

# Health Hazard Evaluation Program



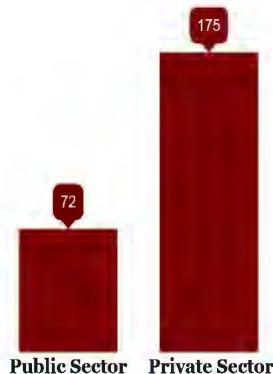
Photos by NIOSH



# 247 HHE Requests

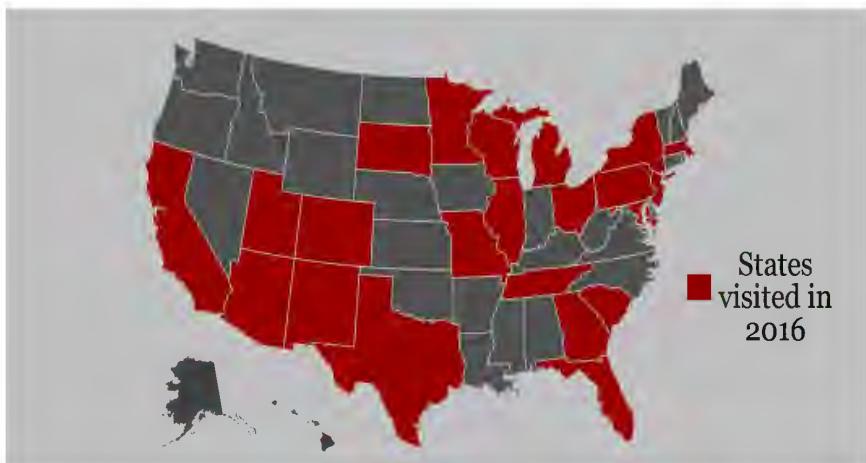
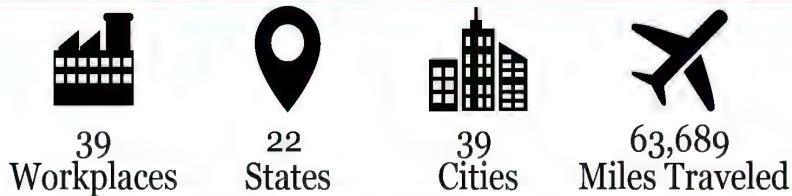


Most requests came from private sector businesses



6 out of every 10 requests were from businesses with less than 100 employees

## 40 Site Visits



# Outreach



<http://>

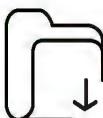
HHE website viewed **65,329** times



**19** New HHE Reports



Reports downloaded  
**23,845** times



**823** Downloads of lead and noise databases



**203** Facebook posts



Reached **480,126** people



**28,659** Page "likes"



From **45** different countries



**76** Presentations



**9** Publications

# EVALUATION OF CRYSTALLINE SILICA EXPOSURE DURING FABRICATION OF NATURAL AND ENGINEERED STONE COUNTERTOPS

## WHAT WE DID



Measured  
crystalline silica  
in the air



Interviewed employees  
about their work  
and health



Examined  
ventilation systems

## WHAT WE FOUND



Photo by NIOSH

Employees using  
grinders with diamond  
cup wheels had the  
highest exposures to  
crystalline silica  
(above OSHA limits)



Employees working in  
material handling and  
lamination were  
exposed to crystalline  
silica levels below OSHA  
limits but above other  
recommended limits



Employees reported  
shortness of breath,  
chest pain, and loss  
of appetite



Some employees  
incorrectly used their  
personal protective  
equipment

## RECOMMENDATIONS

- Use a dust collector and enclosure that captures silica when using the grinders with diamond cup wheels
- Use local exhaust ventilation for cutting, grinding, and polishing tasks in addition to wet cut methods
- Maintain the ventilation systems to ensure that they work properly, filters are changed regularly, and ductwork is not damaged or broken
- Develop a medical surveillance program for employees exposed to silica
- Review employee training on the proper use of personal protective equipment

# EVALUATION OF LAW ENFORCEMENT AGENTS' POTENTIAL EXPOSURES DURING A RAID OF A CLANDESTINE "SPICE" LAB

Spice labs manufacture chemical mixtures that produce cannabis-like highs



A designer synthetic cannabinoid. Photo by G.W. Pomeroy

## WHAT WE DID



Looked for AB-PINACA (a synthetic cannabinoid) and mitragynine (a plant material with opium-like effects) in:

- Agents' urine before and after a raid
- Surface wipe samples in the spice lab and agency office
- Air samples during the raid and at the agency office



Examined personal protective equipment use



Surveyed agents about work history and work-related symptoms



Checked the ventilation system at the agency office for evidence processing

## WHAT WE FOUND

- 6 agents had AB-PINACA, its metabolites, and mitragynine in their urine after the raid
- AB-PINACA was detected on surfaces in the spice lab
- No airborne AB-PINACA or mitragynine was detected in the spice lab or agency office
- Most agents did not wear gloves while handling evidence, and the agency did not provide hand-washing supplies for the field
- The ventilation system in the agency office was not designed to control exposure to contaminated items brought in from the field

## RECOMMENDATIONS

- Store and handle evidence in an area with separate ventilation
- Provide disposable protective clothing for agents working in potentially contaminated areas or when handling potentially contaminated items
- Provide hand-washing supplies for agents during field assignments, and have employees wash their hands after handling potentially contaminated items, even if gloves are used
- Train agents in work practices, hygiene, and use of personal protective equipment that will prevent exposure to potentially contaminated items



Sonja Rasmussen (left), DPHID director, presents Kendra Broadwater (right) with the 2016 CDC Technology Challenge award. Photo by: Khongbeng Lue Xiong

Kendra Broadwater and Eric Glassford, industrial hygienists with the HHE Program, won the first ever CDC Technology Challenge.

Hosted by the CDC's Informatics Innovation Unit (IIU), the competition focused on solving public health problems with innovative uses of technology.



The HHE Program currently mails personal sampling and medical test results to workers. We wanted a quick, efficient way to get people their information wherever they are.



The HHE team proposed delivering this information electronically through a secure and private web-based system.



Out of 61 applications, our project was the grand prize winner. The IIU will build the proposed web-based tool with an expected completion date of August 2017.



Allison Tepper (left) and Jennifer Tyrawski (right) with U.S. Surgeon General Vivek Murthy (middle); Photo by Chris Smith

Out of 82 applications, Jennifer Tyrawski and Allison Tepper were accepted into the Ignite Accelerator Program, a Department of Health and Human Services (DHHS) innovation program designed to help programs improve their work.

They received human-centered design training and coaching from Ignite Accelerator staff and University of Maryland faculty.



Their project focused on answering the following question: how can we best communicate technical health and safety information in HHE reports to a diverse audience?



Through interviews, the HHE team found the type and amount of information these audiences need varies. For some, the current report is too technical and the most useful information is buried deep within the report.



The HHE team developed Project CURE: Clear, Useful Reports for Everyone. Project CURE proposes having 2 main layers to HHE reports: the 1st includes the information that everyone wants, in an easy-to-understand format. The 2nd contains additional information that only some readers need.



At HHS Innovation Day on July 14th, Project CURE won an Innovation Award, as one of the top 4 projects from the Ignite Accelerator Program.

# EVALUATION OF STYRENE AND DUST EXPOSURES AND HEALTH EFFECTS DURING FIBERGLASS-REINFORCED WIND TURBINE BLADE MANUFACTURING

## WHAT WE DID

- ✓ Took air samples for styrene, dust, and xylene
- ✓ Surveyed employees about their health and work history
- ✓ Tested employees' breathing
- ✓ Tested employees' urine for styrene exposure

## WIND TURBINES



Photo by United States Department of Energy

## WHAT WE FOUND



Styrene concentrations in the air were above exposure limits in the blade cut and trim area



Sanding and grinding departments had airborne dust concentrations much greater than exposure limits



Urine styrene levels were below exposure limits



Color blindness was much more common in employees than in the general population, and employees with higher styrene exposure on testing day had more contrast vision problems



Employees with higher long-term exposure to styrene had more chest symptoms and lower lung function problems

## RECOMMENDATIONS

- Limit the need for work that generates styrene and dust exposures by improving mold designs and the blade closing process
- Use sanding and grinding tools with exhaust ventilation shrouds that conform more closely to the shape of the blade surface
- Offer color and contrast vision testing and annual lung function testing to employees
- Use signs in the workplace that employees with color and contrast deficiencies can see
- Store respirators so they do not get crushed, misshaped, or contaminated with dust

# EVALUATION OF IMPACT AND CONTINUOUS NOISE EXPOSURE, HEARING LOSS, HEAT STRESS, AND WHOLE BODY VIBRATION AT A HAMMER FORGE COMPANY

## WHAT WE DID

- ✓ Measured employees' noise exposure
- ✓ Measured impact noise levels and noise frequencies at forge hammers, upset press, shear, and grinder
- ✓ Evaluated effectiveness of hearing protectors
- ✓ Analyzed previous hearing test results
- ✓ Assessed heat stress
- ✓ Interviewed employees about noise exposures, hearing loss, and heat stress
- ✓ Measured whole body vibration at the hammers and hand-arm vibration at the grinders

## WHAT WE FOUND

 Noise levels were very high (sometimes over 100 decibels) and caused by metal-to-metal contact, compressed air, equipment vibration, and grinders

**148** The peak sound pressure level reached during hammer strikes (NIOSH recommended ceiling limit is 140 decibels)

 Hammer, trim press, and heater operators had noise exposures above 100 decibels (well over noise exposure limits)



Many employees had hearing loss and some had permanent ringing in their ears



Hearing loss worsened with length of time on job and age



Some employees did not wear hearing protection properly



Whole body and hand-arm vibration levels were above recommended guidelines and limits



Exposure to heat stress was below exposure limits

## RECOMMENDATIONS

- Reduce metal-to-metal contact and maintain equipment to lower noise levels
- Require employees who work in the noisiest areas to wear ear plugs and earmuffs
- Improve training on how to use hearing protection and make sure employees wear protection properly
- Test employees' hearing protection to make sure it fits well and works properly
- Install vibration isolation pads or mats on the hammer work platforms
- Advise employees to report any hearing problems or problems from vibration exposure to their doctor

## Our Followback Program

After an evaluation, we follow up with the workplace to see how we did and learn how things changed in the workplace. We do this through mailed surveys, phone calls, and return visits.

Here's what some people had to say:



*"Everyone at this worksite – both union and management – was impressed with the professionalism, knowledge, and cooperation of the NIOSH team. This is a tremendous service to workers, employers, and taxpayers. Thank you for the opportunity to work with NIOSH."*

-Union representative



*"The team was exceptionally knowledgeable and explained all processes in detail. Taking the time to ensure our personnel understood what was completed and why. The followup was exceptional and we are working to implement the recommendations."*

-Management representative



*"The final result was excellent. It even improved labor-management relations. Management learned that employees who are healthy get more done."*

-Union representative

## ZIKA RESPONSE

2016



Photo by James Gathany

Four members of the HHE Program were deployed to help with CDC's Zika response in 2016. They used their HHE skills and experience to provide vital assistance to the emergency response, and the lessons they learned will help them in their work.

### AMERICAN SAMOA

*"In my clinical outreach role, I worked with the island's healthcare providers at all of the clinical sites. I gave training on the basics of Zika and the CDC guidelines for testing and management of infants born to Zika positive mothers and helped set up the protocols. I drew upon my infectious diseases expertise, my clinical experience, and my risk communication skills that have been so valuable to me in my HHE work."*

-Marie de Perio

### PUERTO RICO

*"When public health professionals are deployed to field locations during emergencies, they are confronted with new health and safety challenges in addition to doing important work in high-stress situations. As the field safety officer, I supported CDC staff by orienting them to their temporary work location, providing important health and safety information and resources, and maintaining situational awareness. I realized how valuable our work was when I saw firsthand how the support we provided helped deployers be more effective in their role in the emergency."*

-Kendra Broadwater

### U.S. VIRGIN ISLANDS

*"I spent 29 days offering interview and focus group training and support to local Department of Health staff. Our mission was to gather community member perspectives about the Zika virus and various vector control strategies, so that this information could inform decision making about how best to protect the public from the Zika virus. My experience in conducting many confidential medical interviews and focus groups in my role in the HHE Program prepared me well to address the challenges of this mission while establishing a positive working relationship with our CDC partners in the USVI."*

-Douglas Wiegand



# HealthHazard Evaluation Program



The mission of the NIOSH Health Hazard Evaluation Program is to respond to requests from employees, employers, and union representatives to evaluate potential health hazards in their workplace. These evaluations are done at no cost to the requestor. Once the evaluation is complete, recommendations are made on ways to reduce or eliminate identified hazards. Health Hazard Evaluations can help reduce hazards and create more healthful workplaces.



[cdc.gov/niosh/hhe/](http://cdc.gov/niosh/hhe/)



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evaluation.program/](https://facebook.com/health.hazard.evaluation.program/)



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