

Potential ergonomic and hygiene benefits of using a SVRS as a method to prevent musculoskeletal injuries and dust-related illness

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Objective

In construction, the sanding of drywall compound generates high levels of dust, including respirable silica. One method of controlling this occupational health hazard is the use of a shrouded ventilated rotary sander (SVRS). The purpose of this project was to document the potential ergonomic and hygiene benefits of using a SVRS as a method to prevent musculoskeletal injuries and dust-related illness. Eleven subjects—seven journeymen and four apprentices participated in the study.

Study

For each subject, two test runs were conducted: 1) for the respirable dust fraction using the pole sander in one room; 2) for the respirable dust fraction using the SVRS in the other room. A direct reading dust monitor was used to measure respirable dust concentrations. At the same time that respirable dust was being measured, muscle activity was also being measured using electromyography (EMG).

Results

Ergonomic results found that despite the large differences in weight between the SVRS (8 lbs) and the pole sanding tool (2 lbs), working with the SVRS significantly required less muscular activity in the shoulder and forearm. Hygiene results indicate that the SVRS was very effective in capturing most of the respirable airborne dust. The difference between the two sanding methods represents a 96% reduction in respirable dust exposure.