ATLANTIC ALLIANCE CONFERENCE

CAMBORNE SCHOOL OF MINES
UNIVERSITY OF EXETER IN CORNWALL

OCCUPATIONAL HEALTH
-- U.S. Health Program --
Hanson
Building
Materials
America
If you can’t measure it you can’t manage it

Safety

- SHR
- Citations
<table>
<thead>
<tr>
<th>Consolidated</th>
<th>Hours Worked</th>
<th>Total Injuries</th>
<th>Lost Time Injuries</th>
<th>Total Injuries</th>
<th>Lost Work Days</th>
<th>YTD Incidence Rate (Per 200,000 Hours)</th>
<th>Total Case (TCl)</th>
<th>Lost Time (LTh)</th>
<th>Lost Day (LD)</th>
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<td>0 42 175</td>
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<td>Southeast</td>
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<td>Mountain</td>
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<td>Number of Inspections</td>
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<td>S &amp; S Citations</td>
<td>Fines ($)</td>
<td>Citations per Inspect</td>
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<td>233</td>
<td>27</td>
<td>246</td>
<td>239</td>
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<td>28</td>
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<td>0</td>
<td>14</td>
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<td>13</td>
<td>7</td>
<td>6</td>
<td>47</td>
<td>10</td>
<td>1</td>
<td>11</td>
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<td>54</td>
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<td>90</td>
<td>74</td>
<td>19</td>
<td>127</td>
<td>158</td>
<td>5</td>
<td>23</td>
<td>40</td>
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<tr>
<td>Total All Operations</td>
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<td>352</td>
<td>70</td>
<td>482</td>
<td>536</td>
<td>12</td>
<td>0</td>
<td>83</td>
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</table>

| Building Products |       |     |    |       |     |    |       |     |    |       |     |    |       |     |    |        |    |
| Eastern Region    | 0     | 1   | 0  | 0     | 3   | 7  | 0     | 0   | 0  | 0     | 0   | 2200| 0    | 0    | 0    | 7.0 |
| Central Region    | 0     | 1   | 1  | 0     | 0   | 10 | 0     | 0   | 0  | 0     | 1,500| 0   | 0    | 1.0  | 0.0  | 0.0 |
| North Central     | 0     | 7   | 1  | 0     | 0   | 0  | 0     | 0   | 0  | 0     | 0   | 0   | 0    | 0    | 0.0  | 0.0 |
| South Central     | 0     | 2   | 0  | 0     | 0   | 0  | 0     | 0   | 0  | 0     | 0   | 0   | 0    | 0    | 0.0  | 0.0 |
| Southeast Region  | 0     | 2   | 0  | 0     | 0   | 0  | 0     | 0   | 0  | 0     | 0   | 0   | 0    | 0    | 0.0  | 0.0 |
| Spancian Pacifics | 1     | 1   | 0  | 0     | 0   | 0  | 0     | 0   | 0  | 0     | 0   | 0   | 0    | 0    | 0.0  | 0.0 |
| Northeast         | 0     | 2   | 1  | 0     | 0   | 2  | 0     | 0   | 0  | 0     | 0   | 2,125| 0    | 0    | 0.0  | 2.0 |
| South Central (Ontario) | 0 | 0   | 0  | 0     | 0   | 0  | 0     | 0   | 0  | 0     | 0   | 0   | 0    | 0    | 0.0  | 0.0 |
| MASP Corporate Office | 0 | 0   | 0  | 0     | 0   | 0  | 0     | 0   | 0  | 0     | 0   | 0   | 0    | 0    | 0.0  | 0.0 |
| Total Pipe & Products | 1 | 16 | 3  | 9   | 0   | 0  | 0     | 0   | 0  | 0     | 1,580| 4,266| 0    | 0.1  | 3.0  |
| East Roof Tile    | 0     | 1   | 0  | 0     | 2   | 0  | 0     | 0   | 2  | 0     | 0   | <686| 0    | 0    | 2.0  | 0.0  | 0.0 |
| West Roof Tile    | 0     | 0   | 2  | 0     | 0   | 0  | 0     | 0   | 0  | 0     | 0   | 0   | 0    | 0    | 0.0  | 0.0  | 0.0 |
| Total Roof Tile   | 0     | 1   | 2  | 0     | 2   | 0  | 0     | 0   | 2  | 0     | 1,588| 0   | 0    | 2.0  | 0.0  | 0.0 |
| Northern Region   | 0     | 0   | 4  | 0     | 0   | 13 | 0     | 0   | 0  | 0     | 0   | 0   | 0    | 0    | 0.0  | 0.0  | 4.5 |
| Midwest Region    | 1     | 7   | 5  | 0     | 4   | 1  | 0     | 0   | 0  | 0     | 586  | 65  | 0    | 0.6  | 0.2  |
| Southeast Region  | 0     | 11  | 8  | 0     | 7   | 31 | 0     | 1   | 0  | 0     | 815  | 5,000| 0.0  | 0.6  | 3.8  |
| South Central     | 0     | 3   | 2  | 0     | 0   | 0  | 0     | 0   | 0  | 0     | 0   | 0   | 0    | 0    | 0.0  | 0.0  | 0.0 |
| Total Break       | 1     | 21  | 19 | 0     | 11  | 60 | 0     | 0   | 1  | 0     | 1,020| 6,611| 0.0  | 0.6  | 2.6  |
| Total Building Products | 2 | 37 | 24 | 0 | 14 | 59 | 0 | 0 | 4 | 6 | 4,588 | 9,076 | 0.0 | 0.4 | 2.5 | 2.5 |
| Total All Operations | 32 | 380 | 393 | 70 | 406 | 595 | 12 | 0 | 97 | 112 | 6,656 | 47,283 | 97,610 | 2.2 | 1.9 | 1.6 |
Initial Air/Noise Monitoring Program

- One of first American aggregate companies to implement company-wide in-house monitoring

- IH Program considered second only to Vulcan in U.S.
Dust Containing Respirable Crystalline Silica
Air Monitoring: 2003

Compliance Status: HBMA

80% in Control
11% Evaluate
9% PNC
Air Monitoring: 1999 - 2003
IH PROGRAM REVIEW
Positive Aspects

- Management commitment to program
- Monitoring equipment
- Analytical services
- Growing database of RCS results
- Unique HARP system
**Harp Submittal Form**

- **Your Email:** Peter.Ward@HansonAmerica.co
- **Plant:** Plum Run Stone
- **Anticipated Start Date:**
- **Anticipated End Date:**
- **Cassettes will be shipped to:**
  - **Attention:** Terry Louderback
  - **Address 1:** 848 Plum Run Road
  - **City:** Peebles
  - **State:** OH
  - **Zip:** 45660
  - **Phone:** (937) 587-2671

- **Test 1:** None
- **Test 2:** None
- **Test 3:** None
- **Test 4:** None
- **Test 5:** None

- **Blanks Needed:** 0
- **Total Cassettes:** 0

- **Calibration Requested:** 0

*Bold face fields are required*
IH PROGRAM REVIEW

Areas of Concern

- Quality of some data
- Annual NIST calibrations
- Sampling strategy
- Website / database
- Corporate guidance
CALIBRATION CERTIFICATE

Instrument: Gilibrator-2
Flow Cell Serial #: 001-194
Base Serial #: 004519
Final Condition: Functional and In Tolerance for 1,000 cc/min to 3,000 cc/min
Restriction: Do NOT use for flow rate calibrations <1,000 cc/min.

Reference Standard
Device: Bios DC Lite       Model: DCL-M       Serial #: 102387
Last Calibration: 02/25/2004       Date Calibration Due: 02/23/2005
Measurement Uncertainty: ±1% for 90-7,000 cc/min

<table>
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<tr>
<th>Test Flow Rate</th>
<th>Test Flow Rate Range (±1%)</th>
<th>Lab Standard Reading</th>
<th>Instrument Reading</th>
<th>Deviation Percentage</th>
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<tr>
<td>500 cc/min</td>
<td>495 – 505 cc/min</td>
<td>505 cc/min</td>
<td>474 cc/min</td>
<td>-6.2%</td>
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<td>1,000 cc/min</td>
<td>990 – 1,010 cc/min</td>
<td>1,007 cc/min</td>
<td>1,000 cc/min</td>
<td>-0.7%</td>
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<tr>
<td>1,500 cc/min</td>
<td>1,485 – 1,515 cc/min</td>
<td>1,492 cc/min</td>
<td>1,492 cc/min</td>
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<tr>
<td>2,000 cc/min</td>
<td>1,980 – 2,020 cc/min</td>
<td>1,999 cc/min</td>
<td>2,010 cc/min</td>
<td>0.6%</td>
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<tr>
<td>2,500 cc/min</td>
<td>2,475 – 2,525 cc/min</td>
<td>2,490 cc/min</td>
<td>2,510 cc/min</td>
<td>0.8%</td>
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<tr>
<td>3,000 cc/min</td>
<td>2,970 – 3,030 cc/min</td>
<td>2,980 cc/min</td>
<td>3,005 cc/min</td>
<td>0.8%</td>
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</table>

Calibrated By: __________________________________________ 03/04/2004
Richard G. Price, CIH, CSP

This report certifies that the calibration equipment used is traceable to the NIST.
IH PROGRAM
Areas of Concern

- Quality of data
  - Lack of understanding of scientific basis of IH monitoring.
    - Problems with sampling technique
      - Instrument calibration
      - Sample time
      - Cyclones
      - blanks
IH PROGRAM REVIEW UPGRAGES

Hanson IH Technician Certification Course

- Upgrade knowledge and skills of safety personnel
- Four day course in IH principles and technique
- Final exam: Hanson Certified IH Technician.
- Only Certified IH Technicians allowed to perform noise and air monitoring
- Re-certification required every three years
INTRODUCTION TO INDUSTRIAL HYGIENE (8 hours)

- IH History and Evolution
  - IH History & recent advances

- IH Today
  - Current and Evolving IH Issues (Asbestos, Silica, Carbon Reproductive Hazards, etc.)

- Toxicology
  - Routes of Exposure; Dose – Response; Acute v. Chronic Effects; Effects of Overexposure; Carcinogens, Teratogens, Mutagens
INTRODUCTION TO INDUSTRIAL HYGIENE (8 hours)

- Anatomy, Physiology, Pathology
  - Lungs, Ears, Skin & Eyes

- States of Matter – Why They Matter
  - Gases, Vapors, Mists, Dust & Fumes

- Occupation Exposure Limits
  - OSHA and MSHA PELs
  - ACGIH TLVs and NIOSH RELs

- Conducting Qualitative Industrial Hygiene Surveys
DAY 2

INDUSTRIAL HYGIENE MONITORING (8 hours)

- **Targeted Exposure Monitoring**
  - Assessing Greatest Hazards First

- **Random Exposure Monitoring**
  - Develops Exposure Database & Detect Unnoticed Changes

- **Specific Air contaminants Exposure Monitoring Procedures**
  - Silica; total Dust; Welding Fumes; Diesel Particulate Matter; Asbestos; Asphalt Fumes; Coal Tar Pitch Volatiles & Xylene

- **Noise Monitoring Procedures**
DAY 3

INDUSTRIAL HYGIENE SAMPLING (12 hours)

- Air Contaminants and Noise Monitoring
  - Plant or Quarry Near Training
  - Each Trainee Tracks Two Air Samples and One Noise Dosimeter
  - Familiarizes Trainees with IH Equipment in Use
  - Training and Site Monitoring Accomplished Simultaneously

DAY 4

COURSE REVIEW AND WRITTEN TEST (4 hours)

- Course Review – Questions, Answers, Discussions
- Written Test Covering Course Material
Industrial Hygiene Training Course

The Alpha Class –
December 8-11, 2003
Grand Prairie, TX
IH Tech Certification Course
Grand Prairie - 8 - 11 Dec 03
IH Tech Certification Course
Grand Prairie - 8 - 11 Dec 03
IH Tech Certification Course
Grand Prairie - 8 - 11 Dec 03
IH Tech Certification Course
Grand Prairie - 8 - 11 Dec 03
IH Tech Certification Course
Grand Prairie - 8 - 11 Dec 03
Chip Rogers
has successfully completed the Hanson North America training and examination requirements for
Industrial Hygiene Technician 2
Industrial Hygiene Sampling and Initial Results Interpretation
Certificate # 2003-005
Completed at Grand Prairie, TX
December 8-11, 2003

Richard G. Price, CIH, CSP
Senior Industrial Hygienist

Peter F. Ward
Corporate Safety Director

Kathleen O'Doherty, MS
Corporate Industrial Hygienist
IH PROGRAM REVIEW
Areas of Concern

Calibrator certification

- Dosimeters and field calibrators must be calibrated against a NIST standard annually.
IH PROGRAM REVIEW UPGRAGES

Hanson IH Calibration Lab

- Dosimeters and Dosimeter Field Calibrators
  - 50 dosimeters in field @ $260 - $335 per annual calibration
  - Payback at ~ 6 months.

- Dosimeters and Dosimeter Field Calibrators
  - 20 dosimeters in field @ $250 per annual calibration
  - Payback less than 6 months.
  - Annual saving $2,400 in 1st year; $3,150 subsequent years.
Areas of Concern

Sampling Strategy

- Targeted monitoring
  - Sites
  - Job types
# HANSON AGGREGATES OPERATIONS WITH MONITORING DATA

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<th>Number</th>
<th>Number Sampled</th>
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<td>64</td>
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<tr>
<td>Sand / Gravel</td>
<td>61</td>
<td>27</td>
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<td>Quarry</td>
<td>35</td>
<td>28</td>
<td>80</td>
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<td>Crushed Stone</td>
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<td>Stone</td>
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<td>0</td>
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<td>Construction</td>
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<td>100</td>
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<td><strong>Total</strong></td>
<td><strong>310</strong></td>
<td><strong>119</strong></td>
<td><strong>38%</strong></td>
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</table>
% of Total Samples vs Number of Job Codes Sampled
Areas of Concern

Website / database

- Design not robust enough to accommodate growth
  - Additional test methods/reports
  - Centralized database for dosimetry data
  - Documentation of field monitoring notes
  - Improved tracking for non-compliant results
  - Capability for ad hoc reports and statistical analysis
IH Website
# HANSON ANALYTICAL REQUEST PROCEDURE FORM (HARP)

## Air Sampling

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<tr>
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<td>Neptune</td>
</tr>
<tr>
<td>State</td>
<td>NJ</td>
</tr>
<tr>
<td>Zip</td>
<td>07753</td>
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**Anticipated Start Date:** 30/09/04  
**Anticipated Completion Date:** 30/09/04

**Number of Cassettes:** 7  
**Number of Blanks Included:** 1

### Project Management Contacts

**Hanson Building Materials America, Contact**

- **Hanson Laboratory Coordinator:** Kathy O'Doherty  
  **Address:** 19500 Pepper Avenue  
  **City:** Fontana  
  **State:** CA  
  **Zip:** 92337  
  **Phone:** (909) 338-8238  
  **Fax:** (909) 338-2299

**Laboratory Contact**

- **Laboratory Name:** R.J. Lee Group Inc.  
  **Address:** 3517 Linwood Road  
  **City:** Monroeville  
  **State:** PA  
  **Zip:** 15146  
  **Phone:** (724) 337-1964  
  **Fax:** (724) 733-1799

### HARP Data

<table>
<thead>
<tr>
<th>HARP ID#</th>
<th>Division Code</th>
<th>Region Code</th>
<th>Plant Code</th>
<th>Month/Year</th>
<th>HARP Tracking Number</th>
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<td>0001</td>
<td>1003</td>
<td>760</td>
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</table>

**Ship Cassette To:** Peter Ward  
**Address:** 1333 Campus Parkway  
**City:** Neptune  
**State:** NJ  
**Zip:** 07753  
**Phone:** 732-919-9777

**Sampler's Name:**  
**Sampler's Type:** Two Face

### Signature Approval for Initiation of Project

**HARP Originator:** Kathy O'Doherty

**HARP Project Manager:**

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### Verification of Samples Collected and Analyzed upon Project Completion

- **For Laboratory Only:**
  - Does laboratory confirm with the correct number of samples collected and analyzed as listed above?  
  - Does analysis meet all applicable QA/QC requirements?  
  - (This will verify the actual number of samples analyzed for billing purposes.)

**Discrepancies:**

**Laboratory Project Manager Signature:**

**Date:**
# SAMPLING REPORT

Respirable Dust Containing Crystalline Silica

**Exposure Limits and Severity Ratios**

Report data from: 01/01/03

**Div:** Pipe & Products  
**Reg:** Southeast Region  
**Plant:** Bradenton Pipe, FL

**ANALYSIS:** Respirable Dust and Crystalline Silica  
**METHOD:** NIOSH 0600, gravimetric and NIOSH 7500, X-Ray Diffraction  
**EXPOSURE LIMIT:** OSHA/MSHA: 10 mg/m³ + %SiO₂ + 2

<table>
<thead>
<tr>
<th>Employee</th>
<th>Cassette</th>
<th>Job Description</th>
<th>Sample Date</th>
<th>Quartz Wt. %</th>
<th>Airborne Concentration mg/m³</th>
<th>Shift-adjusted Exposure Limit mg/m³</th>
<th>Severity Ratio</th>
<th>Exposure Status</th>
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<tbody>
<tr>
<td>2089089</td>
<td>71466</td>
<td>Pipe Patcher</td>
<td>09/17/03</td>
<td>&lt; 3.7</td>
<td>0.178</td>
<td>5.000</td>
<td>&lt; 0.1</td>
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<td>4259003</td>
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<td>Overhead Crane Operator</td>
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IH PROGRAM UPGRADES

Hanson IH Website Upgrade

- **Website Navigation Redesign**
  - Easier, quicker to use
  - Cleaner, more up-to-date look

- **Website Functions Rebuilt**
  - Interactive HARP for more versatility
  - Allow ad hoc reports to be run by Corp.

- **Database Reconstruct**
  - More stable architecture
  - Allow for future growth
  - Enable Corp IH to maintain tables and reports
IH PROGRAM UPGRADES

HBMA Corp. IH Guidance

- Track and monitor potential overexposure situations
- Monitor and document exposure controls, e.g. PPE, engineering controls
- Report quarterly monitoring progress
Dust Containing Respirable Crystalline Silica
Air Monitoring: 2003

Compliance Status: HBMA

- In Control: 80%
- Evaluate: 11%
- PNC: 9%
Dust Containing Respirable Crystalline Silica
Air Monitoring: EOY 2003

A total of 515 respirable crystalline silica (RCS) samples were analyzed by R.J. Lee in 2003. The In Control samples made up 80% of the total and PNCs were 11%. In addition to RCS, 80 total dust and 26 welding samples were collected in 2004.

During 2002, 466 RCS samples (83% in control and 11% PNCs), 49 total dust and 6 welding samples were collected.

RCS Samples by Division
Dust Containing Respirable Crystalline Silica
Air Monitoring: EOY 2003

RCS Compliance Status: Building Products

- In Control: 72%
- Evaluate: 17%
- PNC: 11%

RCS Compliance Status: Aggregates

- In Control: 80%
- Evaluate: 9%
- PNC: 11%
IH PROGRAM UPGRAGES

HBMA Corp. IH Guidance

- Track and maintain calibration of equipment
- Track and evaluate performance of Certified IH Techs
- Conduct IH Hazard Assessments with field safety professionals
- Assist field safety professionals with new or unusual monitoring tests.
Current IH Regulatory Issues

**SILICA**

- **OSHA:** Small business review phase of draft standard in final stage. OSHA is noncommittal as to what the proposed standard, if any, will contain – including PEL.
- **MSHA:** Latest Regulatory Agenda mentions ANPR due in May 2004.
- **ACGIH:** Notice of Intended Change to lower TLV from 0.05mg/m\(^3\) to 0.025mg/m\(^3\).
ASBESTOS

DIESEL PARTICULATE MATTER
- MSHA: Limited reopening of rulemaking record for comments.

MISCELLANEOUS
- Cr+6, Be: Both hexavalent chromium and beryllium are on OSHA Regulatory Agenda for this year.
IH Legislative & Judicial Issues

U.S. SENATE

- **Asbestos:** Fate of Asbestos Trust Fund Act still uncertain. Both the Trust Fund and the Ban Asbestos bill initially contained expanded asbestos definitions which would have been disastrous for the aggregates industry.

CIVIL COURTS

- News coverage of continuing asbestos and mushrooming silica lawsuits continues to keep these subjects on the front burner.
ATLANTIC ALLIANCE CONFERENCE

CAMBORNE SCHOOL OF MINES
UNIVERSITY OF EXETER IN CORNWALL

OCCUPATIONAL HEALTH
-- U.S. Health Program --