Medical Textiles & Apparel
A Dynamic Niche with Long-term U.S. Export Potential?”

Laura V. Rodriguez
Chemicals and Textiles Division
Office of Industries
March 22, 2012
Today’s Discussion

- Significance of this niche and factors boosting global demand
- Principal products and applications
- Manufacturing processes and factors
- Recent innovations
- Trade trends-key products and markets, 2007-11
- Case studies of U.S. exporters
- Export strategies for long-term success
Significance of this sector

* Supports healthcare
* Growing niche - accounts for 20 percent of technical textiles
* Domestic production
* Recession resistant
* U.S. competitive advantages
Growing Global Demand for Medical Textiles & Apparel

- Population growth and aging populations
- Rising living standards
- Construction of new medical facilities
- Medical tourism
- High hospital infection rates
- Medical devices requiring textiles components
Research Challenges

- Limited and unreliable export data
- Confidentiality - privately held firms
- Intellectual property concerns
Nonwovens Comprise 75% of Medical Textiles
Low to High Tech Products

- Wipes, wadding, gauze, wound dressings
- Surgical drapes & towels
- Hospital surgical scrubs, masks, and lab coats
- Antimicrobial yarns & medical fabrics
- Stump socks, prosthetic socks, diabetic socks
- Compression hosiery (for varicose veins, etc.)
Low to High Tech Products-cont’d

- Smart apparel –embedded devices/sensors to monitor heartbeat and other vital signs
- Implantable textiles -sterile surgical catgut for sutures; vascular grafts, artificial veins
- Textiles with elastomeric yarn used in maternity belts, neck wraps, surgical bras worn outside the body
- Textiles used in heart valves, kidneys, artificial joints/bones/ligaments/implants (some are X rated!)
Cost Factors

- Research and development
- Raw materials
- Fabrics
- Equipment
- Chemicals and their application
- Testing
- Waste disposal
Production Process

- Polymers
  - Fibers
    - Yarns
      - Woven
      - Knitted
      - Braided
      - Non-Woven

- Fabrics
  - Impregnating, coating, laminating, finishing
- Medical Textiles & Apparel
  - Medical properties embedded or sprayed onto product
Essential Properties

- Lightness – Strength – Elasticity – Softness
- Fluid resistant – or absorbent
- Biodegradable – Biocompatible – Bioreceptive
- High barrier of protection & permeability
- Anti-microbial and anti-bacterial
- Electrical or thermal conductivity
- Non-allergenic, non-toxic, non-carcinogenic, non-irritant; durable (medical apparel)
- Comfortable and drapable
Innovations

- New uses for old, natural fibers like silk
- New fiber technology – ex: “Qmilch” - new sustainable textile fiber that when made into fabric – soothing to people with skin allergies (German)
- Self-cleaning cotton fabric kills bacteria and breaks down toxic chemicals when exposed to light–developed by UC Davis
- Antimicrobial technology added to apparel physically ruptures cells without poison
- Pillowcases that eliminate wrinkles!
Medical Textiles & Apparel Exports

* 3005.90 – wadding, gauze, bandages
* 3006.10 – sterile surgical catgut
* 6115.10 – compression hosiery
* 6307.90 – surgical drapes and towels
* 9021.90 – appliances worn or carried on the body
Export Challenges

* Intellectual property protection concerns – pending patent issues
* High foreign tariffs
* Non-tariff barriers
* Lower-cost competition
Export Challenges cont’d

- Initial capital investment
- Economies of scale
- Delays/Licensing-patent requirements
- Exchange rates – strong dollar
- Mindset of U.S. manufacturers
- FTAs
Export Opportunities

* FTAs
* Growing middle class in foreign markets
* DOC assistance
* EXIM bank export credit terms
* Case Studies

Source: Import data based on USITC DataWeb/UDOC. Export data estimated by Commission staff based on USITC/DataWeb/UDOC.
U.S. Exports, of Medical Textiles By Commodity Group - 2011

Source: USITC DataWeb/USDOC.
Top U.S. Export Markets for Medical Textiles - 2011

Source: USITC DataWeb/USDOC.
Essential for Long-Term Export Success

- Take advantage of existing export help
- Engage in ongoing investment in R & D
- Emphasize branding
- Diversify export markets and target markets with expanding medical infrastructure
- Continually develop innovative products