

**Evaluation of Potential Exposure to
Respirable Crystalline Silica When Sizing Drywall
Gypsum Association 2015 Study
October 10, 2017**

Introduction

In 2015, the Gypsum Association engaged the services of an independent laboratory and consulting firm to evaluate the potential exposure to respirable crystalline silica (RCS) when sizing 5/8-inch type X wallboard. Each of the Gypsum Association's seven member companies provided commercially available drywall boards directly to the laboratory for testing purposes.

Methodology

A sampling and analysis plan was created to measure airborne exposures to RCS when using common work practices to size drywall for installation. Generally accepted industrial hygiene methods were used to sample respirable particles for subsequent laboratory analyses. The three methods evaluated for cutting each wallboard product included:

Work Practice Method	Tools Used	Cutting Rate/Amt. (2-hour period)
Score, Snap and Rasp	Razor Knife, 48" T-square and Drywall Rasping Tool	Every 3 min., 40 qty. - 4 ft. cuts (160 feet)
Hand Saw Cutting	Manually Operated – 15" Drywall Saw	Every 10 min., 12 qty. - 4 ft. cuts (48 feet)
Rotary Saw Cutting	AC Powered, Rotary Spiral Saw with 5/32" Drywall Bit	Outline of 4" x 4" 2-Gang Elec. Box, Every 15 min., 8 openings (10.7 feet)

Each cutting method was performed in an isolated testing chamber of approximately 2,000 cubic feet. The testing chamber was subjected to a slight negative pressure (approx. one air change per hour) to prevent leaks and fans were used for air mixing. The chamber was cleaned between tests.

Personal breathing zone and area air samples were collected using SKC aluminum cyclones and polyvinyl chloride (PVC) filters with air sampling pumps set at a target flow rate of 2.5 liters per minute. Air samples were analyzed by the National Institute for Occupational Safety and Health (NIOSH) method 7500 to determine for the presence and amount of RCS on each sample using x-ray diffraction techniques.

Results and Evaluation

A total of 126 air samples were collected and analyzed for RCS (42 personal and 84 area samples). **Respirable crystalline silica was not detected on any of the samples** analyzed for any of the cutting methods used. The reported detection limit for the air samples was less than or equal to 17 µg/m³. **

** Detection limit is less than the OSHA PEL of 50 µg/m³ and ACGIH TLV and OSHA action level which is 25 µg/m³.

In addition to the collection and analysis of samples for RCS, total and respirable dusts were also sampled and analyzed using NIOSH methods 0500 and 0600 respectively. The results of the total and respirable dust samples showed that the score, snap and rasp technique, the most common method of sizing wallboard, created the lowest overall airborne dust emissions.

General Comments and Caveats

The purpose of this study was to use accepted sampling methods to determine if airborne RCS is a potential inhalation exposure concern when sizing drywall. The study does not provide a means of relieving contractors from their monitoring obligations under OSHA's Final Rule to Protect Workers from Exposure to Respirable Crystalline Silica (ref. 29 CFR 1926).

This study, based on work practice and activity metrics, is intended to be a credible means of screening for the likelihood of potential RCS exposure and to provide information to the general construction industry and workers engaged in sizing drywall.

The air sample results for the Gypsum Association's 2015 Silica Study were not pro-rated for exposure according to a time weighted average (TWA) calculation, but are presented based on the actual time sampled. The controlled setting necessary for measuring dust emissions from various cutting methods, may not reflect potential exposures on construction sites where a variety of distinct work activities may be taking place simultaneously. Multiple work activities on a construction site may have a wide variety of sources for dust(s) emissions that should be addressed per the OSHA regulations.

Testing and laboratory analyses were provided by RJ Lee Group, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory for respirable crystalline silica analysis.