

## **UPDATE ON SILICOSIS**

The National Institute for Occupational Safety and Health (NIOSH) held a meeting of federal and state organizations who work on silica exposure and silicosis on December 8th and 9th, 2009. Key points from the meeting include:

• International Agency of Research on Cancer (IARC) is evaluating the medical literature that has been published since its 1997 decision that silica is a human carcinogen. A presentation from a member of the IARC committee was that the evidence published since 1997 is "very strong" that silica is a carcinogen. The updated evaluation has not yet been published. No change is expected in IARC's 1997 conclusion that silica is a human carcinogen.

• The Occupational Safety and Health Administration (OSHA) is moving ahead to propose a comprehensive standard for silica that will include requirements for medical monitoring. OSHA plans to publish the proposed standard in the Federal Register in July 2010.

• Two states, California and New Jersey, have banned the dry cutting and grinding of masonry because of the hazard from silica released during dry cutting.

www.state.nj.us/health/surv/documents/ dry\_cutting.pdf www.dir.ca.gov/title8/1530\_1.html

• NIOSH is moving forward to facilitate "B" reading of digital radiographs with digital standards and electronic recording of the radiographic interpretation.

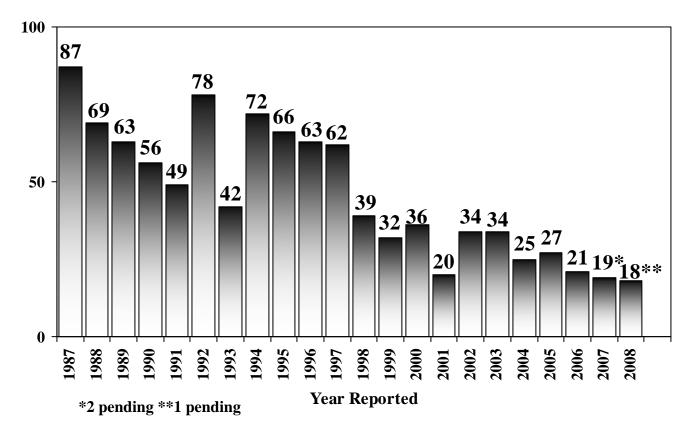
• The Council for State and Territorial Epidemiologists (CSTE) in conjunction with the Centers for Disease Control and Prevention (CDC) has made silicosis a nationally notifiable condition. Discussions were held on how to facilitate reporting in states that, unlike Michigan, do not have an active tracking program for silicosis.

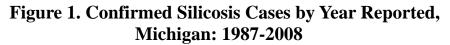
• The incidence of interstitial lung disease in coal miners, which had been decreasing, is now increasing in areas of Kentucky, Virginia and West Virginia and is attributed to mining smaller seams of coal which require drilling and digging through more silica-containing rock around the coal seams.

• Annually, the use of silica as an abrasive in the United States is approximately 400,000 tons, down from 1.4 million tons/year in the 1990's. Most European countries have banned the use of silica as an abrasive.

• State Departments of Transportation in 22 states, including Michigan, have banned the use of silica as an abrasive on bridges and highway overpasses.

• Michigan made a number of presentations at the 2-day meeting including information on spirometric results and connective tissue disease among the individuals with silicosis identified in Michigan since 1985. Figure 1 shows that the number of individuals with silicosis identified each year in Michigan is declining. Since 1987, a total of 1,068 confirmed silicosis cases have been identified. An additional 56 cases from reporting sources prior to 1987 are not shown in Figure 1.





Despite a decline in the reported number of newly confirmed silicosis cases to the Michigan tracking system, personal air sampling data from 38 Michigan foundries since 2007 shows that silica dust levels remain above the OSHA permissible exposure limit (PEL) of 0.1 mg/m<sup>3</sup> for respirable silica in 34% of foundries and above the NIOSH recommended exposure limit (REL) of 0.05 mg/m<sup>3</sup> in 54% of the foundries. The proposed OSHA comprehensive standard for silica may adopt the lower NIOSH REL.



Using a cutoff of 70% as normal for FVC % predicted,  $FEV_1$ % predicted, and %  $FEV_1/FVC$ , Figure 2 shows that regardless of cigarette smoking status, approximately 70% of all silicosis cases have abnormal spirometry either obstructive, mixed obstructive and restrictive, or restrictive changes.

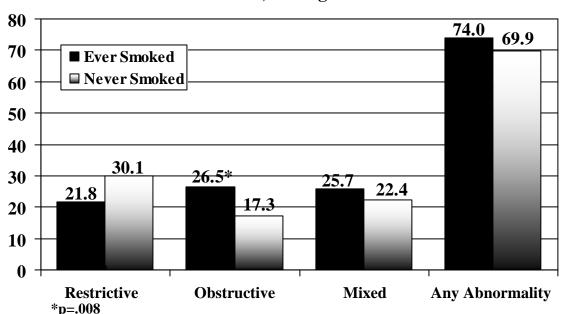


Figure 2. Spirometric Results by Smoking Status among Individuals with Silicosis, Michigan: 1985-2002

Data was also presented that Rheumatoid Arthritis, Scleroderma and ANCA positive vasculitis are significantly increased in individuals with silicosis. Overall, the preponderance of connective tissue disease is typically seen in women. Therefore, the occurrence of connective tissue disease in middle aged to elderly males, the typical demographic of individuals with silicosis, should prompt health care providers to inquire about occupations with past exposure to silica.

Connective Tissue Disease Type	General Population Prevalence	Prevalence among Silicosis Cases, % (N)	Relative Risk (95% CI)
Rheumatoid Arthritis	1.0 %	4.2 % (33)	4.18* (2.07-8.42)
Systemic Lupus Erythematosus (SLE)	0.045 %	0.1 % (1)	2.81 (0.38-20.38)
Scleroderma	0.0029 %	0.3 % (2)	8.73* (2.08-36.52)
Sjogren's Syndrome	1.4 %	0.3 % (2)	0.18 (0.02-1.55)
Vasculitis	0.03 %	0.8 % (6)	25.3* (11.32-56.63)

## Table 1. Prevalence of Connective Tissue Disease among 790 Individualswith Silicosis, Michigan: 1985-2006

\* Statistically significant.



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In this issue: v21n1: Update on Silicosis

\*P S Remember to report all cases of occupational disease!

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