MICHIGAN

MICHIGAN STATE UNIVERSITY: Prevention of work-related injuries & illnesses through research & investigation

INVESTIGATION/RESEARCH — Prevent Work-Related Asthma from Welding Fume

From 1988 to 2013, 145 cases of work-related asthma (WRA) from exposure to welding fume were confirmed in Michigan. WRA from exposure to welding fume is the 5th leading cause of WRA in Michigan. In 2012, there were 411,000 welders in the United States, with 11,319 performing welding in Michigan. Welding is commonly performed in many industries including manufacturing, construction and equipment repair and WRA cases occur in all of these industry types. Examples of WRA from exposure to welding fume:

- A male in his 30s developed asthma while working through a temporary employment agency for an auto rack manufacturer. He welded for 3 months before he was fired for excessive sick leave. He made 4 trips to the Emergency Department while working at the company.
- A male in his 50s worked as a fork-lift driver at an auto stamping plant. He was exposed to welding fume as he drove near the robotic welding cells.
- The classroom of a high school teacher in her 40s was next door to the auto body and welding shop. The shop did not have adequate ventilation. After 4 years of exposure to welding fume from the room next door, she developed asthma.
- A male in his 40s developed asthma after welding on galvanized steel for 10+ years at an auto parts manufacturer. Six months after his diagnosis, other exposures in the work place in addition to welding fume triggered asthma symptoms. He was reassigned to a new work location away from the galvanized steel.

TO PREVENT THE DEVELOPMENT OF WORK-RELATED ASTHMA FROM WELDING FUME

- **Employers should recognize** that welders *and co-workers in the vicinity* can develop WRA from exposure to welding fume.
- **Welding on stainless and galvanized** steel exposes workers to known asthma-causing agents--chromium, nickel and zinc. Welding on non-stainless steel produces an irritant-based fume that can lead to WRA over the long term.
- **Employers should provide down draft ventilation** and other forms of task-specific ventilation (such as movable hoods or fume extraction welding guns) to minimize exposures.
- **Get involved!** Workers who weld should familiarize themselves with their workplace health and safety programs, policies and ventilation and personal protective equipment.
- **Health care professionals should take a detailed occupational history** of workers who present with adult onset asthma. Industry, job title, *tasks performed* and any reported exposures should be thoroughly explored.
- **Health care professionals, employers and employees should also be** aware that: welding on stainless steel can cause lung cancer, welding on galvanized steel can cause flu-like metal fume fever, and welding fume can cause irritant-type symptoms to the eyes, nose and throat.

DID YOU KNOW?

- Half of the welding-fume WRA cases were among individuals who worked near welding.
- Most workers have chronic and long-standing symptoms even with removal from exposure to welding fume.
- 60% of the workers had at least one trip to the Emergency Department, and 37% required hospitalization.
- A third of the workers continued to work in the same environment after their WRA diagnosis.
- WRA commonly occurs in work areas that are within OSHA permissible exposure standards.

Welding, Cutting, & Brazing General Requirements:
http://www.cdc.gov/niosh/docs/2004-101/chklists/r1n64w~1.htn

Safety & Health Topics: Welding, Cutting, & Brazing:
https://www.osha.gov/SLTC/weldingcuttingbrazing/

Welding, Cutting, & Brazing:
http://www.michigan.gov/documents/CIS_WSH_part529_54717_pdf

MSU Occupational & Environmental Medicine Newsletter:
http://www.oem.msu.edu/userfiles/file/News/v21n4.pdf