Vehicle & Equipment Cleaning
Fighting Corrosion from Chemical Deicers

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The Lifeblood of the Operation......

The Equipment Is Costly......

- Pickup with plow, spreader, controls = $50-70,000
- Single Axel with plow, spreader, controls = $150,000
- Tandem with plow, spreader, controls = $200,000
- Frontend loader = $125,000
Ongoing Research and Information

- Numerous DOT research projects
- National Research
- Numerous professional organizations – journals and trade magazines
- Various websites and blogs

Common sense

Facts of Life....

- Snowy driving increases corrosion rates.....
  By 90%
- Chloride chemicals pose significant corrosion risk
  - Electrical wiring and harnesses
  - Frames, bracket, and supports
  - Brake air cans, drums, and disk
  - Spreader chutes and hoppers
  - Fittings
- Corrosion is costly.... estimated at $6 million annually
- S&I fleets = 10%-15% of all repair cost

Washington DOT Repair Cost...
Indirect Costs.....

• Depreciation
• Increased downtime
• Reduced reliability
• Reduced service life
• Premature repairs and replacement
• Safety risk

Lost Opportunities and Lost Profits.......

Minimizing the Impact.....

• Design Improvements
• Good Maintenance Practices
• Anti-corrosion coatings
• Corrosion Inhibitors
• Salt Removers and Cleaners

A collective approach.......

Design Improvements

• Weather-proof terminations
• Stainless steel components
• Eliminate or move junction boxes inside
• Sealed brake canisters & protective boxes for hydraulics and batteries
• Shrink wrap susceptible electrical wiring components
• Design of welded joints & gaskets to minimize crevices
• Fender liners
• Self-healing undercoats for chassis
• High quality primers and topcoats
Maintenance Practices

- Consistent washing after each event
- Regular rinsing and fast drying
- Indoor (dry) storage
- Component protection (wraps, covers, shields)
- Power wash with a quality salt remover
- Apply spray-on inhibitor (several times per year) following cleaning and drying
- After market rust proof coatings

Reactive Maintenance.....

- Be reactive when corrosion develops
  - Neutralize corrosion (abrasive blasting, steam cleaning, chemical spray)
  - Clean the area or material that was corroded
- Prevent rust from spreading
- Grease contact points
- Check, clean and/or replace electrical connections
- Dry, cool storage for off season
- Good article on tips to protect plows: http://info.bossplow.com/Blog/bid/150042/6-Tips-to-Protect-Your-Snowplow-From-Corrosion

Benefit/Cost

- Using a good management plan.................one can expect to see a benefit/cost of about 4.4
- For every $1 spent on a good management plan approximately $4 can be saved on corrosion related maintenance repair costs
Words of Caution....

- Not all chemicals are created equal
  - Do your homework on what others are using and product performance
  - Follow the manufacture’s recommendations for use
- Be mindful of water pressure and volume
  - Low pressure and high volume are commonly used
  - Electrical connections are especially intolerant
- Refer to local regulations regarding wash water disposal

PA Turnpike....

- State of the Art Automated System
- Low pressure and high volume – 300 psi/300 gpm
- Washes up to 30 trucks per hour
- Includes chassis wash
- $3.00 per truck to wash
- Wash following each event
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* A collective approach......*

References

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Truck Washing Processes and Equipment, By Diane M Calabrese, IWA, April 2011
Myths About Salt, By T. Swan, April 2010
ODOT Neutralizer Report # 134718, By Akron University, Christopher Miller & Others, February 2014

Thank You

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QUESTIONS