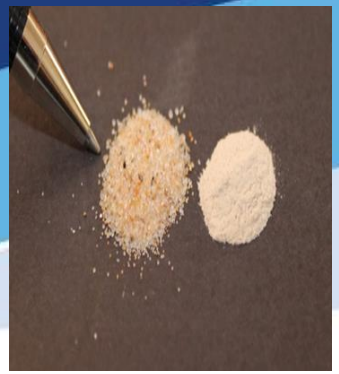
CONTROL SILICA DUST

Breathe Easier

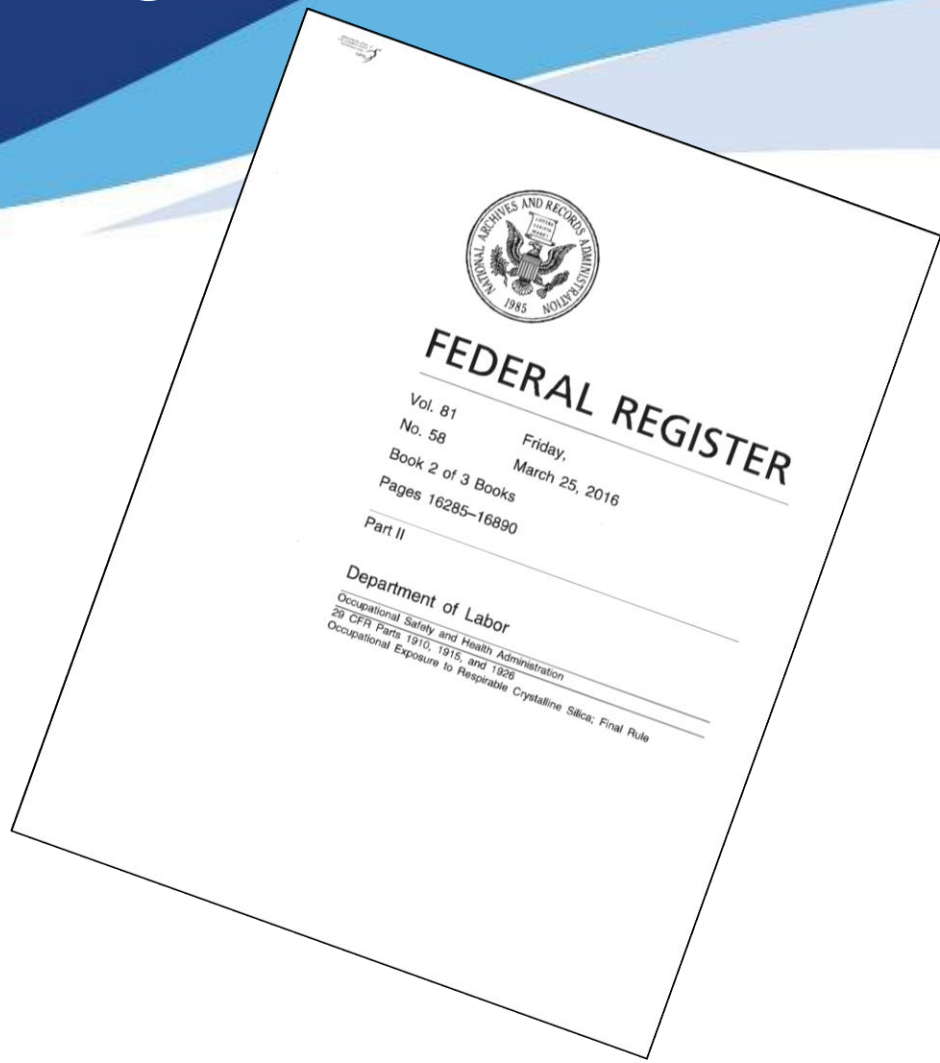


Respirable Crystalline Silica: National Emphasis Program (CPL 03-00-023) and Enforcement Policy

OSHA Occupational Safety and Health Administration

Background/Overview

- Final Rule published on March 25, 2016
- OSHA began enforcing the construction standard (29 CFR § 1926.1153) on September 23, 2017
- OSHA began enforcing general industry and maritime standard (29 CFR § 1910.1053) on June 23, 2018



OSHA Occupational Safety and Health Administration

Background/Overview *(Cont.)*

- OSHA issued Interim Enforcement Guidance:
  - General Industry/Maritime - June 25, 2018

- OSHA issued Frequently Asked Questions (FAQs):
  - General Industry/Maritime

OSHA Occupational Safety and Health Administration

National Emphasis Program for the Silica standards

- National Emphasis Program for the Silica standards was published on February 5, 2020:
  - Contains an updated list of target industries, listed by North American Industry Classification System (NAICS) codes
  - Area Offices must conduct outreach activities three months prior to initiating programmed silica inspections.

OSHA Occupational Safety and Health Administration

Crystalline Silica Is Found In Many Common Materials

OSHA® Occupational Safety and Health Administration

Health Effects

- Exposure to respirable crystalline silica has been linked to:
  - Silicosis
  - Lung cancer
  - Chronic obstructive pulmonary disease (COPD)
  - Kidney disease

OSHA Occupational Safety and Health Administration

Industries and Operations with Exposures

- Construction
- Glass manufacturing
- Pottery products
- Structural clay products
- Concrete products
- Foundries
- Dental laboratories
- Paintings and coatings
- Jewelry production
- Refractory products
- Asphalt products
- Landscaping
- Ready-mix concrete
- Cut stone and stone products
- Abrasive blasting in:
  - Maritime work
  - Construction
  - General industry
- Refractory furnace installation and repair
- Railroads
- Hydraulic fracturing for gas and oil

OSHA Occupational Safety and Health Administration

General Industry / Maritime
29 CFR § 1910.1053

(a) Scope

(b) Definitions

(c) Permissible Exposure Limit

(d) Exposure assessment

(e) Regulated areas

(f) Methods of compliance

- (1) Engineering and work practice controls
- (2) Written exposure control plan

(g) Respiratory protection

(h) Housekeeping

(i) Medical surveillance

(j) Communication of silica hazards

(k) Recordkeeping

(l) Dates

OSHA Occupational Safety and Health Administration

New Permissible Exposure Limit (PEL)

- Old PEL = ~~$\frac{10\ mg/m^3}{(\%\ Silica + 2)}$~~

- **New PEL** = 50 µg/m^3 as an 8-hour TWA
- **Action Level (AL)** = 25 µg/m^3 as an 8-hour TWA

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Scope and Application

- Both standards require employers to assess the exposure of each employee who is or may be reasonably be expected to be exposed to silica at or above the 25 µg/m^3 (AL) as an 8-hour TWA.

- Standards not applicable where objective data are available demonstrating exposure below the AL under *any foreseeable conditions*.

OSHA Occupational Safety and Health Administration

Scope and Application – *Indistinguishable* tasks

- General industry and maritime employers can comply with the construction standard (29 CFR 1926.1153), instead of the general industry and maritime silica standard, in certain circumstances where the task is indistinguishable from construction.

- ***Indistinguishable*** tasks:
  - Tasks that are performed primarily during maintenance and repair activities in general industry or maritime settings, and involve a task described in the construction standard's Table 1. These tasks must be of the same nature and type as the construction tasks.

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Exposure assessment/ Alternative exposure control methods
(General Industry/Maritime or Construction)

Performance Option

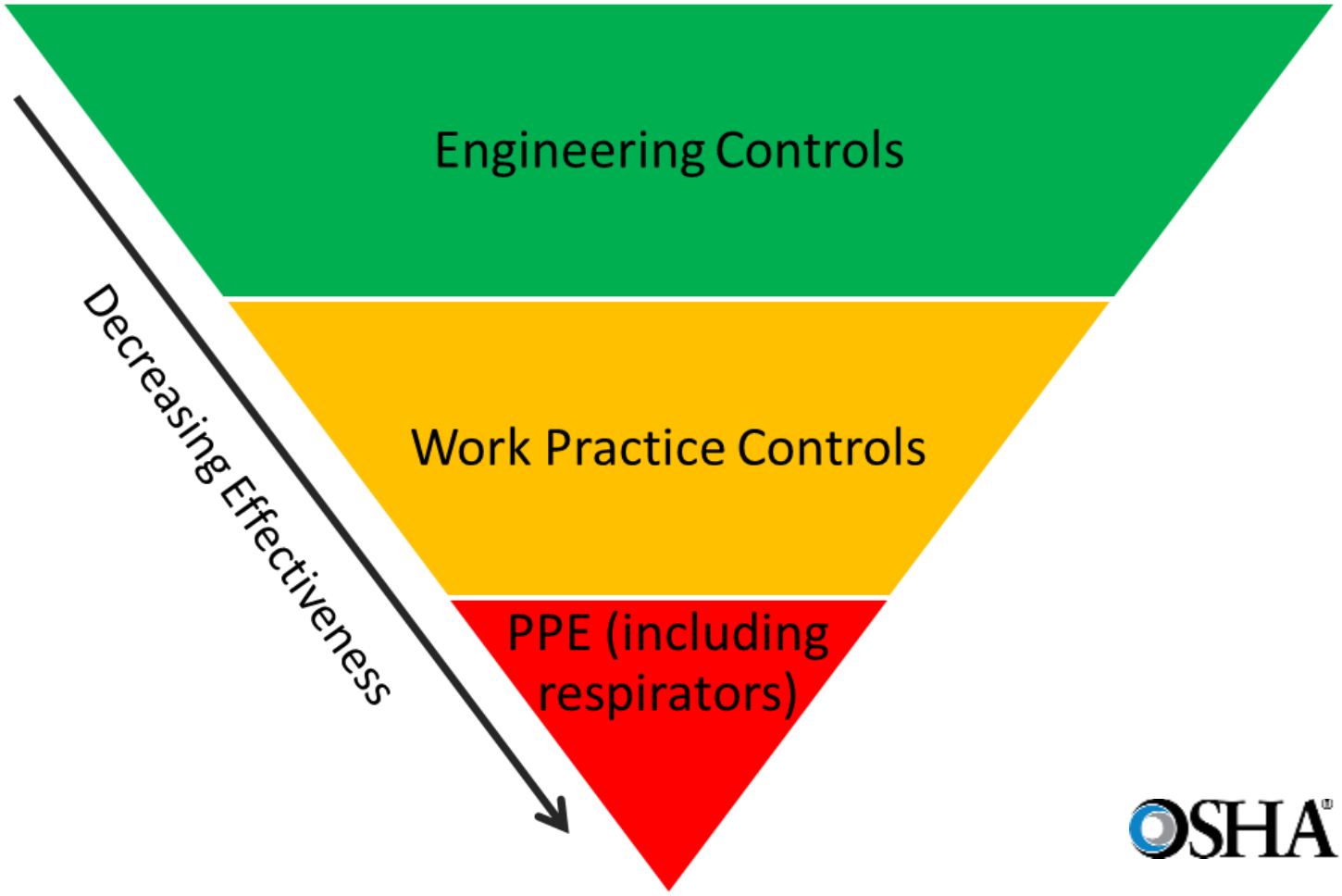
- Must assess ***before*** work begins.
- Use any combination of air monitoring data or objective data
  - sufficient to accurately characterize employee exposure to respirable crystalline silica.
- Can be within a range (i.e. between AL and PEL).

Scheduled Monitoring Option

- Must assess ***as soon as work begins***.
- If monitoring indicates:
  - Initial below the AL: no additional monitoring
  - ≥ AL but ≤ PEL – repeat within 6 months);
  - Above PEL - repeat within 3 months;
- Other monitoring required to discontinue monitoring or when circumstances change.

Protecting Employees

Hierarchy of Controls



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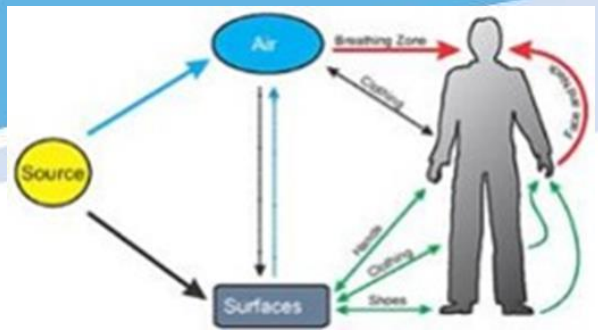
Exposure Variability

- Exposures may differ due to workplace conditions such as fluctuations in environmental conditions or air movements.
- Where an employer’s sampling results differ from OSHA’s:
  - Employer has the burden to demonstrate that OSHA's samples are not representative of normal exposure levels.
  - OSHA will compare both sets of exposure data to determine whether the employer's data are representative of observed conditions.

Use of Objective Data



- Includes air monitoring data from:
  - Industry-wide surveys;
  - Data provided by equipment manufacturers, trade or professional associations; or
  - Calculations based on the composition of a substance.

- Must demonstrate:
  - Employee exposure is associated with a particular product or material or a specific process, task, or activity.

- Must reflect current workplace conditions:
  - Closely resembling or with a higher exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

OSHA Occupational Safety and Health Administration

Exposure Assessment – notification

- Performance option assessment - the period for notification begins when the employer completes the assessment.
- Scheduled monitoring option assessment - the period for notification begins when employer receives the monitoring results.
- Results to each affected employee in writing within 15 working days for general industry/maritime or 5 working days for construction.

Regulated Areas
(General industry/Maritime - Only)

DANGER
RESPIRABLE CRYSTALLINE SILICA
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
WEAR RESPIRATORY PROTECTION IN THIS AREA
AUTHORIZED PERSONNEL ONLY

- General Industry:
  - Establish where exposures are expected to exceed the PEL.
- Employer must:
  - Mark off the area:
    - Cones, tape, barricades, or textured flooring
  - Post warning signs at entrances.
  - Limit access.
  - Provide and require use of respirators.

- Construction:

- **No** requirement to have a regulated area.

- But, need procedures to restrict access, when necessary (ECP).

OSHA Occupational Safety and Health Administration

Regulated Areas (con't)

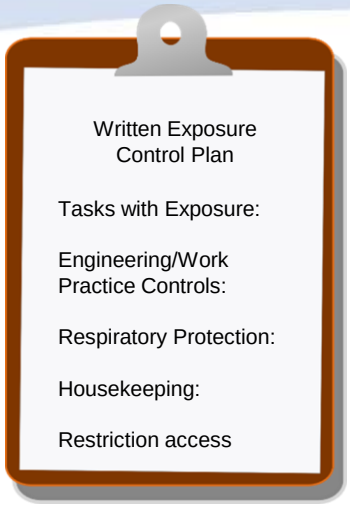
- "Temporary" regulated areas -
  - An area could be a regulated area on days when a particular silica-generating activity causes exposures to exceed the PEL. However, on other days, when that activity is not occurring and exposures do not exceed the PEL, and are not reasonably expected to exceed the PEL, employers do not need to treat the area as a regulated area.

- Some areas may be so high that any exposure in those areas could reasonably be expected to be in excess of the PEL.
  - In such cases, the regulated area requirements in 29 CFR 1910.1053(e) would apply, regardless of any employer work rules limiting (but not precluding) employee entry.

Methods of Compliance

- If exposures remain *above the PEL*, but the employer can demonstrate it has implemented all feasible engineering and work practice controls, then the employer is in compliance with 29 CFR 1910.1053(f)(1) and 29 CFR 1926.1153(d)(3) (assuming the provision and use of required respiratory protection is in accordance with the standard).

Written Exposure Control plan (ECP)
(General industry/Maritime and Construction)



- Must contain a description of:
  - Tasks in the workplace with sufficient detail;
  - Engineering controls, work practices, and respiratory protection used;
  - Housekeeping measures; and
  - Restricting access (e.g., use of barriers, posting signs).
- Annual review and evaluation of effectiveness.
- Readily available to each employee.
- Construction only - Designate a competent person to make frequent and regular inspections, and implement the plan.

- An ECP is not required when employer can demonstrate that employee exposure is below the AL of 25 µg/m^3 under any foreseeable conditions.

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Respiratory Protection
(General Industry/Maritime)

Employers must:

- Provide respirators if needed
- Follow the Respiratory Protection standard, 29 CFR 1910.134

Department of Labor/Shawn T Moore

OSHA® Occupational Safety and Health Administration

Housekeeping
(General industry/Maritime and Construction)

When cleaning up silica dust, avoid:

- Dry sweeping/brushing.
- Compressed air without a ventilation system to capture the dust.

Employers are allowed to use:

- Commercially-available dust suppression sweeping compounds.
- Drivable powered sweepers with HEPA filters for vacuuming.

OSHA Occupational Safety and Health Administration

Medical Surveillance

General Industry/Maritime Standard

- **For employees exposed to silica for 30 or more days/year:**
  - Above the PEL (until June 23, 2020)
  - At or above the action level (starting June 23, 2020)

Construction Standard

- **For employees who will be required to use a respirator for 30 or more days/year**

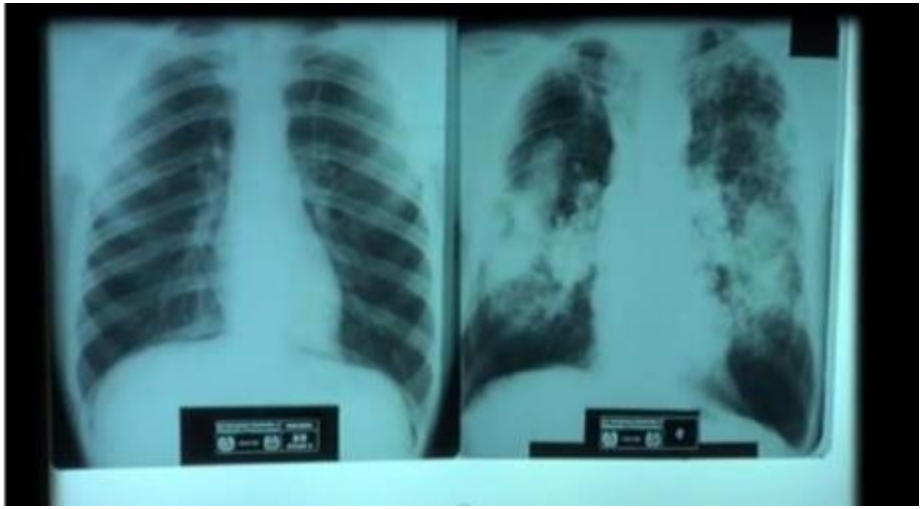
- **Offered:**
  - Within 30 days of assignment
  - Every three years to workers who continue to be exposed above the trigger.
- **Provided at no cost to employee:**
  - Exams, tests, and time spent traveling and getting exam

Amanda Mills/CDC

OSHA Occupational Safety and Health Administration

Medical Exams


Lauren Bishop/CDC



- Medical and work history
- Physical exam
- Lung function test
- Tuberculosis (TB test)
- X-rays

OSHA Occupational Safety and Health Administration

Medical Report/Opinion

- **Medical Report:**
  - *Issued to the employee*
  - Includes:
    - Any medical conditions.
    - Recommended limitations on respirator use and exposure to silica.
    - Recommendation for specialist exam.

- **Medical Written Opinion (to employer):**
  - Recommended respirator limitations.
  - If employee consents, the opinion may include:
    - Recommended limitations on exposure to silica.
    - Recommended specialist exam.

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Communication of Hazards

- Applies to all employees covered by the standards.
- Employer must comply with the hazard communication standard, 29 CFR § 1910.1200:
  - Employee has access to labels on containers of RCS and SDS; and,
  - Trained in accordance with the provisions of HCS.
- Employee information and training shall include:
  - Health hazard associated with RCS; and,
  - Specific measures (engineering controls, work practices, and respirators) implemented to protect employees from exposure to RCS.
- The *Hazard Communication* standard is applicable at any level of exposure.

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Required Training

Each employee covered by the RCS standard must demonstrate knowledge and understanding of the following:

- Health hazards
- Specific tasks
- Controls
- Content of standard
- Medical surveillance

- Other training:
  - Hazard communication
  - Respiratory protection

OSHA® Occupational Safety and Health Administration

Recordkeeping

- Employers must keep:
  - Air monitoring data
  - Objective data
  - Medical surveillance

- Make them available to employees, their representatives, and OSHA.

OSHA® Occupational Safety and Health Administration

Respirable Crystalline Silica (RCS) National Emphasis Program

OSHA Occupational Safety and Health Administration

RCS-NEP

- **NEP for Respirable Crystalline Silica (RCS-NEP)**
  - Published on February 5, 2020
  - To enforce the 2016 Silica standards
  - And target industries with the greatest number of exposed workers
- **Goals**
  - Reduce or eliminate worker exposures to respirable crystalline silica (RCS) in general industry, construction, and maritime
  - Annually do 2% of Federal inspections (600 - 700)

RCS-NEP *(Con't)*

- **Why a revised NEP?**
  - Even at the lowered PEL, still significant risks over work life for respiratory disease (e.g., silicosis, lung cancer, COPD) and kidney disease
  - DOL 2018-2022 Strategic Plan: *OSHA will target high-risk industries*
- **How many workers at risk? Over 2 million workers are exposed to RCS, including 1 million over the PEL!!!**
  - 950,000 workers (850,000 construction / 100,000 general industry & maritime) exposed above new PEL of 50 µg/m^3

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RCS-NEP (*Con't*)

- **What industries are targeted?**
  - Focusing on top half-million+ of highest-exposed workers (≥ 2 x PEL)
  - 500,000 workers in construction (lists 10 industry codes, 4-digit NAICS)
  - 50,000 workers in general industry and maritime (top 30 of the 102 codes listed, 6-digit NAICS)
  - 30,000 workers in electric power and in state and local government construction

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RCS-NEP *(Cont.)*

- **Some of the targeted general industries (6-digit NAICS):**
  - Clay building materials and refractories manufacturing
  - Concrete block and brick manufacturing
  - Cut stone and stone product manufacturing
  - Paint and coating manufacturing
  - Foundries (iron, steel, aluminum)

RCS-NEP *(Cont.)*

- **Some of the targeted specialty industries (6-digit NAICS):**
  - Ship building and repairing
  - Rail transportation
  - Support activities for oil and gas production / Hydraulic fracturing
  - Landscaping services

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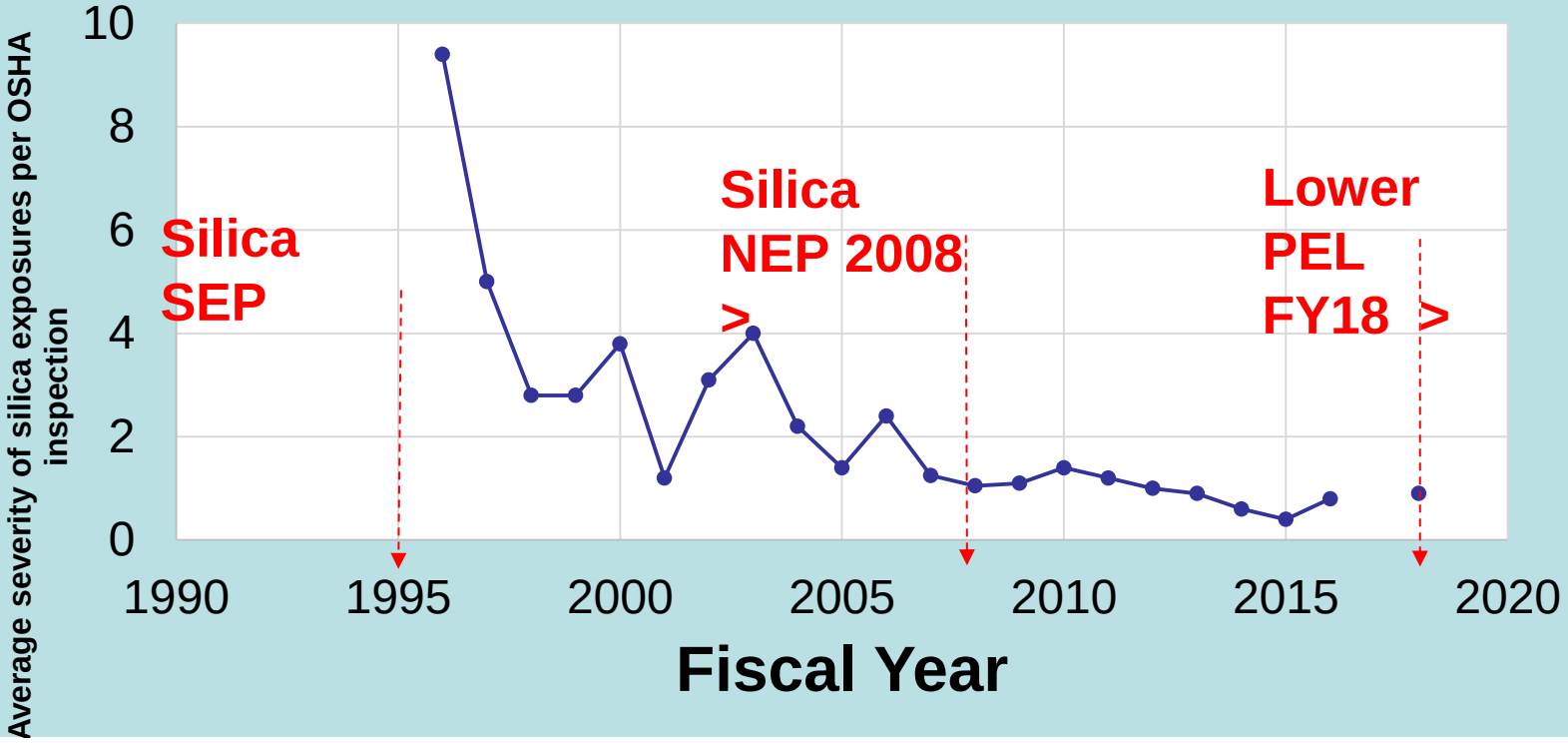
RCS-NEP (*Con't*)

- **Targeting methods and master list generation:**
  - NEP lists NAICS codes and silica-related construction operations
  - Establishment Targeting List–Generation System (ListGen)
  - Construction Inspection Targeting Application (C-target)
  - CSHO drive-bys and local knowledge of the Area Office
  - Include establishments with fewer than 10 workers

Historical Silica Exposures Average Severity per OSHA Inspection



OSHA Sampling Data History

OSHA's Chemical Air Sampling for 2008 through 2017

OSHA Data	Silica	All chemicals (including silica)
Number of personal air samples	13,324	291,860
Number of personal air samples > PEL	1,885	7,353
Percent of personal air samples > PEL	14.1%	2.5%

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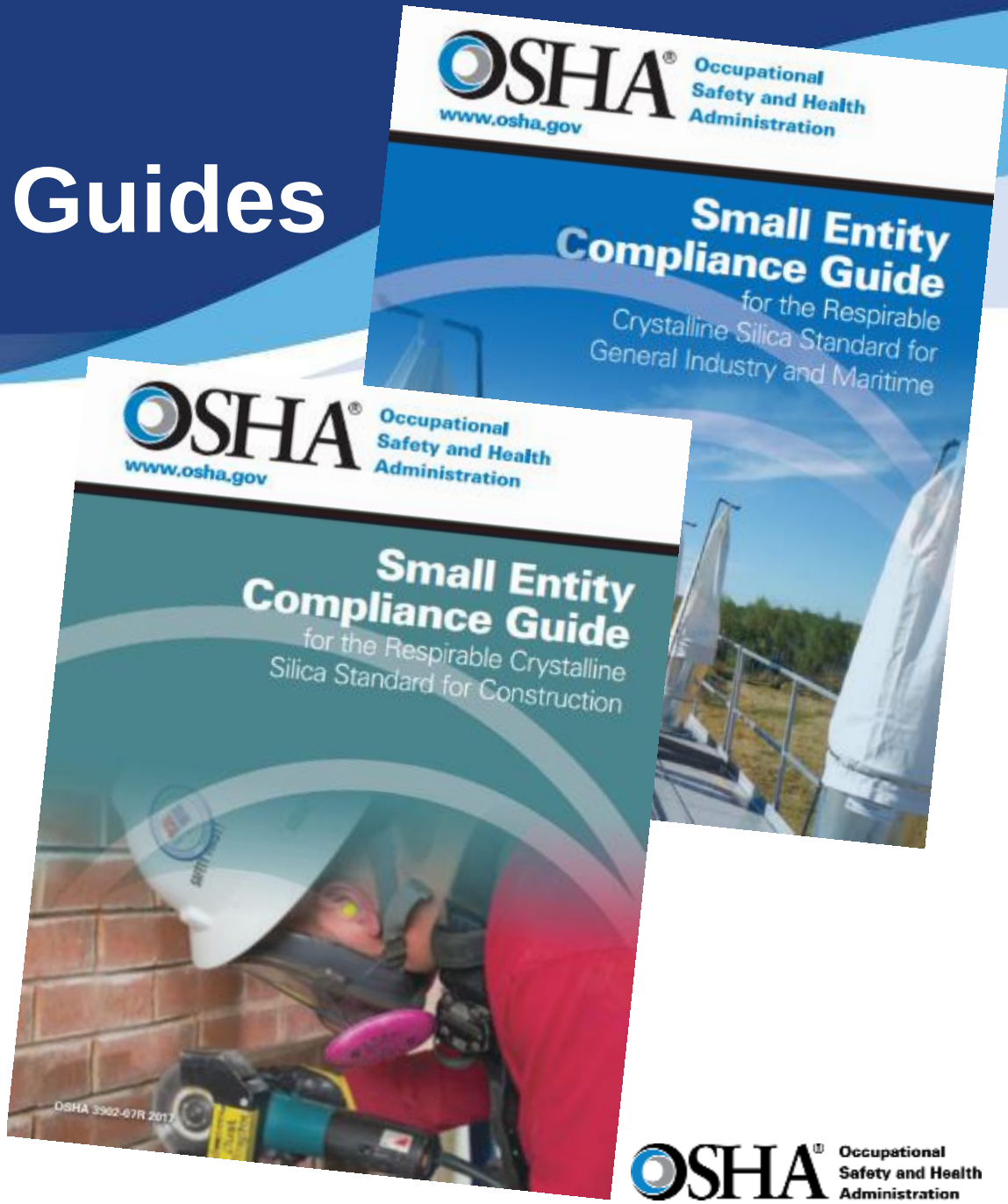
Silica-related Guidance materials

OSHA Occupational Safety and Health Administration

Small Entity Compliance Guides

- Available for both construction
www.osha.gov/Publications/OSHA3902.pdf
and
general industry/ maritime
www.osha.gov/Publications/OSHA3911.pdf

- Explain the provisions of the standards



OSHA Occupational Safety and Health Administration

Outreach and Guidance Materials
OSHA Safety and Health Topics Page

UNITED STATES DEPARTMENT OF LABOR

Find it in OSHA

A TO Z INDEX

Occupational Safety and Health Administration

English | Spanish

ABOUT OSHA | WORKERS | EMPLOYERS | REGULATIONS | ENFORCEMENT | TOPICS | NEWS & PUBLICATIONS | DATA | TRAINING

Safety and Health Topics / Silica

Silica

- Health Effects
- Construction
- General Industry and Maritime
- Sampling and Analysis
- FAQs

Overview

Crystalline silica is a common mineral found in the earth's crust. Materials like sand, stone, concrete, and mortar contain crystalline silica. It is also used to make products such as glass, pottery, ceramics, bricks, and artificial stone.

Respirable crystalline silica – very small particles at least 100 times smaller than ordinary sand you might find on beaches and playgrounds – is created when cutting, sawing, grinding, drilling, and crushing stone, rock, concrete, brick, block, and mortar. Activities such as abrasive blasting with sand; sawing brick or concrete; sanding or drilling into concrete walls; grinding mortar; manufacturing brick, concrete blocks, stone countertops, or ceramic products; and cutting or crushing stone result in worker exposures to respirable crystalline silica dust. Industrial sand used in certain operations, such as foundry work and hydraulic fracturing (fracking), is also a source of respirable crystalline silica exposure. About 2.3 million people in the U.S. are exposed to silica at work.

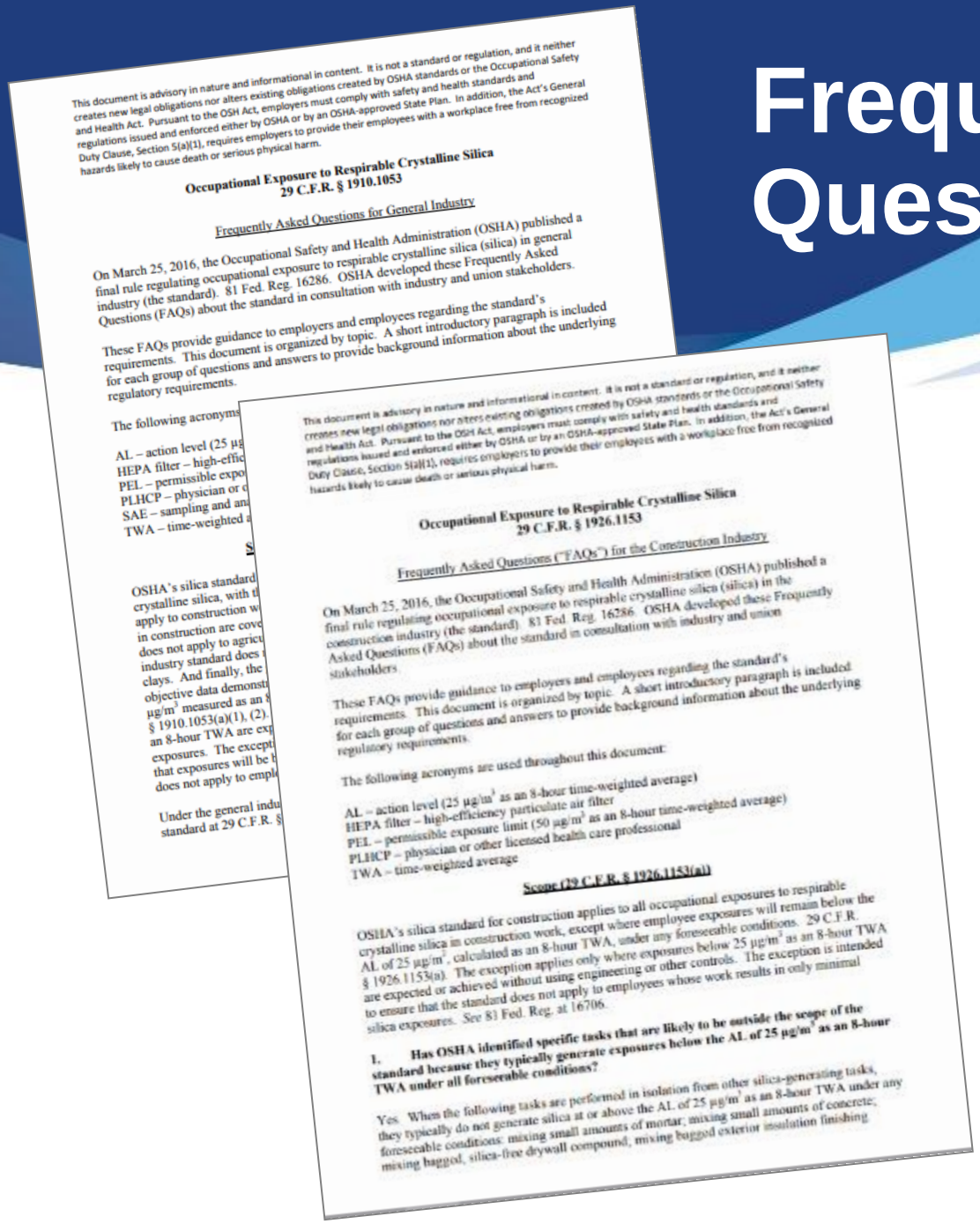
Workers who inhale these very small crystalline silica particles are at increased risk of developing serious silica-related diseases, including:

Highlights

- Small Entity Compliance Guides
  - Construction
  - General Industry and Maritime
- Table 1 Task Fact Sheets for Construction
- Interim Enforcement for the Respirable Crystalline Silica in Construction Standard
- FAQs
- Silica Rule Updates
- Submit a question

https://www.osha.gov/dsg/topics/silicacrystalline/index.html

OSHA Occupational Safety and Health Administration



This document is advisory in nature and informational in content. It is not a standard or regulation, and it neither creates new legal obligations nor alters existing obligations created by OSHA standards or the Occupational Safety and Health Act. Pursuant to the OSH Act, employers must comply with safety and health standards and regulations issued and enforced either by OSHA or by an OSHA-approved State Plan. In addition, the Act's General Duty Clause, Section 5(a)(1), requires employers to provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm.

Occupational Exposure to Respirable Crystalline Silica
29 C.F.R. § 1910.1053

Frequently Asked Questions for General Industry

On March 25, 2016, the Occupational Safety and Health Administration (OSHA) published a final rule regulating occupational exposure to respirable crystalline silica (silica) in general industry (the standard). 81 Fed. Reg. 16286. OSHA developed these Frequently Asked Questions (FAQs) about the standard in consultation with industry and union stakeholders.

These FAQs provide guidance to employers and employees regarding the standard's requirements. This document is organized by topic. A short introductory paragraph is included for each group of questions and answers to provide background information about the underlying regulatory requirements.

The following acronyms

AL – action level (25 µg
HEPA filter – high-effic
PEL – permissible expo
PLHCP – physician or
SAE – sampling and an
TWA – time-weighted a

OSHA's silica standard
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does not apply to agricu
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Occupational Exposure to Respirable Crystalline Silica
29 C.F.R. § 1926.1153

Frequently Asked Questions ("FAQs") for the Construction Industry

On March 25, 2016, the Occupational Safety and Health Administration (OSHA) published a final rule regulating occupational exposure to respirable crystalline silica (silica) in the construction industry (the standard). 81 Fed. Reg. 16286. OSHA developed these Frequently Asked Questions (FAQs) about the standard in consultation with industry and union stakeholders.

These FAQs provide guidance to employers and employees regarding the standard's requirements. This document is organized by topic. A short introductory paragraph is included for each group of questions and answers to provide background information about the underlying regulatory requirements.

The following acronyms are used throughout this document:

AL – action level (25 µg/m³ as an 8-hour time-weighted average)
HEPA filter – high-efficiency particulate air filter
PEL – permissible exposure limit (50 µg/m³ as an 8-hour time-weighted average)
PLHCP – physician or other licensed health care professional
TWA – time-weighted average

Scope (29 C.F.R. § 1926.1153(a))

OSHA's silica standard for construction applies to all occupational exposures to respirable crystalline silica in construction work, except where employee exposures will remain below the AL of 25 µg/m³, calculated as an 8-hour TWA, under any foreseeable conditions. 29 C.F.R. § 1926.1153(a). The exception applies only where exposures below 25 µg/m³ as an 8-hour TWA are expected or achieved without using engineering or other controls. The exception is intended to ensure that the standard does not apply to employees whose work results in only minimal silica exposures. *See* 81 Fed. Reg. at 16706.

1. Has OSHA identified specific tasks that are likely to be outside the scope of the standard because they typically generate exposures below the AL of 25 µg/m³ as an 8-hour TWA under all foreseeable conditions?

Yes. When the following tasks are performed in isolation from other silica-generating tasks, they typically do not generate silica at or above the AL of 25 µg/m³ as an 8-hour TWA under any foreseeable conditions: mixing small amounts of mortar; mixing small amounts of concrete; mixing bagged, silica-free drywall compound; mixing bagged exterior insulation finishing

Frequently Asked Questions

- Available for both construction and general industry/ maritime
- Provide responses to some of the most common stakeholder questions

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CONTROL SILICA DUST

Breathe Easier

hank You!

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