



HAZARD

CONTROLS

HC 23

Controlling Silica Dust from Foundry Casting-Cleaning Operations

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.

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% to 77% 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 downdraft 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 5,600 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 directing the dusts generated from the tools toward the grate opening, away from the breathing zone. (see ILLUSTRATIONS)

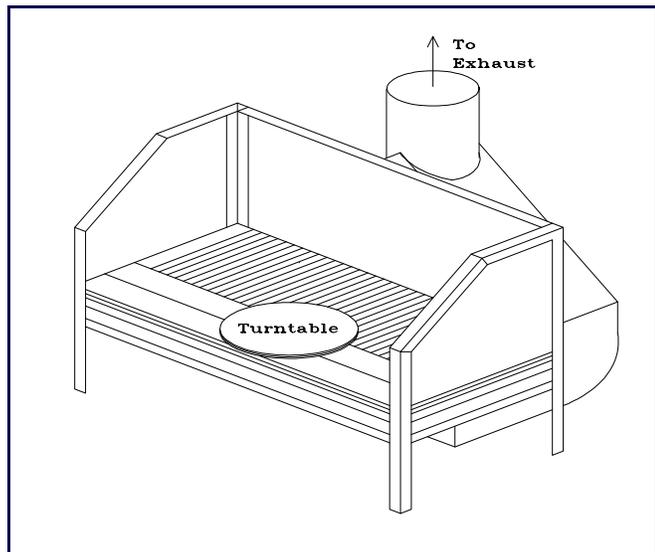


U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

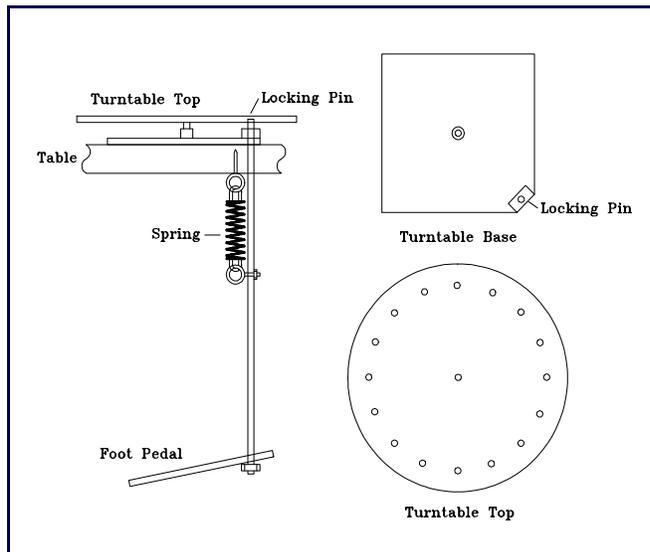
Public Health Service
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health



ILLUSTRATIONS: VENTILATED WORKSTATION WITH TURNTABLE†



Downdraft ventilated casting-cleaning workstation.



Casting-cleaning turntable.

†U.S. Patent 5569074. For other than single use, contact NIOSH Technology Transfer Coordinator (513/841-4321)

For More Information

To obtain more free information about controlling this hazard or about other occupational safety and health issues:

- call NIOSH* at **1-800-35-NIOSH (1-800-356-4674)**, or
- visit the NIOSH Homepage 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).

*NIOSH is the Federal agency responsible for conducting research and recommending measures for preventing work-related illnesses and injuries. All *HAZARD CONTROLS* are based on research studies that show how worker exposure to hazardous agents or activities can be significantly reduced.

Acknowledgments

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