Agenda

Date
Tuesday, June 7, 2011

Place
Francesco’s Restaurant
8520 Pardee Drive
Oakland, CA 94621

Time
8:30 A.M. - 12:30 P.M.

8:30 am  Introduction - Kate Smiley - AGC-CA
8:35 am  “Why We Care About Job Site Dust Control: The Science Behind It”
         Joel Cohen, MPH,CIH - The COHEN Group
9:30 am  Cal/OSHA and the Regulatory Perspective
         Bob Barish - Cal/OSHA, Research and Standards
10:00 am BREAK
10:15 am The Legal Perspective: Toxic Torts
         Richard Finn - Burnham and Brown
11:00 am Contractors Panel: BMP’s and Practical Applications
         Bill Koponen - Syblon Reid
         Jerry Shupe - Hensel Phelps
         Bill Jackson - Granite Construction Company
11:45 am Conclusion - Marcus Oden – Hilti
12:00 pm Equipment Demonstrations
12:45 pm END OF SEMINAR
Jobsite Dust Control: Why We Care

Joel Cohen, MPH, CIH
The Cohen Group
San Mateo, CA
www.thecohengroup.com
Agenda

- What is Silica & Where is it found?
- What are the Health hazards associated with Silica?
- What levels of Silica are commonly found in Construction?
- How do you sample for airborne Silica?
- Q & A
What is Silica?
What is Silica?

- Chemically, it is SiO₂
- Silica can be crystalline or non-crystalline
  - Non-crystalline forms
    - Referred to as ‘amorphous’
    - Some common forms include:
      - Diatomaceous Earth
      - Silica Gel (paint fillers)
      - Fused Silica (found in glass, plastics, camera lenses)
Where is Crystalline Silica Found?

- Crystalline Silica, Free Silica and Quartz are terms used interchangeably.
- Quartz is the second most common mineral found in the earth’s crust.
- Quartz is a common component of sand, stone, rock, concrete, clay, brick, block, and mortar:
  - Granite: 25-40% quartz
  - Shale: 20-25% quartz
  - Sandstone: 60-70% quartz
  - Concrete: >5% quartz
What are the Health Effects?
Construction of nearby tunnel, diverting waters of New R. through Gauley Mt. for hydroelectric power, resulted in state's worst industrial disaster. Silica rock dust caused 109 admitted deaths in mostly black, migrant underground work force of 3,000. Congressional hearing placed toll at 476 for 1930-35. Tragedy brought rec-ognition of acute silicosis as occupational lung disease and compensation legislation to protect workers.
Health Hazards Associated with Quartz

- **Silicosis**
  - Pulmonary fibrosis from inhalation of respirable crystalline silica particles < 10µm
  - **Particle Size and Dose** are most important factors
  - Latency of fibrosis may be 30-40 years

- **3 types of Silicosis**
  - Chronic (>10yrs of relatively low dose)
  - Accelerated (develops in 5-10 years after first dose)
  - Acute (develops within weeks to years after high dose)

[CDC/NIOSH, Health Effects of Occupational Exposure to Respirable Crystalline Silica, 2002-129]
Health Hazards Associated with Quartz

- Most epidemiologic data and dose/response models developed from study of miners, granite workers, & foundry workers
  - Not construction workers
- Other Health Hazards Associated with Quartz
  - Chronic Obstructive Pulmonary Disease (COPD)
  - Tuberculosis
    - As silicosis progress, bacterial or fungal infections are possible
    - Tuberculin test now recommended for >25yrs of silica work (ATS 1997)
  - Other effects (Rheumatoid arthritis, scleroderma, lupus)

[CDC/NIOSH, 2002-129]
Cancer Association with Quartz

- **1980s – Debate started**
- **International Agency for Research on Cancer (IARC)**
  - 1996 deemed “sufficient evidence in humans” (Group 1)
  - 1997 acknowledged epi studies were not uniform and work groups are not comparable
    - Carcinogenicity “may be dependent on characteristics of silica or external factors”
- **National Toxicology Program (NTP)**
  - 1998 re-evaluated studies due to IARC
  - 2000 designated crystalline silica a human carcinogen

[see IARC Volume 68, 5/20/97; NTP Report on Carcinogens, 11th Ed.]
Cancer Association with Quartz

- **NIOSH**
  - Recommended respirable crystalline silica to be considered a potential occupational carcinogen

- **ACGIH**
  - 2006 adds A2 Notation “Suspected Human Carcinogen”

- **California Prop 65**
  - 1988 Silica added to list as cancer causing agent

[Ca Hlth and Safety Code, §25249]
# Occupational Exposure Limits for Quartz

<table>
<thead>
<tr>
<th>Source</th>
<th>Type</th>
<th>Limit (mg/m³)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cal/OSHA §5155</td>
<td>Total</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Respirable</td>
<td>0.1</td>
</tr>
<tr>
<td>Fed/OSHA 1910.1000 Z-3 table</td>
<td>Total</td>
<td>30/(%quartz + 2)</td>
</tr>
<tr>
<td></td>
<td>Respirable</td>
<td>10/(%quartz + 2)</td>
</tr>
<tr>
<td>MSHA 30CFR56,57,70,71</td>
<td>Respirable</td>
<td>10/(%quartz +2)</td>
</tr>
<tr>
<td></td>
<td>Respirable (&gt;5%)</td>
<td>10/%quartz</td>
</tr>
<tr>
<td>ACGIH</td>
<td>Respirable</td>
<td>0.025 (adopted 2006)</td>
</tr>
<tr>
<td>NIOSH</td>
<td>Respirable</td>
<td>0.05, 10-hr TWA</td>
</tr>
</tbody>
</table>

*Note: 8-hr TWA, unless otherwise noted*
Quartz Exposures in Construction

<table>
<thead>
<tr>
<th>Task</th>
<th>Samples Collected</th>
<th>Quartz Concentration (GM - mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuckpoint grinding</td>
<td>101</td>
<td>0.60</td>
</tr>
<tr>
<td>Drill concrete</td>
<td>97</td>
<td>0.20</td>
</tr>
<tr>
<td>Surface grinding</td>
<td>122</td>
<td>0.29</td>
</tr>
<tr>
<td>Road demo</td>
<td>51</td>
<td>0.09</td>
</tr>
<tr>
<td>Cut concrete/brick</td>
<td>164</td>
<td>0.08</td>
</tr>
<tr>
<td>Cleanup</td>
<td>61</td>
<td>0.05</td>
</tr>
</tbody>
</table>

J Occ Env Hyg 3:144-152, 2006
## Silica Exposure for Construction Tools

<table>
<thead>
<tr>
<th>Tool</th>
<th>Average* (mg/m³)</th>
<th>Maximum (mg/m³)</th>
<th>No. of samples</th>
<th>% of samples over WA Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuck point grinder</td>
<td>0.61</td>
<td>76.10</td>
<td>102</td>
<td>89%</td>
</tr>
<tr>
<td>Surface grinder</td>
<td>0.28</td>
<td>18.20</td>
<td>123</td>
<td>79%</td>
</tr>
<tr>
<td>Abrasive blaster</td>
<td>0.24</td>
<td>11.26</td>
<td>56</td>
<td>73%</td>
</tr>
<tr>
<td>Rock drill</td>
<td>0.21</td>
<td>16.00</td>
<td>93</td>
<td>70%</td>
</tr>
<tr>
<td>Jackhammer/chipping gun</td>
<td>0.15</td>
<td>3.86</td>
<td>178</td>
<td>58%</td>
</tr>
<tr>
<td>Hand-held saw</td>
<td>0.13</td>
<td>14.15</td>
<td>65</td>
<td>52%</td>
</tr>
<tr>
<td>Road mill</td>
<td>0.11</td>
<td>1.36</td>
<td>48</td>
<td>52%</td>
</tr>
<tr>
<td>Walk-behind saw</td>
<td>0.09</td>
<td>1.64</td>
<td>33</td>
<td>45%</td>
</tr>
<tr>
<td>Table mount masonry saw</td>
<td>0.07</td>
<td>2.75</td>
<td>51</td>
<td>35%</td>
</tr>
<tr>
<td>Concrete mixer</td>
<td>0.04</td>
<td>0.55</td>
<td>32</td>
<td>25%</td>
</tr>
<tr>
<td>Broom or shovel</td>
<td>0.03</td>
<td>1.19</td>
<td>49</td>
<td>14%</td>
</tr>
<tr>
<td>Backhoe/excavator/bulldozer/bobcat</td>
<td>0.01</td>
<td>0.12</td>
<td>28</td>
<td>7%</td>
</tr>
</tbody>
</table>

*compare to Washington Limit of: for full shift samples: 0.10

*geometric mean

U of Wash, Sept 2006
Quartz Exposure From Hand-Held Grinders

- 4.5 inch angle grinder used on concrete walls in a parking garage
- **Effect of Wind (upwind/downwind measurement)**
  - > 2 mph: 0.02 – 1.80 mg/m³ Quartz
    - 0.34 – 40.0 mg/m³ Respirable Dust
  - ≤ 2 mph: 0.17 – 7.10 mg/m³ Quartz
    - 3.80 – 81.0 mg/m³ Respirable Dust
- **Approx. 69% of subjects overexposed**

Other Source of Silica Exposure

- Wall Caulk Removal
  - PCBs and Silica exposure
- Dry Removal (reciprocating saw, utility knife)
  - ND to 0.054 mg/m$^3$ quartz
- Wet Removal (same tools)
  - ND to 0.016 mg/m$^3$ quartz

[AIHCE Conference May 2011  Poster 109]
How Do You Sample for Silica?
How IH’s Collect Silica Samples in Air

IHs collect air samples for short term or up to 8 hours called an 8 hr TWA (time weighted average)

IHs collect Personal or Area Samples or Both
Conclusions

- Silica is ubiquitous in our environment
- Silica (quartz) is associated with respiratory disease and may be associated with lung cancer
- Not all dusts on construction sites contain silica. The only way one can confirm exposure is by industrial hygiene sampling
Conclusions

- Identify silica dust producing tasks and use controls
- There is overwhelming evidence demonstrating many construction tasks are associated with elevated quartz levels
- When controlling silica dust, you are controlling *all* dust!!
Information Sources

- Federal OSHA [www.osha.gov]
- Cal/OSHA [www.dir.ca.gov]
  - See Cal/OSHA’s eTool on Silica
- NIOSH [www.cdc.gov/niosh/topics/silica]
- The Cohen Group/On-Site Health and Safety [thecohengroup.com/Silica%20Memo.pdf]
Questions??

Joel Cohen, MPH, CIH
The Cohen Group
San Mateo, CA
www.thecohengroup.com
What is Title 8 Section 1530.1? How did it come about and what does it require.

AGC Jobsite Dust Control Seminar
June 7, 2011
Oakland, California

Bob Barish, Cal/OSHA Research & Standards Unit
Process started with silica PEL

- May 2005  Cal/OSHA public advisory meeting on silica PEL

- Much employer comment on possible revision to PEL for silica with so many different businesses affected

- Federal OSHA working on silica PEL >15 years – also looking at work based approach for construction

- Also, growing concern with dust exposure of the public from construction worksites (San Francisco ordinance)

- Alarcon bill – SB 46  June 2, 2006  This bill would prohibit the dry cutting and dry grinding of masonry materials, except where it is determined that the use of water in cutting or grinding masonry materials is not feasible
What’s the concern?

- Operations with high exposure potential, even with relatively short exposures can be >>>PEL, especially when conducted indoors or in partially completed structures

- Serious, debilitating, sometimes fatal lung diseases: silicosis lung cancer TB susceptibility

Recognized more recently: Chronic bronchitis, airflow obstruction, possibly COPD, even in the absence of radiologic signs of silicosis:


- Can also have acute or accelerated silicosis with very high exposures
Informal public advisory process to develop regulatory alternative to proposed legislation

- >60 attendees at each of 2 public meetings January 17 and March 26, 2007
  - Contractor organizations (CAL-PASC, AGC, CEA, Roofers)
  - Labor unions (Bricklayers, Laborers, Roofers)
  - Equipment manufacturers
  - Individual workers and contractors
  - Equipment manufacturers

- Major outcomes of the two advisory meetings:
  - Water or Local exhaust ventilation (LEV) for dust control
  - Exceptions
  - Training details

Standards Board Public Hearing December 13, 2007
- Only minor changes from the original proposal
- Regulation took effect October 22, 2008
Title 8: §1530.1: Control of Employee Exposures from Dust-Generating Operations Conducted on Concrete or Masonry Materials (effective 10.22.08)
(Coverage by this regulation does not exclude coverage by other related standards)

Concrete or Masonry Material
(examples: brick, clay brick, concrete block, mortar, natural or manufactured stone, tile, terra cotta)

• Includes any ‘stone-like’ material
  Unless indicated by evidence to not contain cement, sand, gravel, stone, clay, or aggregate material containing silica

Certain materials and operations are not covered by this regulation, but are still covered by other relevant standards (see the Exceptions in 1530.1(a))

AND

Cutting, Grinding, Coring, Drilling
Using power tools

1. Required Dust Reduction System
   -- Water or Local Exhaust (vacuum)

2. Ensure Safety and Effectiveness of dust reduction system
   -- as per manufacturer’s specifications

3. Employee Training
   -- health hazards, dust reduction systems, proper use and maintenance, good site hygiene

4. Supervisor Training
   -- everything above, task identification, how to implement dust reduction system

Exceptions:
- If shown to be < PEL
- If rooftop operation
- Emergency (24 hrs.)
(1530.1 (e) Training still required)

- Maintain effectiveness
- Electrical safety with water
- Waste disposal
- Manufacturer instructions

- At least annually.

http://www.dir.ca.gov/Title8/1530_1.html

P. Scholz, 2.13.09
Key elements of 1530.1

SUPPLEMENTAL to existing PELs and other applicable regs

A. Covers (with some exceptions – see next slide)
   • Powered tools or equipment
   • Cutting, grinding, coring, or drilling
   • On concrete or masonry material (as specifically defined in the regulation)

B. Requires 3 MAIN ELEMENTS:
   • 1. Use of water or local exhaust ventilation (LEV) (see exceptions next slide) **Note:** LEV can include, per definition, vacuum systems, dust collection systems, and dust exhaust systems (“fan” is not included in the definition of LEV)

**Detail Item 1:** Per language of 1530.1(c) Exception No. 1, must be below all applicable PELs for exception to dust controls apply, not just respirable silica. So 1530.1 is intended to control all dusts from covered operations, not just respirable silica.

**Detail Item 2:** When water or LEV dust control system does not control below PEL, as studies indicate can happen, then need to also use other feasible controls, including potentially water with ventilation if can, to control below PEL per Title 8 section 5141

• 2. Safe and effective use of dust reduction systems (maintenance, electrical safety, waste)

• 3. Employee and supervisor training to be conducted annually
Two kinds of exceptions in 1530.1

1. Specific operation exceptions for coverage by 1530.1 (but still covered by PELs 8 CCR 5155 and control of over-exposures, IIP Training, and Hazard Communication Training)
   - Stucco, plaster, and similar products
   - Wall cladding, siding, or similar products
   - Downward drilling
   - Jackhammering or chipping incidental to plumbing or landscaping activity
   - Work with powder-actuated tools
   - Work incidental to installation of concrete and masonry materials
   - Tile backer board

2. Exceptions to dust control systems for covered operations, but specified 1530.1 training is still required:
   1. Where reliably show by air sampling data that applicable PELs not exceeded (not just respirable silica)
      (NOTE: This means sampling of the employer's own operations. Generalized data for similar operations from, for example, tool manufacturers or employer or trade associations will generally not be specific enough to get exception)
   2. Rooftop operations (1530.1 covered operations should be conducted on ground or scaffold if possible so that dust controls can be used safely)
   3. Emergency operations as defined (1st 24 hours)

NOTE: Title 8 section 5145 Media for Allaying Dusts, Fumes, Mists, Vapors, and Gases includes requirement for use of water or other liquid for dust control beyond operations specifically covered by 1530.1
1530.1 Training Elements

For affected workers and their supervisors
• Silica-related diseases
• Methods employer uses to control dust exposures
• Proper use of dust controls including waste handling
• Good hygiene and housekeeping

Additional information for supervisors
• Work tasks which may result in exposures to silica dust
• The employer’s procedures for implementing the required dust control measures

Periodic training
• Conducted at least annually
Information Resources

- **DOSH Policy & Procedure C-51** Crystalline Silica Inspection Guidelines with emphasis on exposure to concrete and masonry dust in construction per 8 CCR section 1530.1 (4/23/09)  
  https://www.dir.ca.gov/DOSHPol/P&PC-51.HTM

- **Cal/OSHA E-tool**: Hazards of Silica in Construction Consultation Silica “e-tool” (The E-tool can be printed with “Print this e-tool” at the top of its page)  
  https://www.dir.ca.gov/dosh/etools/08-019/index.htm

- **Cal/OSHA Standards Board website** for 8 CCR 1530.1 with rulemaking documentation  
  https://www.dir.ca.gov/oshsb/concreteandmasonry0.html

- **OSHA (Federal)**. Controlling Silica Exposures in Construction 2009 OSHA Publication 3362-04 72 pgs  
  (Very detailed on dust controls for different tools)

- **NIOSH Pub. 2008-126**: Control of Hazardous Dust During Tuckpointing  

- **What Physicians Need to Know About Silicosis in Construction, Demolition, and Renovation Workers**  
  (New Jersey Dept. of Health & Senior Svcs)
BREAK
If it’s Silica, it’s not just Dust
Our RCS Exposure Control Program

- Action Level of 0.05mg/M³
- Personal Monitoring 24-month intervals
- Engineering/Administrative Controls
- Respiratory Protection Program
- Medical Surveillance
- Risk Communication/Training
- Recordkeeping
Actions We Must Take

- Utilize all Dust Controls Available; Do Not Operate Without Them
- Assure that Controls are Working Properly; Inform Your Supervisor if They are Not
- Avoid Dry Sweeping; Keep Work Areas Free of Excess Accumulations of Dust
- Avoid Areas of Visible Dust
- Where Necessary Utilize Respirators
Respiratory Protection

- During Clean-up in High Dust Areas
- Maintenance/Repair in High Dust Areas
- In Designated or Posted Respirator Required Areas
- When You Believe Dust Concentrations are too High
- When the Action Level is Exceeded and Prior to Controls being Installed
Medical Surveillance

- A comprehensive work and medical history to evaluate exposure and the signs and symptoms of respiratory disease before exposure to RCS.
- A thorough medical examination emphasizing the respiratory system.
- A 14 X 17 inch posterior/anterior chest roentgenogram (x-ray), interpreted, using the ILO classifications, by a Board-certified or Board-eligible radiologist or a certified “B" reader.
- A pulmonary function test (PFT) that includes forced expiratory volume in 1 second (FEV1), forced vital capacity (FVC) and diffusion lung capacity (DLCO).
DUST BUSTERS
CORE DRILL RIG

Core Samples
CUT-OFF SAW
ROCK SAW
Legal Realities

- If we know and don’t tell (customers, employees, etc.), we increase the risk of punitive damages above and beyond injury claims.
- If we know and don’t act, we increase the risk of punitive damages above and beyond injury claims.
- **NOT KNOWING IS NO DEFENSE!**
REMEMBER ...

If it’s Silica its not just dust.
Silica in Construction
Applicable Regulations

- Injury and Illness Prevention Program (1509)
- General Requirements of Mechanical Ventilation Systems (1530)
- Control of Concrete and Masonry Dust (1530.1)
- Respiratory Protection (5144)
- Hazard Communication (5194)
Resources

- Cal/OSHA Consultation
  - www.dir.ca.gov
- Federal OSHA
  - www.osha.gov
- NIOSH
  - www.cdc.gov/niosh
Protecting your People

1. Identify Possible Sources
2. Determine the Hazard
3. Develop Controls
4. Train
5. Reassess
Identify Possible Sources

- Product labels
- Material Safety Data Sheets (MSDS)
- Sampling
Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls: Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits.

Personal Protective Equipment (PPE):

Respiratory Protection: Under ordinary conditions no respiratory protection is required. Wear a NIOSH approved respirator that is properly fitted and is in good condition when exposed to dust above exposure limits.

Carcinogenicity: Concrete is not listed as a carcinogen by IARC or NTP, however, concrete contains trace amounts of crystalline silica which is classified by IARC and NTP as known human carcinogens.
Developing Controls

- Eliminate or Reduce Exposure
- Engineering Controls
- Administrative or Work Practices
- Personal Protective Equipment
## Silica Controls Selection Chart

<table>
<thead>
<tr>
<th>Task/Tool</th>
<th>Control</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Abrasive blasting             | Substitute for sand            | - Alternate blasting agents with dust suppressant additives are widely available.  
                                |                                | - Some, such as coal slag, might contain toxic materials                                                                          |
| Jackhammer, pneumatic         | Wetting, vacuum attachment     | - Attachments that provide a fine water spray are currently being developed.  
                                |                                | - Operators can also wet the surfaces with water from spray can, watering truck or hose prior to chipping.  
                                |                                | - Care must be taken since some surfaces may not absorb water and frequent spraying may be necessary.  
                                |                                | - Some workers don’t like wetting because they can’t see the work. Depending upon the location and/or time of year water can be a slip hazard due to mud or ice.  
                                |                                | - Vacuum attachments are available but not widely used.                                                                           |
| Pneumatic drill               | Wetting, vacuum attachment     | - Water hose attachments are available.  
                                |                                | - Refer to above for additional options.                                                                                             |
| Power saws                    | Wetting                        | - Attachments for concrete saws are available and in use.                                                                             |
| Rock crusher                  | Wetting, distancing            | - Hose/spray assemblies available for wetting dust generated during rock crushing.  
                                |                                | - Remote control devices can help reduce operator exposure.                                                                         |
| Grinder, tuck pointing        | Wetting, vacuum attachment     | - Vacuum attachment available although not widely used.  
                                |                                | - Wetting of surfaces works but often discouraged because of surface run-off and slurry created.                                  |
| Operating heavy equipment     | Air-conditioned cab with HEPA filters | - Keep doors, windows closed and air conditioning filter on.                                     |
| Cleaning surfaces and clothing| HEPA vacuums, water spray       | - Compressed air should not be used to clean surfaces or clothing.  
                                |                                | - Mechanical cleaning machines not using water will create dust clouds.  
                                |                                | - Use vacuum for smaller size debris, a shovel should be used for larger pieces that may clog the vacuum.  
                                |                                | - Maintain adequate vacuum capacity.  
                                |                                | - Use prefilters to extend the service life of HEPA filters.                                                                       |
| General work area             | Water truck with spray nozzles  | - Frequent spraying of work area to keep surface damp                                                                             |
## MINIATURIZED CHECKLIST 1. SITE INSPECTION (for all controls)

<table>
<thead>
<tr>
<th>Controls are:</th>
<th>Y/N</th>
<th>Problem noted (describe)</th>
<th>Problem fixed (describe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available at work location</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In operating order</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used when they should be</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used properly (workers trained in their use)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective in controlling dust emissions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sample Controls
Sample Controls
Sample Controls
Sample Controls

Figure 2. Diagram of water-spray control used in NIOSH study
Lessons Learned on Implementation:

Change Management

Subs

PEL’s are Fascinating Things (Do the IH Studies)

Training on equipment

Productivity Myths (Water is Faster and you get what you pay for)

Silica Dust and Stormwater = Dual Compliance

Return on Investment = What is it worth to do what it takes to be in compliance? (We know CAL OSHA has been told to write more serious violations and the EPA can fine contractors up to $37,500 per drainage point per day, State Water Boards can fine up to $10K per drainage point per day, and $10 to $20 per gallon of bad discharge for ph contaminants. Just another relationship between safety & environmental compliance. Done right, employee engagement will increase and they view the safety program in a positive light)
Work safe.

Improve productivity.

Jobsite Dust Removal Systems
for 2011
Productive?

Concrete cutting application performed by two operators – May 2009
Our harmonized systems outperform the competition

Harmonized system

Continuous suction power

Consumables  Tool design  Accessories  Vacuums

~ 180 g/h

~ 9,200 g/h

up to 99% captured at source

~ 9,400 g/h

We are a system solution provider – not selling single product features
Unique TE DRS-B

**Inner ring (2nd ring) at working end**

The purpose of this ring is to restrict intake of large pieces of concrete / surface material which could block the system and cause working interruptions.

**Two chamber air flushing system**

TE DRS-B not only removes dust from the working surface, but also from the front end of the chuck, hence reducing dust exposure by up to 95% of total dust, and 99% of respirable dust.
Have you ever considered....

Up to 2.20 lbs dust are produced with five minutes sawing / cutting.

Now imagine working like this for one hour. Or a full day.

- How does this impact the life of the tool and consumables?
- The drilling/cutting speed of the tools?
- Jobsite preparation and cleaning – productivity?
- The comfort and protection of the operator?
- The environment?
Hilti DRS helps with regulatory compliance, helps to save costs and improve productivity.

- **Inhalable dust**: up to - 99%
- **Respirable dust**: up to - 99%
- **Tool lifetime**: up to + 60%
- **Consumable lifetime**: up to + 20%
- **Application speed**: up to + 20%
- **Cleaning effort**: up to - 33 lbs./hr.

- **Jobsite compliance**
- **Longer lifetime**
- **Labor time savings**
Effective dust control begins with the design of the tools used.

Thanks to innovative design, Hilti systems remove dust right at its source.

Stop kicking up dust! There’s even a dust removal system for Hilti breakers.

Hilti AirBoost technology – for maximum performance and efficiency.

All system components, including consumables, drill bits, discs, blades or other accessories as well as fully integrated systems, are perfectly matched to maximize the amount of dust removed at its source and collected efficiently by the vacuum removal system.
Summary: Our recommendation for superior performance - use our harmonized system

Factors increasing productivity and worker protection:
- Harmonized system which is designed and developed together
- A high continuous suction power - more important than only a high filter class
- Easy to transport, mobile on site, robustly designed and easy to use
Dust
Solutions that increase working comfort, safety and productivity