



Army Southeast Region



Military Mattresses: Cradle to Cradle

JSEM

23 Mar 06



Mission Support





The Problem



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SOUTHEAST REGION, INSTALLATION MANAGEMENT AGENCY



Overview

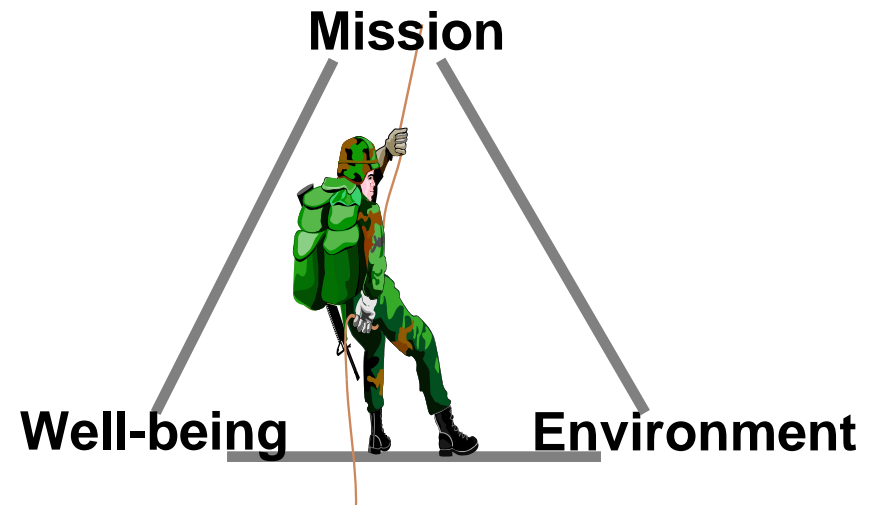
- Organization
- Problem
- Solutions
 - Procuring Better Mattresses for the Future
 - Recycling “Legacy” Mattresses
- Related Initiatives
- Next Steps



Army Installation Management Agency (IMA)

IMA Mission

- Manage installations and improve infrastructure to
 - support readiness
 - enable well-being
 - preserve the environment

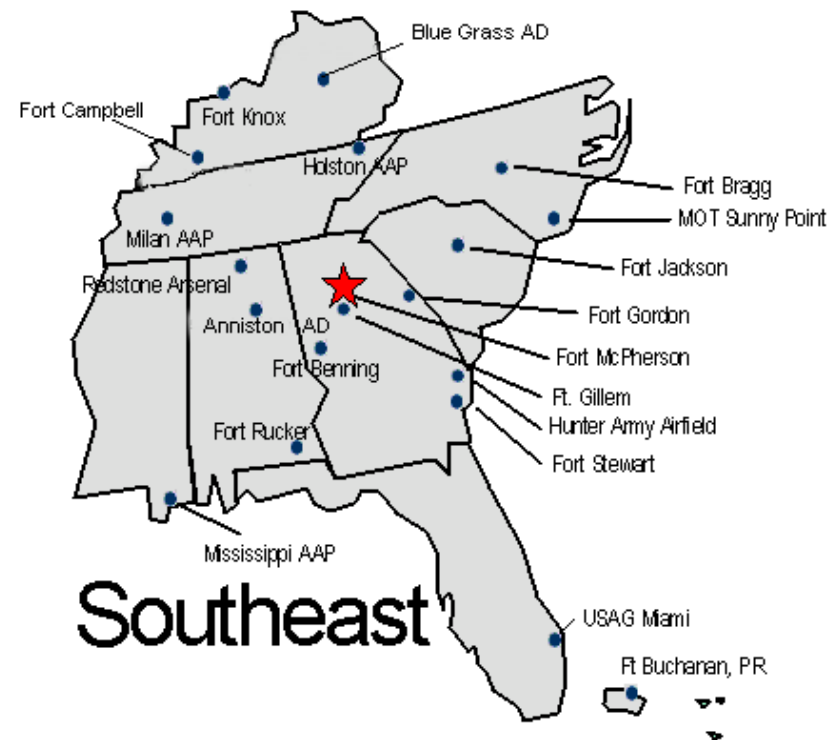


www.ima.army.mil/southeast



IMA-Southeast

- Southeast (SERO)
 - 8 states and Puerto Rico
 - 12 installations/1.1M acres
 - 1.5M soldiers, civilians, families
 - 34M APF meals
 - 28,000 buildings
- SERO Waste Stats
 - Divert 40% of 815K tons in FY05
 - \$3.8M to landfill 485K tons
 - \$4.1M from recycling 330K tons
 - Closed 22 of 23 MSW landfills
 - DoD diversion goals: MSW 40%, C&D 50%
 - Forts Bragg, Stewart, Benning: 100% in 25 years

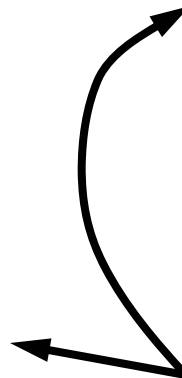




SERO Tons Recycled FY05

WOOD	77,764.25
C&D OTHER	69,527.16
CONCRETE	65,363.58
ASPHALT	50,134.78
METAL	36,331.77
CARDBOARD	11,736.22
SOIL	8,134.32
PAPER	4,046.02
P.O.L.	2,877.41
OTHER	1,816.66
TIRES	1,141.97
GLASS	470.29
PLASTIC	206.18
BATTERIES	161.59

ANTIFREEZE	131.03
FOOD (Grease/Fat/Bones)	115.84
SOLVENT	100.90
E-WASTE	53.70
APPLIANCES	42.22
LAMPS	23.48
COOKING OIL	22.76
TEXTILES	13.72
TONER CART.	9.85
PAINT	6.00
MATTRESSES (NERO 06)	2.40
INSULATION	1.21
TRANSFORMERS	0.86
THERMOSTATS	0.03





Disposal Costs Rising Fast

- Trends
 - Total landfill bans
 - Quantity caps (>64 per week)
 - Landfill surcharges (\$2 to \$15 per mattress or \$80 to \$600 per ton)
 - Vendor return fees (usually 15%)
- Reasons are mostly economic, not environmental
 - Very low revenue per cubic yard
 - Tipping fees rising, landfills closing
 - Poor compaction; equipment jams
 - Shortened landfill life
- SERO installation impacts
 - Fort Jackson SC – Ban, then cap
 - Fort Gordon GA – C&D nearly full



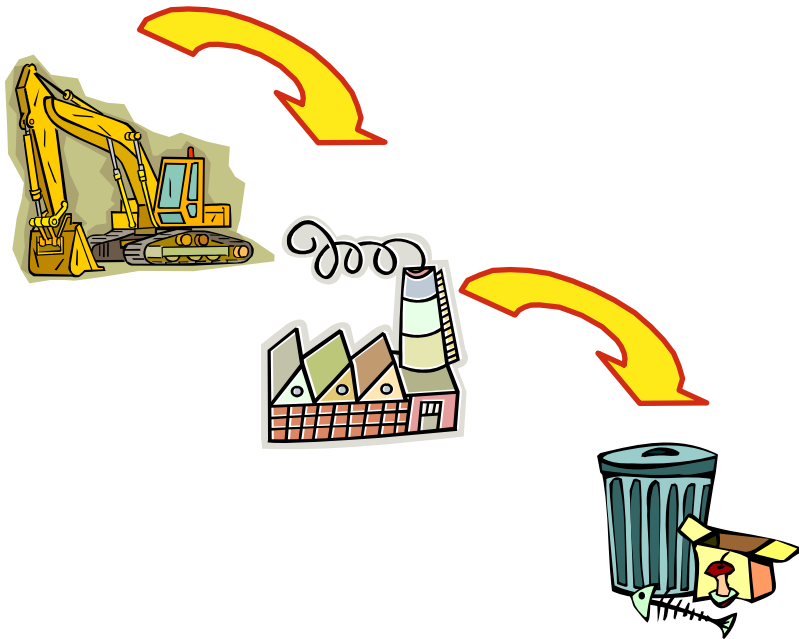
Increasing:

- Fire/health risks
- Storage costs
- Disposal costs



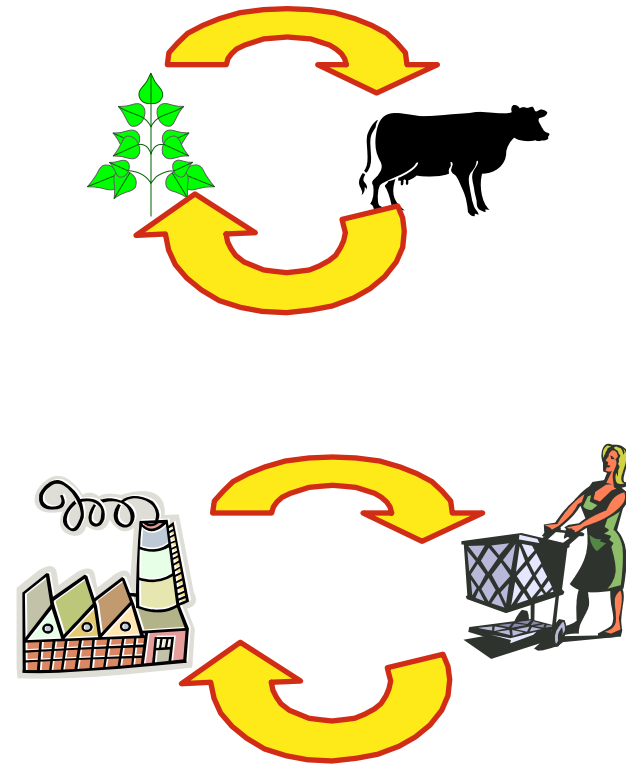
Solution

Take-Make-Waste



6% product → 94% waste

Waste = Food





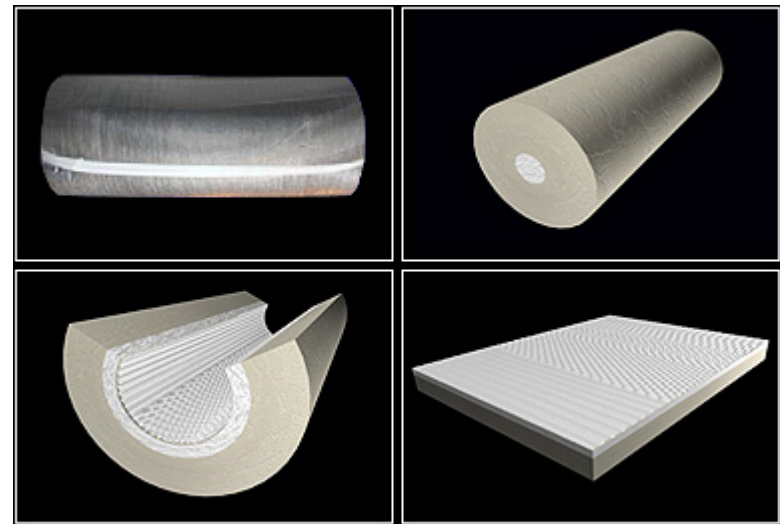
Looking Upstream: Design

- International Sleep Products Association (ISPA)
 - Mattress Disposal Task Force (MDTF) formed
 - 40 million mattresses sold annually
 - What to do with old mattress is key barrier to buying a new one
 - Renovators take 30% of market share
 - Standard designs make recycling difficult and expensive
- Jun 05 First Meeting
 - SERO, ISPA, Ft Jackson, Logistics, Contracting, Air Force, GreenBlue, NDCEE, Ga Tech, P2AD
 - Framed and validated issues
 - DoD volume is ½ of 1% of entire US market
 - 60% of all US mattresses made in SERO
 - Design can't change without customer demand



Procurement Solution?

- Memory foam provides comfort
- Ships/stores at 60% of normal size
- Stores w/o HVAC and doesn't mold
- Waterproof cover option
- **Mfr takes back for recycling**
- Field test soonest
- **10 yrs to see SW benefit**





“Legacy” Mattresses

- Military Volume
 - Ft Jackson: 3,000 to 7,000/yr
 - SERO: <50,000/yr
 - DoD: >200,000/yr
- Recycling costs are driven by facility location: only 4 sites nation-wide
 - For-profit, hi-volume (1,000/day)
 - Conigliaro MA
 - \$19ea or \$605/ton incl trans SC to MA
 - MattAmerica MD
 - \$10ea or \$333/ton incl trans SC to MD
 - Non-profit, low-volume (3,000/yr)
 - St Vincent de Paul OR
 - Goodwill MN

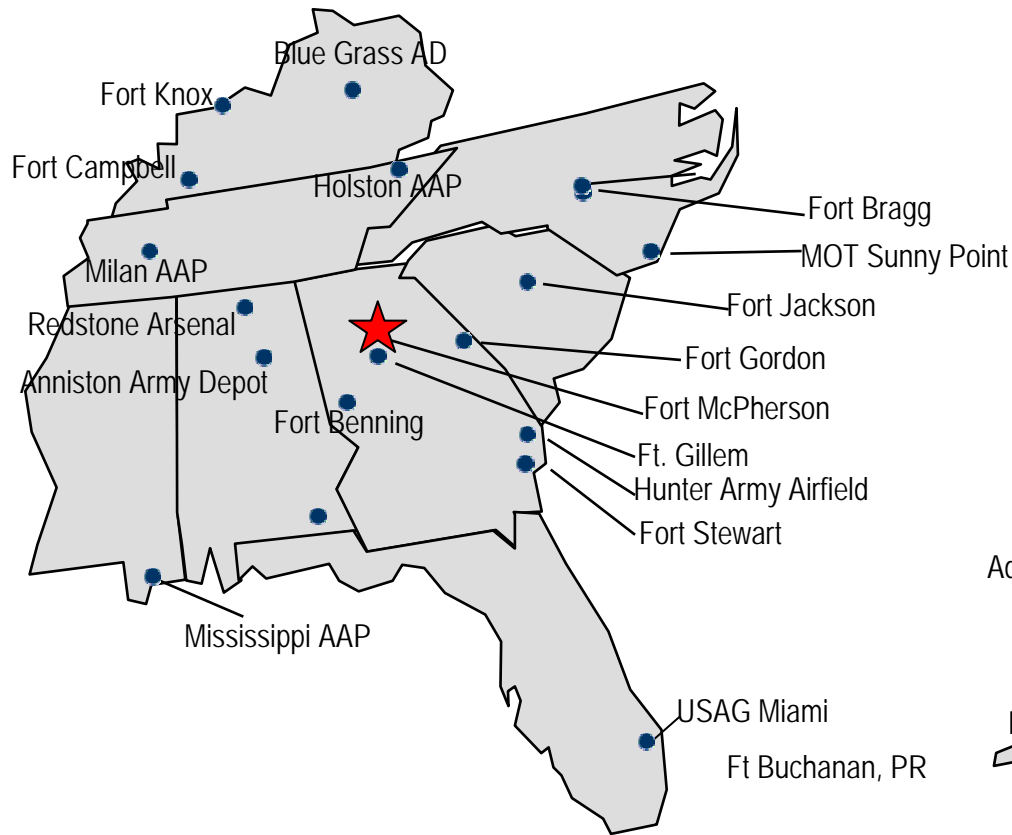




Location, Location, Location

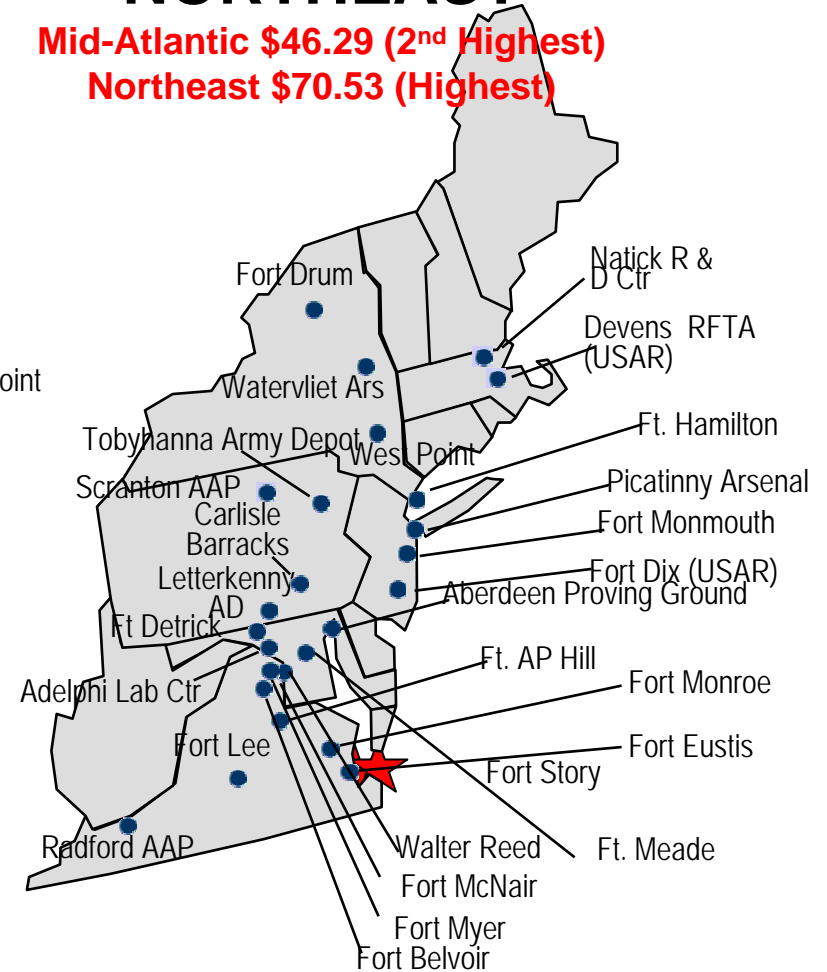
SOUTHEAST

Southeast \$30.97 (Lowest in US)



NORTHEAST

**Mid-Atlantic \$46.29 (2nd Highest)
Northeast \$70.53 (Highest)**



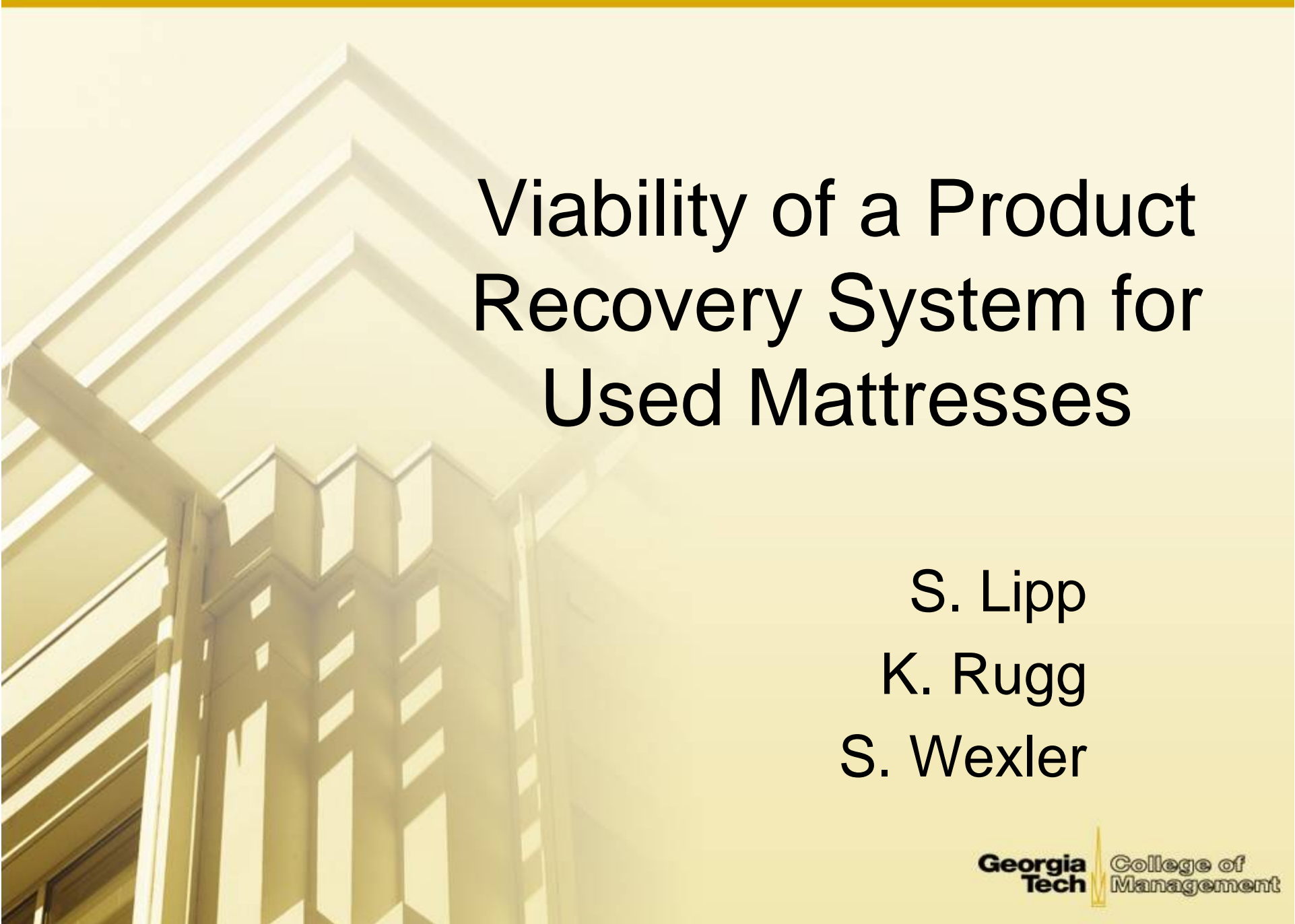
Source: National Solid Wastes Management Association

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Options

- Status quo
 - Costs are rising sharply
- Re-design or take-back
 - 10 years to see SW benefit
- Renovation
 - Risk ISPA partnership
- In-house
 - ROI/thruput suboptimal
- Partner with industry
 - Security/access issues
- Region-wide contract
 - Organizational challenge
- Multi-installation contracts
 - Insufficient initial volume
- Partner with landfills
 - Volume, documentation
- Mobile shredding
 - Multiple partnerships
- Leasing
 - New concept to all parties
- Keep looking ...



Viability of a Product Recovery System for Used Mattresses

S. Lipp

K. Rugg

S. Wexler

Ga Tech Study

- “Free”
- Multi-Disciplinary
 - Faculty and graduate students from College of Management (lead), with MBA, Engineering (Mechanical, Textile, Industrial & Systems), Public Policy, and Urban & Regional Planning
- Industry Analyses
 - Cost comparisons and benefit analyses (for users and mfrs)
 - Existing state legislation (refurbish/recycle)
 - Deposit systems (lessons from tires, bottles)
 - Leasing (lessons from carpet)
- Results
 - Early May 2006
 - Inputs to future ESTCP proposal?



Sandhills Furniture Initiative



- Problem
 - 20,000 pieces of furniture per year
 - \$12 million to landfill it
 - Installation goal: Zero solid waste by 2027
 - Furniture employment in NC down 20% since 1990
- Partnership
 - Fort Bragg, Sustainable Sandhills, NC State Industrial Extension Service, Manufacturers and Service Providers
- Benefits
 - Eliminates Fort Bragg's furniture waste
 - Creates new, local market and new sustainable industries
 - Leverages the buying power of the military
 - A model for other installations



And Beyond ...

- Fort Benning
 - food processing (2,700 emp.)
 - textiles (2,500 emp.)
 - electrical equipment/appliances (2,200 emp.)
 - transportation equipment (1,200 emp.)
 - metalworking (1,000 emp.)
- Fort Gordon
 - transportation equipment (2,600 emp.)
 - metalworking (2,100 emp.)
 - chemicals (2,000 emp.)
 - food processing (2,000 emp.)
 - wood products (1,700 emp.)
- Fort Stewart
 - paper (3,100 emp.)
 - chemicals (1,300 emp.)
 - food processing (1,000 emp.)
 - minerals mining (1,000 emp.)
 - wood products (700 emp.)




Next Steps

- Mattresses
 - Partnerships
 - Field test foam products
 - Recycling facility siting
 - Mobile shredding
 - Develop ESTCP proposal
 - Develop policy
 - Code of conduct
 - Go purple
 - Volume procurement
 - Volume recycling
- Other
 - Furniture successes
 - Local industry pairings




How we won the war... How we win the war.



**WASTE PAPER
MAKES CONTAINERS
FOR BLOOD PLASMA**

SAVE IT... AND HELP
Save a life



**SAVE
A CORN & A MILE**
U. S. VICTORY WASTE PAPER CAMPAIGN

**Half the Metal in
every ship
every tank
every gun
is SCRAP!**



**THROW YOUR SCRAP
INTO THE FIGHT!**

**Housewives!
SAVE
WASTE
FATS
FOR
EXPLOSIVES!**



Take them to your
meat dealer



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