

# Long-Term Landfill Stability

Minnesota Pollution Control  
Agency Perspective

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# Organic Stability Definition

## Wisconsin:

- Gas Production Effectively Ceases
- LF Leachate Levels Have No Significant Organic Component
- Organic Fraction of Waste Mass Will Not Readily Decompose When Placed in Ideal Moisture & Temperature Conditions
- No Measurable Settlement of Landfill Surface

## Minnesota:

- Gas Production Drops to 5% or Less of Peak Generation Rate
- Leachate COD Below 1000 mg/l, BOD Below 100 mg/l and BOD:COD Below 0.1
- Settlement Drops to Less Than 1% over a 12 Month Period

# Diversion

## Wisconsin:

- Upstream Waste Reduction
- Increased Recycling
- Energy Recovery
- Composting

## Minnesota:

- Upstream Waste Reduction
- New Recycling Goal: 50%
- Energy Recovery
  - 9 MSW Combustor Facilities
  - 3 MSWLFs Active Gas w/ Energy Production
- Composting
  - 2 MSW Composting Facilities
  - 3 Source Separated Compost Facilities



# Items Banned from Landfilling

## Wisconsin:

### Absolute Bans

- Yard waste
- Lead-acid batteries
- White goods
- Waste oil

## Minnesota:

- Yard waste (1990 Metro, 1992 MN)
- Lead-acid batteries (1988)
- White goods (1990)
- Waste oil (1988)

# Items Banned from Landfilling

## Wisconsin:

### Conditional Bans

- Aluminum containers
- Glass containers
- Steel containers
- Corrugated cardboard
- Newsprint
- Magazines
- Office paper
- Tires

## Minnesota:

- Banned Landfilling of Source Separated Recyclables (1985)
- Tires (1985)

# Additional Minnesota Waste Bans

- Hazardous Waste (1984)
- Household Hazardous Waste (1987)
- Unprocessed MSW in Metro (1990)
- Dry Cell Batteries (1990)
- Rechargeable Batteries (1991)
- Mercury-containing Wastes (1992)
- Fluorescent & HID (1993)
- Lead Paint (1993)
- Automotive Fluids & Filters (1994)
- Telephone Directories (1994)
- CRTs (2006)

# In - Situ Reaction

Wisconsin:

- Bioreactor Landfills
- Leachate Recirculation
- Alternative Caps

Minnesota:

- Bioreactor Landfills (1)
- Leachate Recirculation (6)



# 2007 Annual Report Data

- BOD – only one site reporting levels consistently around 100 mg/l
- COD – no sites reporting levels consistently below 1000 mg/l
- Landfill Gas Generation Rates are Still Rising
- Landfill Settlement Rates Still Greater Than 1%



# Other

## Closed Landfill Program:

- Perpetual Monitoring and Maintenance

## Open Landfill Program:

- Post-Postclosure
  - Developing Guidance
  - Evaluate landfill at End of Required PC Period
  - Extend PC Period if Warranted

Questions?

Thank You