ENVIROTECH SERVICES, INC.

Regional Local Roads Conference

Rapid City, SD

October 21, 2009

Dust Suppressants:

Chemical Additive Usage on Unpaved Roads

Did You Know?

TOTAL PM10 EMISSIONS / YEAR= 33,600,000 METRIC TONS

FUGITIVE DUST ACCOUNTS FOR 88% (29,800,000 METRIC TONS) OF TOTAL EMISSIONS

KEY SOURCES OF FUGITIVE DUST, AS CAUSED BY MAN…

-UNPAVED ROAD DUST	***41.3%***
-WIND EROSION	**17.8%**
-CONSTRUCTION	**13.4%**
-AGRICUTLURE	**14.7%**
-PAVED ROADS	**8.4%**

WHILE PM10 EMISSIONS WORLDWIDE ARE ON THE DECLINE, THE VOLUME OF DUST FROM ROAD TRAFFIC IS RISING.

SOURCE: USA EPA National Database Emissions Inventory. Note: Some percentages may have changed due to the way data is now collected.

AZ January 2009

How do you choose the right product?

First, you must define the goal:

- *Dust Control*

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- *Dust Control*

OR

- *Stabilization*

First, you must define the goal:

- *Dust Control*
- *Stabilization*

Second, you must set and agree to expectations:

- *Zero Dust?*
- *90% Reduction?*
- *75% Reduction?*
- *Duration?*

Variables Affecting Performance

1. **Climate**
   - *Temperature*
   - *Humidity*


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Variables Affecting Performance

1. **Climate**
   - *Temperature*
   - *Humidity*
   - *Weather*


WEAVER
RANCH

Variables Affecting Performance

2. Type of Base

- *Aggregate*
  - *Size and Shape*
- *Fines*
  - *Type and Amount*
- *Composition*
  - *Granite, Clay, RAP, Recycled Concrete…*

Variables Affecting Performance

3. Road Preparation

- *Grading*
- *Rolling/Compacting*
- *Pre-wet/Moisture Content*


WATER

Variables Affecting Performance

4. Traffic

- *ADT*
- *Type of Vehicles*

Variables Affecting Performance

5. Product Type

- *Chlorides ($MgCl_2$, $CaCl_2$)*
  - *Work on moisture content, keep the road surface wet*

Variables Affecting Performance

5. Product Type

- *Synthetic Polymers*
  - *Latex*
  - *PVA (Polyvinyl Acetate)*
  - *Acrylic Co-Polymers*
    - *Glue particles together.*
    - *Cross-Linking*

Variables Affecting Performance

5. Product Type

- *Oils and Emulsions*
  - *Petroleum or Ag Based*
    - *Coat particles and weigh them down*

Variables Affecting Performance

5. Product Type

- *Lignin*
  - *Organic Binder*
    - *Glue particles together.*
    - *Not Cross-Linking*

Variables Affecting Performance

5. Product Type

- *Proprietary Products*
  - *Can work on different principles*
    - *Evaluate and Compare*

Variables Affecting Performance

6. Product Application Method

- *Top Spray*


KERSTEN
TRAILERS
DENVER CASPER

Variables Affecting Performance

5. Product Application Method

- *Top Spray*
- *Blade Mixing*


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Variables Affecting Performance

5. Product Application Method

- *Top Spray*
- *Blade Mixing*
- *Milling*

Other Considerations

- **Environmental**
  - *Effects on Water*
  - *Effects on Vegetation*

Other Considerations

- **Environmental**
  - *Effects on Water*
  - *Effects on Vegetation*
- **Value**
  - *Price vs Cost*

Product Evaluations

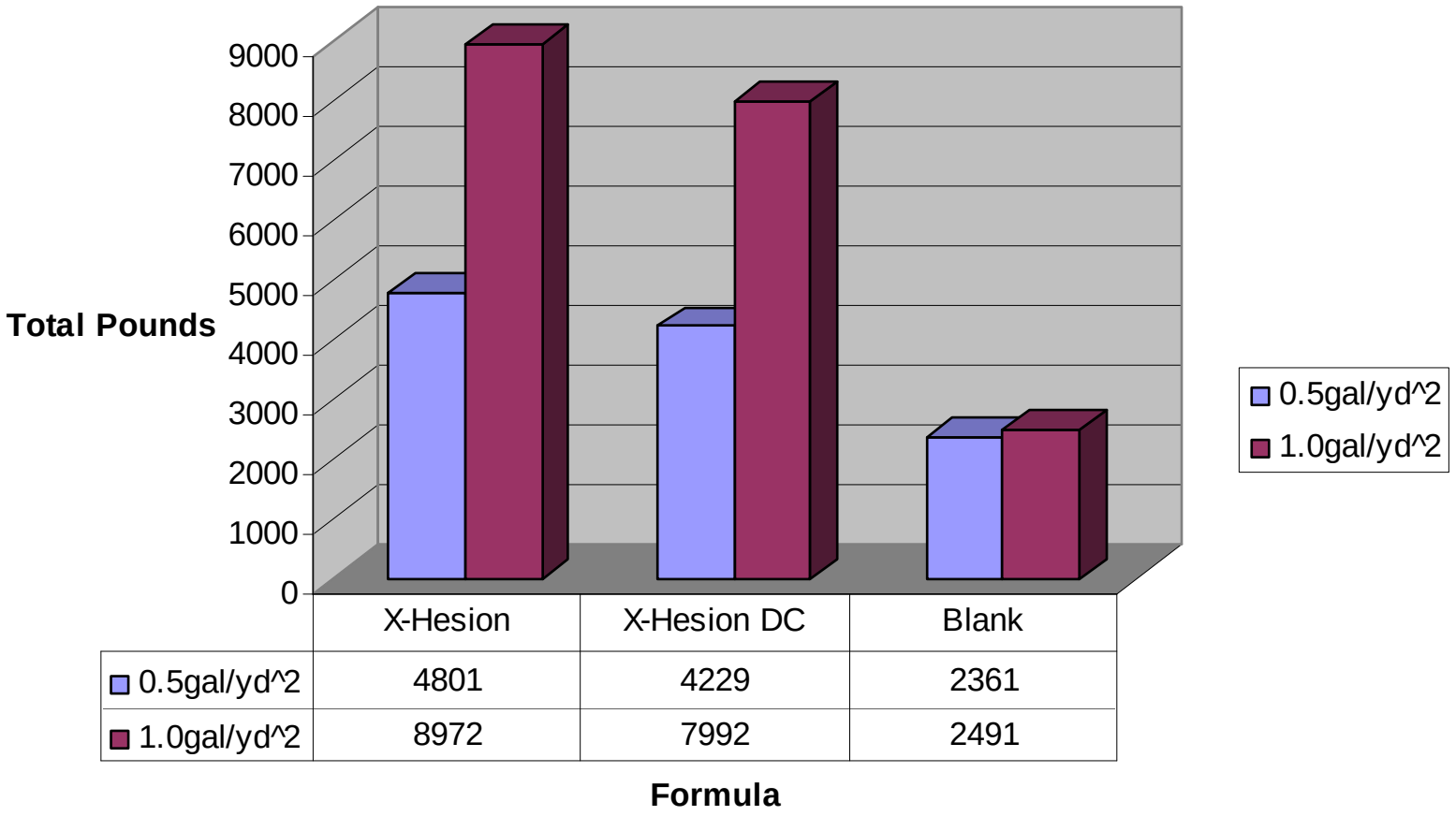
- Lab Data
  - *Moisture Limits*
  - *Compaction Data*
  - *Leeching Data*
  - *Gradation*

Moisture Limit
And
Optimum Moisture

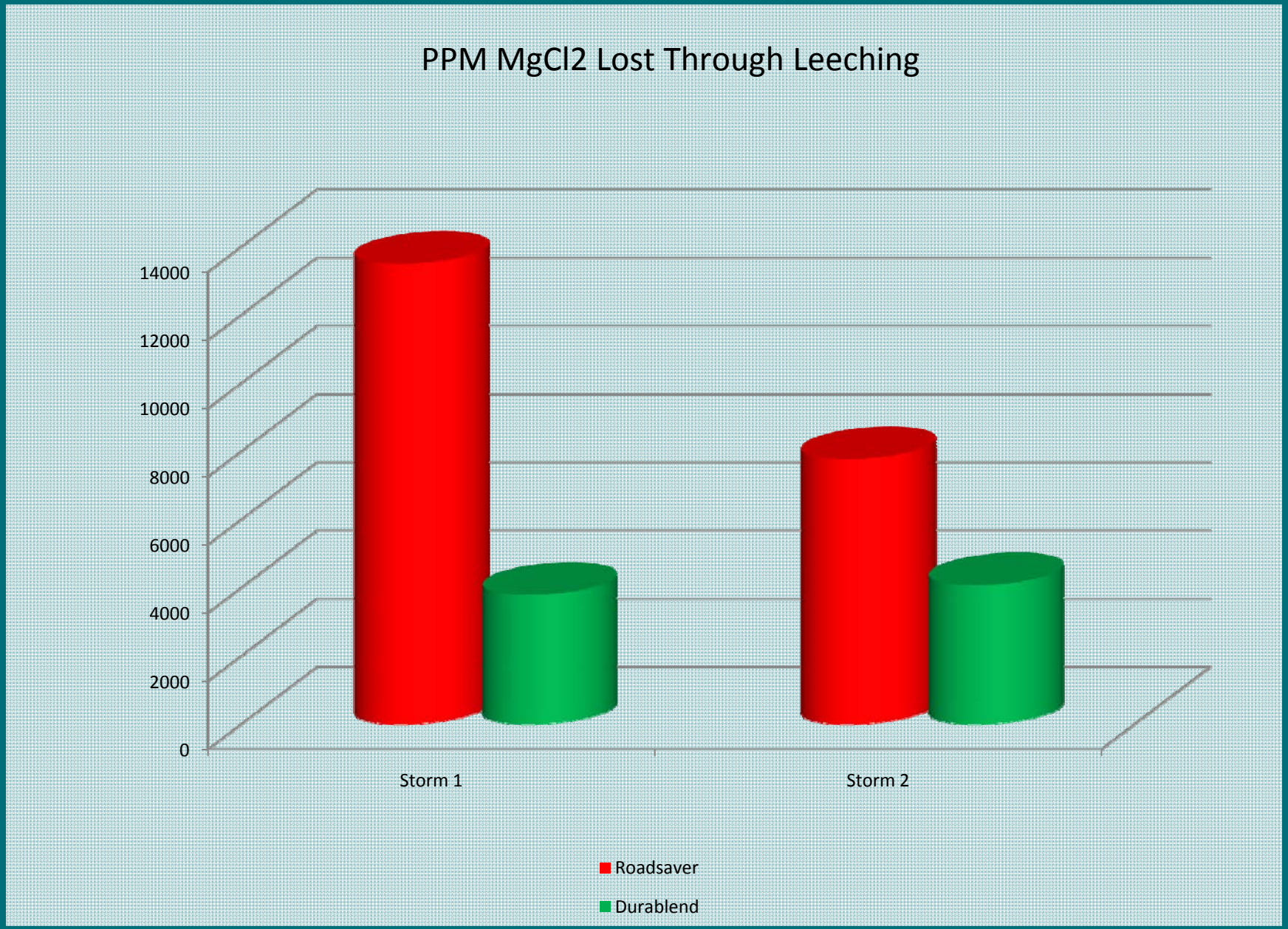
- Critical in deciding application rates and road prep!

- R Value
- Soil Composition or Sieve analysis
- Plasticity

Compresion



	X-Hesion	X-Hesion DC	Blank
0.5gal/yd^2	4801	4229	2361
1.0gal/yd^2	8972	7992	2491


PPM MgCl2 Lost Through Leeching
14000
12000
10000
8000
6000
4000
2000
0
Storm 1
Storm 2
Roadsaver
Durablend

Product Evaluations

- Lab Data
  - *Moisture Limits*
  - *Compaction Data*
  - *Leeching Data*
  - *Gradation*
- Field Data
  - *Evaluate and Compare*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WEAVER
RANCH

Questions?