Presentation on Remedial Alternatives for Addressing Asbestos-Containing Cementous Materials in and near Marrero, Louisiana

April 21, 1998

ERM®

917390

BK571400-D98

Suggested Agenda

EPA – Johns Manville (JM) Meeting

Remedial Alternatives Analyses

Westbank Asbestos Site, Marrero, Jefferson Parish, Louisiana

April 21, 1998

I. Introductions – JM and EPA

II. Meeting Objectives – JM

III. Update on Status of Response Actions – EPA

IV. Review of Remedial Alternatives Analysis – JM and ERM

V. Discussion

VI. Summary of Action Items

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Remedial Alternatives Analysis, Background and Purpose

- Background for this meeting
  - EPA-JM meetings: 2/97, 10/97, 1/98
  - JM Raised issue of remedial alternatives
  - In 1/98 meeting EPA/DOJ suggested technical meeting to discuss alternatives
- Purpose of Today's Meeting
  - Get update on response action
  - Activities to date
  - Planned future activities
  - Discuss remedial alternatives
    - Available to existing sites
    - Available to future sites

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Remedial Alternatives Analysis Overview

- **ERM and Project Description**
  - ERM qualifications
  - Project description
  - Review EPA response action, chosen remedial alternative
  - Determine availability of remedial alternatives
- **Remedial Alternatives Availability Criteria**
  - Generally available and well known technology (not experimental)
  - Ability to achieve remediation goals and objectives
  - Proven track record
  - Suitable for New Orleans area (soils, elevation, drainage, etc.)
  - Same approximate useful life
  - Overall cost <= EPA's excavation alternative

Remedial Alternatives Analysis Overview (Continued)

- **Three General Types of Alternatives Identified**
  - **Remove and Replace**
  - **Overlays**
    - **Advanced asphaltic mixes and modified concrete overlays less than two-inches thick**
  - **Coatings**
    - **Protective coatings of advanced materials a few millimeters thicker to control ACM releases**
- **Suitability for New Orleans – Feasibility and Suitability Considerations**
  - **Soil conditions**
  - **Poor drainage**
  - **Differential settlement**
  - **Frequent rains**
  - **Hot summers, mild winters**

Remedial Alternatives Analysis Overview

(Continued)

- **EPA's Remediation Goals and Objectives**
  - Abate (*potential*) health threats
  - Posed by ACM in Residential Properties and Public Access Areas
  - In Order to Significantly Reduce Likelihood of Future Releases of Asbestos Fibers (*and Potential Exposure*)
- **Remedial Alternatives Considerations**
  - Leaving ACM in place consistent with EPA's remedial objectives
  - Overall goal is to reduce exposure
  - Analysis should include remedial alternatives for
    - Residential areas not currently being remediated
    - ACM under most houses
    - ACM in garages and other structures
    - Commercial areas not within the scope of present response action

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Remedial Alternatives Analysis Overview

(Continued)

- Other Considerations
  - Removal from garages and under homes is not practical
  - Overlays and coatings are easier to implement, less costly and reduce remediation time
  - EPA has approved maintaining shingles, siding, interior insulation, mastic, etc. at these and other locations

these mat'l are exempted from CERCLA

Non-Cost Evaluation of Remediation Options

The reasons for considering an overlay or coating:

1. **Eliminates risk of exposure from disturbing ACM.**
2. **EPA has found containment of ACM to be protective of human health elsewhere.**
3. **Reduces remediation time.**
4. **Reduces risks from heavy equipment and disposal transportation.**
5. **Utilizes existing stabilized base; less subject to settlement and cracking.**
6. **Complete removal is not practical for ACM in garages and under homes.**
7. **Reduces disposal costs.**

ERM's Approach for Identifying & Evaluating Alternative Remediation Options

- Followed EE/CA Guidance
- Referenced Readily Available Information in Trade Journals and Public Libraries.
- Evaluated Effectiveness, Implementability, Useful Life and Cost

List of

Alternative Remediation Options Considered

- Removal and Replacement
- Advanced Asphalt Overlays
- Concrete Overlays:
  - Conventional Concrete Overlay
  - Concrete Overlay with "Fibermesh"
  - Perma Crete
- Protective Coatings:
  - Tech Cote
  - Polibrid 705
  - PermaTec 3000 "Industrial Coating"
  - FEC-2233

Examples of Previous Applications of Alternative Remediation Options

Advanced Asphalt Overlays:

Residential streets in Freeport, Illinois

Concrete Overlays:

Conventional Concrete Overlay

City of Corpus Christi, Texas.

Concrete Overlay with "Fibermesh"

City of Corpus Christi and Houston, Texas and New Orleans Transit Facility. thickness?

Perma Crete

Allegheny Center Plaza in Pittsburgh, Pennsylvania.

Examples of Previous Applications of Alternative Remediation Options (cont'd)

Protective Coatings:

Tech Cote

City of Palmdale, California for asbestos-containing concrete.

Polibrid 705

Municipal wastewater systems and secondary containment structures.

PermaTec 3000 "Industrial Coating"

Concrete-containing PCBs. 40 mil

FEC-2233

Steel and concrete on containment dikes.

Non-Cost Evaluation of Remediation Options
Potential Life

Options:	*Potential Life (Years)*
Removal and Replacement	**15**
Reinforced Concrete minimum	
Advanced Asphalt Overlays	**10**
Concrete Overlays:	
Conventional Concrete Overlay	**15**
Concrete Overlay with "Fibermesh"	**15+**
Perma Crete	**20**
Protective Coatings:	
Tech Cote	**10**
Polibrid 705	**10**
PermaTec 3000 "Industrial Coating"	**15**
FEC-2233	**8**

Non-Cost Evaluation of Remediation Options
Potential Life (cont'd)

NOTES:

Potential life is based on vendor information and ERM experience. For this purpose, ERM has assumed the use of reinforced concrete for replacement slab. The actual life of the replacement slab or overlay/coating will depend primarily on the stability of the base materials.

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Non-Cost Evaluation of Remediation Options
Driveways, Sidewalks, Garages, Under Homes

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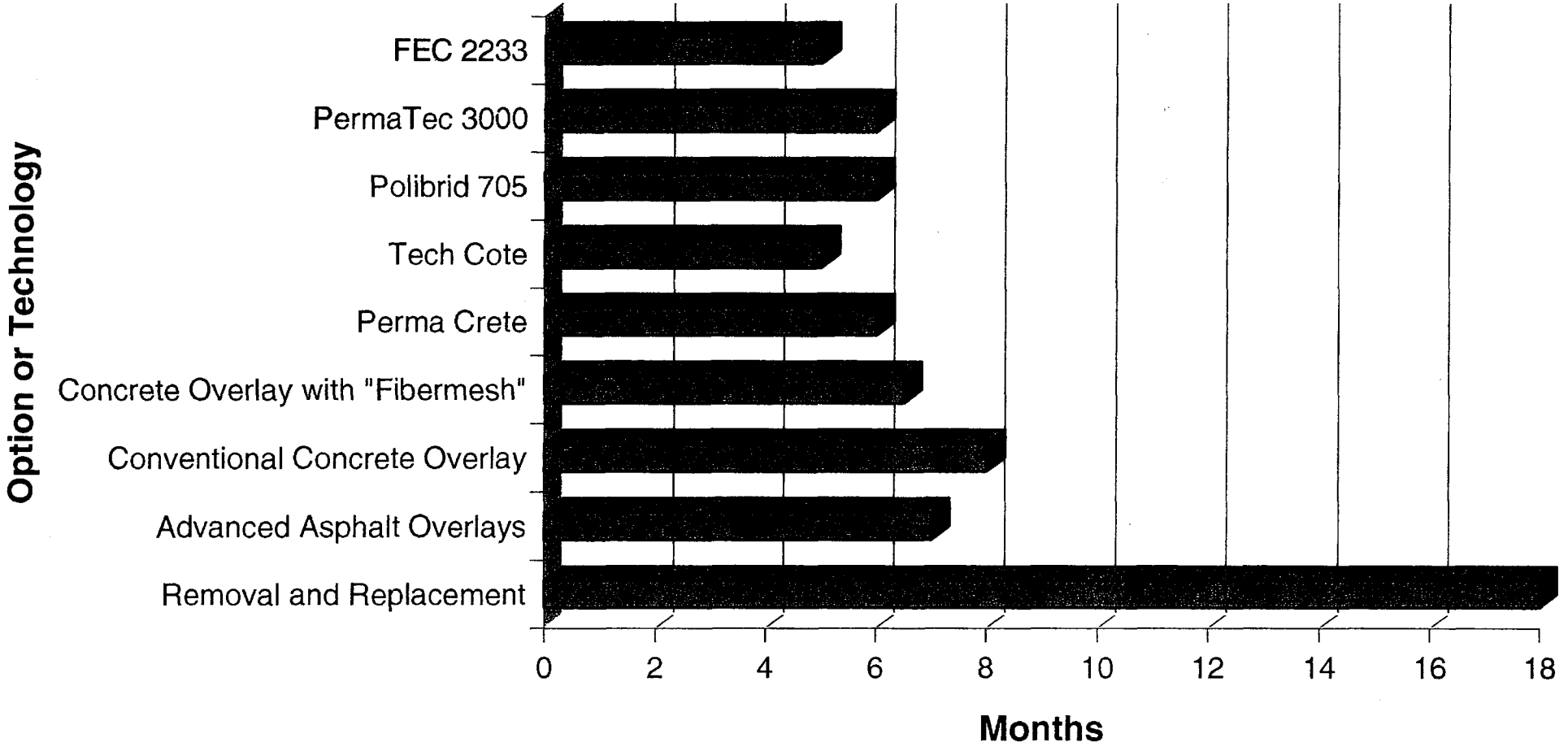
Options	Effective-ness	Implement-ability	Permanence	Traffic Rating		Total Rating	Ranking
				Foot	Vehicular		
Removal and Replacement	5	1	2	5	3	16	Undesirable
Advanced Asphalt Overlays	4	2	4	4	2	16	Less Preferred
Concrete Overlays:							
Conventional Concrete Overlay	4	4	5	5	3	21	Less Preferred
Concrete Overlay with "Fibermesh"	5	5	5	5	4	24	Recommended
Perma Crete	5	5	5	5	4	24	Preferred
Protective Coatings:							
Tech Cote : applied w/ sprayer	5	4	5	5	4	23	Preferred
Polibrid 705	5	3	4	4	2	18	Undesirable
PermaTec 3000 "Industrial Coating"	5	2	5	5	3	20	Undesirable
FEC-2233	5	2	3	3	2	15	Undesirable

Remediation Schedule
Asbestos-Containing Cementous Material
Marrero, Louisiana



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Cost Comparison of Remediation Options (1,000 Driveways)[1]

Options	Unit Material Cost (per sq ft)	Material Cost [2]	Const'n Cost	Transportation and Disposal Cost [3]	Replacement Cost [5]	Total Cost
Removal and Replacement	?	?	?	?	?	$24,000,000 ±
Advanced Asphalt Overlays	$2.50	$900,000	$3,834,000	$80,000	$2,050,000	$6,864,000
Concrete Overlays: [4]						
1/4" hma • Conventional Concrete	$0.96	$130,000	$902,000	$80,000	$202,000	$1,314,000
• "Fibermesh" overlay	$1.07	$145,000	$949,000	$80,000	$214,000	$1,388,000 $1,388
• Perma Crete	$3.00	$1,080,000	$681,000	$80,000	$191,000	$2,032,000 $2,032
Protective Coatings: [4]						
2" • Tech Cote	$0.90	$324,000	$2,650,000 ⊛	$80,000	$1,300,000	$4,354,000 $4,354
• Polibrid 705	$5.00	$9,000,000	$6,220,000	$80,000	$11,440,000	$26,740,000
• PermaTec 3000	$1.71	$620,000	$4,811,000	$80,000	$1,007,000	$6,518,000
• FEC-2233	$1.00	$360,000	$2,912,000	$80,000	$2,122,000	$5,474,000

⊛ incl. costs for drainage

Cost Comparison of Remediation Options (cont'd)

NOTES:

1) For cost comparison purposes, we have assumed a completed cost for removal and replacement of greater than $20 million based upon verbal communications with EPA's Contractors. Assuming a replacement slab thickness of 6 inches, the completed cost for replacement slabs is about $4,000,000. The balance of the cost, about $20 million, is associated with removal, transportation and disposal.

2) We assumed 1,000 driveways at 12' × 30'; for replacement concrete slab we assumed a thickness of 6", for concrete overlay we assumed a thickness of 2", for asphalt 1/4", and the manufacturers suggested thicknesses for coatings. We also assumed 200 driveways would require a gravel drain along the driveway.

Cost Comparison of Remediation Options (cont'd)

3) This cost for disposal of loose ACM debris for the overlay and coating "capping and containment" options is negligible in comparison to the material and installation costs. Disposal cost is based on an assumed average disposal volume of about 0.5 cubic yards of loose material per property (one half inch on a 12' x 30' driveway) and a unit disposal transportation cost of $20 per cubic yard.

4) Where installed cost not provided, we applied a factor of 2.5 to the material cost to estimate the installed cost for concrete/asphalt overlays and a factor of 5.0 to estimate the installed cost for coatings.

5) For a worst case evaluation of maintenance costs, we assumed total replacement at the end of the useful life (without maintenance). The replacement cost (equal to the original construction cost) was adjusted to present value using a discount rate of 12%.

Performance & Cost of Comparison of Recommended Alternatives

	PROs	CONs	Completed Cost
Concrete Overlay with "Fibermesh"	Lowest Cost; 15+ Year Life	Longer Implementation Time (6.5 months)	$1,388,000
Perma Crete Coating	Longest Useful Life (20 years)	Fewer Vendors	$2,032,000
Tech Cote Coating	Shorter Remediation Time; Used Previously for Asbestos Concrete	Shorter Useful Life (10 years)	$4,354,000

Recommendation

Consider Fibermesh for Future Driveways and Sidewalks as well as Garages and Under Homes