DISPOSAL METHOD

Where permissible, consider discharge to TW, biological treatment, or incineration. Follow federal, state and local requirements.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY 1 1-Usually none 2-Particle removing air purifying respirator (mechanical filter) 3-Gas and vapor removing air purifying respirator (canister)

SKIN Rubber or plastic gloves

EYES To avoid eye contact wear goggles

VENTILATION General Ventilation Local Exhaust

OTHER PROTECTION Consider optionally, long sleeves, long pants, and apron. Eye wash and safety shower should be in area of use.

IX. SPECIAL PRECAUTION

No special precautions beyond routine prudent safe handling of chemical substances are necessary.

X. REGULATORY INFORMATION

DOT SHIPPING NAME NOT REGULATED BY DOT

HAZARD CLASS / # NONE / PACKING GROUP:

UN/NA NONE REPORTABLE QTY /

S.A.R.A. See Section III

T.S.C.A All chemicals are listed on the TSCA inventory

O.S.H.A. HAZARD CLASS: HEALTH 2 REACTIVITY 1

FLAMMABILITY 0 PERSONAL PROTECTION B

XI. MISCELLANEOUS

DATE OF LAST REVISION: 09/01/06 COMPANY CONTACT: Joseph E. Mason / Babu C. Patel

This Material Safety Data Sheet has been prepared in compliance with the 29CFR 1910.1200. The information contained herein is prepared by qualified personnel at IndusCo, Ltd. and we believe that the information contained is accurate and current as of the date of preparation; however, no warranty, expressed or implied is given regarding the accuracy of the data or the results to be obtained from the use thereof. Since the use of this information and the conditions of use of this product are beyond our control, IndusCo, Ltd. assumes no liability for injuries or damages associated with the use or the product described herein. It is the user's responsibility to ensure that his activities comply with applicable federal, state or provincial, and local laws.



BioShield® 75 - Competitive Analysis

	USDA Accepted	EPA Registered	Non-leaching	Non-adaptive organisms	Non-mutative organisms	Non-flammable	Non-hazardous storage	Safe to Handle	Disinfectant Group
BioShield 75	X	X	X	X	X	X	X	X	Organosilane
Aegis		X	X	X	X				
Anabec		X	X	X	X				
Amicor						X	X	X	Poisons
Byotrol						X	X	X	
Chlorine bleach		X				X			
Chlorine dioxide		X				X			
Fiberloc						X	X	X	
Microban		X				X	X	X	Silver Ion Group
Agion						X	X	X	
Axenohl		X				X	X	X	
Envirocare		X				X	X	X	
Fosshield		X				X	X	X	
PCG						X	X		Coatings impregnated with disinfectants
Camden		X				X			
Forticel		X				X			
Fosters		X				X			
Microban		X							
Mold Block		X				X			



United States
Environmental Protection Agency
 Office of Pesticide Programs (7505C)
 Washington, DC 20460

Notice of Supplemental Distribution of a Registered Pesticide Product

Instructions

After a registrant has obtained final registration for the basic product, the registrant may then supplementally distribute his/her product. One form must be submitted for each distributor product and must be signed by the distributor involved. The basic registration number and the distributor company number must be shown.

If a registrant has a potential distributor who does not have a company number assigned, she/he should have the distributor apply, on letterhead stationery, to the Registration Division to have a number assigned prior to submitting this form to the agency.

This Notice of Supplemental Distribution must be submitted by the basic registrant. The completed form must have the concurrence and signature of both the registrant and the distributor.

EPA Registration Number of Product 75497-5	Distributor Company Number 53053
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Note: Do not submit distributor product labels.

Name of Registered Product (basic product name accepted by EPA) BST Protectant RTU 75	Distributor Product Name EnviroSystems BioShield 75
------------------------------------------------------------------------------------------	--------------------------------------------------------

Name and Address of Distributor (Type; include ZIP code)	
INDUSCO, Ltd.	
2319 Joe Brown Drive	
Greensboro, NC 27405	

Read All Conditions Before Signing

1. The distributor product must have the same composition as the basic product.
2. The distributor product must be manufactured and packaged by the same person who manufactures and packages the registered basic product.
3. The labeling for the distributor product must bear the same claims as the basic product, provided, however, that specific claims may be deleted if by doing so, no other changes to the label are necessary.
4. The product must remain in the manufacturer's unbroken container.
5. The label must bear the EPA registration number of the basic product, followed by a hyphen and the distributor's company number.
6. Distributor product labels must bear the name and address of the distributor qualified by such terms as "packed for...", "distributed by..."; or "sold by..." to show that the name is not that of the manufacturer.
7. All conditions of the basic registration apply equally to distributor products. It is the responsibility of the basic registrant to see that all distributor labeling is kept in compliance with requirements placed on the basic product.

Distributor

We intend to market our product under the Distributor Product Name specified above, subject to the conditions specified on this Notice.

Signature and Title of Distributor

Babur C. Patel, V.P. Operations

Date

3-14-05

Registrant

I agree that the distributor named above may distribute and sell the Distributor Product specified above, subject to the conditions specified on this Notice.

Signature and Title of Registrant

[Signature] *SO VP*

Date

3-14-05

BioBhield® 75 Active Partial List of Microbial Control

Bacteria (gram positive)

Bacillus sp. (vegetative cell)
Bacillus subtilis
Enterococcus sp.
Micrococcus lutea
Micrococcus sp.
Staphylococcus aureus
Staphylococcus epidermis
Streptococcus faecalis
Streptococcus mutans
Streptococcus pyogenes

Bacteria (gram negative)

Acinetobacter calcoaceticus
Aerobacter aerogenes
Aeromonas hydrophila
Citrobacter deversus
Citrobacter freundii
Enterobacter clocae
Escherichia coli
Klebsiella oxytoca
Klebsiella pneumoniae
Morganella morganii
Mycobacterium tuberculosis
Proteus mirabilis
Proteus vulgaris
Pseudomonas aeruginosa
Pseudomonas fluorescens
Pseudomonas putida
Salmonella choleraesuis
Salmonella cholerae suis
Salmonella typhi
Salmonella typhimurium
Salmonella typhosa
Serratia marcescens
Treponema hyodysenteriae
Xanthomonas campestris

Fungi

Aspergillus farres
Aspergillus flavus
Aspergillus niger
Aspergillus sydowi
Aspergillus terreus
Aspergillus versicolor
Aureobasidium pullulans
Chaetomium globosum
Cephalascus fragans
Gloeophyllum trabeum
Penicillium chrysogenum
Penicillium funiculosum
Penicillium pinophilum
Penicillium variable
Poria placents
Pullularia pullulans
Trichoderm sp. madison P-42
Trichoderma viride
Trichophyton interdigital
Trichophyton mentagrophytes

Algae

Anabaena cylindrical
Chlorophyta (green) protococcus
Chlorophyta (green) selenastrum gracile
Chlorophyta (green) sp.
Chrysochyta (brown)
Cyanophyta (blue-green) anabaena
Cyanophyta (blue-green) oscillatoria
Cyanophyta (blue-green) sp.
Gonium sp. (strain LB 9c)
Pleurococcus sp. (strain LB 11)
Selenastrum gracile

Yeast

Candida albicans
Candida Pseudotropicalis
Saccharomyces cerevisiae

Institute of Progressive Medicine

512 S. Verdugo Drive, Burbank CA 91502
(626) 616-2868

10-26-2006

Dear Carl and Arne,

I am pleased to confirm that your product BioShield[®]75 strongly inhibited a reference strain of methicillin resistant *Staphylococcus aureus* (MRSA). The specific details of the experiments are provided below:

Materials:

MRSA Reference Strain obtained from American Type Culture Collection (ATCC) Manassas, Va. 20108. Catalogue number (strain) 43300.

Bacteria Culture Plates: DD Checker, MEC Agar for MRSA Screening from Denka Seiken. [9 mm square agar surface area, 1.25 square inches]. Provided in strips of 5 plates.

BioShield[®]75 as provided by INDUSCO, Containing 0.75% 3-(Trimethoxysilyl) propyldimethyloctadecyl ammonium chloride.

Spray bottle: 50 ml capacity (approximately 0.1 ml per spray) made by Classic Containers, Ontario CA 91781

Methods: Experiment 1.

Transferred 25 ml BioShield[®]75 to spray bottle

Sprayed individual MEC agar plates with two sprays from the spray bottle held 3 inches above each plate. Estimated 0.1 ml landed on each plate and 0.1 ml landing beyond the plate. A noticeable layer formed over the surface of the agar of the sprayed plates. A total of 5 plates were sprayed with 5 intervening plates unsprayed. The plates were left uncovered for 30 minutes.

Suspended a small colony of MRSA in 5 ml normal saline (Analytab Products, Plainview NY 11803. Using a sterile 0.2 ml micropipette (Beral, Chatsworth CA 91311) added one drop of the bacterial suspension to the center of each plate and gently rocked the plate to allow the suspension to spread across most of the plate.

Incubated the plates at room temperature and recorded observations.

Experiment 2.

MRSA bacteria from the above suspension added to 10 MEC agar plates. The plates were incubated at room temperature for 6 hours. Five of the plates were then exposed to two sprays of BioShield[®]75 and 5 plates were left untreated. All of the plates were subsequently examined.

Results:

Experiment 1. The plates were examined directly and with the aid of a dissecting microscope (Leica). At 24 hours, there were in excess of 1,000 distinct colonies of MRSA covering most of the surface of each of the 5 MEC agar plates not pretreated with BioShield[®]75. Only an occasional minute colony was seen in the plates pretreated with BioShield[®]75 and these tended to be towards the edge of the plates. No plate had more than 10 visible colonies. By day 2, the control plates showed confluent growth. Patchy growth began to appear on the BioShield[®]75

treated plates, but even after several days persisted mainly as individual colonies. Some confluence was seen as an outer ring.

Interpretation: The BioShield®75 formed a surface coating on the MEC agar plates that did not allow for effective growth of >99% of the MRSA bacteria subsequently added to the plate. The effect of the BioShield®75 persisted for several days inhibiting confluence of most of the residual bacterial growth.

Experiment 2. The control plates were similar to Experiment 1 with >1,000 colonies identified on day 1 and confluence seen on day 2 and thereafter. Very small colonies were noted on the BioShield®75 treated plates at day 1. Up to an average of 100 discrete colonies gradually appeared in the treated plates with very minimal confluence. The colonies tended to be unqually dispersed throughout the plates.

Interpretation: BioShield®75 was effective in inhibiting >90% of the ongoing growth of MRSA even on a nutritive, porous surface. The effect of the BioShield®75 persisted for several days inhibiting confluence of most of the residual bacterial growth.

In addition to these studies, I was able to show that BioShield®75 was effective in killing MRSA on plastic surfaces. No viable MRSA were recoverable from bacteria inoculated lids of unused MEC agar plates that were sprayed twice from 3 inches away with BioShield®75.

The data support a claim that BioShield®75 has bacteriocidal activity against a reference strain of MRSA. I will continue to advise you of additional results. Thank you for letting me experiment with your product. I have included my curriculum vitae for your reference. Please note that I have Specialty Certification in Medical Microbiology.

Sincerely,

W. John Martin, M.D., Ph.D.
Pathologist



United States Department of Agriculture

August 2, 2006

Mr. Joseph E. Mason, President
IndusCo, LTD
2319 Joe Brown Drive
Greensboro, NC 27405

This is in response to your notification (Log 06-NT 0215-N-A) dated June 9, 2006, requesting approval of Bioshield 75 to be used in any Food Safety Inspection Services (FSIS) establishments as a sanitizing agent.

On July 18, 2006, representatives from Indusco met with the Food Safety and Inspection Service (FSIS) to present their technology and request a letter of "no objection" for the use of BioShield 75 solution on federally inspected establishments as a sanitizing agent.

BioShield 75 is a stable aqueous solution of Organosilane Quaternary Ammonium that is intended to be applied to food contact and non-food contact materials, e.g., floors, drains, tables, cutting boards, slicers, etc., followed by a wash and rinse. BioShield 75 has strong bonding capabilities upon application to various materials. Thus, the use of BioShield 75 results in a durable coating that is effective in eliminating and preventing the growth of bacteria, mold, and fungi. BioShield 75 is registered with the Environmental Protection Agency (EPA).

FSIS has completed its review of the information submitted supporting BioShield 75 as a sanitizing agent and has no objection to the use of BioShield 75 as FSIS regulated establishments as a sanitizing agent. This letter should not be considered as validation that BioShield 75 will be effective in any particular FSIS establishment.

On October 20, 1999, USDA published in the Federal Register, a Final Rule entitled "Sanitation Requirements for Official Meat and Poultry Establishment". This rule consolidates the sanitation regulations into a single part applicable to both official meat and poultry plants, eliminates unnecessary differences between the sanitation requirements for meat and poultry processing, and converts many of the highly prescriptive sanitation requirements to performance standards. Among the prescriptive sanitation requirements that were eliminated was the regulation (Title 9, Code of Federal Regulations (CFR), Section 381.60) requiring the authorization of nonfood compounds by USDA, prior to their use in a Federally inspected meat or poultry establishment. The new sanitation regulations (9 CFR, Section 416.4) state that nonfood compounds and processing aids used by an establishment must be safe and effective under the conditions of use.



United States Department of Agriculture

The establishment must have documentation on file substantiating the safety of a chemical's use in a food processing environment and this documentation must be available to FSIS inspection program employees for review. The documentation may be in the form of a manufacturer's or supplier's letter of guaranty or a third party authority's certification that the compound is safe according to some established safety criteria and, as proposed for use will have no deleterious effects on meat and poultry being processed. A manufacturer's or supplier's letter of guaranty should contain the following information: 1) name and address of the supplier; 2) brand name, code name, or other designation; 3) statement of safety and efficacy; 4) statement of compliance with U.S. Federal regulations (if applicable); 5) use directions; and 6) signature of an authorized firm representative.

FSIS does not object to the proposed use of BioShield 75 to treat food contact and non-food contact materials in meat and poultry establishments. Those establishments, who use BioShield 75, are to be supplied with following information:

- Information to support the safety of the product when in contact with BioShield 75 solution in food processing environments.
- Copy of EPS's registration Certificate

If you have any further questions, please contact Dr. Kris Murthy at (202) 690-5646 or kris.murthy@fsis.usda.gov.

Sincerely,

A handwritten signature in black ink that reads "Patricia S. Schwartz". The signature is written in a cursive, flowing style.

Patricia S. Schwartz, Ph.D.
Acting Director New Technology Staff
Office of Policy, Program, and Employee Development