

Business Case for P2 Projects: ***Case Study for Textile Wet Processing Facilities***

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Presentation Outline



- Case Study: Wet processing textile mill
- Possible P2 Options for P2 Planning Notice
- Traditional engineering costing approach
- Identifying hidden sources of savings
- Additional issues for consideration
- Summary of business case issues for presentation to senior management



Mill Frontage on Merrimack River, Lowell, Mass.



Case Study: Wet processing textile mill



- Activity: Conducts knitting with wet processes
- Water consumption: 2,000m³/d
- Effluent Discharge: to Municipal WWTP
- Production: 7,100 kg/d (medium sized plant)
- Affected by P2 Planning Notice

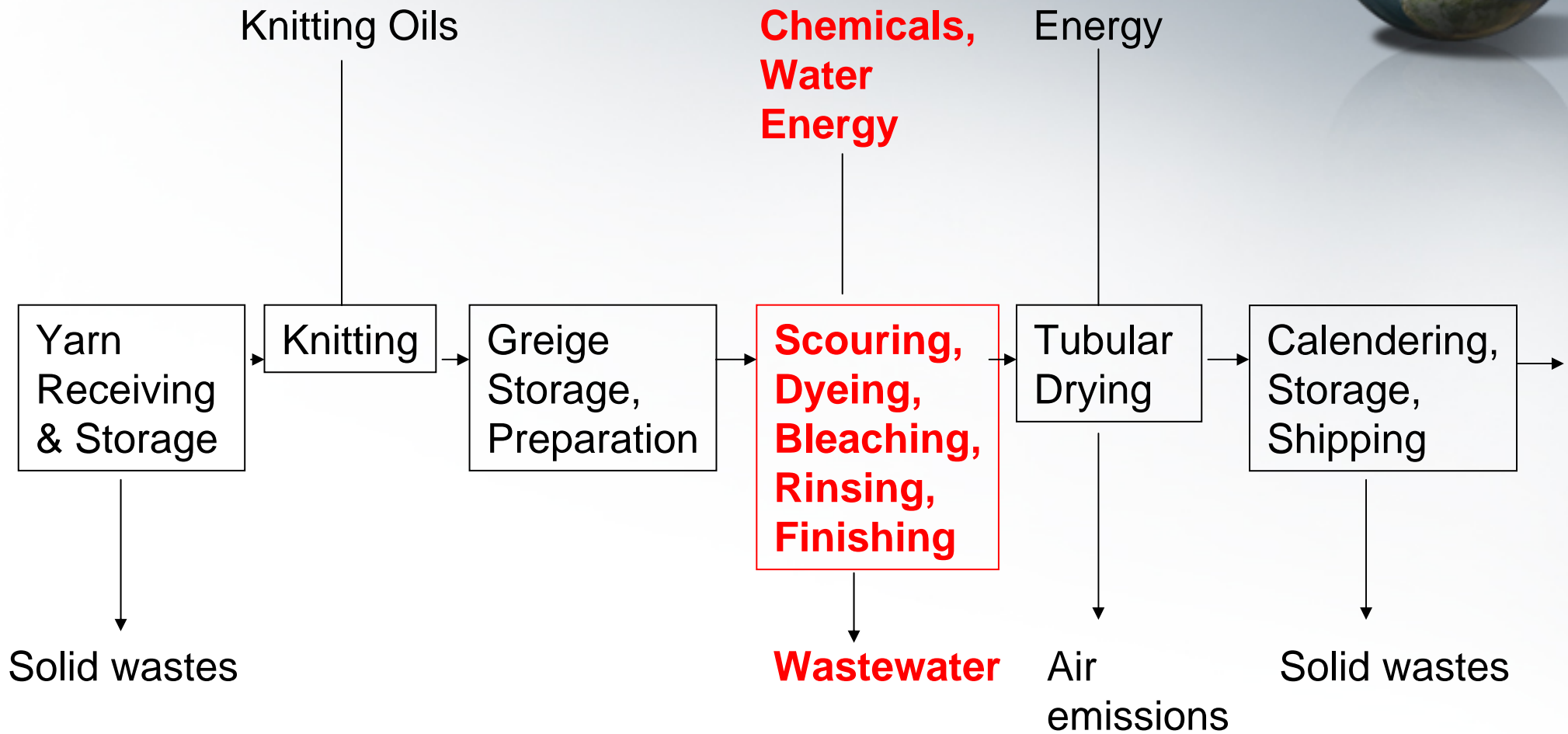


Figure 1: Process flow diagram for textile mill with wet processes

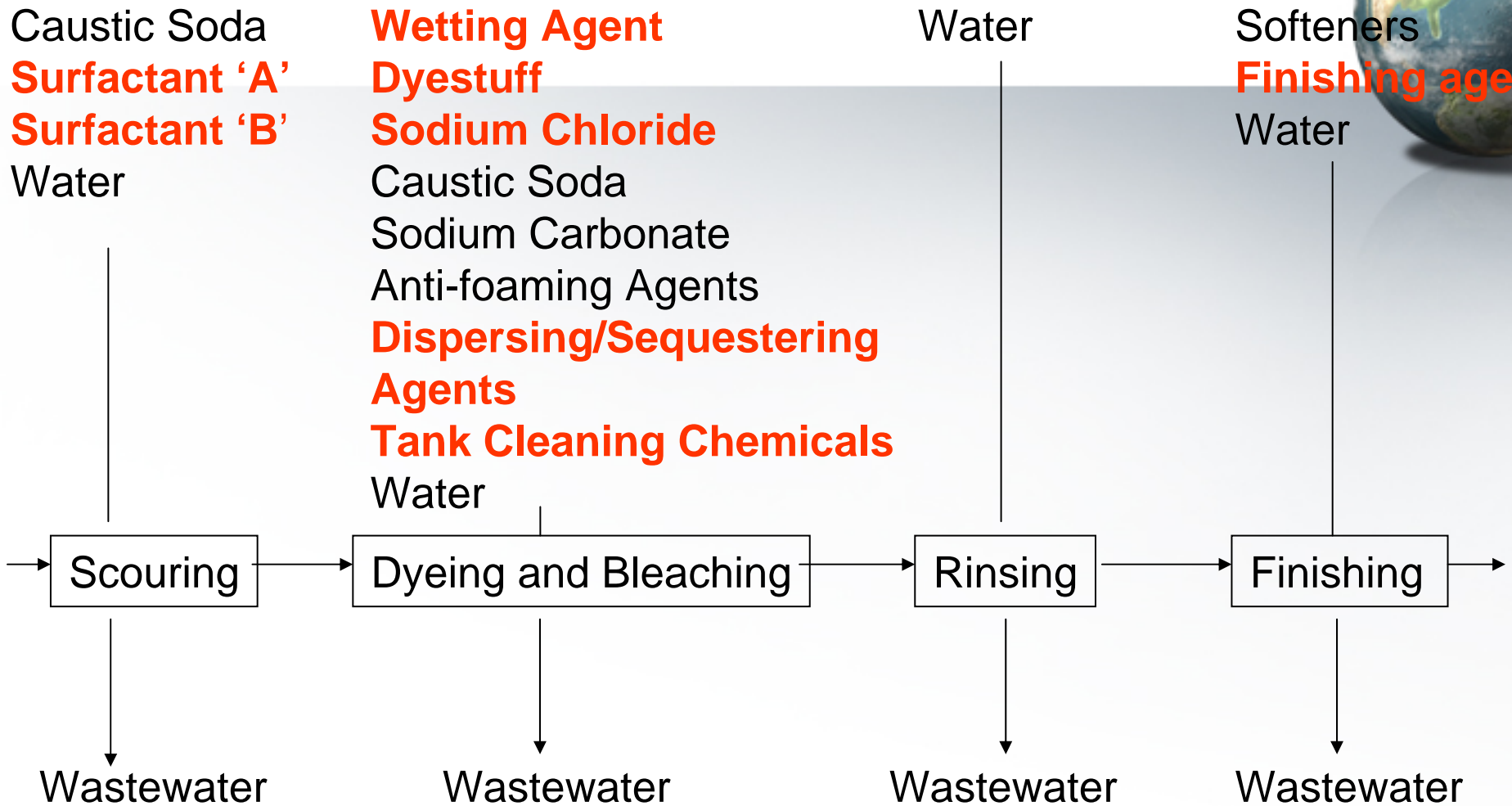


Figure 2: Process flow diagram for wet processes

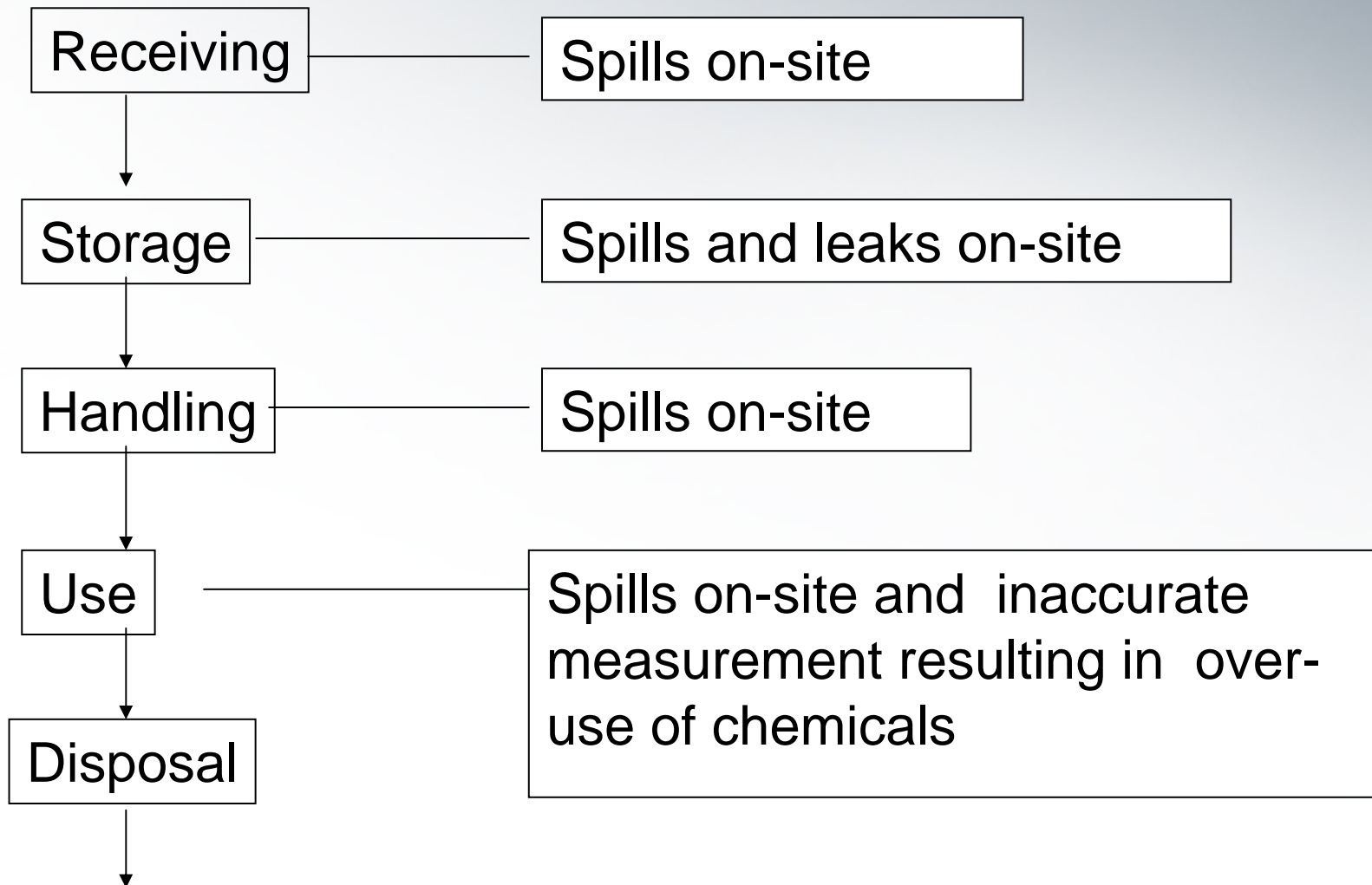


Figure 3: Material flow diagram for textile mill with wet processes

Baseline Review: TMEs



TMEs tested with prescribed toxicity test:

- RMO = 13% IC_{50} , by 2009
- Current TMEs tested = 8% IC_{50}
- Current TMEs does not meet RMO

Baseline Review: NP/NPEs



- Evaluated NP/NPEs used in baseline year (1998) and NP/NPEs current year (2004):
- RMO = 97% reduction by 2009 wrt baseline year
 - Identified 5 products with NP/NPEs currently used
 - Need to reduce NP/NPEs use by 1,207 kg by 2009

Possible Root Causes of TMEs Toxicity



1. Products with NP/NPEs

- Surfactant 'A',
- Surfactant 'B',
- Wetting agents,
- Tank cleaning chemicals
- Finishing agents

Possible Root Causes of TMEs Toxicity



2. Chemicals with Significant Toxicity:

- Sodium Chloride
 - High salt use
 - needed for dyes to work
- Dispersing/Sequestering Agents
 - Suspected toxicities of agents
- Dyes
 - Metal content of some dyes provide specific colours:
 - Colour specs at customer's request

Possible Root Causes of TMEs Toxicity



3. Processes which Contribute to Toxicity

- Operating practices in ‘wet processes’
 - wasted chemicals from
 - lack of process optimization and
 - poor maintenance of equipment
- Manual material management
 - spills and leaks
 - overuse of liquid chemicals from manual measuring and dispensing

Possible Preliminary P2 Measure



1. Seek alternatives for NP/NPEs and OP/OPEs
2. Optimization of wet process operations
3. Automate dispensing of liquid chemicals

Economics



1. Use of alternatives to NP/NPEs and OP/OPEs

- 25% higher costs: \$7,500

Economics



2. Cost of process optimization:

– 0.25 FTE: \$10,000

Economics



3. Cost of automatic liquid dispensing unit

- Total costs of project: \$266,000
 - Labour savings: \$57,000
 - Chemical savings: \$63,000
 - Annual operating costs: (elect/ maint) \$7,000
- Payback: 2.4 years

Economics: Identifying hidden sources of savings



Reduce sewer use surcharges	\$30,000
Reduced chemical purchase costs due to purchase in larger volumes (totes)	\$16,000
Reduced exposure to workers & reduced sick days	\$2,000
Reduced # of products purchased that did the same job and reduced inventory costs	\$2,000
Savings on purchase of spill clean-up chemicals and hazardous waste disposal costs	\$1,000

Revised Costs



Project 1 +Project 2 +Project 3 = 1.7 years payback

Additional issues for consideration



- **Regulatory Issues**

- Must prepare P2 Plan
- Fines for non compliance:
 - Penalties for not complying with the legal obligations include fines of up to \$1,000,000 or imprisonment for a term of up to three years, or both.
- If RMO not met, threat of regulation

- **Environment Protection**

- P2 options will help meet RMO
- Better relations with municipality

- **Improved Health & Safety of Workers**

- Reduced exposure to chemicals
- Reduced workers compensation and sick days

Additional Issues for Consideration



- **Company Issues**

- Quality - same
- Price – reduced
- Performance - enhanced

- **Business Trends**

- Success stories show other textile companies who have undertaken P2 for TMEs have saved money

- **Market Trends**

- Textile customers starting to demand more environmentally made products
- Consumer becoming more sensitive to environmental issues

Summary of Business Case Issues



- Economic
- Regulatory
- Environmental Protection
- Health and Safety
- Company Issues
- Business Trends
- Market Trends
- Other site specific issues



Merci!