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MINNESOTA SOLID WASTE ADMINISTRATORS ASSOCIATION

Preventing the Next Fire in Solid Waste Operations

Practical Risk Reduction Strategies for Landfills, Transfer Stations & MRFs

Presented by:
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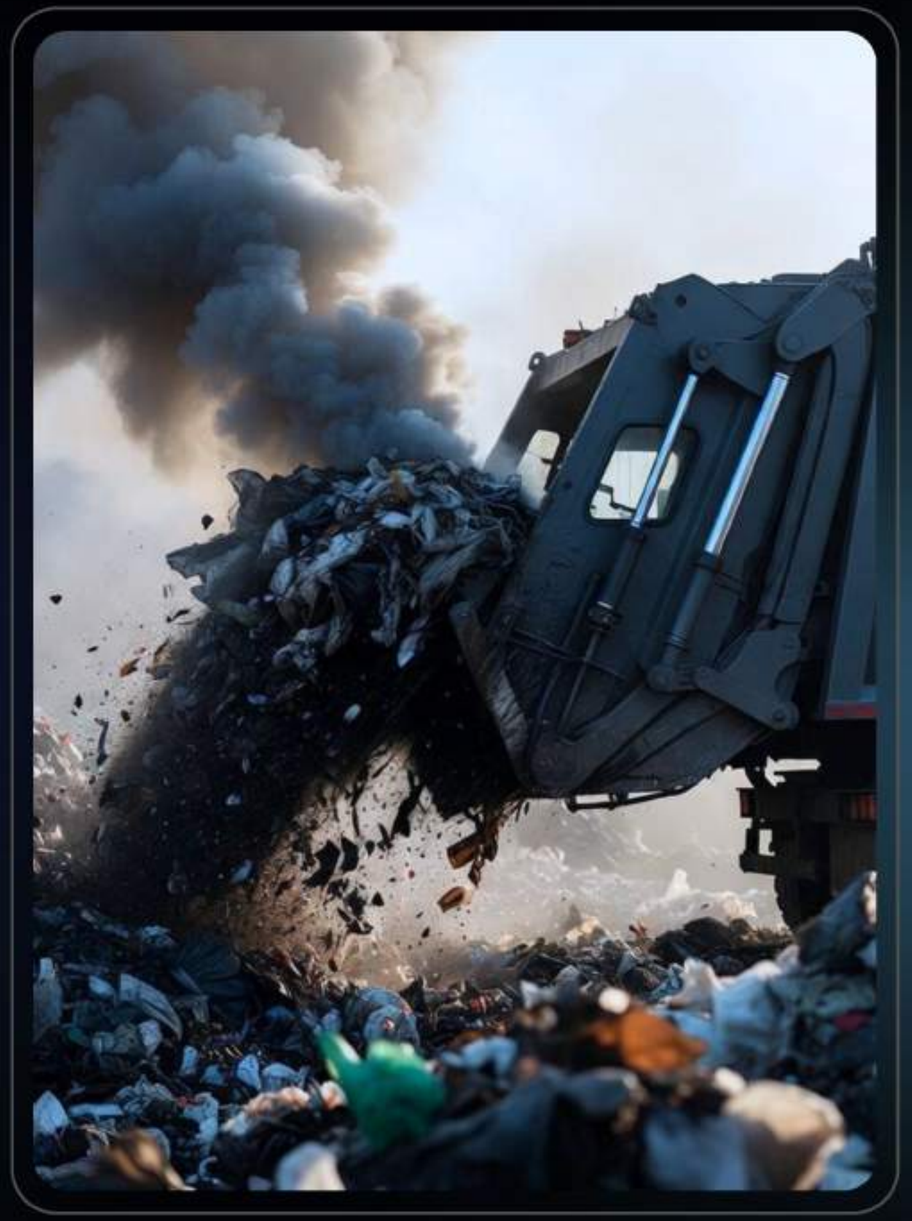
Fire Risk in Solid Waste Is Structural

- Mixed and unpredictable material streams
- Lithium-ion batteries in MSW and recycling
- Compaction and internal heating
- Large pile volumes
- Limited internal visibility

Fire in solid waste operations is a systems-level risk.



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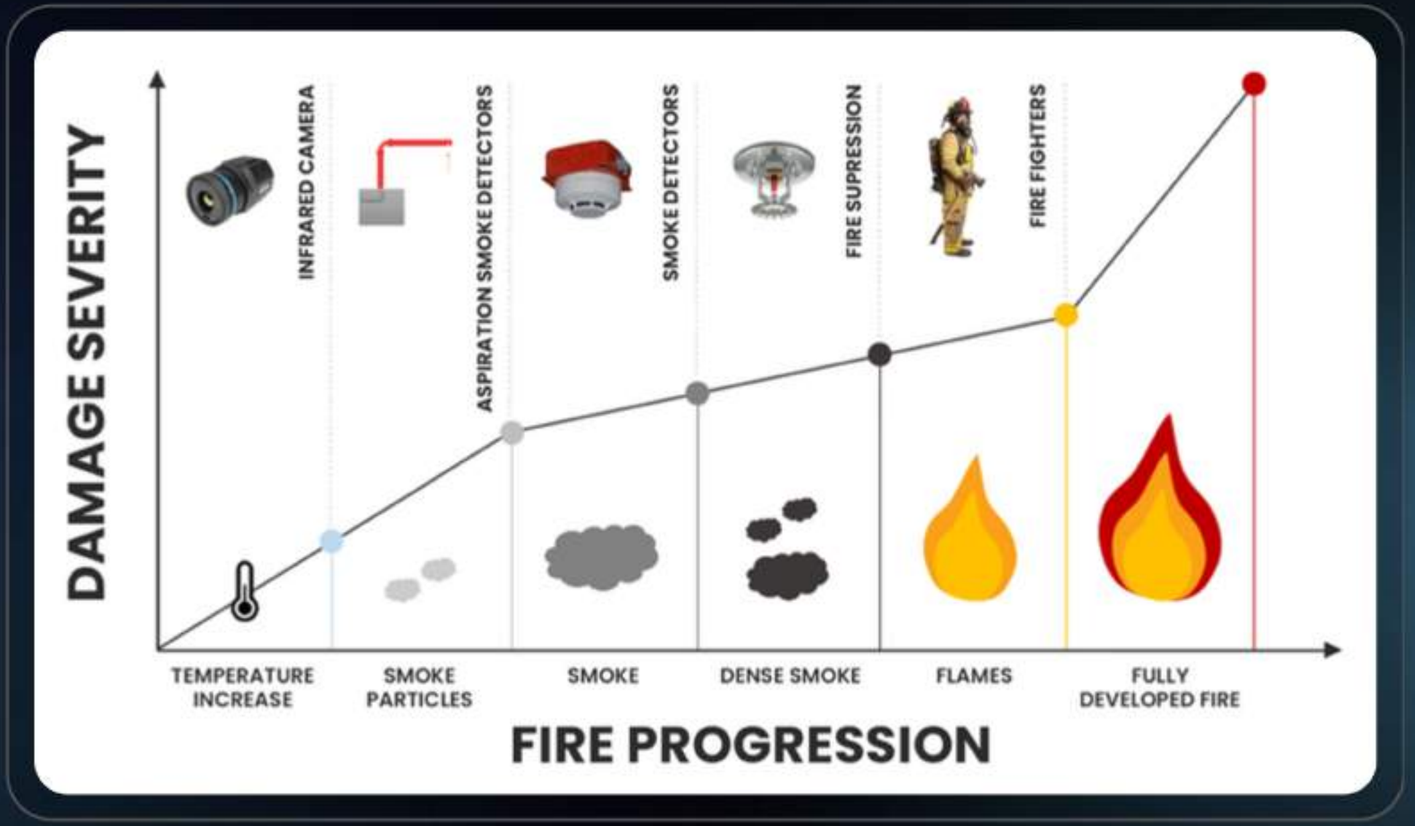
How Structural Risk Manifests in Daily Operations

How Fires Actually Develop

Most facilities detect at Stage 3 or 4.

Prevention must occur at Stage 1.



The Visibility Gap in Solid Waste Operations

Fires often start when facilities have limited oversight.

- Heat cannot be seen with your eyes
- Temperature changes inside piles go unnoticed
- Hot loads may not be identified at tipping
- Equipment can overheat between inspections
- Nights and weekends reduce active monitoring

What is your earliest measurable signal of ignition risk?

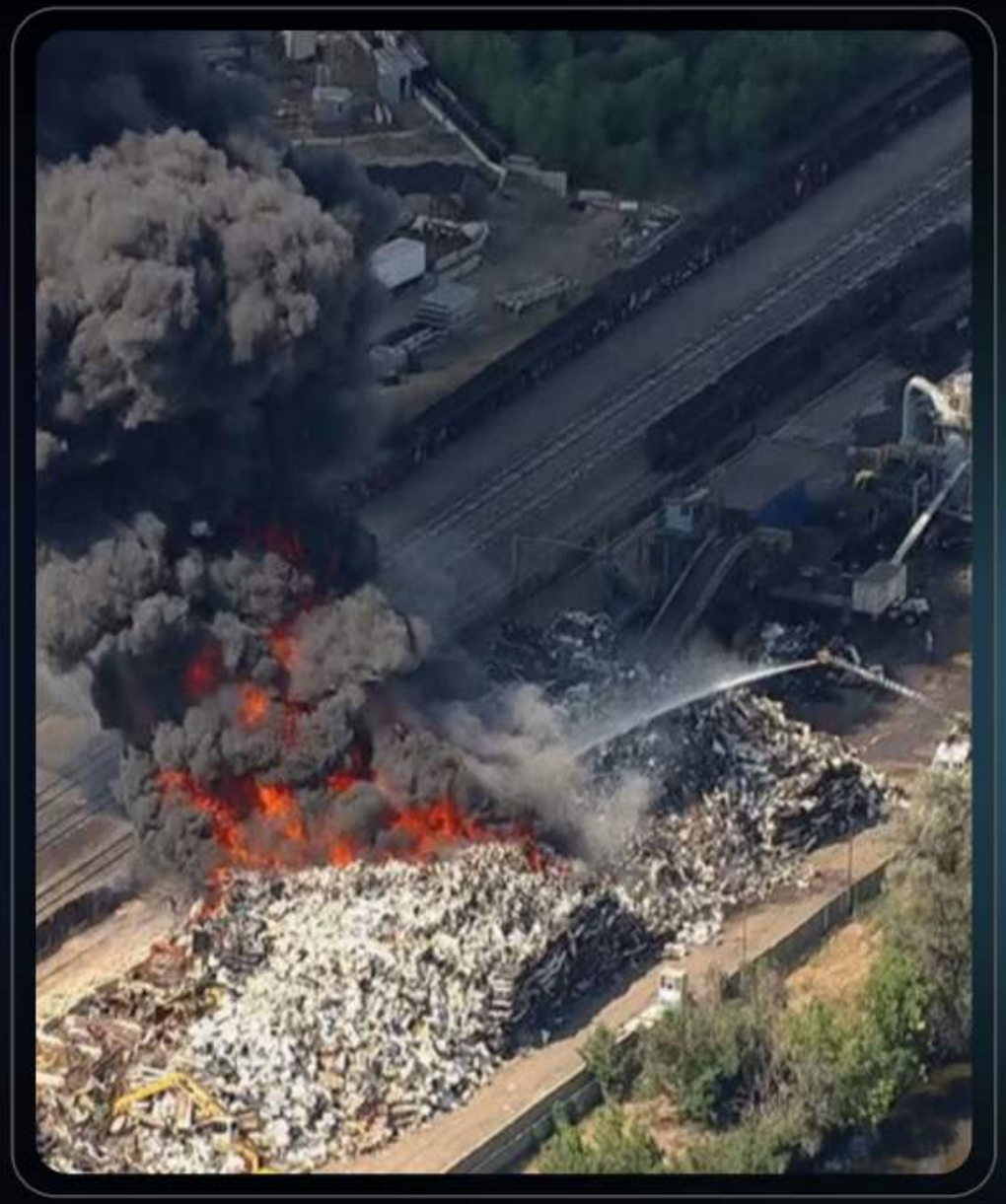
- Smoke?
- Flame?
- A call from the fire department?

If smoke is your first signal, ***intervention is already late.***

Why Traditional Controls Are Reactive

- Smoke detection activates after ignition
- Flame detection confirms combustion
- Manual patrols are intermittent
- Spot checks are momentary
- Suppression systems respond to active events

These tools are necessary, but they ***are not preventative.***



The Operational Reality

- Fires often start internally
- Many incidents occur during low staffing hours
- Staff cannot manually monitor 24/7
- High false alarm rates reduce response urgency

The issue is not effort. It is ***continuous visibility.***

Heat Is the Earliest Detectable Indicator of Ignition Risk

Continuous thermal monitoring provides visibility into Stage 1 of fire development.

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Continuous Thermal Monitoring in Waste Facilities

- Continuous temperature monitoring
- Wide-area coverage
- Real-time alerting
- Automated documentation

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Reducing False Alarms in Waste Operations

Waste facilities are constantly changing:

- Outdoor temperatures shift throughout the day
- Sun exposure heats pile surfaces unevenly
- Equipment cycles create normal heat spikes
- Daily operations change pile conditions

Because of this, fixed temperature limits create unnecessary alerts.

Smarter Monitoring Helps Facilities:

- Learn what normal heat looks like at your site
- Identify unusual heat buildup, not routine activity
- Reduce nuisance alerts that pull staff away from operations
- Escalate only when conditions indicate real ignition risk

The goal is not more notifications.

It is alerts your team can trust.

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If You Are Considering Thermal Monitoring, Start Here

1. Identify your highest ignition risk zones
2. Determine your earliest actionable threshold
3. Establish clear response protocols
4. Define ownership of alerts
5. Integrate monitoring into operations

Technology without process does not reduce risk.

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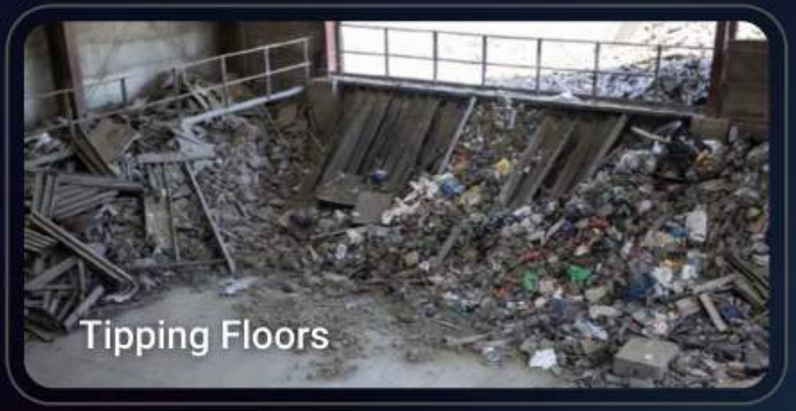
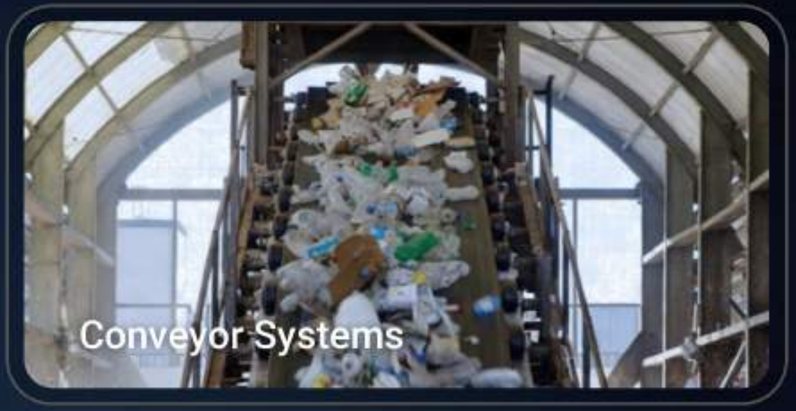
Where to Focus First: High Ignition Zones

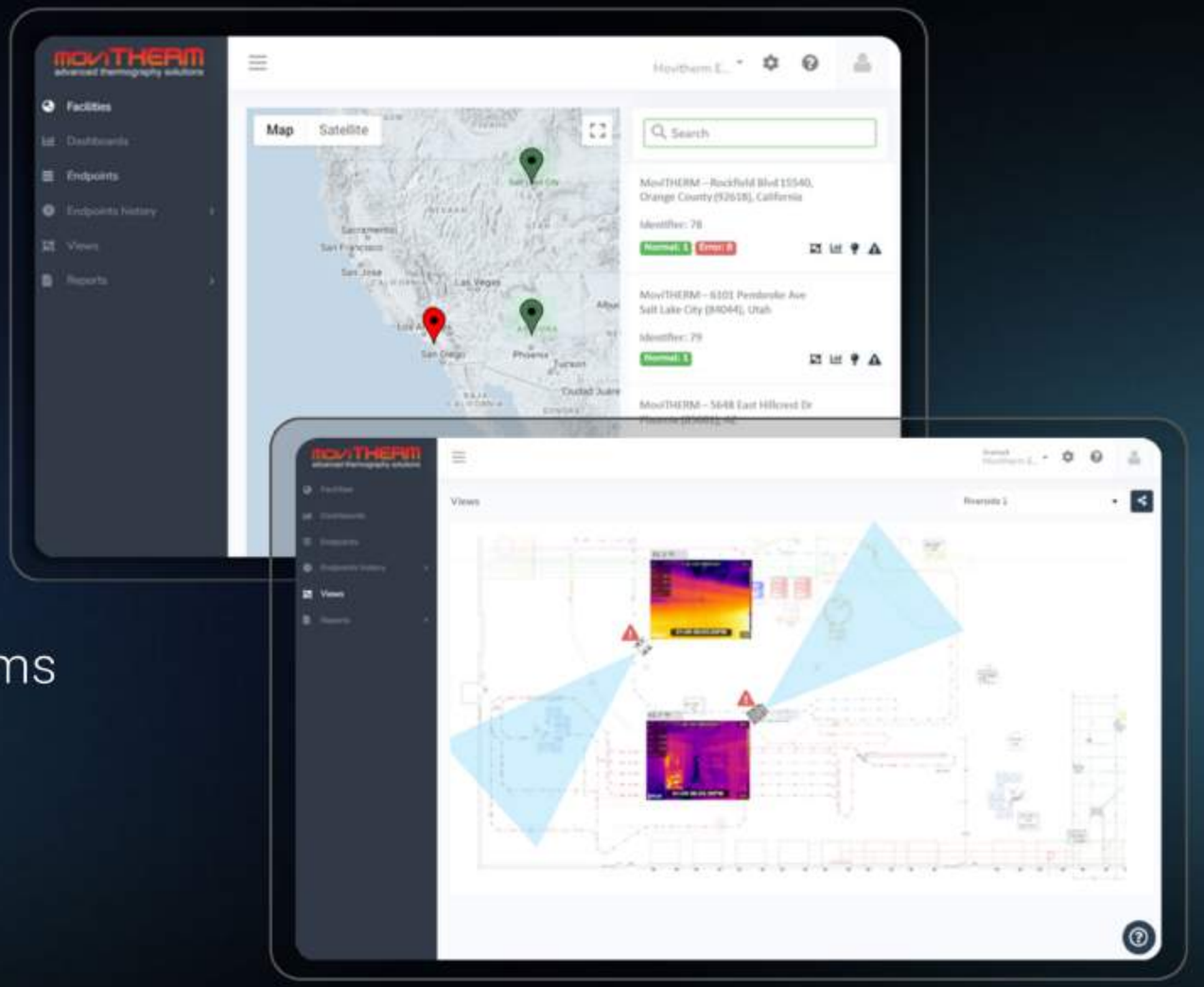
Prioritize based on consequence and probability.





Implementation Considerations

- Site survey & risk mapping
- Critical area prioritization
- Integration with existing safety systems
- Phased deployment options



System Design Considerations

Effective monitoring requires structure, ownership, and clear response pathways.

- Defined alert escalation protocols (who gets notified and when)
- Tiered alert levels: advisory vs critical intervention
- Integration with existing safety and dispatch procedures
- Multi-sensor validation to reduce false alarms
- Centralized dashboard for multi-site visibility
- Historical trend storage for reporting and documentation

Key Questions to Ask Vendors or Consultants

How are false alarms minimized?

How are thresholds established?

Is trend data stored and reportable?

How does the system integrate with response protocols?

Important note: A camera alone is not a system.

Financial & Insurance Implications

Facilities demonstrating proactive monitoring may benefit from:

- Improved insurability in high-risk waste environments
- Stronger underwriting and renewal position
- Reduced loss severity from early intervention
- Lower long-term total loss exposure
- Reduced facility downtime and operational disruption
- Documented due diligence for board and regulatory review
- Faster claim validation with recorded temperature data

Five Takeaways for Solid Waste Leaders

- Today's waste stream contains built-in ignition risk, especially lithium batteries.
- Most facilities become aware of a problem after heat has already escalated.
- The biggest vulnerability is limited visibility inside piles and during off-hours.
- Intelligent monitoring helps staff focus on real risk, not nuisance alerts.
- Early detection protects uptime, budgets, and public trust.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