

Evaluation of Respirable Crystalline Silica Exposures During Drywall Sanding

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Background

HHE Request and Background

- **Employer request**
 - Concerned about employee exposure to respirable crystalline silica during drywall sanding activities
- **History of the request**
 - Conducted previous HHE with company in 2019 at a commercial construction site
 - Sanded joint compound that had been applied between sheets of hanging drywall
 - 2023 visit was at a hospital site
 - Applied skim coat to drywall board and then sanded smooth

Workplace

- Three-employee crew
- Monday-Friday
- 8-hour shifts
- **Sanding occurred approximately once every 4 days**
 - Amount and frequency of sanding could change depending on the project
 - For this visit, sanding took 8 hours
- **Represented by International Union of Painters and Allied Trades (IUPAT)**

Drywall Finishing Process

- Walls were skim coated
- One employee operated a power sander
 - Allows a large area of drywall to be sanded quickly but cannot get into corners or small spaces
- Two employees sanded by hand with a sanding sponge



What we did

Methods

- **Conducted initial walkthrough of the worksite in February 2023 and returned in April 2023**
- **During return visit we:**
 - Observed work processes, PPE use, and workplace conditions
 - Collected full-shift personal air samples for respirable crystalline silica and respirable dust
 - Collected bulk samples of sanding dust and wet joint compound to determine their silica content
 - Conducted semi-structured interviews with employees to discuss PPE use during current work processes and whether they have health or safety concerns

What we found

Key Findings

- One employee was exposed to respirable crystalline silica above the OSHA PEL and NIOSH REL
- All three employees' exposures to respirable crystalline silica were above the OSHA action level (AL)

NIOSH REL

50 $\mu\text{g}/\text{m}^3$

OSHA PEL

50 $\mu\text{g}/\text{m}^3$

OSHA AL

25 $\mu\text{g}/\text{m}^3$

Key Findings

- **Work practices may have contributed to exposures**
 - Employees sanded the tops of walls and ceilings while other employees were sanding directly below
 - We saw the vacuum attached to the power sander being used without a disposable bag, which can put more dust into the air when the vacuum is emptied
 - There were visible dust clouds created when an employee emptied the vacuum later in the shift
 - Employees shook dust off their clothes at the end of their shift
 - An employer who voluntarily wore an N95 respirator did not have the straps positioned correctly



What we recommended

Administrative Controls

Recommendation: Keep employees' exposures to respirable crystalline silica below the OSHA PEL and NIOSH REL

- **Change** work practices so that employees do not sand above other employees.
- **Create** clear instructions for employees to operate and maintain the vacuum.
- Use a vacuum with a HEPA filter and disposable bag to clean dusty clothing.



Recommendation: Keep employees' exposures to respirable crystalline silica below the OSHA PEL and NIOSH REL



- **Improve** the existing respiratory protection program.



- **Educate** employees on the health effects of silica exposure. Tell them what workplace tasks can expose them to silica and how they can limit their exposure.
- **Review** the OSHA *Small Entity Compliance Guide for the Respirable Crystalline Silica Standard for Construction*.

Recommendation: Continue to conduct exposure monitoring at regular times



- Do **additional personal air sampling** for respirable dust and silica.



- **Assess exposures again** when there is a change in how the work is done, who does it, or what equipment is used.

Administrative Controls

Recommendation: Address other health and safety issues we identified during our evaluation



- Consider keeping nonemployees out of work areas where drywall sanding is taking place.



- Do not eat or drink in the work area.



Personal Protective Equipment

Recommendation: Address other health and safety issues we identified during our evaluation

- Provide **head lamps** to employees. Ask them not to hold portable work lights on their shoulders while working.
- Explore other personal protective equipment and procedures.
 - Different types of PAPRs can combine a hard hat and face shield.
 - Drywall sanding requires close inspection of the work surface, presenting challenges to eye and face protection.
- Ensure employees **use a harness** when they are operating the powered man-lift.



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<https://www.cdc.gov/niosh/hhe/reports/pdfs/2023-0028-3396.pdf>



<https://www.cdc.gov/niosh/hhe/default.html>

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