



Asbestos Management: Applied Analytical Methods on Railroad Operations

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Outline



- What is asbestos?
- Perspective on Legal Requirements
- UP Asbestos Management Program
- Applied Analytical Methods - Examples
 - Inventory & record reconciliation
 - Digital reporting system (Queries, risk based-analysis)
 - Statistical analysis for reporting efficiency
 - Abatement
 - Negative Exposure Assessments
- Benefits & Conclusions



What is asbestos?



- Natural occurring mineral
- Uses
- Health risk
- Material condition



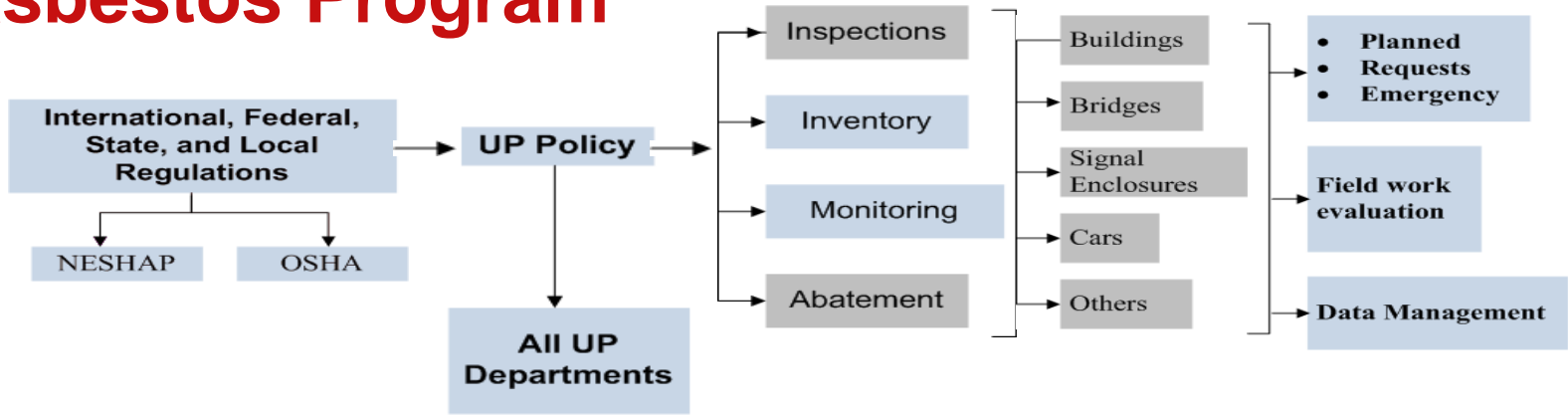
Legal Requirements



- National Emissions Standards for Hazardous Air Pollutants - NESHAP
- Occupational Safety and Health Administration – OSHA
 - 29CFR - Safety and Health Standards
 - 1926 - Construction Safety
 - 1101 - Asbestos



Asbestos Program



Union Pacific Railroad is committed to minimize the risk of exposure of employees and the public, and the risk of releases to the environment of asbestos containing materials (ACM), by managing ACM in full compliance with Local, State, and Federal regulations.



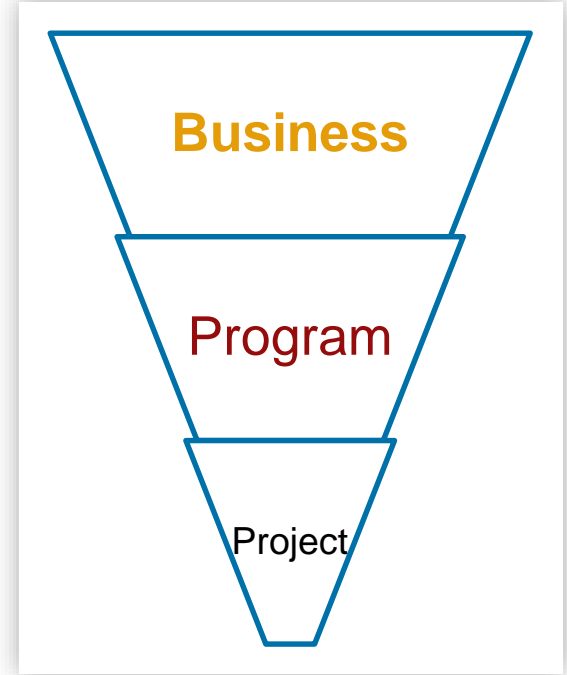
Overview of moss covered transit material



Applied Analytical Methods - Examples

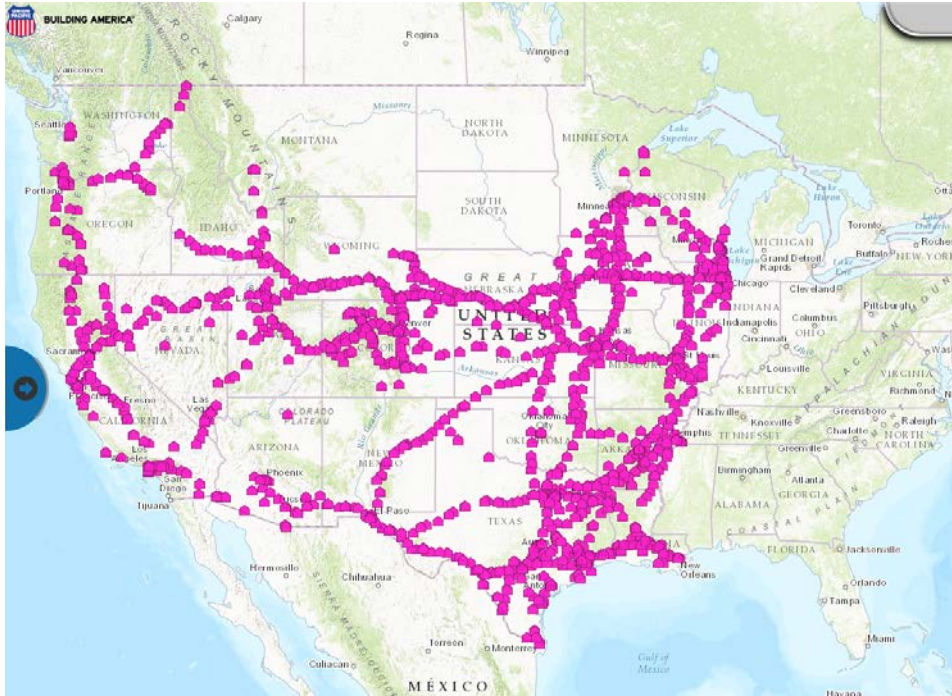


- Program Management & Continuous Improvement
 - Inventory & record reconciliation
 - Digital reporting system (Queries, risk based-analysis)
 - Statistical analysis for reporting efficiency
 - Operations
 - Best project location
 - Milk runs
 - Cost reduction
 - Negative Exposure Assessments



Program Management & Continuous Improvement

Digitalization, Geographic Information Systems & Statistics



- Inventory & record reconciliation
- Digital reporting system
- Queries, risk based-analysis
 - Quality Control
 - Human factors
 - Material condition
 - Laboratory analysis

Statistical Tools

Efficiency



Contractor	Estimated Number of Annual Report Reviews
A	99
B	213
C	122
D	161
E	98
Total	693

Statistical Tools

Quality control and Efficiency



	Inspect					Abatement or Abatement/Demolition					Demo Only			Inspect, Abate, and Demo
	Buildings	Bridges	Rolling Stock	Signals	Other	Buildings	Bridges	Rolling Stock	Signals	Other	Buildings	Signals	Other	Signals
A	25	20	All	All	All	All	All	All	All	All	All	30	All	All
B		15	All	25	25	30	25		25					All
C		25	All	All	All	All	All		All					All
D		25	10	All	20	36	28		All					All
E		25	All	All	All	30	All		All					All

Operations

Planning, Schedule, Budgeting



- Input data
- Create project assignments
- Digital report submission
- Cost estimate
 - One click: approval & rejection
- Data use & results
 - Metrics
 - Key measures
 - Tracking
 - Postings
 - Contacts
 - File outputs (pdf, xls, others)

A screenshot of a web application interface for Union Pacific. At the top left is the Union Pacific logo. Below it is a navigation bar with three tabs: "MAP PORTAL", "TRACKING SHEET" (which is highlighted in blue), and "ADMIN". Below the navigation bar are two buttons: "Refresh" and "Export". A note in orange text reads: "Please Note: Data filtering will be reflected in your". Below the note is a table with a dark grey header. The header has two columns: "Toggle Filter" and "Clear Filter" on the left, and "Date Assigned" with a dropdown arrow on the right. The table body contains three rows with dates: "10/16/2014", "01/06/2014", and "07/24/2015".

Toggle Filter	Clear Filter	Date Assigned
		10/16/2014
		01/06/2014
		07/24/2015

Negative Exposure Assessments

Best Practices



- OSHA standards say that an unprotected person cannot be exposed to more than 0.1 f/cc over an 8-hour period
- Levels over a 30-minute period should not exceed 1.0 f/cc

Special work practices and protective equipment may be required if these levels are exceeded



Benefits & Conclusions

- Cost reduction = \$avings
- Minimum disruption to railroad operations
- Streamlined process
- Consistent inventory
- Employee engagement
- Liability risk management



Questions?

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