



Think and Act Locally – Promoting Use of Engineering Controls in Construction at the Municipal Level

Pam Susi, CPWR; Mark Goldberg, Hunter College Emeritus & Marc Weinstein, Florida International University

AIHCE, Salt Lake City
June 1, 2015

Title Photo: Navajo Arches National Park
commons.wikimedia.org

CPWR* - the Center for Construction Research and Training



3rd year apprentice pipefitter/welder, Cambridge, OH

- Research and training arm of North America's Building Trades Unions (NABTU).
- Conducts research aimed at improving quality of life for construction workers
- Conducts training in occupational safety and health

*Formerly the Center to Protect Workers' Rights

CPWR – Research Program



Dr. Sergio Caporali, Univ. of Puerto Rico and
Mr. Jim Young, UA 495

- Since 1990, has served as a NIOSH “Construction Center” to do joint research with NIOSH through a competitive cooperative agreement program
- Consortium of university researchers and CPWR staff researchers
- Active involvement of building trades unions and contractor organizations

Topic today comes from a larger NIOSH funded project:
Adoption of Innovations to Minimize (AIMs) Exposure to Dusts
& Fumes in Constructions (2010-2014)



CPWR: Pam Susi (project manager)

Universities: Puerto Rico (Sergio Caporali),

Florida International (Marc Weinstein), Harvard (Robert Herrick);

Consultants: Dave Feldscher (UA 120,retired); Mike Flynn ,

Mark Goldberg (formerly with Hunter), Mike Cooper, John Meeker, Univ. of MI,

Silica Exposure in Construction

- Silica exposure is pervasive in construction
- Silicosis can be fatal and still occurs more often in construction workers than other occupations;
- Silica is also associated with lung cancer, autoimmune disorders and other respiratory illnesses



Tuckpointers are among the most highly silica exposed trade in construction



- More than ½ of silica exposure measurements collected by OSHA during tuckpointing were more than twice the NIOSH Recommended Exposure Limit (REL)
- Exposures can be over 100 times the REL

Tuckpointing/masonry restoration work often occurs where there is a potential for public exposure



Local Exhaust Ventilation (LEV) is the most effective means of minimizing fugitive dust emissions and reducing public health risk.....



...but still not commonly used

Engineering Controls are the preferred method of control



- More comfortable for the worker
- Reduces exposure and exposure variability
- Reduces exposures to other trades & the public
- more effective than respirators
- may eliminate need for respirators and associated costs
- LEV is currently the most practical & effective engineering control for many construction tasks including tuckpointing

They work - CPWR evaluated Four Local Exhaust Ventilation (LEV) Systems used for Tuckpointing (2012-2014)



grinder



shroud



vacuum

All systems evaluated at Bricklayers Local 1 Training Center in Philadelphia using randomized, repeat trials with and without LEV

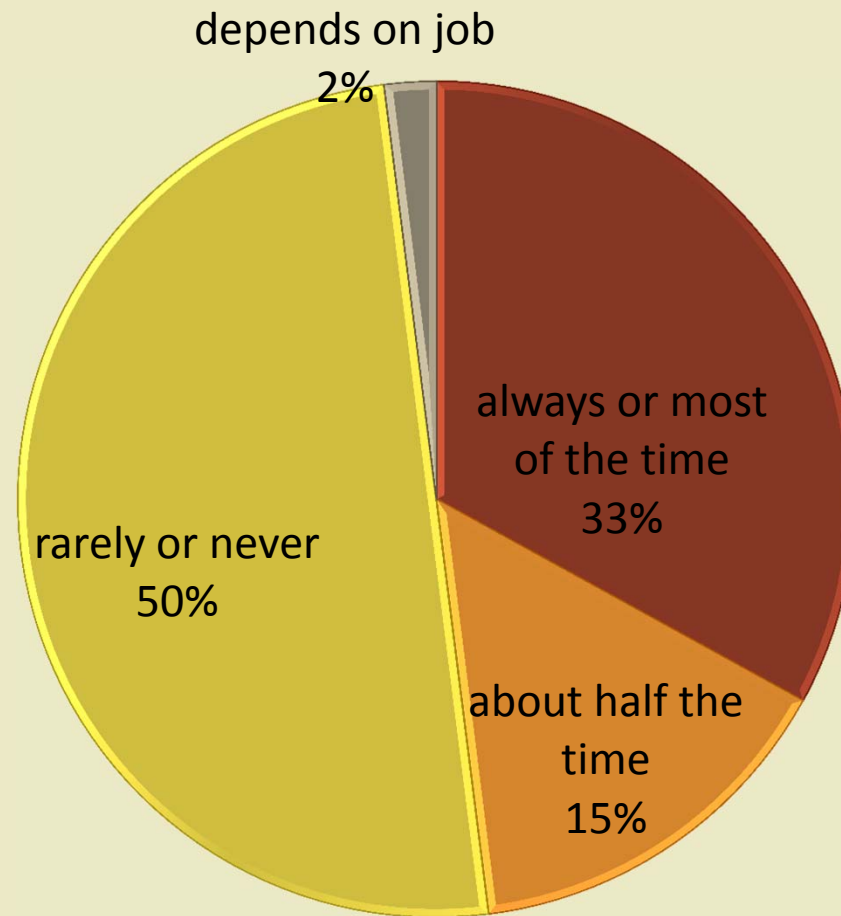


All tested systems reduced exposures by greater than 96%*



*Task TWAs were still higher than the NIOSH REL/proposed OSHA PEL; a respirator with an assigned protection factor of 10 may be required to supplement LEV depending on task duration

Baseline data on LEV use based on a survey of masonry contractors & union representatives (2011) - half of contractors rarely or never use LEV



OSHA Standards

- Compliance with OSHA standards is viewed as the principal driver for engineering controls use in the workplace where adequate standards exist and are enforced, but...
- OSHA standards for silica are weak and outdated
- The OSHA Silica Special Emphasis Program (SEP) which began in 1996 led to more silica inspections, but still very few relative to the problem
- Penalty structure and process for upholding citations often results in relatively low fines with cases sometimes dragging out for years

Number of Federal OSHA Construction inspections where silica samples were collected

Region		1993-96	1996-99
1	Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont	7	33
2	New Jersey, New York, Puerto Rico, Virgin Islands	0	19
3	District of Columbia, Delaware, Maryland, Pennsylvania, Virginia, West Virginia	5	11
4	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee	2	18
5	Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin	1	44
6	Arkansas, Louisiana, New Mexico, Oklahoma, Texas	0	2
7	Iowa, Kansas, Missouri, Nebraska	0	5
8	Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming	3	16
Total		18	148

Stagnation at the Federal Level with Worker S&H Regulations – the example of silica

- Government Accounting Office (GAO) report published in 2012 found it took from 15-19 years for an OSHA standard to be put into place
- FDR administration initiated a national effort to eradicate silicosis in the 1930s
- OSHA began working on a silica standard in 1997, a proposed rule was published 16 years later in 2013
- After hearings & comment periods, OSHA anticipates the new standard going into effect next year – 20 years after starting work on it!

Alternative strategies...

- In the absence of strong federal standards – regulations enforced by local municipalities may have a positive impact on workers, as well as the public
- Some municipal areas are leading the country in passage of legal measures aimed at protecting workers
- We heard from talking to labor and contractor reps from around the U.S. that Chicago was ahead of much of the U.S. with regard to silica dust control measures for tuckpointers



Cities are leading the charge....



UNITED STATES DEPARTMENT OF LABOR

Cities and States Are Leading on Earned Sick Days



U.S. Secretary of Labor Thomas Perez has travelled across the country to talk with CEOs, working parents and local elected officials about paid leave. Above, he speaks during a CEO roundtable discussion at Seventh Generation in Burlington, Vermont, on Oct. 9, 2014. By Monica Donovan for the U.S. Department of Labor.

Cities and States Are at the Forefront of Earned Sick Days Momentum:

In 2014, cities across the country, including Paterson, Passaic, East Orange, Jersey City, Trenton, Irvington and Montclair, New Jersey; Eugene, Oregon; and Oakland, California, enacted earned sick days ordinances, while New York City and Washington, D.C., expanded eligibility for these benefits. They joined cities like Newark, New Jersey; Portland, Oregon; and Seattle, Washington, as well as the State of Connecticut, in guaranteeing earned sick days. California passed statewide earned sick days law in 2014, and Massachusetts passed earned sick days ballot initiative with nearly 60 percent of the vote in the midterm elections.

The Need for Earned Sick Days:

Only 61 percent of U.S. private sector workers have access to paid sick days through their employer.

The Benefits of Earned Sick Days:

- Earned sick days lead to positive outcomes for the health of workers. Workers who had access to earned sick days were 28 percent less likely to be injured on the job.
- Earned sick days provide important public health benefits. Work in service industries who cannot take sick days may transmit flu to their customers and coworkers. One study concluded that if workers had access to earned sick days, the spread of the H1N1 outbreak in 2009 could have been reduced by an estimated five million cases.
- Earned sick days improve children's health. Parents who do not have access to earned sick days may be forced to miss their children's medical appointments, leave sick children at home alone and fail to provide them with check-ups and preventative care.

The Obama Administration Supports Cities and States That Support Earned Sick Days:

In his 2015 State of the Union address, President Obama called on Congress, as well as States and cities, to pass legislation that would allow millions of working Americans to earn up to seven paid sick days per year.

"We are on the cusp of huge breakthroughs on paid leave and paid sick days. I believe that in 30 years, we will look back at this as the moment we began to turn the corner, when a sleeper issue finally began to awaken and when grass-roots momentum began to gather steam and roll toward a broad national consensus."

—U.S. Secretary of Labor Thomas E. Perez

A strong earned sick days policy is a sign of a healthy city. Earned sick day laws can help working families take time off when necessary to face health needs without putting their economic security at risk. Offering these guarantees is also an important public health consideration, as the availability of earned sick days can help prevent the spread of contagious illnesses to coworkers and customers, and curb unnecessary emergency room visits by allowing workers to seek medical attention during regular business hours; moreover, sick workers can recover faster when they can get the care and rest they need. Earned sick days also ensure that parents can care for their sick children, which helps children recover faster and improves parents' overall productivity at work. Lastly,

Vermont, on Oct. 9, 2014. By Monica Donovan for the U.S. Department of Labor.

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TODAY'S TOP STORIES

THURSDAY MAY 21, 2015 | PHILADELPHIA | CITY & SUBURBS | C* | \$1

philly.com



LETTERMAN'S FAREWELL

He signs off after 33 years and 6,028 broadcasts of his late-night show.

TELEVISION | A2

HOWARD, PHILS BEAT ROCKIES

SPORTS | D1



AT SHELTERS, MAKING MEALS THAT APPEAL

FOOD | F1



LOCAL NEWS

A speedy start for bike sharing

Christie disclosure omits tickets

Luxury seats to the Cowboys are uncou... The filing follows an opinion by the state A.G.

By Maddie Hanna and Andrew Sedman
INQUIRER TRUSTON BUREAU
On his latest financial-disclosure form, Gov. Christie does not list as gifts the luxury-box tickets to Dallas Cowboys games he re-

ceived last football season from team owner Jerry Jones.

The governor's disclosure form is dated May 15 — a day after New Jersey's acting attorney general issued an opinion that said the state's require-

ments for disclosing gifts could be interpreted to apply only to remuneration received in exchange for a service, such as for a speaking engagement.

The financial-disclosure form, which Christie files annually, indicates that he and his wife, Mary Pat, earned at least \$600,000 in income last year — most of it from her job as a man-

aging director at the Wall Street investment firm Angelo Gordon.

She recently resigned from the firm, as Christie continues to consider a run for president in 2016.

In his opinion, acting Attorney General John Hoffman said the executive order, which compels disclosure of "gifts and other gratities (cash or noncash)," limits

See CHRISTIE on A4

CAMPAIGN 2015 | THE MAYOR'S RACE

Kenney Keeps It Positive



Mayor nominees Jim Kenney, a Democrat, and Melissa Murray Bailey, a Republican, greet each other before a lunch Wednesday at Broad Street Ministry. Kenney predicted a civil campaign. **WALTER BLOOMER / AP**

Some see leftward big-city tide

By Thomas Fitzgerald
INQUIRER PHOENIX WRITER
It was a Philadelphia underdog story: Irish American son of a firefighter

City Councilman Jim Kenney's landslide win also echoes nationally as the latest example of a progressive big-city tide — on the order of the 2014 victories of Bill de Blasio in New York and union laborer Mary Walsh in Boston.

These mayors and others were elected by broad, cross-racial coalitions, on promises to

At a post-prim... event, a "disci... candidate spo... opponents not... and potential.

By Chris Ito
INQUIRER STAFF
Former City C... Jim Kenney on... said his resound... Tuesday night in... cratic primary e... mayor showed th... went a positive ca... Kenney was eag... that, hoping reat... lissa Murray (Ba... l publican who... won her par... ty's nomination... for mayor in... in an uncon... tested prima... 75, "I've seen... work... neighborhood... the course of... this whole... Kenney is going... when she was... was un... doing a good job... case," he said. "I... most respect for... Kenney predic... and respectful... tion in a city w... creas number... by 7-1... He has been che... able when he was... potential indep... mayor by firm... man Bill Green... "If he wants to... See KENNEY



A day after this primary victory, Jim Kenney (left) was joined by Gov. Wolf for lunch at Broad Street Ministry. **CHRISTOPHER ANASTASOFF / PHILADELPHIA INQUIRER**

In big cities, some see a leftward tide

ahead," AFL-CIO president Richard Trumka said.

Kenney, for instance, vowed to raise the minimum wage, bolster public schools, and establish universal prekindergarten. He also highlighted his record of supporting LGBT rights and efforts to decriminalize marijuana possession, citing the disproportionate impact of drug laws on African Americans.

In New York, de Blasio highlighted his biracial family, promised to halt aggressive stop-and-frisk tactics in minority neighborhoods, and railed against the city's increasing unaffordability for all but the very rich.

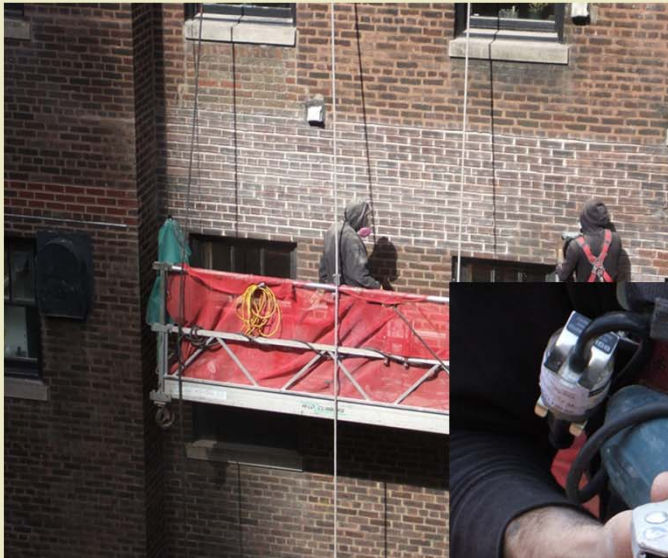
"The economy has recovered in many ways, but a lot of people have been left behind, and that's more visible in cities," said Anna Greenberg, the pollster for both the Kenney and de Blasio cam-

New Leadership Trends in Some Cities May Favor Worker Protection Measures

"Populist, progressive mayors are leveraging city government, which has a direct impact on people's lives, to attack these problems," she said.

Issues of income and wealth inequality was also animating the discussion in the

We learned Chicago was an early adopter & one of a few cities in the U.S where use of dust capture systems (or LEV) was common for tuckpointing



Photos from Chicago site survey conducted in 2008

Estimated 2 person crew generated about 120 pounds of dust per day



Chicago Case Study – Why was LEV used?

CPWR  THE CENTER FOR CONSTRUCTION
RESEARCH AND TRAINING

Adoption of Local Exhaust Ventilation for
Tuckpointing in Chicago - A Case Study
September 2014



Mark Goldberg, PhD, CIH;
Pam Susi, MSPH, CIH;
Marc Weinstein, PhD

- Interviewed former OSHA Area Director, union leaders and contractors
- Collected and reviewed documentation including local regulations, specifications & training material
- Multiple reasons but many were related to local forces and conditions

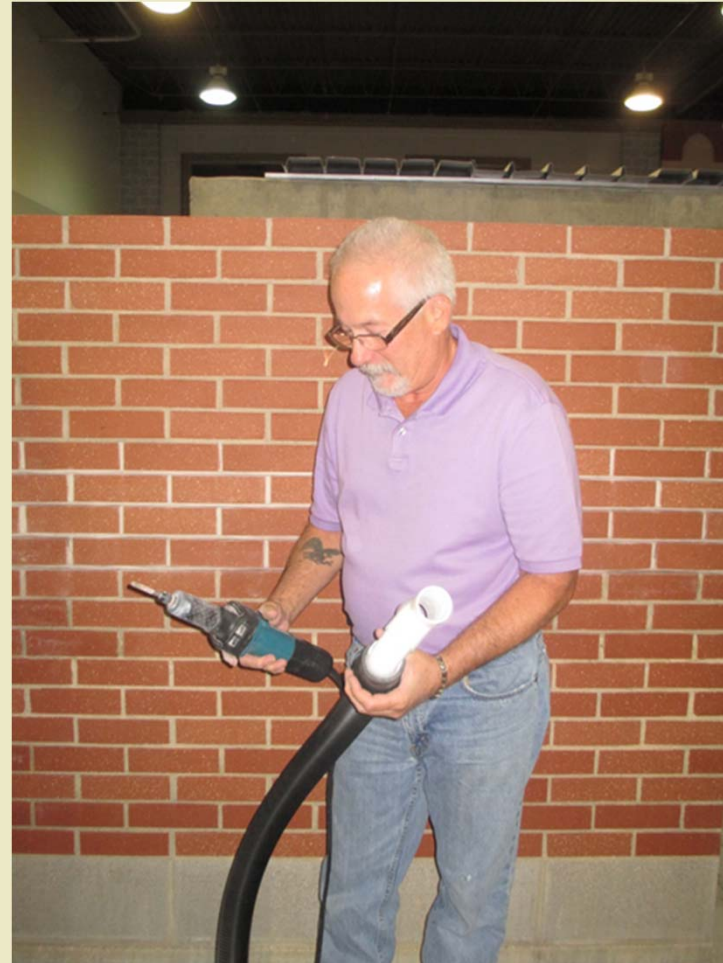
Case Study Research Methods

- *One type of case study interview is an in-depth interview. ... In some situations, you may even ask the interviewee to propose her or his own insights into certain occurrences and may use such propositions as the basis for further inquiry... The interviewee also can suggest other persons for you to interview, as well as other sources of evidence.*
- *The more that an interviewee assists in this manner, the more that the role may be considered one of an “informant” rather than a respondent.*

- Robert K. Yin, Case Study Research: Design and Methods, Sage, 4th edition (2009).

Informants

- Those interviewed played key roles in advancing use of LEV for tuckpointing
- Led us to other “informants”
- Some individuals were “champions” of LEV promotion



Phases of Adoption

- Phase 1 – Initial awareness (the late 1990s/early 2000s)
 - The industry became aware of the problem
 - Initial awareness largely catalyzed by OSHA Special Emphasis program in late 90s and vigorous enforcement of the SEP by Region V and local area offices
 - Contractors were cited and began experimenting with LEV use
 - Construction clients began showing preference for contractors equipped with LEV who would be able to minimize dust complaints

The Clinton Commuter Station Story



- Multiple informants described a pre-awareness period in the 1990s using this event
- Masonry restoration job was underway
- Heavy pedestrian commuter traffic & complaints
- Regulator response – schedule work at night

Phase 2 – Adoption & diffusion of LEV (2000s -)

- Early adopter contractors cited earliest use of LEV (late 90s) driven by federal projects, occupied high rises and complaints during school construction
- Local permitting requirements required contractors to submit a dust control plan prior to starting work involving blasting, cleaning & grinding
- driven by environmental concerns and regulations but still had a positive impact on workers
- Contractors elected use of LEV in mandated dust control plans



City of Chicago
Richard M. Daley, Mayor

Department of Environment

N. Marcia Jiménez
Commissioner

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March 10, 2004

Dear Permit Applicant:

**Subject: ARCHITECTURAL SURFACE
CLEANING- SANDBLASTING, GRINDING OR
CHEMICAL WASH.**

The purpose of this letter is to inform you of the procedure for applying and obtaining an Architectural Surface Cleaning Permit.

Pursuant to the City of Chicago Municipal Code §11-4-2190, a permit is required for sandblasting, grinding or chemical washing of any building, facility, statue or other architectural surfaces.

Please be advised that a separate permit is required for each site. You must also receive a signed permit by the Commissioner of the Department of Environment before any sandblasting, grinding or chemical washing can begin.

To obtain an "Architectural Surface Cleaning Permit", the following items must be submitted:

- 1) A properly completed Architectural Surface Cleaning Permit Application Form (Form SC).
- 2) A copy of current City of Chicago Business License.
- 3) A copy of the "Notification Letter" sent or to be distributed to all residents within a 75-foot radius of the building being cleaned.
- 4) If the architectural surface is painted, samples of the paint must be tested by a licensed laboratory for lead content and the result of the analysis must be attached to the application.
- 5) A written dust minimization-containment plan.
- 6) A check or money order in the amount of two hundred dollars (\$200.00), made payable to the Department of

- City Dept. of Environment requires use of dust control plans, permitting and notification when "sandblasting, grinding or chemical washing (2004 notification)
- Both contractor and building owner required to sign off on plan/permit and notify affected public
- Large volume of school construction work let around 2000 – dust complaints result in stopping work & investigating at contractor expense

Phase 2 – Adoption & diffusion of LEV (cont.)

- Union integrated use of LEV into apprenticeship training & worked with contractors in complying with regulations
- Increased work combined with owner requirements
 - Local facade regs
 - Chicago Public Schools received large infusion of funds; job specifications required contractors to stop work at contractor's expense in the event of complaints until investigated and addressed
- increased research on LEV performance



Façade Ordinances passed in multiple cities including NYC, Philly & Chicago

Senior Judge Berel Caesar; Victim Of Building Accident

By Andy Wallace, INQUIRER STAFF WRITER

POSTED: October 10, 1997

Common Pleas Court Senior Judge Berel Caesar, 69, of Center City, died yesterday from injuries suffered when he was hit on the head by debris let loose when a large sign pulled away from a Center City garage building Sunday afternoon.

He had been in the neurological intensive-care unit at Thomas Jefferson University Hospital since the accident.

“Judge Caesar was a brilliant jurist and a wonderful man, and I was proud to know him and regarded him as a friend,” Mayor Rendell said yesterday. “Judge Caesar's death only deepens the city's resolve to deal with the problems of dangerous buildings in Philadelphia.”

School Construction



In the event that dust or fumes escape from the work area or create dirty conditions or contaminations to nearby building spaces or grounds, the Contractor is responsible for all costs associated with the cleaning, testing and/or repair deemed necessary by the Board Authorized Representative.

-Chicago Public Schools job specification



A confluence of forces

- OSHA
 - Special emphasis program
 - Enforcement
 - education
- Activities of tuckpointers local & provision of workforce well equipped to use LEV with a minimum loss in productivity
 - Training
 - Stability of work force
- Local city regulations
- Large construction users
- Use of LEV by larger contractors resulted in a ripple effect throughout the industry



Contractor informants self reported advantages of LEV use

- Reduced dust exposure;
- Reduced risk of OSHA citations;
- Eliminated or reduced risk of lawsuits and monetary damage claims;
- Eliminated or reduced job stoppages by city agencies or public schools due to dusty conditions; and
- Increased their ability to capture work, win contract awards and retain work especially for historical and public buildings.

Lessons learned

- OSHA may serve as an important catalyst in making an industry aware of a hazard and the best means for controlling the hazard (as seen here in the case of the Silica Special Emphasis Program which seemed to drive early activity)
- Local forces on the other hand, both regulatory and market based, may in some cases change industry practice more quickly and more completely
- When building trades unions, contractors and OSHA work together on addressing a pervasive hazard such as silica, effective and practical measures to address the problem are likely to emerge



Application of lessons learned to Philadelphia

- Favorable conditions
 - Organized workforce with good labor/management relationships
 - Respected & active OSHA labor liaison
 - Progressive forces in city government
 - Proximity & involvement of research resources



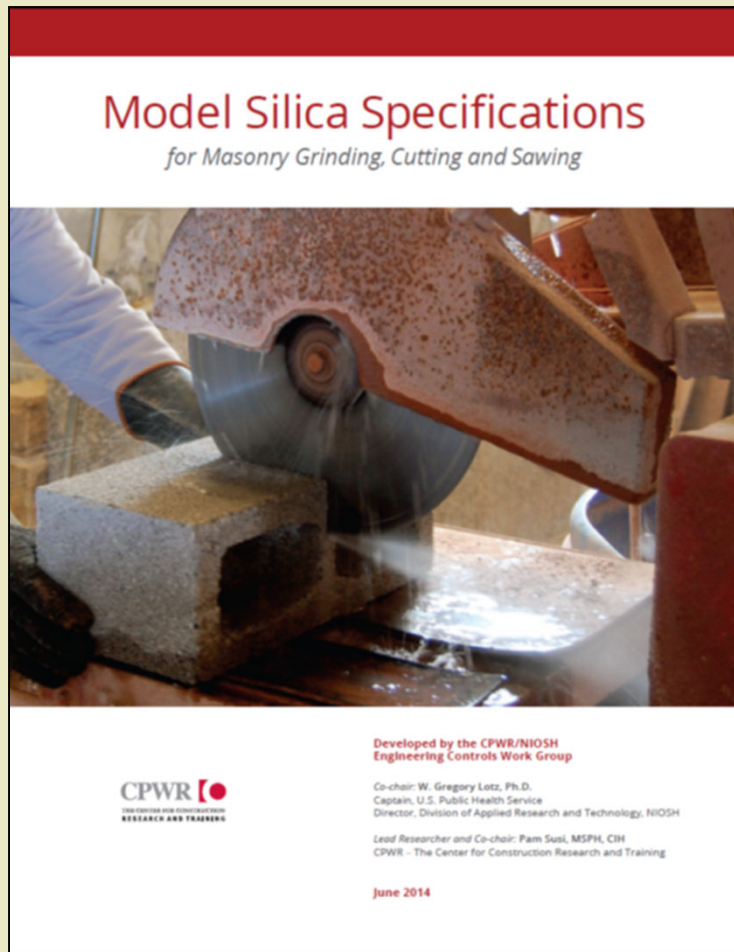
Application of lessons learned (cont.)

- Bricklayers local 1 PA/DE organized a meeting with contractors, CPWR & OSHA (2012)
 - # 1 contractor issue with LEV – loss of work to competitors who don't use LEV
- Met with city government
 - First Risk Management
 - Then Air Management Services (enforce air pollution regulations)
- City developed and posted dust control guidelines on their website:
<http://www.phila.gov/health/airmanagement/AirManageBoards.html>
- Currently working on dust control regulations; draft planned for Air Pollution Control Board review by end of summer



Don Anderson, BAC Local 1 & Jim Touey, OSHA Region 3

Construction client/user resources



- CPWR published Model Silica Specifications in 2014
- Philadelphia School District adopted language for use in capital improvement jobs; included in bid documents since Feb 2014

Conclusions & Recommendations

- City government & major construction users may play an important role in improving safety & health conditions in construction
- Identify local opportunities, organizations and individuals with which to form alliances
- Unions can play an important role in:
 - bringing multiple stakeholders to the table
 - Initiating the conversation
 - Making agencies and allies aware of problems & solutions
 - Supporting agencies who are working on regulations
- Research is useful in documenting the need for safety and health measures and effective solutions

