

## ASTHMA MORTALITY

Since 2003, we are aware of 9 deaths from work-related asthma. Table 1 provides a summary of six of the deaths where the individual died after an acute asthma attack at work. The other 3 individuals died at home from asthma; they had previously been diagnosed with work-related asthma.

Michigan is in a unique position to recognize these asthma deaths. We are the only state with three CDC-funded surveillance projects which allow us to identify and investigate these deaths:

- ✓ Sentinel Event Notification System for Occupational Risks (SENSOR)
- ✓ Fatality Assessment and Control Evaluation (FACE)
- ✓ Asthma Fatality Surveillance

SENSOR has been in existence since 1988. This system tracks all work-related illnesses, with special emphasis on select conditions including asthma. FACE has been in existence since 2000, and tracks all acute traumatic work-related deaths. The Asthma Fatality Surveillance program has been in existence since 2001; it tracks asthma deaths for all ages and all causes

of asthma.

We previously reported on a worker who died immediately after the application of a spray-on truck bed liner which contained isocyanates (PS News, Fall 2003 and Chester et al 2005). A second death from isocyanate-induced asthma occurred in late 2005 (report 05MI141 on [www.oem.msu.edu](http://www.oem.msu.edu), MIFACE). This individual died from exposure to isocyanates despite receiving repeated and ongoing medical care. The employee worked at a facility that made adhesives that contained isocyanates.

Table 2 shows for this second death the timeline of the patient's 18 medical encounters from the time he hired in at the company in December 2001 until his death in 2005. His medical encounters included 4 medical exams provided by the company, 5 urgent care visits, 7 visits to his primary care physician and 2 visits to a pulmonary specialist. He had hired in at the age of 45. He had no personal or family history of allergies or asthma per his family and medical records. He had smoked cigarettes since the age of 16. The results of his FEV<sub>1</sub> from the breathing tests provided by the company are shown in Table 3. At the time of hire (1/2002) his third FEV<sub>1</sub> was normal; two months before his death

**Table 1. Michigan Work-Related Asthma Deaths, Acute Attack at Work**

2003	43-year old male	Truck bed liner applicator	Methylene diisocyanate (MDI) (1)
2004	19-year old female	Waitress in a bar	Second hand smoke (2)
2004	75-year old female	Dairy farmer	Sodium, hypochlorite/sodium hydroxide mixture used for tank cleaning mixed with acid
2005	50-year old male	Adhesive manufacturer	MDI and Toluene diisocyanate
2007	54-year old female	Laundry worker	Bleach
2008	55-year old male	Auto parts manufacturer	Metal working fluid

12/01 Began Work			
Company Screening	Urgent Care	Primary Care	Pulmonologist
01/02			
	07/02		
09/02			
	12/02		
	04/03		
		05/03	
	07/03	07/03	
		09/03	
10/03			
		11/03	
	09/04	09/04	
10/04			
		11/04	
		08/05	
			09/05
			10/05
12/05 DIED			

when the primary care doctor recorded the following in the patient's chart:

*"trouble with dyspnea from bronchospasm from occupational exposure to lung irritants. This has been going on for some time. He has been on prednisone, averaging one taper per month. It seems that is not the best route to go long term. He is considering leaving his work but if he leaves voluntarily on his own he loses his severance pay, so he is wondering if there is any medical reason for leaving his job, as this might help him to retain his severance. I recommend that we have him see a pulmonologist for further evaluation at this point."*

The patient had two visits with the pulmonologist. The pulmonologist documented the patient had hyperreactivity with a 12% improvement in his FEV<sub>1</sub> with a bronchodilator. He had no evidence of COPD with a normal diffusing capacity and the absence of air trapping on lung volumes. At his second visit the pulmonologist wrote:

*"I do think that it is going to become necessary for them to try and minimize his exposure to isocyanates, since I do feel that he is most likely having flare from his work environment. Certainly, if they cannot do this, then we will proceed down the road to spirometry before work and spirometry after work to document changes in his flows and proceed down the road if becomes necessary."  
"Return in 2 months time for clinical re-evaluation and spirometry."*

Date	FEV <sub>1</sub>	Pred	% Predicted
January 2002	3.75 L	3.94	95
September 2002	3.60 L	3.77	96
October 2003	3.27 L	3.74	87
October 2004	2.58 L	3.54	73

(October 2005) his FEV<sub>1</sub> had decreased over one liter (Table 3).

This employee first sought medical care at an Urgent Care Facility 6 months after beginning work. The impression from that encounter was "acute bronchitis with mild bronchospasm." On subsequent visits to the Urgent Care Facility his symptoms were noted to occur at work. After the care visit he was referred to a primary care doctor. The primary care doctor diagnosed him with asthma and prescribed Advair. On subsequent visits the primary care doctor noted: "was exposed to chemical at work again" and "exposed to isocyanate." The primary care doctor referred him to a pulmonologist in August of 2005

The patient collapsed at work and died prior to the scheduled third visit. He died in the hospital after never regaining consciousness. An autopsy ruled out an acute myocardial infarction, pulmonary emboli, stroke or acute rupture of an organ. His pulmonary finding showed chronic changes of asthma.

The records of the company doctor, a family practitioner who provided occupational health services to the company noted the patient was under care for asthma in his 10/2003 encounter and in his 10/2004 encounter that the patient had



\*Project  
S E.N.S.O.R.

# News

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Address service requested.

In this issue:  
v19n3: Asthma Mortality

\*Remember to report all cases of occupational disease!

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the Reporting of  
Known or Suspected  
Occupational Diseases

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Management and Technical

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Reporting forms can be obtained by

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