Occupational Injury and Illness in New Hampshire: A Status Report

Data to Inform Programs and Policies








New Hampshire Department of Health and Human Services
Office of Health Statistics and Data Management

Occupational Injury and Illness in New Hampshire:
A Status Report: Data to Inform Programs and Policies

New Hampshire Department of Health and Human Services
Office of Health Statistics and Data Management

Requests for additional copies should be directed to:
New Hampshire Department of Health and Human Services
Office of Health Statistics and Data Management
29 Hazen Drive, 3rd Floor East
Concord, NH 03301
603-271-4988 or 1-88-852-3345, ext. 4988
TDD Access 1-800-735-2964

An electronic version of this report is available on the DPHS web site:
http://www.dhhs.state.nh.us/DHHS/HSDM

Acknowledgements

Contributors:

Division of Public Health Services, NH Department of Health and Human Services

Karla Armenti, ScD., Chief, Office of Health Statistics and Data Management
Sai S. Cherala, MD, MPH, Office of Health Statistics and Data Management, NH State Cancer Registry
Susan Knight, MSPH, Office of Health Statistics and Data Management, NH BRFSS
JoAnne Miles, MPH, Office of Health Statistics and Data Management
Megan Tehan, MPH, Childhood Lead Poisoning Prevention Program
Elizabeth Traore, MPH, NH Asthma Control Program

Owen David, University of New Hampshire-Manchester, Master of Public Health Program
David Skinner, University of Massachusetts Lowell, School of Health & Environment

For a complete listing of the Occupational Health Committee, see Appendix A.

Table of Contents

Executive Summary

This report contains data and information on occupational injuries and illnesses in New Hampshire, which marks a vital first step on the path to a safer and healthier work environment for New Hampshire workers. The report format used is based on the Council of State and Territorial Epidemiologists (CSTE) and the National Institute for Occupational Safety and Health - Centers for Disease Control and Prevention (NIOSH-CDC) *"Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants."*[1] This guide was produced by the NIOSH-States Occupational Health Surveillance Work Group which was created to make recommendations to NIOSH concerning fundamental State-based surveillance activities, beginning with recommendations to identify occupational injuries, illnesses and hazards to be placed under surveillance by states. The resulting 19 occupational health indicators have been utilized by some states to produce state occupational health surveillance reports.

What is an Occupational Health Indicator?

An occupational health indicator is a specific measure of work-related disease or injury, or a factor associated with occupational health such as workplace exposures, hazards, or interventions, in a specified population. These indicators can be generated by states to track trends in the occupational health status of the working population.

In 2005 a collaborative pilot project involving 13 states, CSTE, NIOSH and the Centers for Disease Control and Prevention culminated in *"Putting Data to Work: Occupational Health Indicators from Thirteen Pilot States for 2000."*[2] This pilot project provided useful insights into how states such as New Hampshire could combine data from various sources to compose state-specific occupational health and illness surveillance reports.

Using the above examples as a framework, this report includes available New Hampshire data on several of these established occupational health and injury indicators. These indicators, as well as highlighted special emphasis occupational health and illness surveillance and research projects, illustrate the importance of collecting occupational health injury and illness data to inform prevention efforts aimed at eliminating or reducing these work-related events.

Report Highlights

- Manufacturing industries are on the decrease in New Hampshire.
- From 2000 to 2005 there were 93 work-related fatalities in New Hampshire.
- The average workers' compensation award per covered New Hampshire worker in 2005 was $354.
- There are approximately 150 cases per year of work-related chemical-substance exposures in New Hampshire.
- Almost 50% of people with current asthma report that their asthma is possibly work-related.
- More than 58,000 New Hampshire workers are employed in high mortality risk occupations.
- More than 88,000 New Hampshire workers are employed in high mortality risk industries.
- 10 of the 19 CSTE/NIOSH occupational health indicators are Healthy People 2010 objectives.

[1] Available from, http://www.cste.org/pdffiles/howoguide8.3.06.pdf.
[2] Available from, http://www.cste.org/dnn/ProgramsandActivities/OccupationalHealth/OccupationalHealthIndicators/tabid/85/Default.aspx

This report marks a vital first step on the pathway to improved occupational health surveillance in New Hampshire. Many of the 19 CSTE/NIOSH occupational health indicators could not be performed for New Hampshire due to a lack of a dedicated occupational health surveillance program to collect and analyze occupational health data. CSTE and NIOSH consider the 19 occupational health indicators to be a minimal level of occupational health surveillance activity for states.

19 CSTE/NIOSH Occupational Health Indicators

- Non-fatal injuries reported by employees
- Work-related hospitalizations
- Fatal work-related injuries
- Amputations reported by employers
- Amputations identified in state workers' compensation systems
- Hospitalizations for work-related burns
- Musculoskeletal disorders reported by employers
- Carpal tunnel syndrome cases identified in state workers' compensation systems
- Pneumoconiosis hospitalizations
- Pneumoconiosis mortality
- Acute work-related pesticide poisonings reported to poison control centers
- Incidence of malignant mesothelioma
- Elevated blood lead levels among adults
- Workers employed in industries with high risk for occupational morbidity
- Workers employed in occupations with high risk for occupational morbidity
- Workers in occupations with high risk of occupational mortality
- Occupational health and safety professionals
- OSHA enforcement activities
- Workers' compensation awards

Introduction

Currently more than 600,000 individuals work in New Hampshire in over 44,000 workplaces.[3] Each year thousands of these workers are injured on the job or become ill as a result of exposure to health and safety hazards at work. These work-related events result in substantial human and economic costs, not only for

[3] New Hampshire Economic and Labor Market Information Bureau, *Covered Employment and Wages Annual Averages 2007*, available from, http://www.nh.gov/nhes/elmi/covempwag.htm

workers and employers, but also for society as a whole.[4] Workers' compensation claims alone in New Hampshire cost approximately $213 million in 2006.[5]

Work-related injuries and illnesses can be prevented with appropriate and targeted interventions. Successful approaches to making the workplace safer begin with having the most accurate and current occupational health surveillance data, which are necessary to understand the root causes of the problems that lead to occupational injury and illness.[6] Unfortunately federal occupational health surveillance reporting requirements result in data gaps and shortfalls that do not accurately capture the true nature of occupational health and illness. This results in an inaccurate view that occupational health and illness is on a downward trend.

Underreporting to OSHA of occupational injuries and illnesses has been documented within the occupational health academic field. The House Committee on Education and Labor has held extensive hearings on this issue with first hand testimony from worker victims and OSHA employees.[7] Listed below are some quotes which vividly describe the underreporting of occupational injuries and illnesses. These hearings on underreporting of occupational health events in the workplace highlight the need to improve occupational health surveillance at the national and state level.

Testimony of Bob Whitmore OSHA employee

"I contend that the current OSHA injury and illness information is inaccurate, due in part to wide scale underreporting by employees and OSHA's willingness to accept these falsified numbers."

"Steady annual declines in the number of workplace injuries and illnesses makes it appear that OSHA is fulfilling its mission."

"All of us want to see a reduction in the numbers of workplace injuries and illnesses. However, this reduction must be the result not of falsified reporting."

Testimony of A.C. Span, worker

"Reporting illnesses or injuries can cause you to be unpopular with your co-workers, get disciplinary points, have your salary reduced and ultimately lose your job. Why take the chance?"

"One of my co-workers had a toe cut off and passed out on the floor. We watched as managers debate whether they should actually call 911".

[4] Leigh, J.P., et al., *Occupational injury and illness in the United States. Estimates of costs, morbidity, and mortality.* Archives of Internal Medicine, 1997. **157**(14): p. 1557-68.

[5] Sengupta, I., Reno V, Burton JF., *Workers Compensation: Benefits, Coverage, and Costs, 2006*. August 2008, National Academy of Social Insurance.

[6] Friedman, L.S. and L. Forst, *The impact of OSHA recordkeeping regulation changes on occupational injury and illness trends in the US: a time-series analysis*. Occupational Environmental Medicine, 2007. **64**(7): p. 454-60.

[7] U.S. House of Representatives Education and Labor Committee, "The Hidden Tragedy: Underreporting of Workplace Injuries and Illnesses". June 19, 2008, available from , http://edlabor.house.gov/hearings/2008/06/hidden-tragedy-underreporting.shtml

A Stakeholder Focused Approach

New Hampshire does not currently have a formal system for the gathering, analysis and dissemination of occupational health surveillance data. In order to address this gap, we reached out to key stakeholders involved with occupational health and safety with the goal of creating an Occupational Health Surveillance Committee for New Hampshire. The Committee included representatives from the Small Business Development Center, City Health Departments, the Safety and Health Council of Northern New England, unions, safety and health consultants, occupational medicine, Department of Education, Department of Safety, Department of Labor, the Northern New England Poison Control Center, Occupational Safety and Health Administration, and other NH Division of Public Health Services control and prevention programs (see Appendix A for full participant list).

The main goal of this Committee was to provide data and information to stakeholder groups to aid them in reducing the incidence and severity of occupational injury and illness in NH. In addition, the group would serve as an advisory committee to help the Division of Public Health Services build a program to support key stakeholders in developing more "customized" intervention programs for unique New Hampshire work environment health and safety issues.

Objectives toward meeting the committee's goal:

Objective 1: Describe current occupational health surveillance in NH

Objective 2: Identify the incidence and severity of occupational injury and illness in NH

Objective 3: Disseminate data and information to stakeholder groups

How does New Hampshire compare with other US States or with the Nation?

Many of the indicators in this report do not allow comparison with other state data or with the US as a whole. The data for these indicators often are influenced by external factors which vary by state, such as which work-related illnesses or hospitalizations may be paid for by the state workers' compensation program. The variability across states can lead to incorrect comparisons of data even from similar sources. Many factors may influence variability in worker injury and illness rates across states; some factors include the distribution of state private sector, employment by industry, occupation or employer size, the adequacy of safety regulations, business safety practices, workers' compensation policy, worker demographics, and many others. Identifying these factors and determining how they may influence the reported occupational injury and illness rates is an important topic for future surveillance efforts.[8]

[8] Occupational Health Indicators for Washington State, 1997-2004 Washington State Department of Labor & Industries, June, 2008, available from http://www.lni.wa.gov/Safety/Research/Files/OccHealth/OccHealthReport2008.pdf

Background

In 1998, the Council of State and Territorial Epidemiologists (CSTE), in association with the National Institute for Occupational Safety and Health (NIOSH), convened the NIOSH-States Occupational Health Surveillance Work Group to make recommendations to NIOSH concerning fundamental State-based surveillance activities, beginning with recommendations to identify occupational injuries, illnesses and hazards to be placed under surveillance. The Work Group developed profiles for priority conditions along with a set of public health surveillance indicators including chronic disease, injury control and environmental health. As described in the CSTE-NIOSH publication, "*Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants*," these indicators are a construct of public health surveillance that defines a specific measure of health or risk status (i.e., the occurrence of a health event or of factors associated with that event) among a specified population.[9] Surveillance indicators allow a state to compare its health or risk status with that of the nation as a whole, evaluate trends over time within the state, and guide priorities for prevention and intervention efforts.

Occupational health indicators can provide information about a population's health status with respect to workplace injuries and illnesses or to factors that can influence health. These indicators can either be measures of health (work-related disease or injury) or factors associated with health, such as workplace exposures, hazards or interventions, and socio-economic impact. The indicators represent a core set of data that, if collected at the state level, would assist in the development of programs to prevent workplace injuries and illnesses. While analyzing these core data points is part of a fundamental surveillance program, it is expected that states use them in conjunction with other guidelines for state-based surveillance and as a complement to overall state and national goals to improve the health of the population.

The occupational health indicators are estimated from many data sources. They are meant to provide an overview and general assessment of the occupational health status of New Hampshire over a span of years for which data are available. Each data source has its strengths and limitations. Some of the 19 occupational health indicators cannot be performed for New Hampshire due to a lack of available data.

This report includes a State Employment Profile and some of the core occupational health indicators for New Hampshire based on the most recent data available for each indicator. Since not all 19 indicators can be analyzed according to the prescribed guidelines, we have included a variety of other data points and health outcomes using existing data sources. No single data source is currently adequate to characterize occupational health profiles in the State. Studies involving occupational poisonings, work-related asthma, and recording of industry and occupation in the NH State Cancer Registry are also included in this report. A description of the data sources used in generating these indicators is found on page 42.

[9] Council of State and Territorial Epidemiologists In Collaboration with the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, "Occupational health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants." Last updated August 2006, available from http://www.cste.org/pdffiles/howoguide8.3.06.pdf

New Hampshire Employment Profile 2000 – 2008

There are an estimated 143 million civil non-institutional workers in the United States.[10] Work-related injuries and illnesses are preventable, and control of occupational hazards is the most effective means of prevention. Research has shown that relationships exist between the demographic characteristics of workers and the risk of occupational illness or injury. Understanding the basic characteristics of the New Hampshire workforce is vital to assessing possible occupational health risks for New Hampshire's workers. The following data show the most recent demographic profile for New Hampshire.

Employment status of the NH civilian non-institutionalized population aged 16 and older

Year	2008	2007	2006	2005	2004	2003
Total Civilian non-institutional population	1,049,000	1,053,000	1,044,000	1,033,000	1,018,000	1,005,000
% Civilian labor force	70.8	70.8	70.9	71.4	71.1	71.5
Total civilian non-institutional population employed	715,000	719,000	716,000	708,000	698,000	688,000
% Employment	68.1	68.2	68.6	68.8	68.5	68.5
% Unemployment	3.8	3.6	3.4	3.7	3.7	4.3

Source: Bureau of Labor Statistics, Current Population Survey and the Geographic Profile of Employment and Unemployment, http://www.bls.gov/gps/home.htm

Workforce Characteristics Ages 16 and Older New Hampshire and United States 2004

Characteristic	New Hampshire	United States
2004 Total Workforce age 16 and older	698,000	139,252,000
% Male	53.3	53.5
% Female	46.7	46.5
% Ages 16-17	2.3	1.6
% Ages 18-64	94.5	94.9
% Ages 65 and older	3.2	3.5
% Self-employed	7.7	74.9
% Employed part-time*	19.6	17.8
% Work < 40 hrs/week	36.0	33.7
% Work 40 hrs/week	31.7	39.4
% Work > 40 hrs/week	32.4	26.8

"Employed part-time" are individuals who work 1 to 34 hours per week.
Source: Bureau of Labor Statistics, Current Population Survey, using Data Ferret
Bureau of Labor Statistics, Geographic Profile of Employment and Unemployment

[10] U.S. Bureau of Labor Statistics, http://www.bls.gov/, Retrieved 3/1/2009.

Distribution of New Hampshire Workforce by Major Industry Sectors 2003 and 2008

Industry	2003	2008	Change
Number Employed	681,000	719,000	NA
% Education and health services	21.2	22.0	+0.8
% Wholesale and retail trade	16.9	15.3	-1.6
% Manufacturing	15.3	13.8	-1.5
% Professional and business services	10.3	10.6	+0.3
% Construction	7.4	7.4	-
% Leisure and hospitality	7.4	8.1	+0.7
% Financial activities	6.2	6.7	+0.5
% Other services	4.5	4.3	-0.2
% Transportation and utilities	3.9	3.9	-
% Public administration	3.4	4.6	+1.2
% Information	2.3	2.7	+0.4
% Agriculture and related	1.0	0.8	-0.2
% Mining	0.2	0.1	-0.1

Source: Bureau of Labor Statistics, Current Population Survey, from Data Ferret
Source: Bureau of Labor Statistics, Geographic Profile of Employment and Unemployment

Distribution of New Hampshire Workforce by Major Occupation Sectors 2003 and 2008

Occupation	2003	2008	Change
Number employed	681,000	719,000	N/A
% Management, business and financial operations	15.4	16.7	+1.3
% Professional and related	22.9	23.4	+0.5
% Service	13.6	14.6	+1.0
% Sales and related	12.6	10.9	-1.7
% Office and administrative support	12.6	13.6	+1.0
% Farming, fishing and forestry	0.6	0.4	-0.2
% Construction and extraction	5.9	5.6	-0.3
% Installation, maintenance and repair	3.9	3.6	-0.3
% Production	7.8	6.6	-1.2
% Transportation and material moving	4.7	4.6	-0.1

Source: Current Population Survey, Data Ferret

Occupational Health Indicators for New Hampshire

Indicator 1 Non-Fatal Work-Related Injuries and Illnesses Reported by Private Sector Employers

Introduction: Thousands of workers are injured each day in the United States. The US Bureau of Labor Statistics (BLS) annual survey of occupational injury and illness (SOII) estimates state non-fatal occupational injuries and illnesses (available from http://www.bls.gov/respondents/iif/). Because of funding/resource limitations, New Hampshire does not participate in the SOII program so there is no NH specific data for evaluation of this indicator.

Indicator 2 Work-Related Hospitalizations (NH Hospital Data)

Introduction: More severe occupational injuries and illnesses may result in hospitalization. Hospital discharge data are categorized by payer, so it is possible to limit the data to just those patients whose discharges are expected to be billed to the state workers' compensation system. However, work-related hospitalizations may be under-represented due to utilization of other payer sources (OOP, patient's private insurance). One may expect that most hospitalizations resulting from workers covered by a workers' compensation system would be reported.

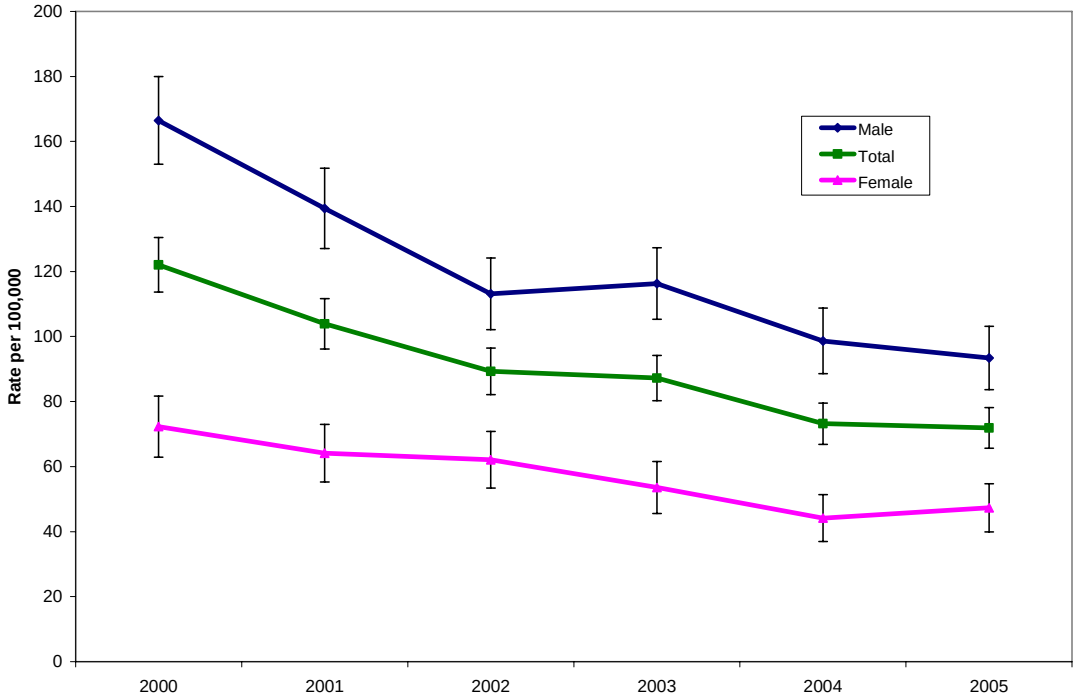
Indicator #2: Work-Related Hospitalizations
Numerator: Hospital Discharges with primary payer coded as workers' compensation
Denominator: Employed persons age 16 years or older for the same calendar year
Measure: Annual crude rate per 100,000 employed persons age 16 and older
Exclude: Unknown age, out-of-state residents, and out-of-state hospitalizations

Annual number and rate* of inpatient hospitalizations for persons age 16 years and older, expected payer workers' compensation, 2000-2005

	Male			Female			Total		
Year	N	*Rate	95% CI	N	*Rate	95% CI	N	*Rate	95% CI
2000	586	166.5	153.0 - 180.0	227	72.3	62.9 - 81.7	813	122.1	113.7 - 130.5
2001	488	139.4	127.1 - 151.8	202	64.1	55.3 - 73.0	690	103.9	96.2 - 111.7
2002	405	113.1	102.1 - 124.1	195	62.1	53.4 - 70.8	600	89.3	82.1 - 96.4
2003	428	116.3	105.3 - 127.3	172	53.6	45.6 - 61.6	600	87.2	80.2 - 94.2
2004	367	98.7	88.6 - 108.7	144	44.2	37.0 - 51.4	511	73.2	66.9 - 79.6
2005	354	93.4	83.7 - 103.1	157	47.3	39.9 - 54.7	511	71.9	65.6 - 78.1

Source: NH Office of Health Statistics and Data Management, NH Inpatient Hospital Discharge Data
N = number of hospitalizations
*Crude rate per 100,000 NH employees age 16 years and older

Annual rate of inpatient hospitalizations for persons age 16 years and older, expected payer workers' compensation, 2000-2005



Emergency Department Discharge Data

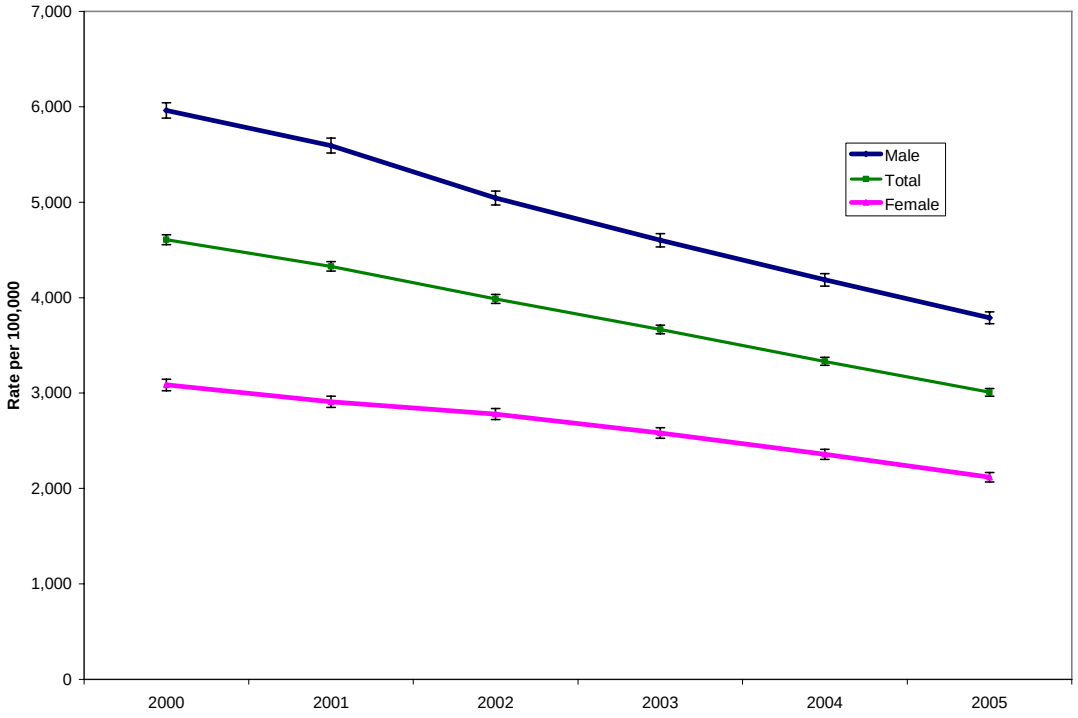
The CSTE indicator parameters reference hospital data suggest the use of inpatient discharges only. Nationally, many states that generate the OH indicators do not have access to emergency department (ED) data. Since New Hampshire also has ED discharge data available, counts and rates for ED discharges will also be provided where appropriate.

Annual number and rate* of emergency department discharges for persons age 16 years and older, expected payer workers' compensation, 2000-2005

	Male				Female				Total			
Year	N	*Rate	95% CI		N	*Rate	95% CI		N	*Rate	95% CI	
2000	20,991	5,963	5,883	- 6,044	9,687	3,085	3,024	- 3,146	30,678	4,606	4,555	- 4,658
2001	19,577	5,593	5,515	- 5,672	9,163	2,909	2,849	- 2,968	28,740	4,328	4,278	- 4,378
2002	18,058	5,044	4,971	- 5,118	8,729	2,780	2,722	- 2,838	26,787	3,986	3,938	- 4,034
2003	16,936	4,602	4,533	- 4,671	8,287	2,582	2,526	- 2,637	25,223	3,666	3,621	- 3,711
2004	15,573	4,186	4,121	- 4,252	7,687	2,358	2,305	- 2,411	23,260	3,332	3,290	- 3,375
2005	14,359	3,789	3,727	- 3,851	7,031	2,118	2,068	- 2,167	21,390	3,008	2,968	- 3,049

Source: NH Office of Health Statistics and Data Management, NH ED Discharge Data
*Crude rate per 100,000 NH employees age 16 years and older
N = number of hospitalizations

Annual rate of emergency department discharges for persons age 16 years and older, expected payer workers' compensation, 2000-2005



Indicator 3 Fatal Work-Related Injuries

Introduction: New Hampshire workers die each year from injuries received at work or illnesses caused by the work environment. One death is too many. Data tracking the number of workplace deaths is from the Census of Fatal Occupational Injuries (CFOI) administered by the Bureau of Labor Statistics. CFOI gathers data for all states and is a reliable count (not estimate) of all traumatic injury deaths related to work.

"Healthy People 2010," (HP2010) a publication of the Centers for Disease Control and Prevention, has created several targets for occupational health and safety. Indicator number 20-1, work-related fatalities, sets a target rate of 3.2 per 100,000 workers aged 16 years and older in 2010.[11] New Hampshire's rate for work-related fatalities was 2.5 (CI 1.7-4.4) in 2005, which is below the HP2010 US rate. Between 2000 and 2005, this rate has not had a statistically significant change.

Indicator #3: Fatal Work-Related Injuries
Numerator: Fatal Occupational Injuries as reported by the Bureau of Labor Statistics
Denominator: Employed persons age 16 years or older for the same calendar year
Measure: Annual crude death rate per 100,000 employed persons age 16 and older

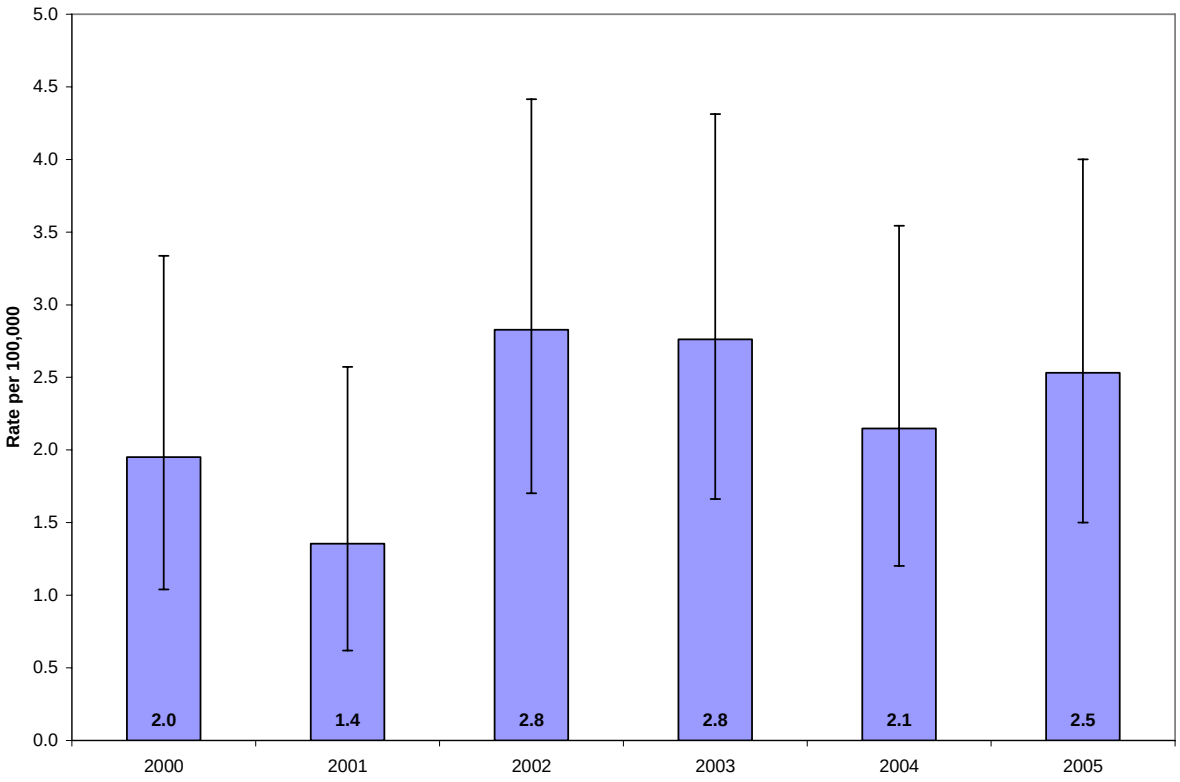
[11] CDC, "Healthy People 2010: 20 – Occupational Safety and Health," http://www.healthypeople.gov/Document/HTLM/Volume2/20OccSH.htm. Retrieved on 2/24/2009.

Annual number and rate of fatal work-related injuries in NH, 2000-2005

Year	N	*Rate	95% CI
2000	13	2.0	1.0 - 3.3
2001	9**	1.4	0.6 - 2.6
2002	19	2.8	1.7 - 4.4
2003	19	2.8	1.7 - 4.3
2004	15	2.1	1.2 - 3.5
2005	18	2.5	1.5 - 4.0

Source: http://www.bls.gov/news.release/cfoi.t05.htm Census of Fatal Occupational Injuries, Bureau of Labor Statistics
N = number of work-related fatalities
*Crude rate per 100,000 NH employees age 16 years and older
**Counts lower than 10 events do not produce statistically reliable rates

Annual rate of fatal work-related injuries in NH, 2000-2005



Indicators 4-5 (Modified) Work-Related Amputations

Introduction: Data for work-related amputations with days away from work is not available through the US Bureau of Labor Statistics as recommended for the construction of this indicator. In addition, data collected by the New Hampshire Workers' Compensation System on cases with days away from work are not currently available. Since the denominator of the number of full-time equivalent (FTE) employees is not available, rates cannot be generated.

As an alternate way of enumerating the number of work-related, non-fatal, amputations in New Hampshire, hospital inpatient and ED discharge data were used. The ICD-9 diagnosis codes selected to define amputations are between 885 and 88799 for arm/hand/finger/thumb or between 895 and 89779 for leg/foot/toe. Principle Diagnosis and all Secondary Diagnosis Fields were used in this query.

Of the 360 emergency department discharges between 2000 and 2005, 67% of the amputations were of fingers, and 14% were of thumbs. The 17 amputations between 2000 and 2005 that required inpatient care included 35% finger, and 17% thumb.

Indicator #4-5, Modified: Work-Related Amputations
Numerator: Hospital Discharges who arrived at hospital with amputated appendage, with primary payer coded as workers' compensation
Denominator: Employed persons age 16 years or older for the same calendar year
Measure: Annual crude rate per 100,000 employed persons age 16 and older
Excluded: Patients with other injuries that later required an amputation

Annual number and rate of patients, who arrived at the hospital with an amputated appendage, expected payer workers' compensation, 2000-2005:

	Emergency Department Discharges					Inpatient Hospitalization Discharges				
Year	N	*Rate	95% CI			N	*Rate	95% CI		
2000	72	10.8	8.5	-	13.6	6**	0.9	0.3	-	2.0
2001	54	8.1	6.1	-	10.6	4**	0.6	0.2	-	1.5
2002	57	8.5	6.4	-	11.0	0	0.0	0.0	-	0.0
2003	53	7.7	5.8	-	10.1	4**	0.6	0.2	-	1.5
2004	61	8.7	6.7	-	11.2	2**	0.3	0.0	-	1.0
2005	63	8.9	6.8	-	11.3	1**	0.1	0.0	-	0.8

Source: NH Office of Health Statistics and Data Management, NH Emergency Department and Inpatient Discharge Data
N = number of hospitalizations, out-of-state hospitalizations included
*Crude rate per 100,000 NH employees age 16 years and older
**Counts lower than 10 events do not produce statistically reliable rates

There is no graph shown for the above data because there was no statistically significant difference between years.

Indicator 6 (Modified) Hospitalizations for Work-Related Burns

Introduction: Work-related burns are not only extremely painful but also result in large amounts of lost work time. Hospital discharge data are useful to estimate the number of hospitalized burns in New Hampshire. Cases are identified by using standard diagnosis codes for burns with those injuries where the expected payer is the state workers' compensation system. Benefit adequacy of the state workers' compensation program may influence the proportions of hospitalizations paid for by the workers' compensation program.

The CSTE recommendations for this indicator exclude out-of-state hospitalizations. For this indicator, out-of-state hospitalizations of New Hampshire residents were included because New Hampshire is a small state. Hospitals with specialized burn units are close to its borders. Many serious burns would be transported to these hospitals even if the injury occurred in New Hampshire.

Indicator #6: Hospitalizations for Work-Related Burns
Numerator: Hospital discharges with primary diagnosis of burn injury (ICD-9 code between 940 and 94999) and with primary payer coded as workers' compensation.
Denominator: Employed persons age 16 years or older for the same calendar year
Measure: Annual crude rate per 100,000 employed persons age 16 and older
Exclude: Unknown age, out-of-state residents, and out-of-state hospitalizations, secondary diagnosis

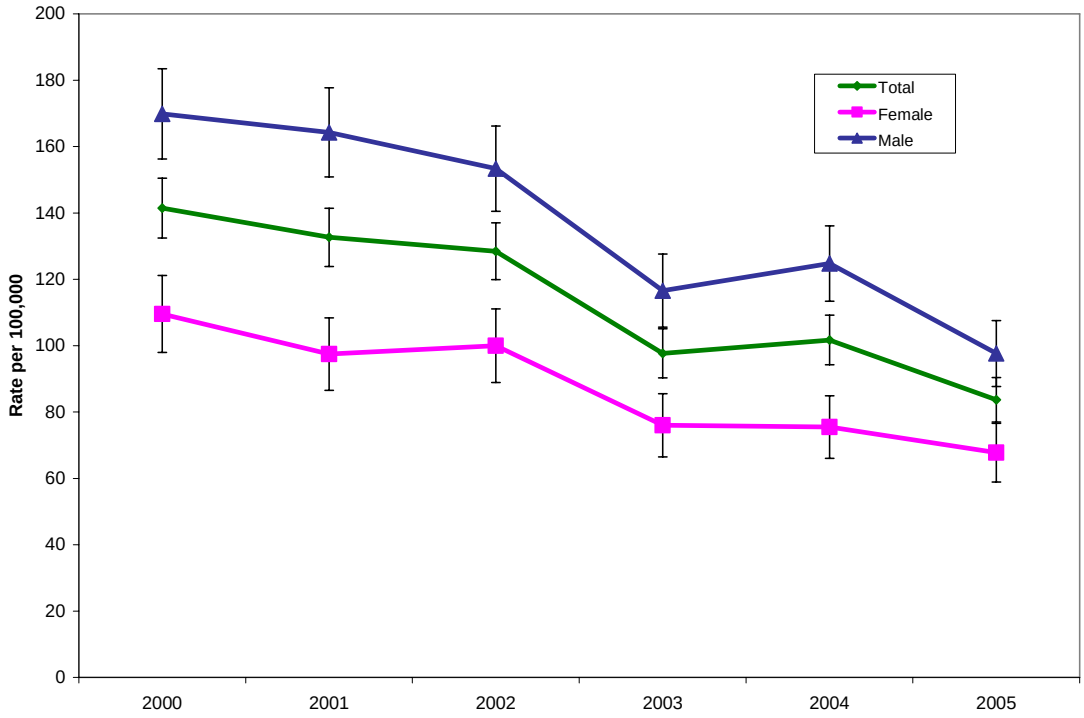
Annual number and crude rate of NH employees, hospitalizations for burns expected payer workers' compensation paid, 2000-2005

	Emergency Department Discharges					Inpatient Hospitalization Discharges				
Year	N	*Rate	95% CI			N	*Rate	95% CI		
2000	942	141.4	132.4	-	150.5	8**	1.2	0.5	-	2.4
2001	882	132.6	123.9	-	141.4	9**	1.4	0.6	-	2.6
2002	863	128.4	119.9	-	137.0	16	2.4	1.4	-	3.9
2003	673	97.7	90.3	-	105.1	16	2.3	1.3	-	3.8
2004	710	101.7	94.2	-	109.2	8**	1.1	0.5	-	2.3
2005	595	83.7	77.0	-	90.4	9**	1.3	0.6	-	2.4

Source: NH Office of Health Statistics and Data Management, NH Inpatient and Emergency Department Hospital Discharge Data
N = number of hospitalizations, out-of-state hospitalizations included
*Crude rate per 100,000 NH employees age 16 years and older
**Counts lower than 10 events do not produce statistically reliable rates

Only the crude rates for emergency department discharges are shown in the graph below because there are no statistically significant changes of the rates in the inpatient discharges.

Annual rate of emergency department discharges for persons age 16 years and older for burns, expected payer workers' compensation, 2000-2005



Indicator 7 Work-Related Musculoskeletal Disorders with Days away from Work Reported by Employers

Introduction: Work-related musculoskeletal disorders are preventable, and control of occupational hazards is the most effective means of prevention. Estimating the burden and tracking these injuries can help target prevention programs and activities. These data are collected via the US Bureau of Labor Statistics (BLS) annual survey of occupational injury and illness (SOII).[12] Because of financial/resource limitations, New Hampshire does not participate in SOII so there is no data for evaluation of this indicator.

Indicator 8 Carpal Tunnel Syndrome Cases Filed with State Workers' Compensation System

Introduction: Carpal tunnel syndrome is a preventable musculoskeletal disorder, and control of occupational hazards is the most effective means of prevention. Estimating the burden and tracking these injuries can help target prevention programs and activities. These data are collected by the New Hampshire Workers' Compensation System but carpal tunnel syndrome cases with days away from work are not currently available (see Indicator 19 Workers' Compensation Awards on page 28).

[12] Available from http://www.bls.gov/respondents/iif/

Indicator 9 Hospitalizations for Pneumoconiosis (Asbestosis)

Introduction: Asbestos is known to cause significant lung disease. A common disease resulting from asbestos exposure is asbestosis, a condition in which there is reduction in an individual's lung capacity. Asbestosis is one of many occupational lung diseases caused by dust exposure. These dust related lung diseases are commonly referred to as 'pneumoconiosis.' In New Hampshire the most common pneumoconiosis is asbestosis. Measuring morbidity and mortality from asbestosis is related to capturing hospitalizations with asbestosis (Indicator 9) and deaths with asbestosis (Indicator 10). There is a long interval between asbestos exposure and the occurrence of lung disease, therefore rate trends may reflect exposure controls implemented 20 or more years ago.

Indicator #9: Hospitalizations from or with Pneumoconiosis
Numerators: All Hospital Discharges with primary or contributing (secondary) diagnosis of the following:

1. Total Pneumoconiosis, ICD9 Code: between 500.0 and 505.9
2. Coal workers' pneumoconiosis, ICD9 Code: 500
3. Asbestosis, ICD9 Code: 501
4. Silicosis, ICD9 Code: 502
5. Other and Unspecified pneumoconiosis, ICD9 Codes: Between 503.0 and 505.9

Denominator: Midyear resident population age 15 year or older for the same calendar year
Measure of Frequency:

1. Annual number of hospitalizations, NH residents age 15 and older
2. Annual crude rate per 100,000 population

Note: Demographic is all residents age 15 and older. The parameter of primary payer being workers' compensation is not included. Out-of-State hospitalizations excluded.

Number inpatient discharges from or with pneumoconiosis

	2000	2001	2002	2003	2004	2005
1. Inpt Total Pneumoconiosis	69	63	95	102	88	86
2. Inpt Coal workers' pneumoconiosis	4	8	6	12	4	6
3. Inpt Asbestosis	63	52	76	76	77	75
4. Inpt Silicosis	2	1	13	10	7	3
5. Inpt Other and Unspecified pneumoconiosis		2		4		2

Number emergency department discharges from or with pneumoconiosis

	2000	2001	2002	2003	2004	2005
1. Inpt Total Pneumoconiosis	27	36	45	40	43	37
2. Inpt Coal workers' pneumoconiosis	2	2	2		3	3
3. Inpt Asbestosis	24	34	43	39	40	31
4. Inpt Silicosis	1			1	1	3
5. Inpt Other and Unspecified pneumoconiosis						1

Rate of hospital discharges from or with pneumoconiosis

	Inpatient Hospital Discharges					Emergency Department Hospital Discharges				
Year	N	*Rate	95% CI			N	*Rate	95% CI		
2000	69	7.0	5.5	-	8.9	27	2.7	1.8	-	4.0
2001	63	6.3	4.8	-	8.0	36	3.6	2.5	-	5.0
2002	95	9.3	7.5	-	11.4	45	2.6	1.7	-	3.9
2003	102	9.8	7.9	-	11.8	40	3.5	2.4	-	4.8
2004	88	8.4	6.7	-	10.3	43	4.3	3.1	-	5.7
2005	86	8.1	6.5	-	10.0	37	3.8	2.7	-	5.1

Rate of hospital discharges from or with asbestosis

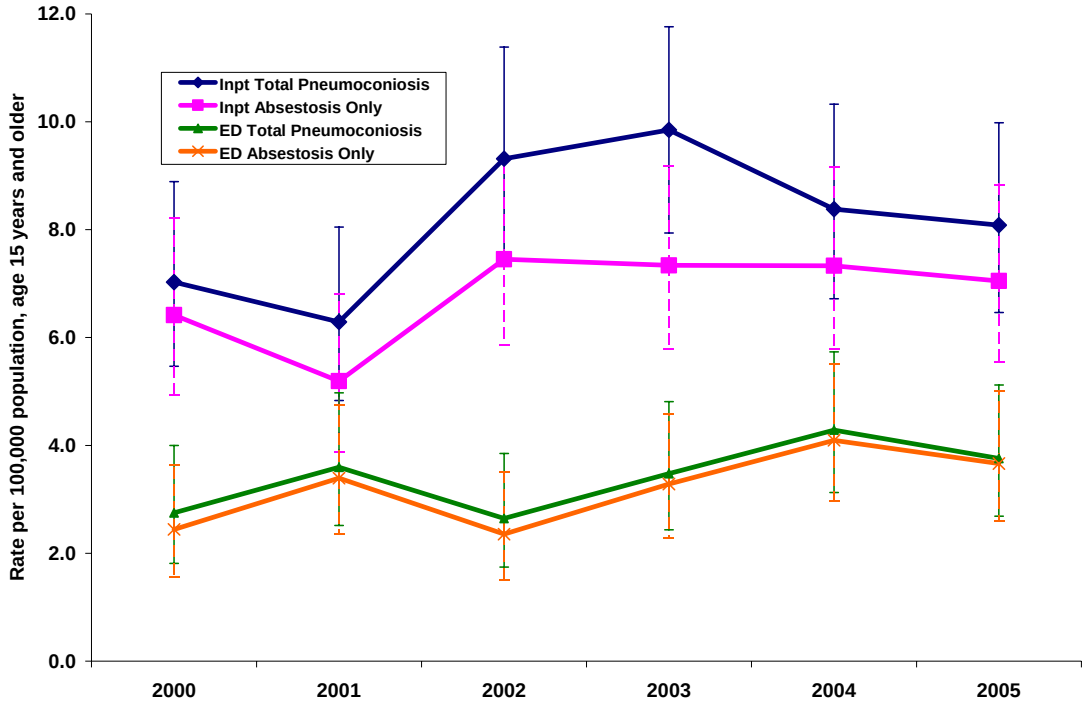
	Inpatient Hospital Discharges					Emergency Department Hospital Discharges				
Year	N	*Rate	95% CI			N	*Rate	95% CI		
2000	63	6.4	4.9	-	8.2	24	2.4	1.6	-	3.6
2001	52	5.2	3.9	-	6.8	34	3.4	2.4	-	4.7
2002	76	7.5	5.9	-	9.3	43	2.4	1.5	-	3.5
2003	76	7.3	5.8	-	9.2	39	3.3	2.3	-	4.6
2004	77	7.3	5.8	-	9.2	40	4.1	3.0	-	5.5
2005	75	7.0	5.5	-	8.8	31	3.7	2.6	-	5.0

Source: NH Office of Health Statistics and Data Management, NH Inpatient and Emergency Department Hospital Discharge Data

N = number of hospitalizations of New Hampshire residents

*Crude rate per 100,000 NH employees age 16 years and older

Total pneumoconiosis and asbestosis, hospital discharges, NH residents, 2000-2005



There are no statistically significant changes from year to year in the rate of hospitalizations for total pneumoconiosis or asbestosis. Of the total inpatient and emergency department discharges for total pneumoconiosis cases, 91% are males. Totaling males and females, 85% of the cases are 65 years old or older, and 15% are between 35 and 64 years old, less than 1% is ages 15 to 34 years.

Indicator 10 Mortality from or with Pneumoconiosis

The "Healthy People 2010," (HP2010), indicator number 20-4 target for the United States is to reduce the number of deaths due to pneumoconiosis by 10% in people aged 15 years and older between 1997 and 2010.[13] New Hampshire's data between 2000 and 2005 show a 55% increase in pneumoconiosis deaths. Four of these NH residents who died from or with pneumoconiosis were between ages 55 and 74. Since the numbers are too small to generate statistically significant rates, we cannot report if the rate of death is increasing or decreasing. No graph is provided for the table below because the rates are not significantly different between years. Pneumoconiosis has a long latency period. People suffering from this health condition may have been exposed many years ago.

Indicator #10: Mortality from or with Pneumoconiosis
Numerator: Deaths with ICD10 Codes between J60 and J66.9
Denominator: Resident population age 15 years and older per calendar year
Measures of Frequency: Annual number of deaths and Annual Crude Rate per 100,000 residents

Annual death count and rate of NH residents, age 15 years and older, from or with Pneumoconiosis, 2000-2005

Year	N	*Rate	95% CI
2000	6**	0.6	0.2 - 1.3
2001	6**	0.6	0.2 - 1.3
2002	6**	0.6	0.2 - 1.3
2003	7**	0.7	0.3 - 1.4
2004	7**	0.7	0.3 - 1.4
2005	11	1.0	0.5 - 1.8

Source: NH Vital Records, NH Office of Health Statistics and Data Management, Death Certificate Data
N = number of work-related fatalities
*Crude rate per 100,000 NH employees age 16 years and older
**Counts lower than 10 events do not produce statistically reliable rates

[13] CDC, "Healthy People 2010: 20 – Occupational Safety and Health," http://www.healthypeople.gov/Document/HTLM/Volume2/20OccSH.htm. As read on 2/24/2009.

Indicator 11 Acute Work-Related Pesticide-Associated Illness and Injury Reported to Poison Control Centers

Introduction: Pesticides are workplace chemicals purposely designed to harm certain life forms. Hence, the active ingredients can pose risk of an acute exposure if not carefully applied. Pesticide-associated calls to poison control centers (PCCs) give counts of the types of pesticides involved in workplace exposures. However, PCC calls are thought to capture only a small percentage of actual exposures; and generally do not record any long-range symptoms or health effects. The NIOSH/AAPCC (American Association of Poison Control Centers) criteria classifies as 'pesticides' certain disinfectants, fungicides, fumigants, herbicides, insecticides, repellents, and rodenticides. While PCCs capture the types and active ingredients of a pesticide, the circumstance, occupation, and business and industrial identification associated with a call are not systematically known.

For the period of January 1, 2005 through October 27, 2007, there were 11 work-related pesticide cases in New Hampshire as defined by the NIOSH/AAPCC case definition used by the Council of State and Territorial Epidemiologists (CSTE). This case definition includes some industrial cleaners used as disinfectants. Other organizations calculating exposures may have different case definitions and/or exclude cases where age and zip code are not known. There were no known agricultural exposures during this period, which may make comparisons with states with larger agricultural sectors problematic. (For other research related to occupational poisonings see New Hampshire Special Emphasis Studies on pages 31-34).

Indicator #12: Incidence of Acute Work-Related Pesticide-Associated Illness and Injury Reported to Poison Control Centers
Numerator: Reported cases of work-related pesticide poisoning
Denominator: Employed persons age 16 years and older for the same calendar year
Measures of Frequency:
1. Annual number of reported cases of work-related pesticide poisoning (numerator)
2. Annual incidence rate of reported cases of work-related pesticide poisoning per 100,000 employed persons age 16 years or older

New Hampshire occupational pesticide cases January 1, 2005 to October 27, 2007

Year	N	*Rate
2005	3**	0.42
2006	5**	0.79
2007^	3**	0.42^

Source: Bureau of Labor Statistics
N= Number of work-related poisonings reported to poison control center
*Crude rate per 100,000 NH employees age 16 years and older
**Counts lower than 10 events do not produce statistically reliable rates
^based on calls from January 1, 2007 through October 27, 2007

Indicator 12 Incidence of Malignant Mesothelioma

Introduction: Malignant mesothelioma, while relatively rare, is a fatal cancer largely attributable to workplace exposures to asbestos. Tracking malignant mesothelioma should be undertaken to document the burden of occupational disease, to design, target, and evaluate the impact of prevention efforts over time, and to identify previously unrecognized settings in which workers may continue to be at risk of asbestos exposure.

In New Hampshire counts per year by gender are too small and produce unreliable rates. Only the Crude Incidence Rate for the total incidences by year is shown in the graph below. The total rate has not significantly changed from year to year. Even the total numbers are small and may not produce reliable, statistically significant rates. No graph is provided for the table below because the rates are not significantly different between years. Mesothelioma has a long latency period (10-20 years) so current rates may not be indicative of current exposures and it may be many years before reductions in occupational exposures affect the rates of mesothelioma in New Hampshire.

Indicator #12: Incidence of Malignant Mesothelioma
Numerator: Incident Cases with Mesothelioma (from the NH Cancer Registry)
Denominator: Resident population age 15 years and older per calendar year
Measures of Frequency: Annual number of deaths and Annual Crude Rate per 100,000 residents

Annual count and rate per 100,000 NH residents, age 15 years and older, with Malignant Mesothelioma, 2000-2005

	Male					Female					Total				
Year	N	*Rate	95% CI			N	*Rate	95% CI			N	*Rate	95% CI		
2000	13	2.7	1.4	-	4.7	5**	1.0	0.3	-	2.3	18	1.8	1.1	-	2.9
2001	10	2.1	1.0	-	3.8	4**	0.8	0.2	-	2.0	14	1.4	0.8	-	2.3
2002	10	2.0	1.0	-	3.7	3**	0.6	0.1	-	1.7	13	1.3	0.7	-	2.2
2003	11	2.2	1.1	-	3.9	3**	0.6	0.1	-	1.7	14	1.4	0.7	-	2.3
2004	16	3.1	1.8	-	5.1	2**	0.4	0.0	-	1.3	18	1.7	1.0	-	2.7
2005	9**	1.7	0.8	-	3.3	1**	0.2	0.0	-	1.0	10	0.9	0.5	-	1.7

Source: Source: NH Office of Health Statistics and Data Management, Cancer Registry Data
N = number of Mesothelioma cases
*Crude rate per 100,000 NH employees age 15 years and older
**Counts lower than 10 events do not produce statistically reliable rates

Indicator 13 Elevated Blood Lead Levels among Adults

Introduction: Lead poisoning among adults is primarily due to occupational or hobby-related exposure. Lead adversely affects multiple organ systems and can cause permanent damage. Exposure to lead in adults can cause anemia, nervous system dysfunction, kidney damage, hypertension, decreased fertility, and miscarriage. Workers bringing lead dust home on their clothing can expose their children to lead. The blood lead level (BLL) is the best biological indicator of recent lead exposure. A BLL of 25 micrograms per deciliter (µg/dL) or greater for adults is considered "elevated," and the Healthy People 2010 goal is to eliminate BLLs above this level. The federal Occupational Safety and Health Administration (OSHA) requires that employers regularly monitor the BLLs of workers where airborne lead in the workplace exceeds certain levels. When a worker's BLL is 40 µg/dL or greater, the employer is required to offer an annual medical exam and other medical interventions depending on the BLL. However, adverse health effects have been found with cumulative exposure at BLLs lower than 40 µg/dL29 and 25 µg/dL.30. The average BLL for the general population is less than 2 µg/dL. Individuals with ongoing elevated BLLs are at greater risk for adverse health effects and are an indication that long-term airborne lead exposure continues to be a problem in lead industries.

Indicator #13: Elevated Blood Lead Levels among Adults

Numerator: Annual number of residents with elevated blood lead levels

1. All reported state residents age 16 years or older, with a blood lead level of > 25 µg/dL
2. All reported state residents age 16 years or older, with a blood lead level of > 40 µg/dL

Denominator: Employed population age 16 years or older for the same calendar year

Measures of Frequency:

Annual prevalence rate per 100,000 employed persons age 16 years or older

Annual incidence rate per 100,000 employed persons age 16 years or older

Annual number of incident cases of residents with elevated blood lead levels

Annual prevalence count and rate of elevated blood lead levels per 100,000 employed workers, age 16 years and older, New Hampshire, 2000-2005

	Blood Lead Level >= 25 mcg/dL					Blood Lead Level >= 40 mcg/dL				
Year	N	Rate	95% CI			N	Rate	95% CI		
2000	108	16.2	13.2	-	19.3	29	4.4	2.9	-	6.3
2001	80	12.0	9.6	-	15.0	22	3.3	2.1	-	5.0
2002	71	10.6	8.3	-	13.3	16	2.4	1.4	-	3.9
2003	59	8.6	6.5	-	11.1	10	1.5	0.7	-	2.7
2004	51	7.3	5.9	-	9.6	10	1.4	0.7	-	2.6
2005	51	7.2	5.3	-	9.4	5**	0.7	0.2	-	1.6

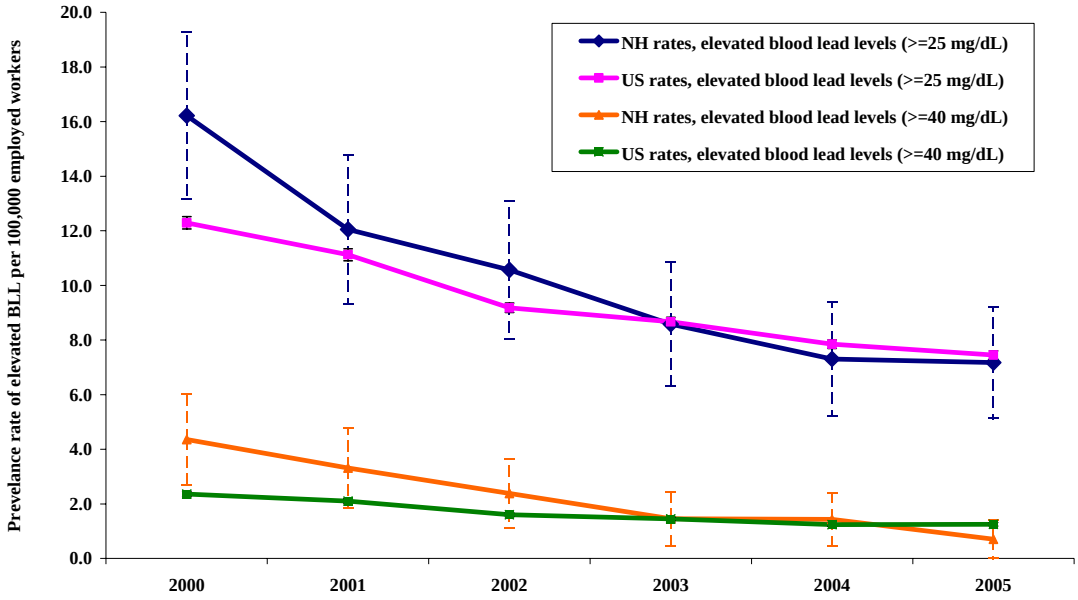
**Counts lower than 10 events do not produce statistically reliable rates

Annual incidence count and rate of elevated blood lead levels per 100,000 employed workers, age 16 years and older, New Hampshire, 2000-2005

	Blood Lead Level >= 25 mcg/dL					Blood Lead Level >= 40 mcg/dL				
Year	N	Rate	95% CI			N	Rate	95% CI		
2000	100	15.0	12.1	-	18.0	26	3.9	2.6	-	5.7
2001	73	11.0	8.6	-	13.8	20	3.0	1.8	-	4.7
2002	65	9.7	7.5	-	12.3	15	2.2	1.2	-	3.7
2003	48	7.0	5.1	-	9.3	9**	1.3	0.6	-	2.5
2004	43	6.2	4.5	-	8.3	9**	1.3	0.6	-	2.4
2005	44	6.2	4.5	-	8.3	5**	0.7	0.2	-	1.6

**Counts lower than 10 events do not produce statistically reliable rates

Prevalence rate of blood lead levels >=25 mcg/dL and >=40 mcg/dL in employed persons aged 16 years and older in New Hampshire and the United States, 2000-2005



The graph and tables above show the rates of prevalent and incident cases of elevated blood levels but do not distinguish between occupational and non-occupational cases. As part of a contract with the National Institute of Occupational Safety and Health (NIOSH), the New Hampshire Adult Blood Lead Epidemiology and Surveillance program follows up with healthcare providers of cases to determine if the lead exposure was occupational or non-occupational. In 2005, 6 of the 51 prevalent cases were non-occupational.

Technical Note: • Rates include all cases of adult elevated BLL reports in the numerator, but the denominators are limited to employed persons. This will result in an overestimate of rates per 100,000 employed persons. • A prevalent case is a person reported at least once in the calendar year with a BLL greater than or equal to 25 µg/dL (or 40 µg/dL). • An incident case is a person with a BLL greater than or equal to 25 µg/dL (or 40 µg/dL) who was reported in the calendar year, but not reported in the immediately preceding calendar year with a BLL greater than or equal to 25 µg/dL (or 40 µg/dL).

Indicator 14 Percentage of Workers Employed in Industries at High Risk for Occupational Morbidity

Introduction: In 2003, the U.S. Bureau of Labor Statistics (BLS) reported an estimated total of 4.4 million injury and illness cases within the private sector workforce, an estimated incidence rate of 5.0 cases per 100 full-time-equivalent workers. There are industries that have significantly higher injury and illness rates than this national average. Thirty-seven industries have occupational injury and illness rates of 10 cases per 100 full-time workers or higher. These industries accounted for 7.6 million workers in the U.S. (6.7% of the private sector non-farm wage and salary employment), but 17% of the OSHA reportable injuries and illnesses in 2003.

In New Hampshire, there were 28,389 workers employed in industries with a high risk for occupational morbidity in 2005. That is 5% of the workforce in NH.

Indicator 15 Percentage of Workers Employed in Occupations at High Risk for Occupational Morbidity

Introduction: In 2003, the Bureau of Labor Statistics (BLS) reported an estimated 1.3 million injuries and illnesses that resulted in "days away from work", and a rate of 1.3 "days away from work" cases per 100 workers. The risk of these injuries and illnesses are significantly higher in certain occupations. Eighty two occupations had "days away from work" injury and illness rates higher than 2.6 cases per 100 workers in 2003. These occupations accounted for approximately 12.6 million workers in the U.S. (12.2 % of the private sector employment), but 41.3% of OSHA "days away from work" cases in 2003.

In New Hampshire, there were 73,156 workers employed in occupations with a high risk for occupational morbidity in 2005. That is 10.5% of the workforce in NH.

Indicator 16 Percentage of Workers Employed in Industries and Occupations at High Risk for Occupational Mortality

Introduction: Each year, over 6,000 cases of work-related fatalities are reported to the Census of Fatal Occupational injuries (CFOI) Program administered by the Bureau of Labor Statistics (BLS). On an average day, 16 workers die as a result of injuries sustained at work. The risks for these occupational fatalities are significantly higher in certain industries and occupations. Thirty one industries have fatality rates of 9.5 deaths per 100,000 workers or higher, and employed approximately 18 million workers (15% of the private sector employment), but account for 61% of the occupational fatalities in 2003. There are also 57 occupations that have fatality rates of 9.5 deaths per 100,000 workers or higher. These occupations account for approximately 13 million workers in the U.S. (11% of the private sector employment), but 60% of the occupational fatalities in 2003.

In New Hampshire, there were 88,586 workers employed in industries with a high risk for occupational mortality in 2005. That is 12.4% of the workforce in NH. Occupations with high risk of mortality employed 58,826 workers in 2005. That is 8.2% of the workforce in NH.

Indictors 14 through 16, New Hampshire workers employed in occupations and industries with high risk of morbidity or mortality, 2005.

New Hampshire workers employed in…	N	Percent
Indicator #14: Industries with High Risk for Occupational Morbidity	28, 389	5.0%
Indicator #15: Occupations at High Risk for Occupational Morbidity	73, 156	10.2%
Indicator #16: Industries with High Risk for Occupational Mortality	88, 586	12.4%
Indicator #16: Occupations at High Risk for Occupational Mortality	58, 826	8.2%

Source: Bureau of the Census County Business Patterns (CBP)

Indicator 17 Occupational Safety and Health Professionals

Introduction: Physicians with training and/or special interest in occupational medicine provide primary, secondary, and tertiary occupational health preventative services. In 1989, the American Medical Association recommended that there be one physician per 1,000 employees. Occupational health nurses provide a great deal of onsite occupational health care. Industrial hygienists and safety professionals are typically the primary individuals responsible for evaluating workplaces and making recommendations to prevent occupational injuries and illnesses.

Occupational safety and health professionals New Hampshire 2005

Professional Organization	Members	*Rate
American Board of Preventive Medicine	12	1.7
American College of Occupational and Environmental Medicine	17	2.4
American Board of Occupational Health Nurses	53	7.5
American Association of Occupational Health Nurses	85	12.0
American Board of Industrial Hygiene	35	4.9
American Industrial Hygiene Association	38	5.4
board certified safety health professionals	75	10.6
American Society of Safety Engineers	243	34.3
Total	558	78.8

Source: CSTE and BLS
*Crude Rate per 100,000 Employed People 16+ years old
Note: 2006 & 2007 numerators are available but not denominators

Indicator 18 OSHA Enforcement Activities

Introduction: In 1970, Congress established the Occupational Safety and Health Administration (OSHA). The OSHA mission is to "assure so far as possible every working man and woman in the nation safe and healthful working conditions." This mandate involves the application of a set of tools by OSHA (e.g. standards development, enforcement, compliance assistance). OSHA conducts both referral and non-referral inspections on work sites. Work sites are selected into an emphasis program for non referred inspections, randomly and on the basis of industry incidence rates of injuries. Investigations are inspections triggered by three events: fatality, catastrophe, or referral (including outside health/safety agency or media). All of the above on-site activities are called inspections for statistical databases. Comprehensive information about inspections is found in the OSHA Field Inspection Reference Manual CPL 2.103.[14]

Annual number of establishments New Hampshire inspected by OSHA and estimated total number of private Sector establishments in New Hampshire

Year	Number of Inspections	Number of Private Sector Establishments
2006	461	46,197
2005	345	45,303
2004	362	44,998
2003	455	44,230
2002	371	43,829
2001	304	44,032
2000	323	44,001

Source: OSHA inspection data and Bureau of Labor Statistics

[14] Available on the OSHA website http://osha.gov/Firm_toc_by_sect.html

Estimated percentage of all NH private sector establishments under OSHA jurisdiction Inspected by OSHA

Year	Percentage
2006	0.99
2005	0.76
2004	0.80
2003	1.03
2002	0.85
2001	0.69
2000	0.73

Source: OSHA inspection data and Bureau of Labor Statistics

Estimated percentage of all NH employees under OSHA jurisdiction whose work areas were inspected

Year	Percentage
2006	2.41
2005	1.38
2004	1.43
2003	2.63
2002	1.96
2001	1.74
2000	2.24

Source: OSHA inspection data and Bureau of Labor Statistics

Annual number of New Hampshire private sector employees whose work areas were inspected by OSHA and estimated total number of employees under OSHA jurisdiction in New Hampshire

Year	Number of Employees Covered by OSHA Inspections	Number of Employees Under OSHA Jurisdiction
2006	13,104	541,506
2005	7,407	536,157
2004	7,617	529,498
2003	13,732	520,458
2002	10,228	521,454
2001	9,269	530,972
2000	11,876	529,654

Source: OSHA inspection data and Bureau of Labor Statistics

Indicator 19 Workers' Compensation Awards

Introduction: In 2000, $45.9 billion in workers' compensation benefits were paid to workers with occupational injuries or illnesses in the United States. In 2005, workers' compensation awards to injured New Hampshire employees totaled $216,968,000. That is an average cost of $354 per covered NH employee. The benefits include payments for medical care and wage-replacement to workers or their surviving dependants. The number of workers covered by workers' compensation insurance has increased and while the frequency of claims has declined, the medical and wage-replacement costs per worker have increased, assuring continued economic impact of work-related injuries and illnesses on workers and employees.

The following tables show some details from the New Hampshire Department of Labor, Biennial Report.

Total Injuries Reported to NH Workers' Compensation, 2001-2007

Injuries reported to the Department of Labor decreased to 46,473 in FY 2006 with an incidence rate of 7.3. In FY 2007, total reported injuries increased slightly to 46,832 with the same incidence rate of 7.3. The table and graph below represents the overall decrease in the incidence rate of injuries reported over the past 5 years with an increase in non-agricultural employment in fiscal year 2007.

The pattern of incidence rates of lost time cases seem to be consistently decreasing over the period of the last five fiscal years, which is reflected in the section below. In FY 2006 there were 3,644 injuries that represented cases where the employee was disabled from work or out of work due to their injury for four or more days, compared to 3,543 lost time cases in FY 2007.[15]

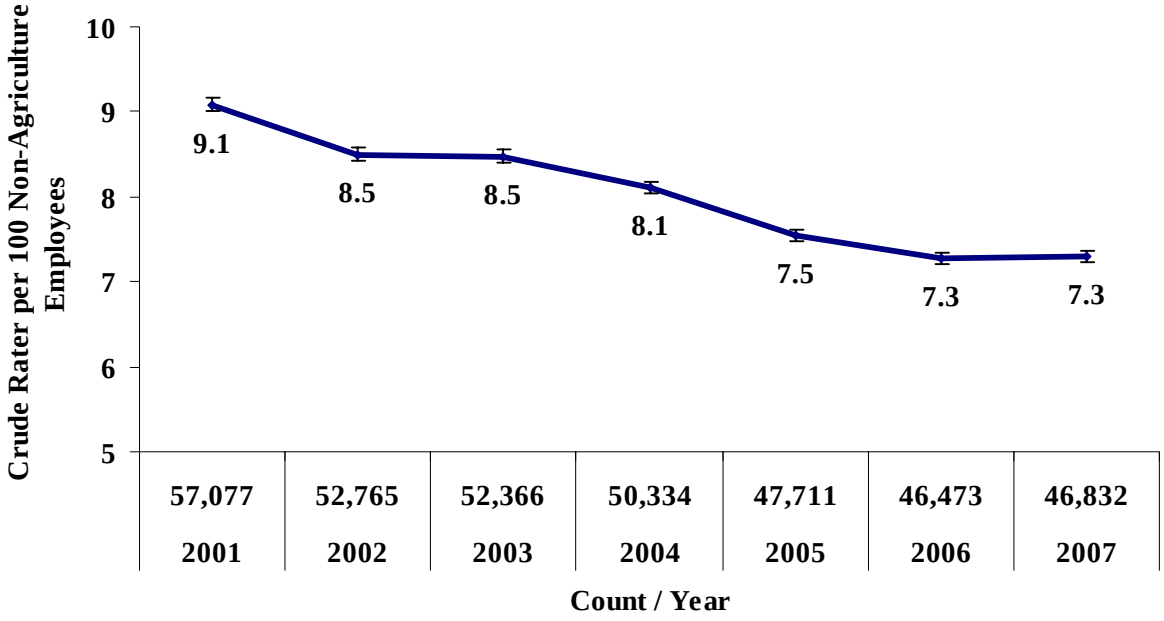
REPORTED INJURIES						COMPASSABLE DISABILITIES	
Fiscal Year	**Injuries Reported**	**Non-Agricultural Employees**	***Rate**	**Lower 95% CI**	**Upper 95% CI**	**Lost Time**	***Rate**
2001	57,077	628,450	9.1	9.0	9.2	5,289	0.84
2002	52,765	620,800	8.5	8.4	8.6	4,665	0.75
2003	52,366	617,775	8.5	8.4	8.5	4,650	0.75
2004	50,334	620,508	8.1	8.0	8.2	3,916	0.63
2005	47,711	632,783	7.5	7.5	7.6	3,733	0.59
2006	46,473	638,425	7.3	7.2	7.3	3,644	0.57
2007	46,832	642,408	7.3	7.2	7.4	3,543	0.55

*Incidence rate per 100 employees

There is a statistically significant decrease in reported injuries between 2001 and 2006. Between 2006 and 2007 the rate (7.3) is the same, as stated above.

[15] State of New Hampshire, Department of Labor, "57th Biennial Report, July 1, 2005-June 30, 2007." November 2007. 2001 and 2002 data are from the "56th Biennial Report, July 1, 2003-June 30, 2005." November 2005.

Injuries Reported to NH Worker's Comp, 2001-2007

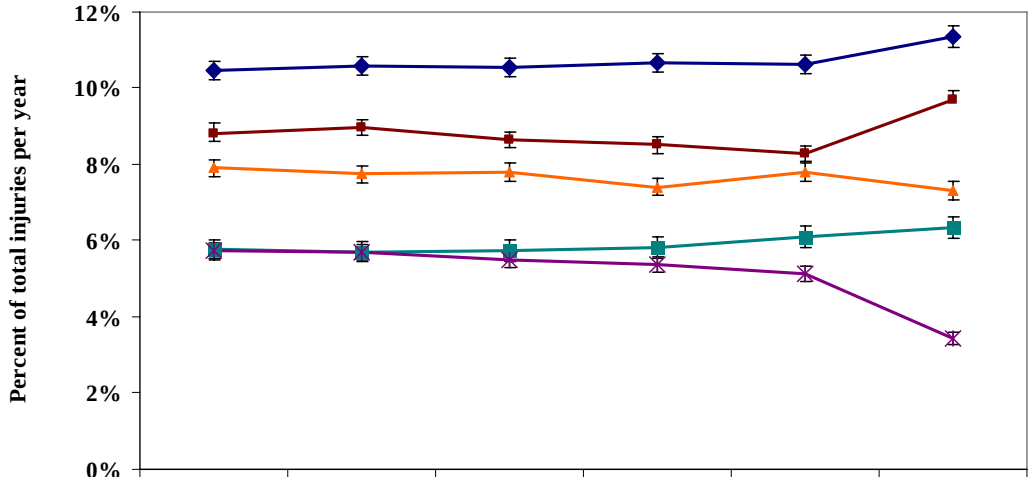


The following two reports (graphs) include statistics developed from the First Reports of Injury (FROI) received from employers. The first report breaks the FROI up by body part injured as reported by the employer. The second report represents the cause of the injury. These reports must be sent in within 5 days of the employer receiving notice of the injury. The number of "unknown outcome" in the third report is large since the employer may not know the outcome at the time of completing the report.[16]

The graphs below show the percent of total injuries for the top 5 body parts and causes of injury. For more detailed information, refer to the NH Department of Labor Biennial Reports that can be found on the internet at: http://www.labor.state.nh.us/BiennialRpt.pdf.

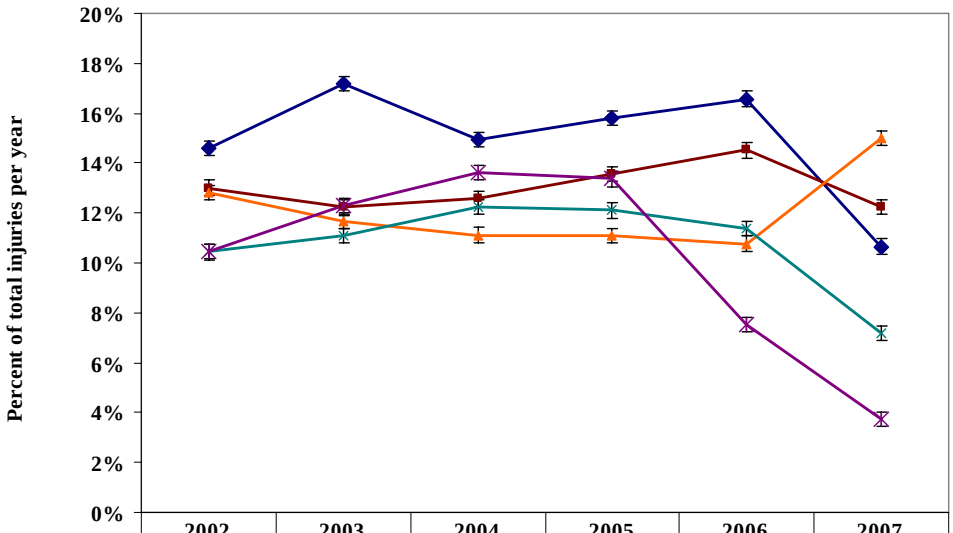
[16] State of New Hampshire, Department of Labor, "57th Biennial Report, July 1, 2005-June 30, 2007." November 2007. 2001 and 2002 data are from the "56th Biennial Report, July 1, 2003-June 30, 2005." November 2005

Top 5 body parts injured, annual percent of total injuries reported, 2002-2007



	2002	2003	2004	2005	2006	2007
Finger	10.5%	10.6%	10.5%	10.7%	10.6%	11.4%
Lower Back	8.8%	9.0%	8.6%	8.5%	8.3%	9.7%
Hand	7.9%	7.7%	7.8%	7.4%	7.8%	7.3%
Knee	5.8%	5.7%	5.7%	5.8%	6.1%	6.3%
Back	5.7%	5.7%	5.5%	5.4%	5.1%	3.4%

Top 5 causes of injury, annual percent of total injuries reported, 2002-2007



	2002	2003	2004	2005	2006	2007
Slip or Fall	14.6%	17.2%	14.9%	15.8%	16.6%	10.7%
Hit by Object	13.0%	12.2%	12.6%	13.6%	14.5%	12.2%
Lifting Action	12.8%	11.7%	11.1%	11.1%	10.8%	15.0%
Sharp Object	10.5%	11.1%	12.2%	12.1%	11.4%	7.2%
Twist	10.4%	12.3%	13.6%	13.4%	7.5%	3.7%

New Hampshire Special Emphasis Studies

Work-Related Chemical Poisonings Reported to Poison Control Centers

Introduction: Chemicals are common in the workplace, not just in manufacturing and construction, but in the service sector. Many New Hampshire employees perform activities involving chemicals and other substances that potentially can result in injury through inhaling or swallowing, or from contact to the skin and eyes. Even occupants of work areas can become exposed. Some of these exposures require medical treatment. Caution is always warranted when working with chemicals and other potentially harmful substances.

A study was undertaken to help understand and reduce harmful exposures to NH employees. The purpose was to first discover how harmful exposures occur, and then to target specific workplace activities with recommendations for safe operating practices. Calls from NH residents to the Northern New England Poison Center (NNEPC) served as information for the study.

Each year about 150 calls are received pertaining to chemical-substance exposures in NH workplaces. These cases represent about 2 percent of NH cases seeking medical treatment and first-aid advice about unintended chemical and drug exposures. The study examined information from 417 cases, occurring from January 2005 to October 2007. Information of interest in this study included chemical substances, exposure mechanisms, resulting severity, and other attributes associated with these exposure events.

For each case, an attempt was made to categorize occupation, business type, activity engaged in, exposure event, possible contributing factors, and any relevant external circumstances. NH employees call the NNEPC to seek advice about their exposure to chemical substances and symptoms, and can voluntarily choose to provide information about exposure events. The volunteered information provided valuable insights into exposure circumstances.

The information extracted from the cases was organized into groupings or categories established within our study parameters to better describe and present the circumstances surrounding exposures.

Findings

- Employee exposures are not just from industrial, construction, and agricultural processes. Chemical substances have permeated most workplaces in the form of cleaning agents and disinfectants. Hence exposure mechanisms and circumstances vary. Exposure routes varied among inhalation, dermal, ocular, ingestion and combinations of these routes.

Business type classification for 138 of 417 cases with known information

Business Type	Frequency	Percent
Factory/manufacturing/mill	24	17.4
Store	22	15.9
Building trades	19	13.8
Maintenance	17	12.3
Laboratory	12	8.7
Miscellaneous	11	8.0
Health care	9	6.5
Restaurant	9	6.5
Cleaning	7	5.1
Government	3	2.2
School	3	2.2
Agriculture	2	1.5
Total	138	100%

- Chemical substance exposures resulted not only from handling, but even from simply occupying the areas where they are used. Mechanical failure of heating and air conditioning units, malfunctioning of propane tanks, and cleaning substances used in enclosed spaces caused exposures to occupants.

- The categorization of 'possible contributing factors' (according to our study parameters) highlighted the difficulty in assigning a single cause to many exposures. Besides the properties of the chemical substances, other contributing factors include: inappropriate mixing of substances, increased severity from high-pressure delivery systems, human factor issues (e.g., eating and drinking while using substances, using a substance for the first time, or not as part of normal activity), not using personal protective equipment or PPE, and even organizational issues (e.g., delay in maintenance or repair, employee not wanting to perform task).

Five most common possible contributing factors (representing study parameters) for exposure (Note: Twenty-three percent of the 417 cases can be coded for these factors)

Possible Contributing Factors	Frequency
Organizational issue	10
Substance under pressure	10
Communication	9
Mixing, two or more substances	9
Working while eating and/or drinking	9

- Most callers sought treatment information about acute, accidental exposures. Some sought information about chronic exposures, including those associated with birth defects. About 25 percent of calls came from a friend or relative, emphasizing the importance of a social network. A few of these callers mentioned patient reluctance to seek information or treatment.

- Age appears associated with business type and not an independent risk factor. For example: a 15-year old suffered frostbite injury while working filling propane tanks.
  - Younger workers are more likely to be employed by retail stores
  - Older workers are more likely to be employed by construction and manufacturing sites

- The distribution of gender appears associated with business type, and not a risk factor.
  - Construction and manufacturing site exposures were mainly male Retail store exposures were equal between males and females

- Notably, there were no agricultural-related pesticide calls during the study period. Chemical substances classified as pesticides for the most part were industrial cleaners and disinfectants used in interior workplace settings. However, an absence of agricultural-related pesticide calls should not be interpreted as such exposures not existing.

Exposure Groups and Safe Operating Practice

Based on the findings, exposure circumstances were classified into 25 descriptive groups. The following groupings represent study parameters thought helpful in organizing the study information for better understanding:

- boatyard-shipyard,
- carbon monoxide,
- soldering and welding,
- motor-vehicle maintenance, and
- laboratory exposures.

The variety of the above groups illustrates the range of workplace types and activities through which chemicals and harmful substances have potential to cause problematic exposures to NH employees. In the future, targeted preventive efforts which incorporate safe operating recommendations for reducing risk associated with the handling of chemicals in NH workplaces should include:

12 Safe Operating Recommendations for Reducing Risks Associated with Chemicals

1) *Don't mix chemicals inappropriately. Follow directions carefully.*

2) *Don't transfer chemicals to an improperly marked container.*

3) *Don't eat or drink when working with chemicals or where chemicals are being used or have been applied.*

4) *Dress properly when working with chemicals. If clothing is exposed, change immediately. Always use personal protective equipment (PPE) when required. Be sure PPE is appropriate, and in working order.*

5) *Take special precaution when working with a chemical for the first time or when use is outside of your normal job activity or not recently used.*

6) *Never omit a proper operating step for safe use. Never rush when working with chemicals.*

7) *Always ventilate when risk exists for an inhalation exposure; even with ventilation, risk may exist.*

8) *Keep all mechanical devices containing or dispensing chemicals in good working order. Use caution when cleaning a refrigerator or freezer. Cooling system components can rupture or leak. Never chip ice from cooling components.*

9) *Use extreme caution when applying chemicals or substances under pressure, or when substances are heated or can produce frostbite (propane, Freon).*

10) *If pregnant, or experiencing reproductive difficulties, or have a prior medical condition, seek information about chemicals in the workplace. Always communicate a chemical hazard to fellow employees and workplace occupants. A good source of safety and prevention information is the Northern New England Poison Center (at www.nnepc.org/ or 1-800-222-1222).*

11) *Parents should stress safe chemical handling practices with working children, especially those entering the workforce for the first time. Family members and fellow employees notice symptoms potentially related to work exposures that others may be experiencing. Mentor less experienced employees.*

12) *Do not operate a motor vehicle or mechanical device if experiencing symptoms of a chemical exposure. Do not leave motor vehicles running, or idling, near air-intake sources to buildings such as vents, doors, and windows.*

Work-Related Asthma

Introduction: Asthma is a chronic lung disease that involves swelling and inflammation of the airways, reversible airway obstruction, and muscle spasms around the airways in response to a variety of triggers. The main symptoms of asthma are cough, chest tightness, wheeze (a whistling, high-pitched noise coming from the chest), and shortness of breath.

Work-related asthma (WRA) is asthma caused or made worse by workplace exposures and is classified by the following three types:

- Work-aggravated asthma: pre-existing asthma that is worse at work.
- Reactive airway dysfunction syndrome (RADS): new-onset asthma resulting from an acute exposure to irritants in the work place.
- Allergic occupational asthma: new-onset asthma that occurs when a person becomes sensitized to a specific chemical agent due to continued exposure. The sensitization process does not occur after one exposure but develops over time.

Work-related asthma is a debilitating and sometimes fatal disease that affects a relatively large segment of the adult population. A 2003 statement of the American Thoracic Society concluded that approximately 15% of all adult asthma cases are attributable to occupational factors.[17] Subsequent U.S. studies found that 29% [18] to 33%[19] of new-onset asthma is attributable to workplace exposures; and 23% of adults with existing asthma show evidence of workplace exacerbation of symptoms.[20]

More than 350 substances used in the workplace are known to either cause asthma in healthy workers or aggravate asthma in those who already have the condition.[21] Poor indoor air quality, a common factor in the workplace, also contributes to WRA. Further research suggests that people with WRA have more severe symptoms, a higher utilization rate of health care services, and an increased rate of disability compared to those with asthma unrelated to work. [22, 23, 24, 25, 26]

Methods

Work-related asthma questions from the 2006 & 2007 New Hampshire Behavioral Risk Factor Surveillance System Adult Asthma Call-back Survey (NH BRFSS Adult Asthma Call-back Survey) were

---

[17] *Balmes J, Becklake M, Blanc P, Henneberger P, Kreiss K, Mapp C, Milton D, Schwartz D, Toren K, Viegi G. American Thoracic Society Statement: Occupational contribution to burden of airway disease. Am J Respir Crit Care Med 2003; 167:787-797.*

[18] *Sama SR, Milton DK, Hunt PR, Houseman EA, Henneberger PK, Posiell RA. Case-by-case assessment of adult-onset asthma attributable to occupational exposures among members of a health maintenance organization. J Occup Environ Med 2006; 48:400-407.*

[19] *Vollmer WM, Heumann MA, Bree VR, Henneberger PK, O'connor EA, Villnave JM, Frazier EA, Buist AS. Incidence of work-related asthma in members of a health maintenance organization. J Occup Environ Med 2005; 47:1292-1297.*

[20] *Henneberger PK, Derk SJ, Sama SR, Boylstein RJ, Hoffman CD, Preusse PA, Rosiello RA, Milton DK. The frequency of workplace exacerbation among health maintenance organization members with asthma. Occup Environ Med 2006; 63:55-1557.*

[21] *The Association of Occupational & Environmental Clinics, AOEC Exposure Codes. Available at:* http://www.aoec.org/aoeccode.htm. *Accessed January 16, 2008.*

[22] *Liss GM, Tarlo SM, MacFarlane Y, Yeung KS, Hospitalization among workers compensated for occupational asthma. Am J. Respir Crit Care Med 2000;162(1):112-118.*

[23] *Henneberge PK, Hoffman CD, Magid DJ, Lyons EE. Work-related exacerbations of asthma. Int J Occup Environ Health 2002;8:291-296.*

[24] *Lowery EP, Henneberger PK, Rosiello R, Sama SR, Preusse P, Milton DK. Quality of life of adults with workplace exacerbation of asthma. Qual Life Res. 2007 Dec;16(10):1605-13.*

[25] *Lemiere C, Forget A, Dufour MH, Boulet LP, Blais L.. Characteristics and medical resource use of asthmatic subjects with and without work-related asthma. J Allergy Clin Immunol. 2007 Dec; 120(6):1354-9.*

[26] Axon EJ, Beach JR, Burge PS. A comparison of some of the characteristics of patients with occupational and non-occupational asthma. Occup Med (Lond). 1995 Apr;45(2):109-11.

analyzed to assess the burden of work-related asthma in New Hampshire as well as asthma management and control characteristics of those with asthma who have work-related asthma compared to those with asthma who do not have work-related asthma. The survey contains ten work-related asthma questions. To view a complete list of questions on the Call-back Survey, visit www.cdc.gov/asthma/pdfs/SurveyQuestions06.pdf.

The following six questions were used to identify people who may have work-related asthma:

1. Were you ever told by a doctor or other health professional that your asthma was related to any job you ever had?
2. Did you ever tell a doctor or other health professional that your asthma was related to any job you ever had?
3. Was your asthma caused by chemicals, smoke, fumes or dust in your current job?
4. Is your asthma made worse by chemicals, smoke, fumes or dust in your current job?
5. Was your asthma caused by chemicals, smoke, fumes or dust in any previous job you ever had?
6. Was your asthma made worse by chemicals, smoke, fumes or dust in any previous job you ever had?

Data limitations

The CDC and implementing states have developed rigorous survey methods, including methods to increase survey response and quality assurance checks to make data from the BRFSS and the Adult Call-back Survey some of the best telephone survey data available. However, there are some limitations to these data that should be kept in mind when interpreting results.

One potential source of error for the Adult Call-back Survey is that all data are self-reported. Inaccurate recall by respondents may lead to response bias and recall bias and thus result in under- or over-estimation of specific behaviors or conditions. Other potential data limitations are outlined on p.14 of the Asthma in New Hampshire, 1990-2004 burden report, which can be found on-line at: www.asthmanow.net.

Because these data are based on a sample and not the entire population, the exact frequency of any activity for the entire population is unknown; instead the true frequency is estimated using the information from the sample. A 95% confidence interval (CI) is the range of values that, with 95% certainty, includes the true value for the entire population. When the sample is very small, the 95% CI will be wide, because it is harder to accurately estimate the frequency.

Results

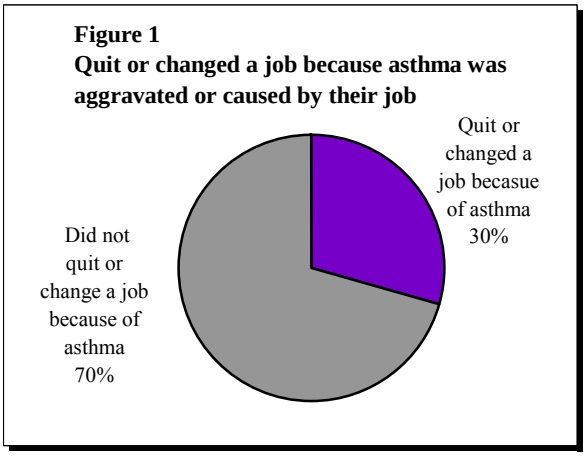
Table 1: Percent of adults 18+ years old who report their asthma may be work-related

		Lifetime Asthma		Current Asthma	
Question	Measure	Percent	95% CI	Percent	95% CI
1	Told *by a HCP* that asthma was work-related	6.9	4.1 - 9.7	9.1	4.3 - 13.8
2	Told *a HCP* that asthma was work-related	8.9	5.9 - 11.9	11.9	7.6 - 16.2
1 & 2	Told *a HCP or was told by a HCP* that asthma was work-related	11.0	7.8 - 14.2	14.5	10.1 - 19.0
3	Asthma *caused* by *current* job	8.7	4.6 - 12.9	10.2	5.6 - 14.9
4	Asthma aggravated by current job	18.4	13.7 - 23.1	28.4	21.5 - 35.2
3 & 4	Asthma *caused or aggravated* by *current* job	21.8	16.5 - 27.2	30.3	23.3 - 37.3
5	Asthma *caused* by *previous* job	13.7	10.1 - 17.4	16.4	11.7 - 21.0
6	Asthma aggravated by previous job	30.5	25.5 - 35.6	34.7	28.7 - 40.7
5 & 6	Asthma *caused or aggravated* by *previous* job	32.4	27.2 - 37.5	36.7	30.6 - 42.8
1 to 6	Possible WRA (Yes to any of the questions 1 through 6)	41.9	36.5 - 47.3	49.1	42.8 - 55.4

Almost 50% of people with current asthma report that their asthma is possibly work-related.

Among those with current asthma who said their asthma was caused or aggravated by any job they ever had only 29.5% reported talking to a health care provider about their asthma being work-related (Source: NH BRFSS Adult Asthma Call-back Survey 2006 & 2007).

Figure 1
Quit or changed a job because asthma was aggravated or caused by their job



Approximately 29.5% (95% CI 20.9-38.2) of adults with current asthma have quit a job because of their asthma. Those with a household income <$50,000 per year were statistically significantly more likely to have WRA than those with a household *income ≥ $50,000. No difference was found by gender, age, education or smoking status. (NH BRFSS Adult Asthma Call-back Survey 2006 & 2007).*

Several indicators for uncontrolled or more severe asthma are statistically significantly higher among those with possible work-related asthma (see Table 2).

Table 2: Asthma characteristics among those with current asthma by WRA status:

	Possible WRA			No WRA		
Measure	Percent	95 % CI		Percent	95 % CI	
**Amount activities were limited a moderate amount or a lot due to asthma, past 12 months*	34.8	26.1	- 43.5	12.1	7.1	- 17.1
Saw a health care provider for routine asthma check up	63.6	54.5	- 72.7	58.5	49.7	- 67.3
**Had asthma symptoms, past 14 days*	74.4	67.0	- 81.9	57.7	48.8	- 66.5
**Had 4 or more asthma episodes in last 3 months*	23.3	15.9	- 30.7	9.2	5.1	- 13.3
Sleep disturbed due to asthma, past 30 days	32.7	23.9	- 41.4	18.3	12.1	- 24.5
Had one or more emergency department or other urgent care visits for asthma, past 12 months	18.0	11.5	- 24.5	8.1	4.2	- 12.0
Used asthma medication in past 3 months	74.4	66.2	- 82.6	77.7	70.0	- 85.3

*The measures highlighted are statistically significantly different.

Asthma Study Conclusions

Almost 50% of adults 18+ years old with current asthma indicate that their asthma is possibly work-related. Those who indicate that they may have work-related asthma are statistically significantly more likely to indicate that they had limitations due to their asthma in the past year, had asthma symptoms in the past 14 days, and had four or more asthma episodes in the last 3 months than those with current asthma who do not have work-related asthma. Approximately 30% of adults with current asthma have changed or quit a job because of their asthma. Another interesting finding is that only approximately 30% of those who identified that their asthma was either caused or aggravated by a current or former job discussed the possibility that their asthma is work-related with a health care provider.

Both patients and providers need increased awareness about what work-related asthma is and how to determine if someone has it. Employers also should have a vested interest in determining if their work place is contributing to someone's asthma so they can take steps to reduce the risk. If employees are frequently absent or leave because their asthma is caused or aggravated by their work environment, it costs the employer money and may affect the cost of health insurance premiums.

This work is supported by grant number 5U59EH124193-05 from the Centers for Disease Control and Prevention.

Occupational Cancer Study: The Importance of Documenting Industry and Occupation in Cancer Registry Data

Background

While central cancer registries funded by the National Program of Cancer Registries are required to collect industry and occupation (I/O) information when available, it is well recognized that I/O data in cancer registries have many limitations. We looked at the accuracy of recording I/O by hospital cancer registrars and assessed the quality of the I/O history.

Methods

Medical records for cancer patients were reviewed for I/O history using a sample of cases from the New Hampshire State Cancer Registry (NHSCR). A trained occupational coder classified I/O data according to the North American Industry Classification System (NAICS), the industry classification system used by the statistical agencies of the United States. Our analysis included an evaluation of the quality of I/O data reported to NHSCR.

Results

Existing registry data included *both* I/O for only 15% of the original records, compared to 54% of re-abstracted records (Table 1). The re-abstraction audit identified *some* I/O information for 88% of the cases. Documents in the medical record that were more likely to provide I/O information included face or admission sheets (36%), physician dictated reports (36% history & physicals and consults), and 16% from admission notes completed by nurses or patients upon intake (Figure 1). Of the cases where I/O information was found, 92% was recorded and available at the time the cases were originally abstracted. (Figure 2).

Table 1: Availability of I/O information in cases reported originally compared with I/O collected by re-abstraction.

	Original		Re-abst.	
Measure	N	Percent	N	Percent
I/O Available	72	15.2	257	54.2
Industry or Occupation Only	15	3.2	62	13.1
I/O Unpaid Workforce	19	4.0	91	19.2
Occupation Avail, Industry Unpaid Workforce	1	0.2	1	0.2
Industry Avail, Occupation Unpaid Workforce	1	0.2	6	1.3
Industry Unpaid Workforce, Occupation Unknown	0	0.0	1	0.2
I/O Unknown	366	77.2	56	11.8
Total	474	100.0	474	100.0

Figure 1. Source of I/O information in patient medical records at time of reabstraction.

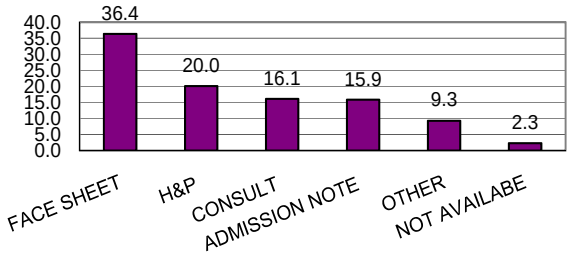
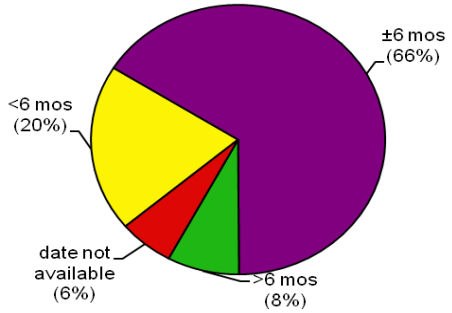


Figure 2. Period of time that I/O source date was available from the date of diagnosis.



Occupational Cancer Study Conclusions

This study demonstrates the potential to improve data quality for I/O in New Hampshire, and corroborates previous research showing that detailed medical record re-abstraction and subsequent I/O coding can provide substantially more accurate and useful information about occupational cancers.

Future Studies

Patterns of Occupational Mortality in New Hampshire, 1994-2006

Workforce composition is changing with the evolving nature of the New Hampshire economy. It is expected that the pattern of work-related mortality will also change. Determining just how is the focus of a new project to examine death certificates for relationships between cause, and occupation and industry. In partnership with the National Institute for Occupational Safety and Health, New Hampshire will receive this information electronically for the most-recently available 15 years. Results will be compared with a previous study based on New Hampshire work-related deaths, 1975-1985.[27] Results will also be compared with those in the United States to determine whether New Hampshire has significantly more or less of certain deaths as related to occupation and industry. Because of data limitations, the previous New Hampshire study included only male deaths. The new project will also include female, work-related mortality.

New Hampshire Behavioral Risk Factor Surveillance System Workers' Compensation Module

The 2008 New Hampshire Behavioral Risk Factor Surveillance System (NH BRFSS) questionnaire included several questions about injuries on the job, and workers' payment for treatment for these injuries. Data collection for the 2008 survey was completed in December and final data are expected to be available in the spring of 2009.

[27] Schwartz E, Grady K. Patterns of occupational mortality in New Hampshire 1975 1985. Concord, NH: Division of Public Health Services, Bureau of Disease Control. 1986.

The questions included the following:

- What kind of business or industry do you work in?
- During the past 12 months, were you injured seriously enough while performing your job that you got medical advice or treatment?
- Were you injured seriously enough while performing your job that you got medical advice or treatment?
- For your most recent work-related injury, who ho paid for your treatment?

Results from these questions will provide the following:

- Prevalence of annual workplace injury among adults employed in the previous 12 months
- Source, or sources, of payment for workplace injury treatment
- Analysis by industry category and demographics, including gender, age, education, income level
- Employment status and county of residence

Conclusion and Recommendations

The indicators presented in this report provide an overview of the occupational health status of New Hampshire workers over a span of years. However, these data are far from complete and does not give an accurate picture of the true nature of occupational illnesses and injuries in New Hampshire. The trends suggest a decrease in many of the occupational injury and illness rates in New Hampshire, but due to a lack of dedicated resources for occupational health surveillance combined with underreporting and lack of enforcement at the federal and state level, we are unable to document the true incidence and severity of the problem. Data are often unavailable to specifically identify the industries at highest risk. Detailed information about subgroups of the working population at risk and how the injury occurred are also absent from these data systems. Information about less common injuries is poorly estimated.

In summary, we cannot definitively answer the question as to why occupational injury and illness trends are decreasing in New Hampshire. Optimistically, improvements in workplace safety by employers and workers may explain the decreasing injury and illness trends. However, the data systems available for estimating the trends may systematically bias the results. Employment patterns toward less hazardous work may also provide the rationale for the decrease. This is an area for further research and consideration.

Given what we do know, however, we can at least identify higher risk populations and industries to target for prevention measures. We must be proactive as industries and jobs change in our state and vigilant in collecting accurate, timely and meaningful data to better inform our intervention efforts. We must collaborate with our partners and key stakeholders to ensure that resources are invested in occupational health surveillance at the state level.

Data Source Descriptions

Hospital Discharge Data (Inpatient and Emergency Department): Health Statistics and Data Management Section (HSDM), Bureau of Disease Control and Health Statistics (BDCHS), Division of Public Health Services (DPHS), New Hampshire Department of Health and Human Services (NH DHHS), and the Bureau of Data and Systems Management (BDSM), Office of Medicaid Business and Policy (OMBP), New Hampshire Department of Health and Human Services (NH DHHS), with assistance from a DHHS contractor.

Mortality Data: Health Statistics and Data Management Section (HSDM), Bureau of Disease Control and Health Statistics (BDCHS), Division of Public Health Services (DPHS), New Hampshire Department of Health and Human Services (NH DHHS), and the Bureau of Data and Systems Management (BDSM), Office of Medicaid Business and Policy (OMBP), New Hampshire Department of Health and Human Services (NH DHHS), and the New Hampshire Department of State, Division of Vital Records Administration. Underlying cause of death is classified in accordance with the International Classification of Disease. Deaths for 1979-98 are classified using the Ninth Revision (ICD-9). Deaths for 1999 and beyond are classified using the Tenth Revision (ICD-10).

Cancer Incidence Data : Health Statistics and Data Management Section (HSDM), Bureau of Disease Control and Health Statistics (BDCHS), Division of Public Health Services (DPHS), New Hampshire Department of Health and Human Services (NH DHHS), and the New Hampshire State Cancer Registry (NHSCR). Invasive Cancer is classified in accordance with the International Classification of Disease-Oncology-Third Edition(ICD-O-3) and SEER Staging as defined in 2000.

Employment estimates used to calculate rates: Bureau of Labor Statistics' Current Population Survey.
Adult Blood Lead Data: Numbers of cases with elevated blood lead levels: Adult Blood Lead Epidemiology Surveillance (ABLES) program.

Poison Center Data: Northern New England Poison Center with assistance from Health Statistics and Data Management Section (HSDM), Bureau of Disease Control and Health Statistics (BDCHS), Division of Public Health Services (DPHS), New Hampshire Department of Health and Human Services (NH DHHS) and University of Massachusetts Lowell Graduate Student. Funding for data sharing project provided by U.S. Health Services Administration.

Behavioral Risk Factor Surveillance System Survey Data(BRFSS): Health Statistics and Data Management Section (HSDM), Bureau of Disease Control and Health Statistics (BDCHS), Division of Public Health Services (DPHS), New Hampshire Department of Health and Human Services (NH DHHS), and the Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, Georgia.

New Hampshire Labor Data: State of New Hampshire, Department of Labor, "57th Biennial Report, July 1, 2005-June 30, 2007." November 2007. 2001 and 2002 data is from the "56th Biennial Report, July 1, 2003-June 30, 2005." November 2005.

Appendix A Occupational Health Committee Participants

Participant's Organization	Participant Name
Concord Cymorth LLC	David May
Department of Environmental Services	Owen David
Department of Health and Human Services, Adult Blood Lead Program	Megan Tehan
Department of Health and Human Services, Safety and Health Coordinator	Heather Fairchild
Department of Public Health Services, Asthma Prevention and Control Program	Lindsay Dearborn
	Elizabeth Traore
Department of Public Health Services, Chronic Disease	Lida Anderson
Department of Public Health Services, Disease Control and Surveillance	Beth Daly
	Christine Adamski
	David Swenson
Department of Public Health Services, Injury Prevention Program Manager	Rhonda Siegel
Department of Public Health Services, Office of Health Statistics and Data Management	JoAnne Miles
	Karla Armenti
Department of Public Health Services, State Health Officers Liaison	Louise Merchant Hannan
Department of Safety	Mike Schnyder
Department of Health and Human Services - Division for Juvenile Justice Services	David Reichel
Division of Vital Records Administration, Secretary of State's Office	Patsy Elderkin
Kluber Lubrication North America	Brian Pynn
	Joel Garrett
Manchester Health Department	Phil Alexakos
Nashua Department of Health	Bobbie Bagley
NH - VT Ironworkers	Patrick Long
NH Association for Occupational Health Nurses	Susan Kareta
NH Coalition for Occupational Safety and Health	Judy Elliot
NH Department of Labor	Henry Vincent
NH Local Government Center	Kevin Flanagan
NH Occupational Safety and Health Agency	George Killens
	Rose O'har
NH State Cancer Registry	Sai S. Cherala
Northern New England Poison Control Center	Melissa Heinen
Occupation Medicine, Dartmouth-Hitchcock Med. Center	Kevin Wallace (former)
OSHA Consultation Branch, Department of Environmental Health Services	Teresa Ferrara
RPF Associates, Inc.	Dennis Franceour Jr.
Safety and Health Council of Northern New England	David Henderson
Small Business Development Center	Andrea O'Brien
The Scott Lawson Group	Beverly Drouin
	Scott Lawson

Bibliography

Council of State and Territorial Epidemiologists In Collaboration with the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, "*Occupational health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants."* Last updated August 2006, available from http://www.cste.org/pdffiles/howoguide8.3.06.pdf

Council of State and Territorial Epidemiologists/Centers for Disease Control and Prevention, National Institutes for Occupational Health *"Putting Data to Work: Occupational Health Indicators from Thirteen Pilot States for 2000.* Available from, http://www.cste.org/dnn/ProgramsandActivities/OccupationalHealth/OccupationalHealthIndicators/tabid/85/Default.aspx

Friedman, L.S. and L. Forst, *The impact of OSHA recordkeeping regulation changes on occupational injury and illness trends in the US: a time-series analysis.* Occupational Environmental Medicine, 2007. 64(7): p. 454-60.

Leigh, J.P., et al., *Occupational injury and illness in the United States. Estimates of costs, morbidity, and mortality.* Archives of Internal Medicine, 1997. 157(14): p. 1557-68.

Levy, Barry S., et al., Occupational and Environmental Health: Recognizing and Preventing Disease and Injury. 5th Edition. Lippincott Williams and Wilkins, 2006. Philadelphia.

New Hampshire Economic and Labor Market Information Bureau, *Covered Employment and Wages Annual Averages 2007*, available from, http://www.nh.gov/nhes/elmi/covempwag.htm

Occupational Health Indicators for Washington State, 1997-2004 Washington State Department of Labor & Industries, June, 2008, available from http://www.lni.wa.gov/Safety/Research/Files/OccHealth/OccHealthReport2008.pdf

Schwartz E, Grady K. Patterns of occupational mortality in New Hampshire 1975 1985. Concord, NH: Division of Public Health Services, Bureau of Disease Control. 1986.

Sengupta, I., Reno V, Burton JF., *Workers Compensation: Benefits, Coverage, and Costs, 2006*. August 2008, National Academy of Social Insurance.

U.S. House of Representatives Education and Labor Committee, "The Hidden Tragedy: Underreporting of Workplace Injuries and Illnesses". June 19, 2008, available from , http://edlabor.house.gov/hearings/2008/06/hidden-tragedy-underreporting.shtml

Other Data Sources

Council of State and Territorial Epidemiologists (CSTE) http://www.cste.org/dnn/
US Department of Labor Bureau of Labor Statistics (BLS) http://www.bls.gov/
US Department of Labor Occupational Safety and Health Administration (OSHA) http://www.osha.gov/
The National Institute for Occupational Safety and Health (NIOSH) http://www.cdc.gov/NIOSH/
The New Hampshire Economic and Labor Market Information Bureau
http://www.nh.gov/nhes/elmi/covempwag.htm
The New Hampshire Department of Labor http://www.labor.state.nh.us/