# MED-FIT SYSTEMS, INC.

## Presents *mPact* Antimicrobial Products

# The Problem…

***Drug-resistant pathogens are a growing threat***

Each year, over ***100,000 people die*** as a result of an infection, and that figure is growing at an alarming rate. More than 70% of the bacteria that cause these infections are resistant to at least one of the drugs most commonly used to treat them. Persons infected with drug-resistant organisms are more likely to have longer hospital stays and require treatment with second- or third-choice drugs that may be less effective, more toxic, and/or more expensive.*

*Centers for Disease Control and Prevention. *Campaign to Prevent Antimicobial Resistance in Healthcare Settings: Why a Campaign? Atlanta, GA: Centers for Disease Control and Prevention; 2001. Available atwww,cdc,gov/drugresistance/healthcare/problem.htm.*

# THE MRSA PROBLEM …

**“MRSA infections are becoming more and more prevalent. According to CDC data, the proportion of infections that are antimicrobial-resistant has been growing. In 1974, MRSA infections accounted for two percent of the total number of staph infections; in 1995 it was 22 percent; and in 2004 it was 63 percent.”[6]**

[6]“MRSA: Methicillin-resistant Staphylococcus aureus”Centers for Disease Control and Prevention

# WHAT IS AT THE HEART OF AN INFECTION?

Infections are defined as an invasion by, and multiplication of, microorganisms in a bodily part or tissue, which produces tissue injury through a variety of cellular or toxic mechanisms. These Microorganisms (microbes) are a life form of microscopic size. Typical types of these organisms fall into four general groups:

- Bacteria
- Fungi (Mold & Mildew)
- Algae
- Yeast

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# Why are we seeing such a rise in microbial infections?

- Current mode of infection control
- Chemical Leaching*
- Develops immunities/resistance (superbugs)

* L**eaching**: Uses a heavy metal poison that the microorganism absorbs over time in order to die, migrates off the treated surface, and wears out over time.

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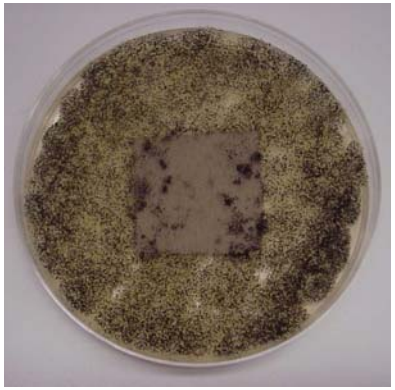
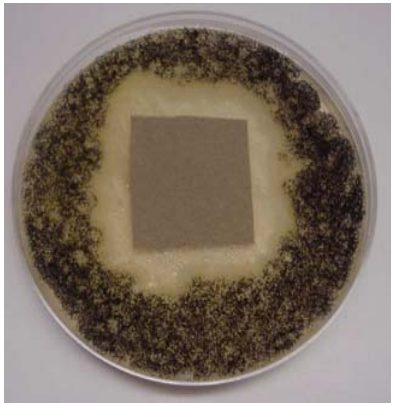
# LEACHING ANTIMICROBIALS

*These products work via a poisoning process.*

- Material gets used up or deteriorates over a period of time
- The cell chemically consumes the poison and eventually dies
- Creates a temporary zone of inhibition
- Environment for “super bugs”



Sample 1: Untreated microorganism on center plate



Sample 2: Obvious Zone of Inhibition (ZOI) seen from a leaching technology

# HOW DO WE KILL MICROBES WITHOUT CREATING "SUPERBUGS"?

## *Introducing mPact with ÆGIS Technology*

- Chemistry developed by Dow Corning in Midland, MI
- Technology developed and commercialized by ÆGIS Environmental Management
- Can be used on any organic or inorganic surface
- Mode of action – Bonded*/Physical not Chemical

**Bonded: Permanently bonds itself to the treated surface; kills by a physio-mechanical process; is not a poison; does not leach or off gas; does not wear out.*

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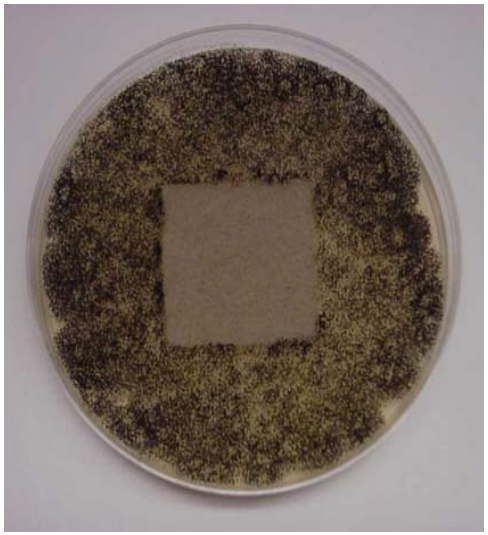
# BONDING ANTIMICROBIALS

*Bonds to the treated surface allowing physical control of the microbes on contact.*

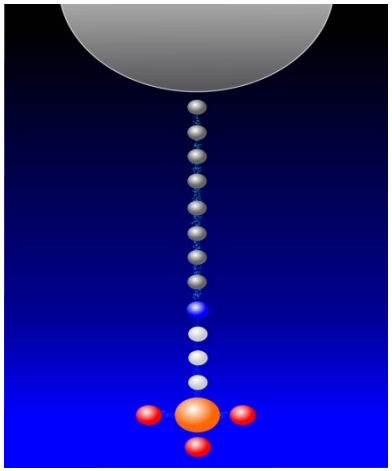
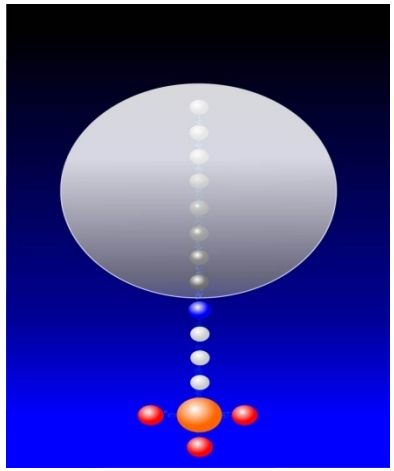
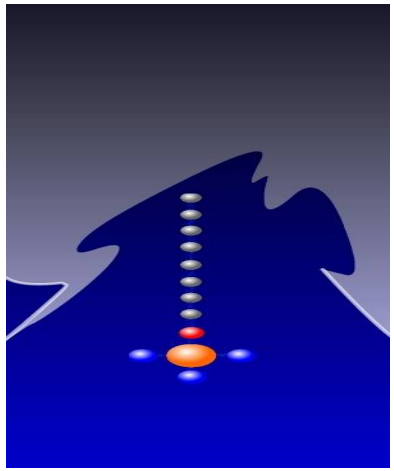
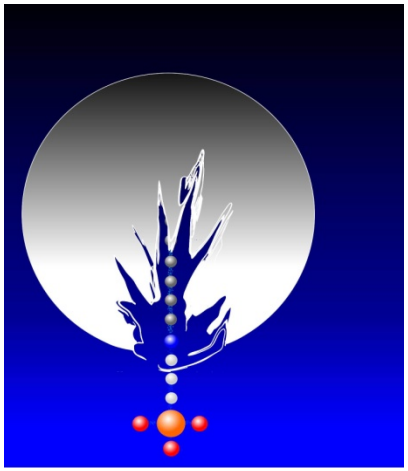
- Is not consumed by the microorganism
- Lasts for as long as the surface remains intact
- Physically “punctures” the cell membrane
- Does not off gas or leach or bleed into the environment
- Does not cause adaptive microorganisms



Sample treated with ÆGIS Antimicrobial Shield. No ZOI seen leaching outside of the treated plate.

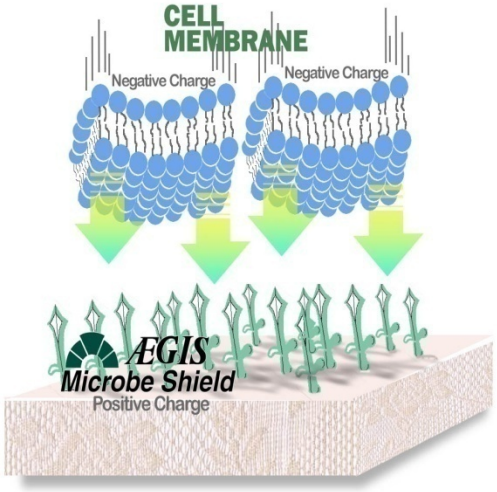
# HOW THE AEGIS TECHNOLOGY WORKS

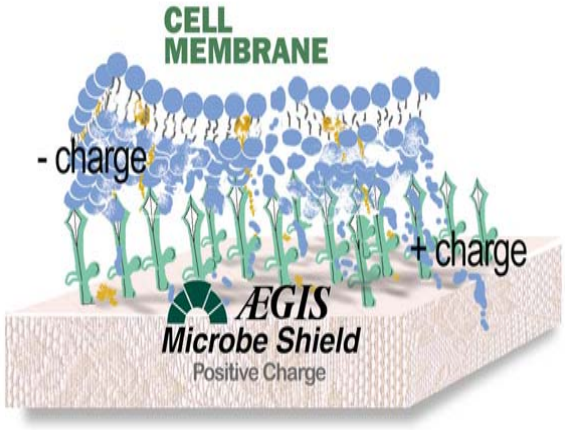
**A closer look at the AEGIS technology will show how the silane quaternary ammonium salt chemical chain, exclusive to AEGIS, acts like a “spike” attached to the surface onto which it was applied. This spike contains a nitrogen molecule that produces a positive electrical charge. Single cell microorganisms are drawn to the charge. When the spike and cell wall come into contact, the spike punctures the cellular membrane, then effectively electrocutes what’s left of the offending microbe.**

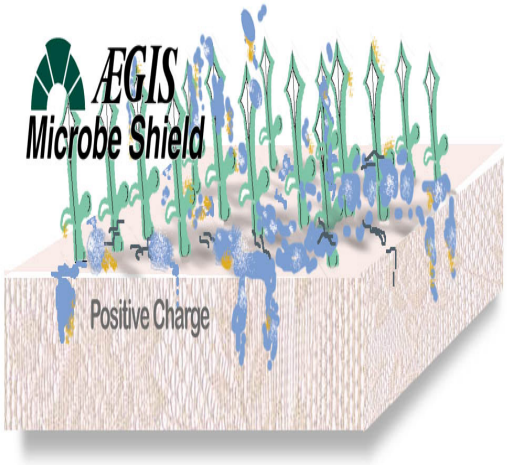





# AEGIS Microbe Shield - A BED OF SPIKES PROTECTING THE SURFACE FROM MICROBIAL CONTAMINATION.

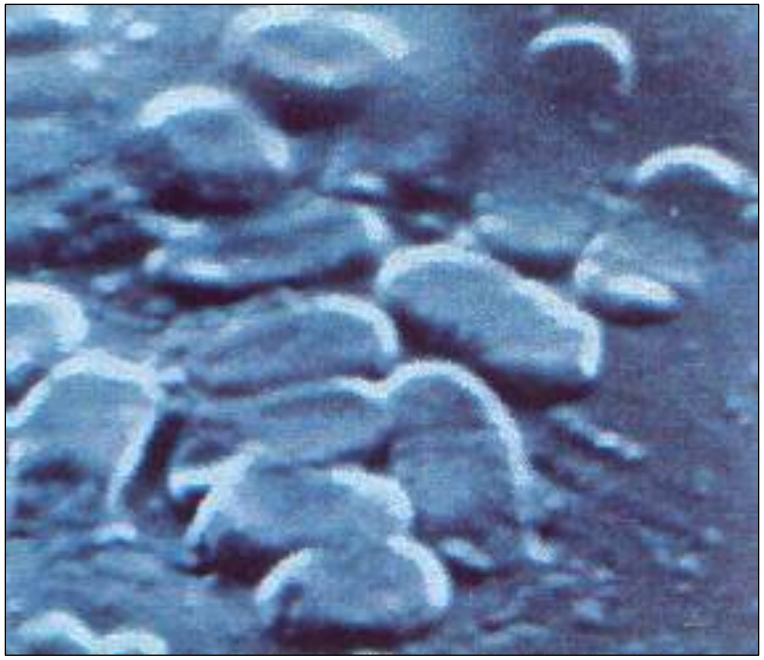
***The surface/product is treated with the AEGIS Microbe Shield which permanently bonds to that target using a patented chemical formula. It is microscopic, does not have an odor, is colorless, and does not leach or bleed off the surface. It dries to the touch within minutes. AEGIS remains active for as long as that surface remains intact.***



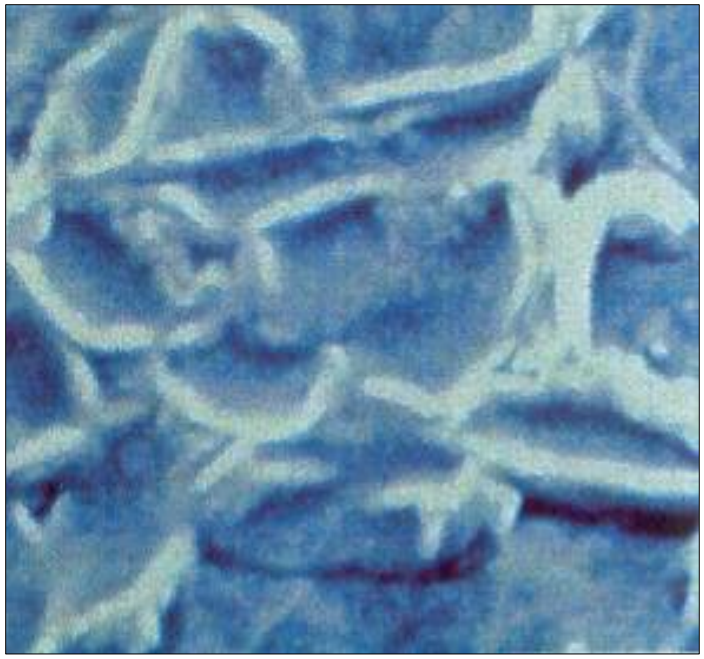



# Illustration of E-COLI cell rupture from treatment with the ÆGIS Microbe Shield®.



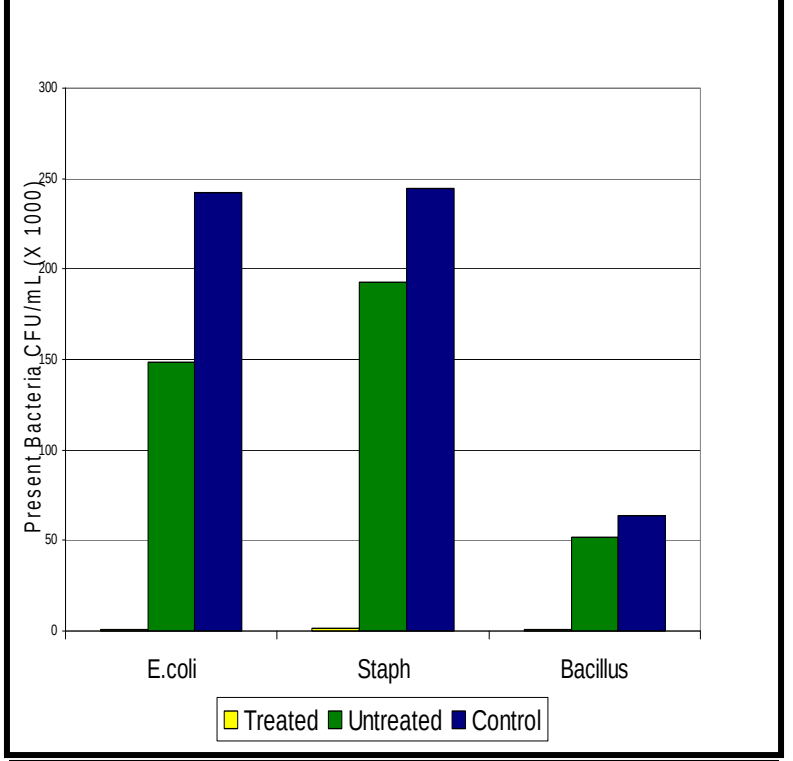
**Untreated Fabric**



**Fabric treated with the ÆGIS Microbe Shield**

# NASA Study Results

It was discovered that the antimicrobial agent killed the three species of bacteria that were tested, The three types of bacteria were *Escherichia coli, Staphylococcus epidermidis*, and *Bacillus subtilus*




Graph 1: Comparison of all pure cultures used with and without the antimicrobial agent.

## Acknowledgements

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# mPact Products

***mPale*** is EPA registered (EPA Reg. No. 83129-1) and extremely effective against mold, fungi, algae and most harmful bacteria. The beauty of this technology is that it controls microorganisms without chemical poisons. Instead, it relies on electrically charged particles that have a unique spiked molecular structure. In nature, most microbes carry the opposite electrical charge---so they are physically and irresistibly drawn into contact with *mPale's* "sword-like" molecules. The physical contact punctures the cell walls of the offending microbes. These molecular spikes are undetectable to human touch, but more than a match for single-cell organisms.