The heavy use of antibiotics has led to treatment-resistant bacterial strains, such as Methacillin-resistant Staphylococcus aureus (MRSA) and Acinetobacter baumannii (MDRAB) (see NYT 2/27/10, B1). Bacterial infections have become increasingly virulent not only in healthcare facilities, but in general activity. Bioterrorism threat exacerbates the problem.

We have developed novel antimicrobial materials derived from quaternary ammonium salts ("quats"), with associated proprietary processes for applying and embedding these quats in working surfaces of equipment, devices, and fabrics. By rendering the surfaces themselves antibacterial, our solution creates a durable and effective antimicrobial environment for medical and general use. These quats are broad-spectrum, non-toxic, non-metabolic, and non-specific, with low potential for drug resistant mutation.

This technology is effective against a wide variety of dangerous gram positive and negative bacterial species: includes the MSRA and likely MDRAB “Iraqibacter” species, Pseudomonas aeruginosa, C. difficile, E. coli, and Salmonella. It is also effective against mildew and yeast, such as black mold, Candida albicans, ringworm, and Athlete’s foot; and effective against Bacillus anthracis spores (Anthrax). Can be applied to fabrics and hard surfaces and in fluids (paints, cosmetics etc.).

High effective. Low cost. Readily available chemicals. Promising antiviral activity. It is also metal-free and environmentally benign.

We have successfully modified various types of surfaces, including fabrics (natural and synthetic, such as cotton, silk, wool, polyester, and blends with nylon), plastics (e.g. PVC blends), glass, wood (replacing pressure-treated wood for construction purposes, also to repel termites), and paints (latex finishes for wide variety of surfaces, including metals).

Enormous market, including but not limited to: $52 billion of world active sportswear; $86 billion of world athletic footwear; $1.2 billion of disinfectant and antimicrobial chemical; $2.3 billion disposable paper products; 1.9 billion of wipes; $7.5 billion of diapers; $4.4 billion of cosmetic products; 2.3 billion of deodorant products; $7.1 billion of skin care products; $144.5 billion of packaging; $5.8 billion of frozen food packaging; $9.8 billion of filters; $19.7 billion of US paint & coating market; $47.1 billion of US disposable medical supplies demand; $4.8 billion of US sterile medical packaging demand; $6.9 billion of baby products; and $300 billion of coated fabric.

Dr Engel and his team + two outside experts from garment industry.