Pass the Salt, Hold the Liability:

Addressing Salt Reduction in the Private Sector

26th Annual NEIWPCC Nonpoint Source Conference
Freeport, Vermont
April 29, 2015

Eric Williams, Watershed Assistance Section Supervisor
NH Dept of Environmental Services
The Road to Salt Reduction is Paved with 8 Lanes
I-93 Chloride Impairments
Chloride Impairment is a Statewide Issue

2012 = 46 Impairments

2012 Chloride Impaired Assessment Units – Whole State
Relationship of Salt Imports to Water Quality Violations

Salt Imports vs Chloride WQS Violations in FY07

Apparent Threshold

Policy Brook

Dinsmore Brook

Beaver Brook
Chloride TMDL

TOTAL MAXIMUM DAILY LOAD

-25%

Current Load vs Target Load for State, Town, and Private sectors.
DOT Efforts
DOT Salt Reduction Achieved

Preliminary Data

DOT salt use (tons/LM), WSI adjusted

BMPs implemented

25.1% reduction

FY03  FY04  FY05  FY06  FY07  FY08  FY09  FY10  FY11  FY12  FY13  FY14
Derry Salt Reduction
Preliminary Data

Town of Derry Salt use (tons/LM), WSI adjusted

BMPs implemented

21.1% reduction
Londonderry Salt Reduction
Preliminary Data

Town of Londonderry Salt use (tons/LM), WSI adjusted

- BMPs implemented
- 28.4% reduction
Salem Salt Reduction
Preliminary Data

Town of Salem salt use (tons/LM), WSI adjusted

BMPs implemented

21.0% reduction
Windham Salt Reduction
Preliminary Data

Town of Windham salt use (tons/LM), WSI adjusted

BMPs implemented

44.0% reduction
Source Characterization
Policy Brook, Salem

- Water Softener: 2%
- Food Waste: 1%
- Atmospheric Deposition: 1%
- State Roads: 9%
- Municipal Roads: 27%
- Private Roads: 3%
- Parking Lots: 50%
- Salt Piles: 7%
TMDL sector allocation
### A Snowball’s Chance...

<table>
<thead>
<tr>
<th>Year</th>
<th>Action</th>
<th>Bill Number</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Mandatory Certification w/ fee</td>
<td>HB 1676</td>
<td>Referred to Interim Study</td>
</tr>
<tr>
<td>2011</td>
<td>Mandatory Certification w/ fee</td>
<td>HB 202</td>
<td>Inexpedient to Legislate (killed)</td>
</tr>
<tr>
<td>2012</td>
<td>Optional Certification w/ fee</td>
<td>SB 392</td>
<td>Passed Senate, Killed in the House</td>
</tr>
<tr>
<td>2013</td>
<td>Optional Certification w/ fee</td>
<td>HB 523</td>
<td>Retained in committee. <strong>Passed as part of the budget bill, HB 2</strong></td>
</tr>
</tbody>
</table>
Liability Protection

“Salt applicators, and those who hire them, are not liable for damages due to hazards, EVEN WITH ACTUAL NOTICE THEREOF, when such hazards are caused solely by snow or ice...”

Walking on snow and ice is inherently dangerous
Meanwhile, away from the sausage-making...
Course Overview

Environmental & Infrastructure Concerns (20 min)
Pre-Season Preparation, Site Inspection & Expectations (20 min)
Calibration Demo (45 min)
Pre-Treatment: Before the Storm (35 min)
During The Storm Activities (45 min)
Record Keeping & Salt Accounting System (10 min)
Exam Review (10 min)
Exam (30 min)
## Melting Capacities of Salt

<table>
<thead>
<tr>
<th>Pavement Temp (°F)</th>
<th>1 lb. salt will melts this amount of ice</th>
<th>Time it takes to melt this amount of ice</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>46.3 lbs.</td>
<td>5 mins.</td>
</tr>
<tr>
<td>25</td>
<td>14.4 lbs.</td>
<td>10 mins.</td>
</tr>
<tr>
<td>20</td>
<td>8.6 lbs.</td>
<td>20 mins.</td>
</tr>
<tr>
<td>15</td>
<td>6.3 lbs.</td>
<td>60 mins.</td>
</tr>
<tr>
<td>10</td>
<td>4.9 lbs.</td>
<td>ineffective</td>
</tr>
<tr>
<td>5</td>
<td>4.1 lbs.</td>
<td>“</td>
</tr>
<tr>
<td>0</td>
<td>3.7 lbs.</td>
<td>“</td>
</tr>
</tbody>
</table>
Use Pavement Temperature

Truck Mounted Thermometer

Cab Display
## Parking Lot Application Rates

<table>
<thead>
<tr>
<th>Pavement Temp. (°F) and Trend (↑↓)</th>
<th>Weather Condition</th>
<th>Maintenance Actions</th>
<th>Application Rate (lbs/per 1000 sq.ft.)</th>
<th>Salt Prewetted/Pre treated with salt brine</th>
<th>Salt Prewetted/Pre treated with other blends</th>
<th>Dry salt</th>
<th>Winter sand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Snow</td>
<td>Plow, treat intersections only</td>
<td>4.5</td>
<td>4</td>
<td>4.5</td>
<td>Not recommended</td>
<td></td>
</tr>
<tr>
<td>&gt;30 ↑</td>
<td>Frz. Rain</td>
<td>Apply chemical</td>
<td>5.75</td>
<td>5.25</td>
<td>6.5</td>
<td>Not recommended</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Snow</td>
<td>Plow and apply chemical</td>
<td>5.75</td>
<td>5.25</td>
<td>6.5</td>
<td>Not recommended</td>
<td></td>
</tr>
<tr>
<td>30 ↓</td>
<td>Frz. Rain</td>
<td>Apply chemical</td>
<td>6.5</td>
<td>5.75</td>
<td>7</td>
<td>Not recommended</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Snow</td>
<td>Plow and apply chemical</td>
<td>5.75</td>
<td>5.25</td>
<td>6.5</td>
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## Results of Field Calibration

<table>
<thead>
<tr>
<th>Gate Opening</th>
<th>Spread Width (ft.)</th>
<th>Discharge Rate (lb/min.)</th>
<th>Average Discharge Rate (((\text{Run1} + \text{Run2} + \text{Run3})/3))</th>
<th>Points of Material Discharged per 1000 square ft. ((D = B \times C \div A))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(5.28 \times W)</td>
<td>Run 1</td>
<td>Run 2</td>
<td>Run 3</td>
</tr>
<tr>
<td><strong>1”</strong></td>
<td>12</td>
<td>70</td>
<td>71</td>
<td>68</td>
</tr>
<tr>
<td><strong>1.5”</strong></td>
<td>11.4</td>
<td>92</td>
<td>84</td>
<td>86</td>
</tr>
<tr>
<td><strong>2”</strong></td>
<td>11</td>
<td>106</td>
<td>112</td>
<td>99</td>
</tr>
<tr>
<td><strong>2.5”</strong></td>
<td>10.75</td>
<td>120</td>
<td>128</td>
<td>129</td>
</tr>
<tr>
<td><strong>3”</strong></td>
<td>10.75</td>
<td>140</td>
<td>150</td>
<td>143</td>
</tr>
<tr>
<td><strong>EX</strong></td>
<td>14</td>
<td>87</td>
<td>92</td>
<td>93</td>
</tr>
</tbody>
</table>
Application Rate Example

1. What application rate should you select for:
   a) Salt Pre-Wet with Salt BRINE
   b) Dry Salt

2. Roughly how much total salt would you expect to use if the parking lot was ~5000 ft²?
Academic Rigor?

- 5% Failed the Exam

What is a vibration?

There are good vibrations and bad vibrations. Good vibrations were discovered in the 1960s.
## Re-take Policy

<table>
<thead>
<tr>
<th>1&lt;sup&gt;st&lt;/sup&gt; Re-take</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Re-take</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Re-take</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No waiting period</td>
<td>• 14-day wait period</td>
<td>• Must re-take course</td>
</tr>
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</table>
Transition to State Certification

1. Train
   - Technology Transfer Center
     New Hampshire LTAP at UNH

2. Certify
   - New Hampshire Department of Environmental Services
Since 2010 – Over 700 salt applicators trained
Since 2013 – Over 300 salt applicators certified by DES
Content of Rules

• Policy – “to maintain safe surfaces with the least amount of salt.”
• Training Requirements for Initial Certification
• Continuing Education
• Authorized Training Providers
• Recordkeeping
• Annual Reporting
Certification Breakdown

- Master Certificate: 35%
- Subordinate Certificate: 56%
- Individual Certificate: 9%
Profile of NH Salt Applicators

- Calibrate
- Pre-wet
- Liquid
- Acetate

0% 20% 40% 60%
Professional Development

Eric Brand
Salt of the Earth Award Winner

Justin Gamester
Shaken Not Stirred Award Winner

Alan Cote
Salt ‘n Peppa Award Winner
What’s Next?

- Annual Reports
- Marketing to Business Owners
- 2nd Annual Salt Symposium
- Dedicated Revenue Source
- Measure Progress
Upcoming Training Courses

May 6 -- Portsmouth, NH
June 12 -- Concord, NH
June 17 -- Grantham, NH
see t2.unh.edu for details
On the Web

www.des.nh.gov
Click on the “A to Z List”
Select “ROAD SALT REDUCTION”
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