Atlantic Alliance Meeting
April 20, 2007
State of the Industry in the United States
Industry Perspective
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National Stone, Sand & Gravel Association
Alexandria, VA  USA

Session 1
The Impact of the Aggregates Industry on the American Public

Every American Born Will Need...

- 1,64 million lbs Stone, Sand, & Gravel
- 81,585 gallons Petroleum
- 57,448 lbs Cement
- 5.9 million cu. ft. of natural gas
- 3.7 million pounds of minerals, metals, and fuels in his/her lifetime

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The Impact of Aggregates on the American Public

- Aggregates account for over 2/3 of the non-fuel minerals mined in the United States. (1/2 if coal is included.).
- The aggregates industry employs approximately 117,000 people.
- 3,100 quarries, 70 underground mines & 6,500 sand & gravel operations
We need aggregates close to where we live

- Aggregate operations must be located where deposits exist.
- Operations must be located near population areas whenever possible
  - 70% of local U.S. jurisdictions contain an aggregate operation
  - Hauling distances of 20-30 miles can more than double the delivered cost of aggregates.
Aggregate Operations in the United States

In all 50 states and 70% gov’t jurisdictions
End Uses of Aggregates

- Residential Buildings: 33%
- Highways & Streets: 31%
- Commercial Buildings: 19%
- Gov't Buildings: 5%
- Other Public Works: 8%
- Railroad Ballast: 3%
- Private Nonconstruction: 1%
Economic Impact of the Aggregates Industry, 2003 (in $billions)

- Sand & Gravel: $8.82 billion (Indirect) + $5.81 billion (Direct) = $14.63 billion
- Crushed Stone: $13.925 billion (Indirect) + $8.625 billion (Direct) = $22.55 billion
- Total: $22.745 billion (Indirect) + $14.435 billion (Direct) = $37.18 billion
Economic Impact

• For every new dollar of output in the aggregates industry, an additional $1.58 is generated in the U.S. economy.

• For each $1,000,000 in output produced by the industry 19.5 jobs are created.
Demand For Aggregates: Highway & Other Public Uses of Aggregates

Constant Dollars or tons (2005 = 100)

+2.1%/yr.

+2.9%/yr.

Demand for Aggregates: Housing

Constant Dollars or tons (2005 = 100)

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

+8.0%/yr.
+0.4%/yr.

Demand For Aggregates: Non-Residential Building

-3.7%/yr.  +2.4%/yr.

Aggregate Production From 1900 to 2025

Production (Billion Metric Tons)

- Sand & Gravel
- Crushed Stone
- Combined

Aggregate Production From 1900 to 2025

Production (Billion Metric Tons)

- Sand & Gravel
- Crushed Stone
- Combined

*Based on USGS estimates. Assumes 2.1 percent annual increase for crushed stone production and 1.3 percent increase in sand & gravel production.
Where will this aggregate come from and who will produce it?
Rinker Materials Florida
FEC Quarry
Miami, Florida
Largest Quarry in the US

L.C. Curtis & Son, Inc.
Watkinsville, GA
## U.S. Production of Aggregates by Size of Company’s Tonnage Production

<table>
<thead>
<tr>
<th>Rank</th>
<th>Number of Companies</th>
<th>% of all Companies</th>
<th>Production/Company (Millions of metric tons)</th>
<th>Total Production (Millions of metric tons)</th>
<th>% of U.S. Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-13</td>
<td>13</td>
<td>0.3</td>
<td>➥25</td>
<td>1,070</td>
<td>37.9</td>
</tr>
<tr>
<td>14-30</td>
<td>18</td>
<td>0.4</td>
<td>10 – 25</td>
<td>273</td>
<td>9.6</td>
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<tr>
<td>31-58</td>
<td>28</td>
<td>0.6</td>
<td>5 – 10</td>
<td>204</td>
<td>7.2</td>
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<tr>
<td>59-356</td>
<td>297</td>
<td>6.2</td>
<td>1 - 5</td>
<td>581</td>
<td>20.5</td>
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<tr>
<td>357-1282</td>
<td>926</td>
<td>19.4</td>
<td>0.25 – 1</td>
<td>455</td>
<td>16.1</td>
</tr>
<tr>
<td>1283-2235</td>
<td>954</td>
<td>20.0</td>
<td>0.1 – 0.25</td>
<td>151</td>
<td>5.3</td>
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<tr>
<td>223-4777</td>
<td>2541</td>
<td>53.1</td>
<td>&lt; 0.1</td>
<td>96.3</td>
<td>3.4</td>
</tr>
<tr>
<td>Total</td>
<td>4777</td>
<td>100.0</td>
<td>NA</td>
<td>2,830</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Based on USGS data.*
Who will produce aggregates?

- Most companies are small companies (85%+), many family-owned businesses (still true)
- Most aggregate produced by largest producers (The top 30 produce close to 50% of the aggregates.)
- Consolidation is increasing; the number of small companies is decreasing.
- The number of people in the workforce has not increased over the past 15 years
Comparison of Aggregate Industry
Workhours vs. Incident Rates from 1989-2004

Years
1989 1991 1993 1995 1997 1999 2001 2003

Inci dent Rates

Employee Hours

Total Incidence Rates

0 0.00
100,000,000 1.00
200,000,000 2.00
250,000,000 3.00
400,000,000 4.00
500,000,000 5.00
600,000,000 6.00
700,000,000 7.00
800,000,000 8.00

Comparison of Aggregate Industry Workhours vs. Incident Rates from 1989-2004
Atlantic Alliance Meeting
April 20, 2007
State of the Industry in the United States
Government Perspective
Robert M. Friend
Deputy Assistant Secretary for
Mine Safety and Health
Arlington, VA USA
State of the Industry
MNM fatalities have dropped sharply since the Mine Act of 1977-from 134 in 1977 to 25 in 2006.
MNM Fatalities and Incidence Rates  
CY 1995 through 2006

![Graph showing MNM Fatal Accidents and Total Incidence Rate for the years 1995 to 2006.](image)

IR = (# Incidents x 200,000) / Hours Worked
MNM All Incidence Rate vs. Aggregate All Incidence Rate

MNM All IR
Aggregate All IR
M/NM and Aggregates Fatal IR vs. M/NM's Fatal IR GPRA Goals

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>M/NM Fatal IR Target</th>
<th>M/NM Fatal IR</th>
<th>Aggregates Fatal IR</th>
</tr>
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<tbody>
<tr>
<td>2003</td>
<td>.0176</td>
<td>.0146</td>
<td>.0221</td>
</tr>
<tr>
<td>2004</td>
<td>.0170</td>
<td>.0134</td>
<td>.0161</td>
</tr>
<tr>
<td>2005</td>
<td>.0165</td>
<td>.0167</td>
<td>.0229</td>
</tr>
<tr>
<td>2006</td>
<td>.0160</td>
<td>.0132</td>
<td>.0154</td>
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<tr>
<td>2007*</td>
<td>.0155</td>
<td>.0096</td>
<td>.0085</td>
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<tr>
<td>2008</td>
<td>.0150</td>
<td></td>
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</tr>
</tbody>
</table>

*1st Qtr. Preliminary Data

**The M/NM Fatal IR Target and M/NM Fatal IR Actual include contractors while the Aggregates Fatal IR excludes contractors.
M/NM and Aggregates All Injury IR vs. M/NM's All Injury IR GPRA Goals

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>M/NM All Injury IR Target</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007*</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.64</td>
<td>3.64</td>
<td>3.29</td>
<td>2.97</td>
<td>2.68</td>
<td>2.42</td>
<td>2.19</td>
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<tr>
<td></td>
<td>3.68</td>
<td>3.68</td>
<td>3.55</td>
<td>3.56</td>
<td>3.24</td>
<td>2.77</td>
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<tr>
<td></td>
<td>3.55</td>
<td>3.55</td>
<td>3.42</td>
<td>3.44</td>
<td>3.19</td>
<td>2.56</td>
<td></td>
</tr>
</tbody>
</table>

*1st Qtr. Preliminary Data
**The M/NM All Injury IR Target and M/NM All Injury IR Actual include contractors while the Aggregates All Injury IR excludes contractors.
## MNM Fatalities Since 2001

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
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<tbody>
<tr>
<td>Powered Haulage</td>
<td>16</td>
<td>15</td>
<td>6</td>
<td>7</td>
<td>16</td>
<td>7</td>
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<tr>
<td>Machinery</td>
<td>2</td>
<td>15</td>
<td>8</td>
<td>6</td>
<td>10</td>
<td>4</td>
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<tr>
<td>Electrical</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Fall of Material /</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Highwall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall of Roof / Back</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Slip / Fall of Person</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Other</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>30</td>
<td>42</td>
<td>26</td>
<td>27</td>
<td>35</td>
<td>25</td>
</tr>
</tbody>
</table>
## Powered Haulage

<table>
<thead>
<tr>
<th>Year</th>
<th>‘01</th>
<th>‘02</th>
<th>‘03</th>
<th>‘04</th>
<th>‘05</th>
<th>‘06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatalities</td>
<td>16</td>
<td>15</td>
<td>6</td>
<td>7</td>
<td>16</td>
<td>7</td>
</tr>
</tbody>
</table>

- Mobile equipment and conveyors
- Issues...
  - Seat belt use
  - Conveyor guarding,
    esp. return idlers
    and tail pulleys
  - Human factors
  - Training
## Machinery

<table>
<thead>
<tr>
<th>Year</th>
<th>‘01</th>
<th>‘02</th>
<th>‘03</th>
<th>‘04</th>
<th>‘05</th>
<th>‘06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatalities</td>
<td>2</td>
<td>15</td>
<td>8</td>
<td>6</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>

- Lower after 4 yrs of high fatalities
MNM Fatalities - 2006

Non Agg Fatal Acc, 28%
(7)
2,363 Mines (19%)

Aggregate Fatal Acc, 72%
(18)
10,378 Mines (81%)
Root Causes

• No Risk Assessment Conducted
• No/Inadequate Policy or Procedures
• Did not use Personal Protective Equipment
• Lack of Pre-operation Checks
• Equipment not Maintained
• Training Inadequate
• Failure to Conduct Examinations
### Most Frequently Cited Standards

**All Operations, FY 2006**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
<th>No. C/O</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>56/57.14107(a)</td>
<td>Guarding Machine Moving Parts</td>
<td>6769</td>
<td>10.4</td>
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<tr>
<td>56/57.14100(b)</td>
<td>Mobile Equipment Safety Defects</td>
<td>3857</td>
<td>6.0</td>
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<tr>
<td>56/57.14132(a)</td>
<td>Mobile Equipment Horns &amp; Back Up Alarms</td>
<td>3345</td>
<td>5.2</td>
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<tr>
<td>56/57.12004</td>
<td>Electrical Conductors</td>
<td>2441</td>
<td>3.8</td>
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<tr>
<td>56/57.20003(a)</td>
<td>Housekeeping</td>
<td>2158</td>
<td>3.3</td>
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<tr>
<td>56/57.12032</td>
<td>Electrical Inspection &amp; Cover Plates</td>
<td>1862</td>
<td>2.9</td>
</tr>
<tr>
<td>56/57.14112(b)</td>
<td>Construction &amp; Maintenance of Guards</td>
<td>1850</td>
<td>2.9</td>
</tr>
<tr>
<td>56/57.14101(a)(2)</td>
<td>Parking Brakes on Mobile Equipment</td>
<td>1477</td>
<td>2.3</td>
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<tr>
<td>56/57.11001</td>
<td>Safe Access</td>
<td>1389</td>
<td>2.1</td>
</tr>
<tr>
<td>56/57.12008</td>
<td>Insulation &amp; Fittings for Power Wires &amp; Cables</td>
<td>1359</td>
<td>2.1</td>
</tr>
<tr>
<td>56/57.9300(a)</td>
<td>Berms or Guardrails</td>
<td>1258</td>
<td>1.9</td>
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<tr>
<td>50.30(a)</td>
<td>Prepare &amp; Submit Form 7000-2, Qtrly Employment</td>
<td>1115</td>
<td>1.7</td>
</tr>
<tr>
<td>56/57.12028</td>
<td>Testing Grounding Systems</td>
<td>1084</td>
<td>1.7</td>
</tr>
<tr>
<td>56/57.12030</td>
<td>Correct Dangerous Conditions Before Energizing</td>
<td>829</td>
<td>1.3</td>
</tr>
<tr>
<td>56/57.11002</td>
<td>Handrails &amp; Toeboards</td>
<td>800</td>
<td>1.2</td>
</tr>
<tr>
<td>56/57.14112(a)(1)</td>
<td>Construction &amp; Maintenance of Guards</td>
<td>703</td>
<td>1.1</td>
</tr>
</tbody>
</table>

These standards accounted for 50% of all citations issued. 32,296