



Controlling Silica Dust from Foundry Casting-Cleaning Operations

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Hazard Controls

Controlling Silica Dust from Foundry Casting-Cleaning Operations

From the National Institute for Occupational Safety and Health

Description of Hazard

Exposure to respirable silica dust can lead to the development of silicosis, a debilitating and potentially deadly lung disease. In foundry operations, workers who clean small castings made from sand molds use various handheld chipping and grinding tools. If dust exposures are not adequately controlled, workers breathe in high concentrations of respirable silica.

Description of Controls

Studies conducted by the National Institute for Occupational Safety and Health (NIOSH) have shown that excessive concentrations of respirable silica are produced when cleaning castings made from sand molds. Use of the local exhaust ventilation (LEV) system described below significantly reduced

worker exposures to respirable dust by 59 percent to 77 percent for various cleaning tools. This system may keep worker exposures to respirable silica below permissible limits and eliminate the need for workers to wear respirators.

Local Exhaust Ventilation (LEV) System

The LEV system consists of a down-draft ventilation booth outfitted with a turntable for manipulating the castings. This system is designed to enclose and draw air contaminants downward through a grate opening at the working surface of the table for cleaning small castings. The table surface opening for this booth is approximately 5 ft long and 1.5 ft deep; airflow rate for the system was about 5600 ft³/min. This LEV system exceeds the minimum recommended face capture velocity of 200 ft/min. The turntable allows the worker to have easy access for cleaning multiple surfaces and direct-

ing the dusts generated from the tools toward the grate opening, away from the breathing zone. (See illustrations)

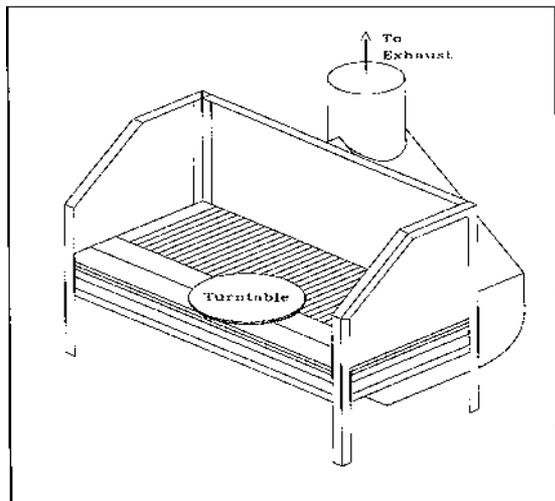
For More Information

To obtain more free information about controlling this hazard or about other occupational safety and health issues, call NIOSH at 800-35-NIOSH (800-356-4674), or visit the NIOSH Home Page on the World Wide Web at <http://www.cdc.gov/niosh/homepage.html>.

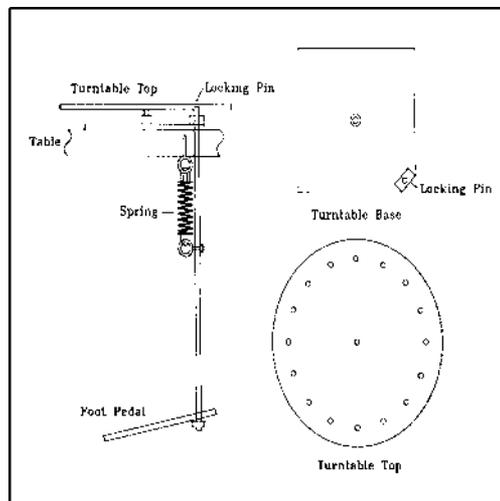
A technical report has been published: *An Evaluation of a Local Exhaust Ventilation Control System for a Foundry Casting-cleaning Operation*. *Am. Ind. Hyg. Assoc. J.*, (58): 354-358 (1997).

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Down-draft ventilated casting-cleaning workstation.



Casting-cleaning turntable.