

NANOBYTE
Nanomedical Commercial Products
for Force Health Protection

For The

Defense Logistics Enterprise Services
Program (DLESP)

February 13, 2007

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In support of
Contract INM0405BP41582
Order Number 0405DO42525

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Nanomaterial Commercial Products for Force Health Protection

Introduction:

Force Health Protection is a critical component of combat and logistics operations. Medical technology and practices require continual modernization to insure the health and safety of the warfighter. Nanotechnology is enabling a wide range of medical products that can provide new and enhanced benefits. Included within this memorandum are two examples of nanomaterial commercial products that warrant consideration for evaluation.

Commercial Products:

- Emergency Respirator Monitor (Nanomix)
- Acticoat™ Antimicrobial Wound Dressing (Smith & Nephew)

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Emergency Respiratory Monitor

<http://www.nano.com/Products-Respiratory.html>

Description: Disposable carbon nanotube capnography sensor
Application Suitability: Emergency Intubation, Patient Monitoring
Vendor: Nanomix, Inc.
FDA Approval Status: FDA evaluation in progress; Market launch FY07 Q3-4

Problem: Current technology includes optical spectroscopy and colorimetric litmus paper. Spectroscopy requires expensive equipment with a power source that is difficult to maintain. Litmus paper provides a crude qualitative measurement. Both only provide spot-checking capabilities. Neither is appropriate for emergency field medicine.

Discussion: Nanomix's capnography sensor provides a sensitive, cost-effective method for continual monitoring of CO₂ in breath.

Projected Specifications:

- Concentration Range: 0-10% CO₂
- Resolution: 1% CO₂
- Response Time: 500 ms
- Use Life: 6 hrs
- Shelf Life: 1 yr
- Dead Space: <10 cc
- Weight: <30 g
- Warm up time: Instant-on
- Expected retail price is \$19/ea

Cost:

Notes: Field demonstration available upon request

Product Image:



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Acticoat™ Antimicrobial Wound Dressing

<http://wound.smith-nephew.com/us/Standard.asp?NodeId=2867>

Description: Product line of various multilayer polymer bandages that incorporate silver nanoparticles for antimicrobial and anti-inflammatory properties

Application Suitability: Burn treatment, Long-term/chronic wound management, Standard wound dressing

Vendor: Smith & Nephew

FDA Approval Status: Approved

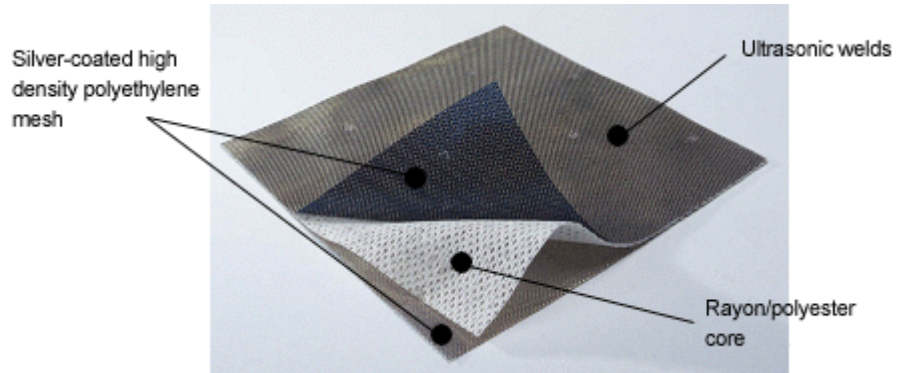
Problem: Sustained protection of wounds from external bacterial contamination is a serious issue for injured warfighters.

Properties:

- Fast-acting, long-lasting bacterial protection
- Demonstrated effective against gram-negative bacteria, gram-positive bacteria, antibiotic-resistant bacteria, yeasts and molds.
- Dressings can be cut to any desired shape and size.
- Sustained release for 3-7 days (product dependent) from a single dressing

Related Products: Additional wound dressings that utilize silver nanoparticles are commercially available and should be considered as alternatives. Examples include SilvaSorb® Wound Dressing (AcryMed, Inc.) and Algicell™ Wound Dressing (Derma Sciences, Inc.).

Product Image:



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