

# **Georgia Occupational Health Surveillance Report, 2008 - 2012**

## **Acknowledgements**

### **Georgia Department of Public Health**

Brenda Fitzgerald, MD, Commissioner

### **Health Protection**

J. Patrick O'Neal, MD, Director

### **Epidemiology Program**

Cherie L. Drenzek, DVM, MS, State Epidemiologist

### **Chronic Disease, Healthy Behaviors, and Injury Epidemiology Section**

A. Rana Bayakly, MPH, Director

### **Occupational Health Surveillance Epidemiology**

Antionette Lavender, MPH, Epidemiologist

Suggested citation: Lavender A., Benson A., Bayakly R. Georgia Occupational Health Surveillance Report, 2008-2012. Georgia Department of Public Health, Epidemiology Program, July 2015.

*This publication was supported by Cooperative Agreement Number 1U60OH010908 from the Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC.*

## Table of Contents

	Page
Executive Summary.....	4
Profile of Georgia workforce, aged 16 years and older, 2008-2012.....	6
Indicator 1: Nonfatal work-related injuries and illnesses reported by employers.....	9
Indicator 2: Work-related hospitalizations.....	11
Indicator 3: Fatal work-related injuries.....	12
Indicator 4: Work-related amputations with days away from work reported by employer.....	14
Indicator 5: Workers' compensation claims for amputations with lost work time.....	15
Indicator 6: Hospitalizations for work-related burns.....	16
Indicator 7: Work-related musculoskeletal disorders with days away from work reported by employer.....	17
Indicator 8: Workers' compensation claims for carpal tunnel syndrome with lost work time.....	18
Indicator 9: Pneumoconiosis hospitalizations.....	19
Indicator 10: Pneumoconiosis mortality.....	20
Indicator 11: Acute work-related pesticide poisonings reported to Poison Control Centers.....	21
Indicator 12: Incidence of malignant mesothelioma.....	22
Indicator 13: Elevated blood lead levels among adults.....	23
Indicator 14: Workers employed in industries at high risk for occupational Morbidity.....	25
Indicator 15: Workers employed in occupations at high risk for occupational Morbidity.....	26
Indicator 16: Workers employed in industries and occupations at high risk for occupational mortality.....	27
Indicator 17: Occupational safety and health professionals.....	28

Indicator 18: Occupational safety and health administration (OSHA) enforcement activities.....	31
Indicator 19: Workers' compensation awards.....	33
Indicator 20: Work-related low back disorder hospitalizations.....	34
Indicator 21: Asthma among adults caused or made worse by work.....	36
Indicator 22: Work-related severe traumatic injury hospitalizations.....	38
State Specific Indicator 1: Arthritis among employees.....	39
State Specific Indicator 2: Workplace secondhand smoke exposure.....	41
References.....	43
Data Sources and Limitations.....	45
Appendices.....	49

## Executive Summary

More than four million people aged 16 years and older make up Georgia's workforce. Almost half of a worker's lifetime is spent at work or commuting, which makes the workplace an important determinant of a person's health.<sup>1</sup> Social factors, workplace procedures and design, chemical exposures, and chronic wear and tear are all facets of the workplace that may negatively impact workers' health.<sup>1,2,3</sup> Some workers are employed in occupations or industries that may put them at higher risk of work-related injuries or illnesses or being exposed to harmful substances. These injuries, illnesses, and exposures on the job can affect workers' health for the rest of their lives. Thus, the workplace provides unique opportunities for public health interventions.<sup>1</sup>

Work-related injuries and illnesses can be prevented, especially by controlling occupational hazards and exposures. Resource allocation for prevention can be prioritized by focusing on industries and occupations that are at high risk for injury and illness.<sup>4</sup> The Council of State and Territorial Epidemiologists (CSTE), in association with the National Institute of Occupational Safety and Health (NIOSH), has recommended that states conduct surveillance for a set of 22 occupational health indicators. These indicators serve as baseline measures of the occupational health status of a state's workforce and allows states to track trends and guide prevention and intervention efforts.<sup>4</sup> Each indicator falls under one of the five categories below:

- Health Effect Indicators (15)--measures of injury or illness that indicate adverse effects from exposure to known or suspected occupational hazards
- Exposure Indicator (1)--measures of markers in human tissue or fluid that identify the presence of a potentially harmful substance resulting from exposure in the workplace
- Hazard Indicators (3)--measures of potential for worker exposure to health and safety hazards in the workplace
- Intervention Indicators (2)--measures of intervention activities or intervention capacity to reduce workplace health and safety hazards
- Socioeconomic Impact Indicator (1)--measure of the economic impact of work-related injuries and illnesses<sup>4</sup>

Georgia has also elected to conduct surveillance for two state-specific occupational health indicators. These include arthritis among workers and workplace secondhand smoke exposure.

A variety of sources were used to collect data for the 2008-2012 occupational health indicators in Georgia. Due to limitations of the sources, most of the data provided are believed to be underestimates. The exact methods by which the indicators were calculated can be found in CSTE's guidance document entitled, *Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants* (at [www.cste.org](http://www.cste.org)). While decreases were noted for most of the injuries and illnesses reported during 2008-2012 in Georgia, it is uncertain whether these decreases were due to declines

in employment observed in the state. The percent of unemployment in Georgia increased from 6.4% in 2008 to 9.1% in 2012, though down from a peak of 10.7% in 2010.<sup>5,6,7</sup> The data provided in this report estimates the burden of work-related injuries and illnesses and gives baseline measures of occupational health in Georgia during 2008-2012. At the time of this report, 2012 was the most current year of data available for many of the data sources used. The information in this report can be used to identify contributory factors and develop improved or new prevention strategies and regulations to protect the health of Georgia's workers.

Below are highlights of the findings in this report:

- In 2012, private sector employers reported that an estimated 74,800 work-related injuries and illnesses occurred among workers in Georgia, a decrease from previous years.
- The 2012 incidence rate of total work-related injuries and illnesses involving days away from work was 800 per 100,000 full-time workers.
- A total of 101 fatal work-related injuries were reported in Georgia during 2012.
- The five most frequent causes of fatal work-related injuries in Georgia during 2012 were highway incidents, homicides, falls, being struck by an object, and having contact with electric current.
- In 2012, there were 113 hospitalizations for burns reported in Georgia among workers aged 16 years and older in which workers' compensation was the primary payer.
- The most frequently reported work-related musculoskeletal disorder in Georgia involved disorders of the back.
- The rate of work-related pesticide poisonings in Georgia during 2012 was 2.0 per 100,000 employed persons.
- About 75% of pneumoconiosis hospitalizations in Georgia were from asbestosis.
- In Georgia, the number of new cases of mesothelioma decreased from 71 in 2008 to 53 in 2012.
- In 2012, Georgia had 202 prevalent cases of elevated blood lead levels of 25 µg/dL or greater among those aged 16 years and older, an increase from previous years.
- More than 500,000 Georgia workers were employed in occupations at high risk for occupational morbidities in 2012.
- Workers' compensation benefits paid to Georgia workers with occupational injuries or illnesses decreased from approximately \$1.60 billion in 2008 to \$1.45 billion in 2012.
- The rate of occupational medicine physicians in Georgia is 0.02 per 1,000 employees, much lower than the recommended rate of 1 per 1,000 employees.
- Among currently employed adults with work-related asthma, 33% say that their asthma is made worse by their current job, and 14% say that their asthma is caused by their current job.

## Profile of Georgia Workforce Aged 16 Years and Older, 2008-2012

An average of 4.4 million civilians were employed in Georgia during 2008-2012 (Table 1). Over this five-year period, unemployment in the state increased from 6.4% in 2008 to 9.1% in 2012 and peaked at 10.7% in 2010. Males made up over half of Georgia's workers. In 2012, 52.9% of the workforce was males and 95.4% of workers were between the ages of 18-64 years. About 65.4% of workers were white, 28.3% were black, and 6.3% were of other races. Additionally, 7.7% of the civilian workforce was of Hispanic origin. Georgia civilian employment demographics are compared to Georgia population demographics in Appendix 1 (page 49).

About 71.1% of Georgia's workers spent 40 or more hours per week on the job and about 6.1% of workers were self-employed. Educational and health services (19.6%), wholesale and retail trade (14.6%), professional and business services (12.8%), manufacturing (9.5%), and leisure and hospitality (8.3%) were the top five employment industries in the state. The five most common occupations were: 1.) professional and related occupations (20.7%); 2.) management, business, and financial operations (16.8%); 3.) service (16.9%); 4.) office and administrative support (12.1%); and 5.) sales and related occupations (12.0%). Table 2 shows the leading industries and occupations by sex and by race/ethnicity in Georgia during 2012. Examples of industries and occupations by major categories can found in Appendix 2 (page 50) and Appendix 3 (page 52).

**Table 1. Demographic and employment characteristics, aged 16 years and older, Georgia, 2008-2012**

	2008	2009	2010	2011	2012
Total number employed	4,569,000	4,329,000	4,238,000	4,263,000	4,379,000
Civilian workforce unemployed	6.4%	9.8%	10.7%	10.1%	9.1%
Civilian self-employed	6.2%	6.4%	5.9%	6.1%	6.1%
Civilian employed part-time	14.7%	15.9%	16.4%	16.1%	15.6%
Civilian hours worked per week					
<40 hours	28.7%	32.6%	31.3%	28.5%	28.9%
40 hours	45.8%	43.4%	44.9%	44.8%	46.9%
41+ hours	25.5%	24.1%	23.8%	22.7%	24.2%
Civilian employment by sex					
Male	53.7%	53.4%	52.8%	52.4%	52.9%
Female	46.3%	46.6%	47.2%	47.6%	47.1%
Civilian employment by age group					
16-17 years	0.9%	0.7%	0.5%	0.6%	0.8%
18-64 years	96.0%	95.9%	96.2%	96.0%	95.4%
65+ years	3.2%	3.3%	3.3%	3.4%	3.8%
Civilian employment by race					
White	68.2%	67.8%	68.5%	68.0%	65.4%

Black	27.3%	27.7%	27.3%	27.2%	28.3%
Other*	4.6%	4.6%	4.2%	4.8%	6.3%
Hispanic origin*	7.4%	8.2%	8.7%	8.5%	7.7%
Civilian employment by industry					
Education and health services	20.0%	20.7%	20.8%	20.3%	19.6%
Wholesale and retail trade	14.1%	14.7%	15.1%	14.9%	14.6%
Professional and business services	11.4%	11.9%	12.6%	12.3%	12.8%
Manufacturing	10.8%	9.1%	9.3%	9.6%	9.5%
Leisure and hospitality	7.7%	8.2%	8.8%	8.6%	8.3%
Construction	8.7%	8.1%	7.4%	7.3%	7.0%
Transportation and utilities	6.5%	7.1%	6.6%	6.2%	6.7%
Financial activities	7.2%	6.7%	6.2%	6.6%	6.5%
Mining	0.1%	0.1%	0.1%	0.1%	0.0%
Public administration	5.2%	4.9%	5.3%	5.4%	5.5%
Other services	4.6%	4.9%	4.5%	5.2%	6.0%
Information	2.9%	2.5%	2.6%	2.6%	2.7%
Agriculture	0.9%	1.3%	0.9%	0.9%	0.9%
Civilian employment by occupation					
Professional and related occupations	21.1%	21.4%	20.3%	20.2%	20.7%
Management, business, and financial operations	16.3%	16.0%	16.4%	16.3%	16.8%
Service occupations	14.6%	15.8%	16.4%	16.5%	16.9%
Office and administrative support	13.3%	12.3%	12.5%	12.6%	12.1%
Sales and related occupations	11.9%	12.5%	12.5%	12.4%	12.0%
Transportation and material moving	6.4%	6.9%	7.0%	7.2%	6.7%
Construction and extraction	6.2%	5.6%	5.6%	5.3%	4.9%
Production occupations	6.0%	4.8%	5.1%	4.9%	5.6%
Installation, maintenance, and repair	3.8%	3.9%	3.8%	4.1%	4.0%
Farming, fishing, and forestry	0.4%	0.6%	0.4%	0.5%	0.4%

Source: U.S. Department of Labor, Bureau of Labor Statistics, Geographic Profile of Employment and Unemployment, 2008-2012

\* Persons of Hispanic origin may be of any race (white, black, other)

\*Other includes Asians, American Indians, Alaskan Natives/Pacific Islanders



**Table 2. Leading industry and occupation employment by sex, race, and ethnicity, Georgia, 2012**

	Industry		Occupation	
<b>Male</b>	Professional and business services	13.9%	Management, business, and financial operations	17.6%
	Manufacturing	12.6%	Professional and related occupations	16.9%
	Construction	12.0%	Service occupations	14.3%
<b>Female</b>	Education and health services	32.4%	Professional and related occupations	24.9%
	Wholesale and retail trade	14.4%	Office and administrative support occupations	19.4%
	Professional and business services	11.6%	Service occupations	19.9%
<b>White</b>	Education and health services	18.3%	Professional and related occupations	21.2%
	Wholesale and retail trade	14.2%	Management, business, and financial operations	18.1%
	Professional and business services	12.7%	Service occupations	14.0%
<b>Black</b>	Education and health services	22.8%	Service occupations	22.9%
	Wholesale and retail trade	15.7%	Professional and related occupations	17.5%
	Professional and business services	12.2%	Office and administrative support	13.0%
<b>Asian</b>	Professional and business services	18.0%	Professional and related occupations	32.3%
	Wholesale and retail trade	17.0%	Management, business, and financial operations	12.8%
	Education and health services	14.3%	Sales and related occupations	16.0%
<b>Hispanic</b>	Construction	21.8%	Service Occupations	25.1%
	Leisure and Hospitality	15.1%	Construction and extraction	20.3%
	Manufacturing	14.9%	Production occupations	14.3%

Source: U.S. Department of Labor, Bureau of Labor Statistics, Geographic Profile of Employment and Unemployment, 2012

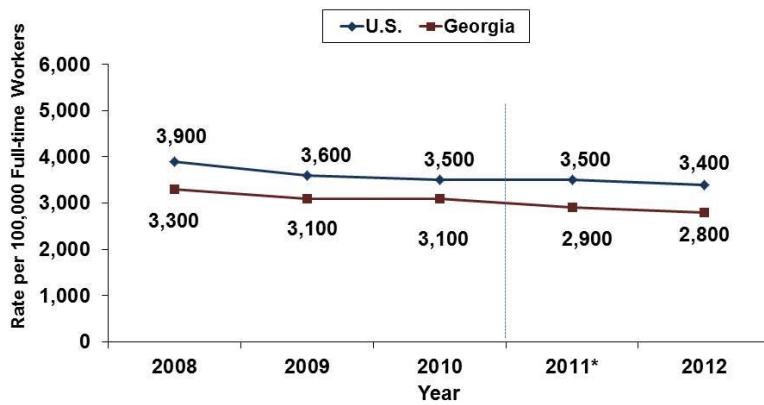
## **Indicator 1: Nonfatal Injuries and Illnesses Reported by Employers, Georgia, 2008-2012**

Data from the Bureau of Labor Statistics (BLS) Annual Survey of Occupational Injuries and Illnesses (SOII) were used to estimate the incidence of non-fatal work-related injuries and illnesses in Georgia during 2008-2012. The SOII is an annual sample survey of employers conducted by the BLS. Employers are surveyed on all work-related injuries and illnesses that resulted in one or more days away from work, death, loss of consciousness, restricted work, or medical treatment beyond first aid. Starting in year 2011 BLS began using a revised version of the Occupational Injuries and Illnesses Classification System (OIICS) to code case characteristics associated with work-related injuries, illnesses, and fatalities. Due to the revisions in OIICS coding structures, data from 2011 onward may not be directly comparable to previous years. Work-related injuries and illnesses include any injury or illness experienced by an employee while performing work-related activities on or off the worksite.<sup>1</sup> Most injuries and illnesses that occur in the workplace are preventable. Monitoring and tracking of workplace injuries and illnesses can help guide priorities for prevention and intervention efforts.<sup>4</sup>

The employer-reported incidence of work-related injuries and illnesses in Georgia declined each year since 2008. In 2012, private sector employers reported an estimated 74,800 work-related injuries and illnesses occurring among workers in Georgia (Table 3). This corresponds to a rate of about 2,800 per 100,000 full-time workers who had a work-related injury or illness (Figure 1). In 2012, about 27% (20,400) of these cases involved one or more days away from work, while about 12% (8,900) of these cases involved more than 10 days away from work. The 2012 incidence rate of total work-related injuries and illnesses involving days away from work was 800 per 100,000 full-time workers (Figure 2). The industries in Georgia with the highest number of non-fatal work-related injuries are listed in Table 4. There were 22,900 non-fatal injuries in the trade, transportation, and utilities industry, the highest number among all the industries. The agriculture, forestry, fishing, and hunting industry had the highest incidence rate of non-fatal injuries in Georgia during 2012 at 7,000 per 100,000 full-time workers.

<b>Table 3. Total number of work-related injuries and illnesses, Georgia, 2008-2012</b>					
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Estimated total number of work-related injuries and illnesses	98,300	87,400	83,100	78,800	74,800
Estimated total number of cases involving days away from work	26,800	22,300	23,400	20,800	20,400
Estimated total number of cases involving more than 10 days away from work	11,260	9,740	9,650	9,050	8,900

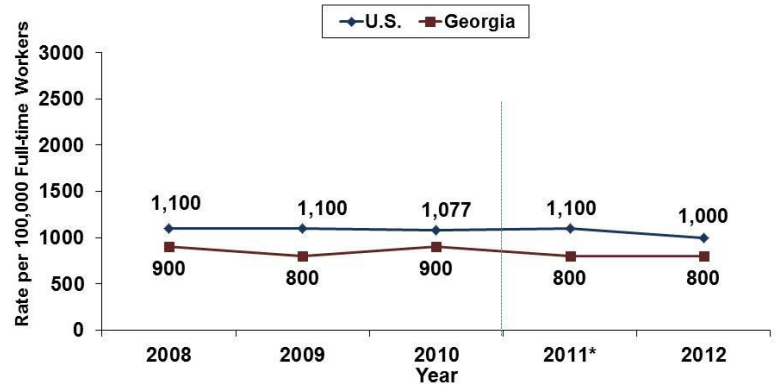
Figure 1. Annual incidence rate of total non-fatal work-related injuries and illnesses, Georgia and U.S., 2008-2012



Source: BLS Survey of Occupational Injuries and Illnesses (SOII)

\*Data for 2011 - 2012 may not be directly comparable to data from previous years due to changes in coding structures for injuries and illnesses

Figure 2. Annual incidence rate of total non-fatal work-related injuries and illnesses involving days away from work, Georgia and U.S., 2008-2012



Source: BLS Survey of Occupational Injuries and Illnesses (SOII)

\*Data for 2011 - 2012 may not be directly comparable to data from previous years due to changes in coding structures for injuries and illnesses

**Table 4. Leading industries with non-fatal work-related injuries, Georgia, 2012**

	Number Non-Fatal Injuries	Incidence Rate per 100,000
Agriculture, forestry, fishing, and hunting	1,300	7,000
Education & health services	14,800	3,800
Leisure & hospitality	9,200	3,600
Manufacturing	12,200	3,500
Construction	4,300	3,200
Trade, transportation, & utilities	22,900	3,100

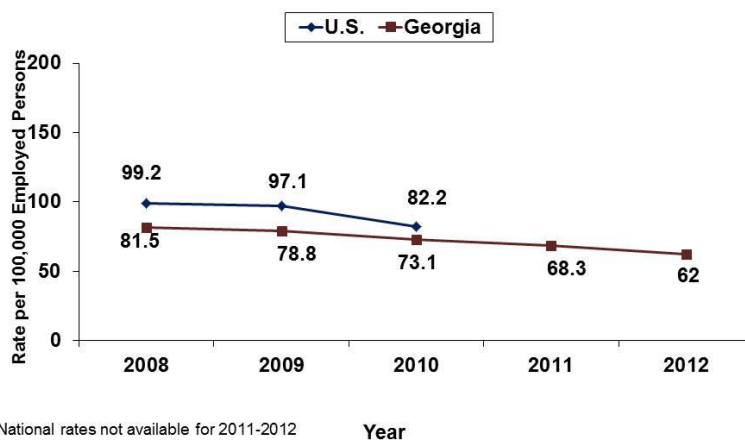
\*Rates are the number of workers per 100,000 employed in the specific industry

## Indicator 2: Work-Related Hospitalizations, Georgia, 2008-2012

Work-related hospitalizations represent some of the most severe and costly work-related injuries and illnesses. Work-related hospitalizations, by definition, have the primary payer coded as workers' compensation. Since less than 10 percent of workers who receive workers' compensation are hospitalized, work-related hospitalizations underestimate the actual burden of injuries and illnesses. In addition, most individuals who are injured on the job do not file for workers' compensation.<sup>4</sup> Also, some workers may not be covered by workers' compensation, such as self-employed workers. In 2012, Georgia had 2,717 work-related hospitalizations among workers age 16 years and older in which worker's compensation was the primary payer.

Hospital discharge data, collected by the Georgia Hospital Association, were used to estimate work-related hospitalizations during 2008-2012. The number of work-related hospitalizations in Georgia declined during 2008-2012. The number declined by 200-300 every year (in 2008 there were 3,726 hospitalizations, 3,410 hospitalizations in 2009, 3,096 hospitalizations in 2010, 2,912 hospitalization in 2011, and 2,717 hospitalizations in 2012 ). The rate of work-related hospitalizations per 100,000 employed persons in Georgia decreased from 81.5 per 100,000 employed persons in 2008 to 62.0 per 100,000 in 2012 (Figure 3). The rate of work-related hospitalizations per 100,000 employed persons in Georgia was lower than the national rate during 2008-2010.

Figure 3. Rate of work-related hospitalizations, Georgia, 2008-2012



\*National rates not available for 2011-2012  
Sources: Georgia Hospital Discharge Data;  
National Hospital Discharge Survey

### Indicator 3: Fatal Work-Related Injuries, Georgia, 2008-2012

The number of fatal work-related injuries in Georgia was determined using data from the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI). The CFOI collects data from a variety of sources such as death certificates, workers' compensation records, police and medical examiner reports, news media, and Occupational Safety and Health Administration (OSHA) reports. Data for both intentional (i.e. homicides, suicides) and unintentional (i.e. falls, highway accidents, electrocutions) work-related deaths are collected.<sup>4</sup> A total of 101 fatal work-related injuries in Georgia were reported to CFOI in 2012. This was a decrease from the number of fatal injuries that occurred in previous years (Table 5). Among deaths in Georgia during 2012, 91 (90.1%) were among men and 10 (9.9%) were among women. In 2012, workers aged 55-64 years had the highest number of fatal work-related deaths with 27 deaths. The rate of fatal work-related injuries for Georgia workers declined from 4.1 per 100,000 in 2008 to 2.4 per 100,000 in 2012 and has remained relatively stable throughout 2009-2012. The work-related fatality rate in Georgia was lower than the U.S. rate during 2009-2012 (Figure 4).

Five of the most frequent causes of fatal work-related injuries were highway accidents, homicides, falls, being struck by an object, and having contact with electric current. There were slight declines for highway accidents, being struck by an object, and having contact with electric current, while the number of incidents increased for homicides and falls in Georgia during 2012 compared to 2011. Highway incidents were the primary cause of fatal work injuries (Figure 5).

In 2012, the majority of fatal work-related injuries among Georgia workers occurred in the transportation and utilities and construction industries (Table 6). The highest rate of fatal injuries occurred among workers in the agriculture, forestry, fishing, and hunting industry.

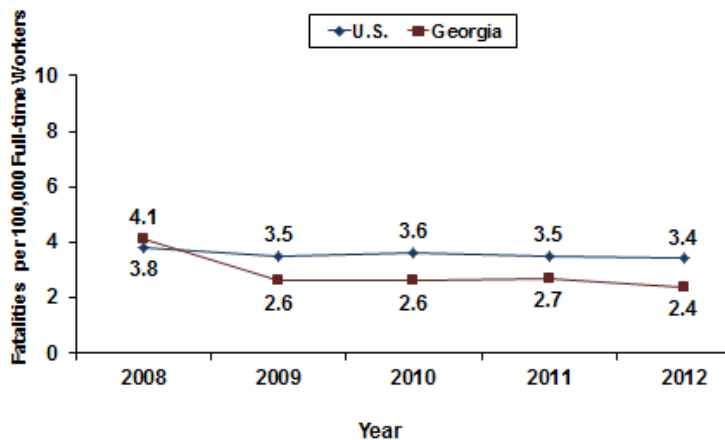
**Table 5. Total number of fatal work-related injuries, Georgia, 2008-2012**

	2008	2009*	2010	2011	2012
Total	182	110	108	111	101
Sex					
Male	170	103	103	106	91
Female	12	7	5	5	10
Age Group (years)					
16-17	0	0	0	0	0
18-19	5	0	0	3	0
20-24	11	8	8	12	6
25-34	32	20	24	16	19
35-44	38	19	22	19	25
45-54	53	36	26	27	16
55-64	24	13	19	22	27

65+	15	12	5	11	8
Race/Ethnicity					
White, non-Hispanic	100	79	64	67	55
Black, non-Hispanic	48	17	23	27	28
Hispanic	26	10	16	14	10
Other	6	3	4	3	8

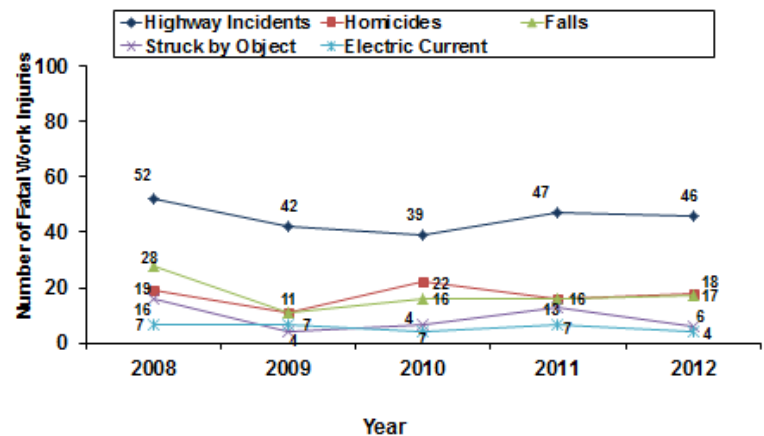
\*Georgia mortality data for 2009 may be unreliable

Figure 4. Rate of fatal work-related injuries, Georgia and U.S., 2008-2012



\*Georgia mortality data for 2009 may be unreliable  
Source: Census of Fatal Occupational Injuries (CFOI)

Figure 5. Five most frequent work-related fatal injury events, Georgia, 2008-2012



Source: Census of Fatal Occupational Injuries (CFOI)

Table 6. Leading industries with fatal work-related injuries, Georgia, 2012

	Number of Fatal Injuries	Fatality Rate per 100,000
Agriculture, forestry, fishing, and hunting	7	17.7
Transportation and utilities	22	8.2
Construction	17	5.8
Public administration	9	3.0
Manufacturing	10	2.4
Wholesale and retail trade	14	2.4
Leisure and hospitality	5	1.7

\*Rates are the number of workers per 100,000 employed in the specific industry

\*Public administration includes justice, public order, and safety activities, police protection, correctional institutions, and security and international affairs

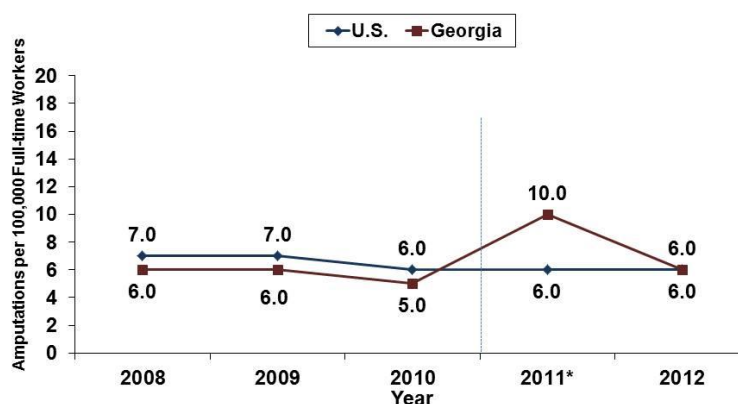
#### Indicator 4: Work-related Amputations with Days Away from Work, Reported by Employers, Georgia, 2008-2012

Work-related amputations are serious and preventable injuries usually resulting from occupational hazards or improper use of equipment. Besides the economic burden, amputations also affect workers' productivity and ability to perform job functions.<sup>4</sup> Data from the BLS Survey of Occupational Injury and Illness (SOII) was used to estimate the number of work-related amputations with days away from work in Georgia during 2008-2012. In 2012, there were 170 work-related amputations in Georgia that involved days away from work. This was a decrease from the number of amputations observed in 2008, 2009, and 2011 (Table 7). Of the 170 amputations in 2012, 120 were finger or hand amputations, the majority of which resulted from use of machinery. The remaining amputations were toe amputations (n = 50). Production, installation, maintenance and repair, transportation and material moving, and service occupations were the occupations reporting employees with work-related amputations during 2012. The annual incidence rate of work-related amputations in Georgia during 2012 remained the same as to 2008, at 6.0 per 100,000; however, 2011 showed an increase to 10.0 per 100,000 (Figure 6).

**Table 7. Total number of work-related amputations with days away from work, reported by employers, Georgia, 2008-2012**

	2008	2009	2010	2011	2012
Estimated number of amputations	190	180	140	270	170

Figure 6. Rate of work-related amputations with days away from work, Georgia and U.S., 2008-2012



Source: BLS Survey of Occupational Injuries and Illnesses (SOII)

\*Data for 2011–2012 may not be directly comparable to data from previous years due to changes in coding structures for injuries and illnesses

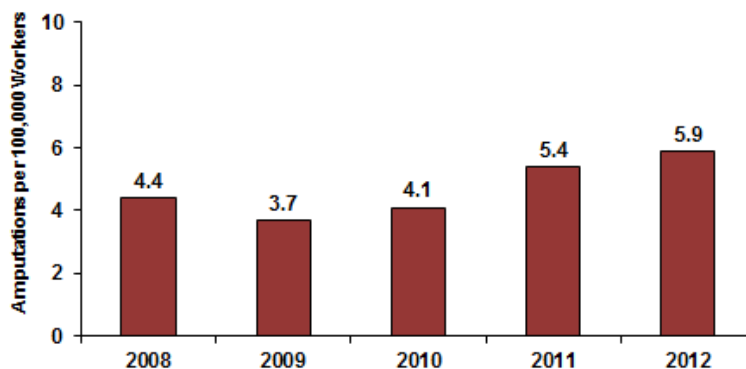


### Indicator 5: Workers' Compensation Claims for Amputations with Lost Work Time, Georgia, 2008-2012

State workers' compensation claims for amputations, based on the National Council on Compensation Insurance (NCCI) codes, were obtained from the Georgia State Board of Workers' Compensation, regardless of age, state of residence, or open or closed claim status. Cases were based on the date of injury. In Georgia, a lost work time claim is defined as an injury that results in seven or more days lost from work. In 2012 in Georgia, there were 216 amputations resulting in seven or more lost workdays that were filed with workers' compensation. This is an increase from the number of claims for amputations filed during 2008-2011 (Table 7). The incidence rate of amputation claims declined slightly in 2008 to 2009; however, the rate then proceeded to increase from 3.7 per 100,000 in 2009 to 5.4 per 100,000 workers in 2011. The rate further increased in 2012 to 5.9 per 100,000 workers (Figure 7).

<b>Table 7. Number of amputations with lost work time filed with workers' compensation, Georgia, 2008-2012</b>					
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Annual number of amputations	167	134	145	194	216

Figure 7. Incidence rate of amputation cases with lost work-time filed with state workers' compensation, Georgia, 2008-2012



Source: Georgia Board of Workers' Compensation

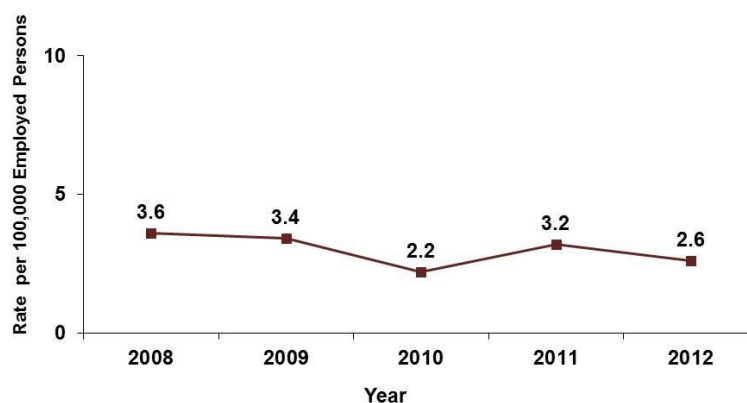


## Indicator 6: Hospitalizations for Work-related Burns, Georgia, 2008-2012

It is estimated that about 30%-40% of burns are work-related, with the majority occurring among males and younger workers.<sup>4</sup> Burn hospitalizations can be devastating, painful, and costly to treat. Hospitalizations for work-related burns were estimated using data from the Georgia Hospital Association's Hospital Discharge Data. Hospitalizations for burns with workers' compensation coded as the primary payer were considered to be work-related. In 2012, Georgia had 113 hospitalizations for burns among workers aged 16 years and older in which workers' compensation was the primary payer. This was an overall decline from the annual number of burns observed in 2008, 2009, and 2011; however, both 2011 and 2012 represented an increase compared to 2010 (Table 8). About 2.6 per 100,000 workers aged 16 years and older in Georgia were hospitalized due to work-related burns in 2012. As observed in Figure 8, there was some fluctuation in the rate of work-related burn hospitalizations during 2008-2012. The rate declined during 2010-2012 compared to 2008 and 2009.

<b>Table 8. Number of hospitalizations for work-related burns, Georgia, 2008-2012</b>					
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Annual number of work-related burns	165	149	95	135	113

Figure 8. Rate of work-related burn hospitalizations, Georgia, 2008-2012



Sources: Georgia Hospital Discharge Data

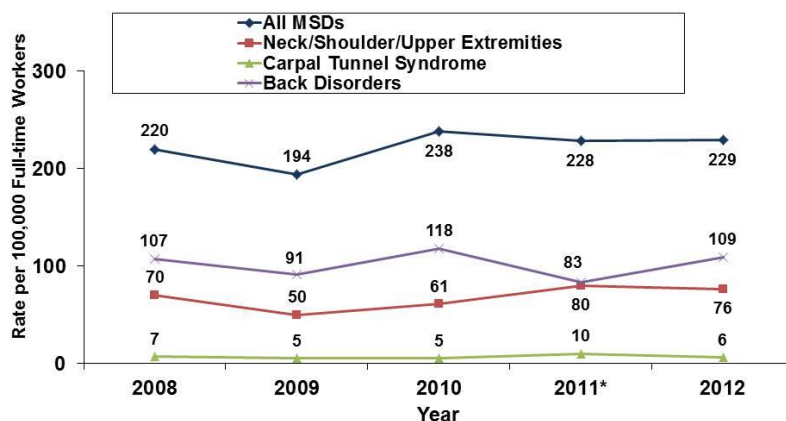
## Indicator 7: Work-related Musculoskeletal Disorders with Days Away from Work Reported by Employers, Georgia, 2008-2012

The U.S. Department of Labor defines musculoskeletal disorders (MSDs) as injuries or disorders of the muscles, nerves, tendons, joints, cartilage, and spinal discs that are not caused by slips, trips, falls, motor vehicle crashes or similar events. Work-related musculoskeletal disorders are caused or aggravated by work activities.<sup>4</sup> The BLS Survey of Occupational Injuries and Illnesses (SOII) was used to estimate the number and rate of work-related musculoskeletal disorders in Georgia during 2008-2012. In 2012, a total of 6,160 musculoskeletal disorder cases were reported by employers that involved days away from work. The total number of work-related musculoskeletal disorders in Georgia has been fluctuating since 2008 (Table 9). Three categories of musculoskeletal disorders include neck/shoulder/upper extremities, carpal tunnel syndrome, and disorders of the back. The numbers of MSDs within each of these three categories occurring during 2008-2012 in Georgia are shown in Table 9. The most frequent work-related MSD in Georgia involved disorders of the back. In 2012, there were 2,940 work-related MSDs of the back reported in Georgia. In 2012, the incidence rate of all MSDs in Georgia was 229 per 100,000 full-time workers and the rate of MSDs of the back was 109 per 100,000 full-time workers (Figure 9).

**Table 9. Total number of work-related musculoskeletal disorder cases reported by employers, Georgia, 2008-2012**

	2008	2009	2010	2011	2012
Total number of work-related MSDs	6,550	5,380	6,380	5,930	6,160
Number of work-related MSDs of the back	3,200	2,520	3,160	2,250	2,940
Number of work-related MSDs of the neck/shoulder/upper extremities	2,100	1,400	1,630	2,150	2,040
Number of work-related MSDs of carpal tunnel syndrome	200	150	140	270	160

Figure 9. Incidence rate of work-related musculoskeletal disorders, Georgia, 2008-2012



Source: BLS Survey of Occupational Injuries and Illnesses (SOII)

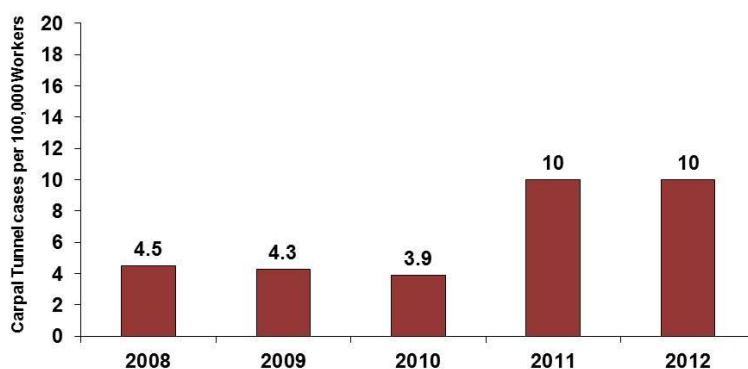
\*Data for 2011 - 2012 may not be directly comparable to data from earlier years due to changes in coding structures for injuries and illnesses

### Indicator 8: Workers' Compensation Claims for Carpal Tunnel Syndrome with Lost Work Time, Georgia, 2008-2012

Carpal tunnel syndrome results when the median nerve that runs from the forearm to the palm of the hand is pressed or squeezed at the wrist, resulting in pain, numbness, or weakness in the hand and wrist, and sometimes radiating up the arm. Carpal tunnel syndrome is common among people performing assembly line work, such as manufacturing, sewing, finishing, meat, poultry, or fish packing.<sup>8</sup> It ranks second behind back injuries as the leading cause of lost work-time diagnoses and claims.<sup>9</sup> Carpal tunnel syndrome cases with seven or more days lost from work (lost work-time) filed with the Georgia State Board of Workers' Compensation during 2008-2012 were used to estimate the annual number and rate. Cases included were based on the date of injury and the National Council on Compensation Insurance (NCCI) codes for carpal tunnel syndrome, regardless of age, state of residence, or open or closed claim status. In 2012, there were 364 carpal tunnel syndrome cases in Georgia resulting in seven or more lost work days with claims filed with workers' compensation. This was an increase from the numbers observed during 2008-2011 (Table 10). The rate of carpal tunnel syndrome cases with lost work-time filed with workers' compensation in Georgia during 2012 was 10.0 per 100,000 covered workers, the same rate observed during 2011 (Figure 10). Carpal tunnel syndrome can be prevented at the workplace by having workers take frequent breaks, perform stretching exercises, rotate job tasks, use correct posture and wrist position, and/or wear splints to keep wrists straight.

<b>Table 10. Number of carpal tunnel syndrome cases with lost work time filed with workers' compensation, Georgia, 2008-2012</b>					
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Annual number of carpal tunnel syndrome claims	172	156	138	357	364

Figure 10. Incidence rate of carpal tunnel syndrome cases with lost work-time filed with state workers' compensation, Georgia, 2008-2012



Source: Georgia Board of Workers' Compensation

## Indicator 9: Pneumoconiosis Hospitalizations, Georgia, 2008-2012

Pneumoconiosis is a class of non-malignant lung diseases that includes asbestosis, coal workers' pneumoconiosis and silicosis. Nearly all cases of pneumoconiosis are caused by occupational exposures to mineral or metallic dust particles. Asbestosis results from inhalation of microscopic asbestos fibers. Coal workers' pneumoconiosis, also called "black lung disease," results from inhalation of coal dust. Silicosis results from inhalation of free crystalline silica. There is typically a long latency period for pneumoconiosis of about 10-15 years.<sup>4</sup> Therefore, the current incidence presented in this report result may not be representative of the current exposures. Controlling occupational exposures to dust is the single most effective means of preventing pneumoconiosis.<sup>4</sup> Data for pneumoconiosis hospitalizations were obtained from Georgia Hospital Discharge Data. In 2012, Georgia had 240 total hospitalizations for pneumoconiosis. The 2012 age-adjusted rate of total pneumoconiosis hospitalizations in Georgia was 45.1 per million residents. About 75% of the pneumoconiosis hospitalizations in 2012 were due to asbestosis. In Georgia during 2012, there were 180 asbestosis hospitalizations, 26 coal workers' pneumoconiosis hospitalizations, 25 silicosis hospitalizations, and 10 hospitalizations for other and unspecified pneumoconiosis. The age-standardized rates of pneumoconiosis hospitalizations per million Georgia residents in comparison to national rates for 2010 are shown in Figure 11. National rates of pneumoconiosis (all types) were generally lower than rates in Georgia with the exception of other and unspecified pneumoconiosis. During 2008-2012, hospitalization rates for asbestosis declined from 45.1 per 1,000,000 residents to 35.2 per 1,000,000 residents. However, after a decrease in 2010, rates of coal workers' pneumoconiosis and silicosis in Georgia appeared to increase (Figure 12).

Figure 11. Age-standardized rates of hospitalization for pneumoconiosis, Georgia and U.S., 2010

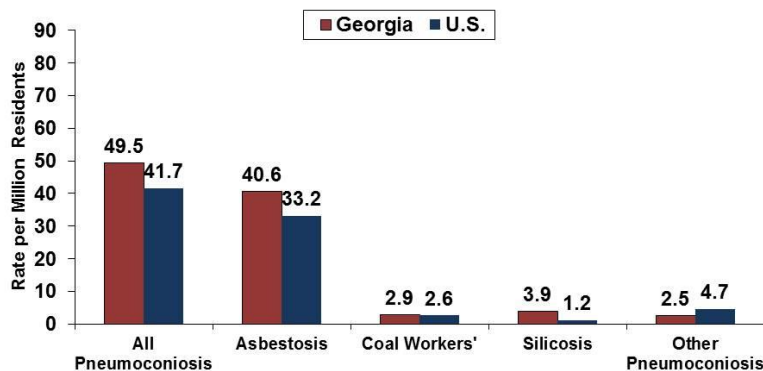
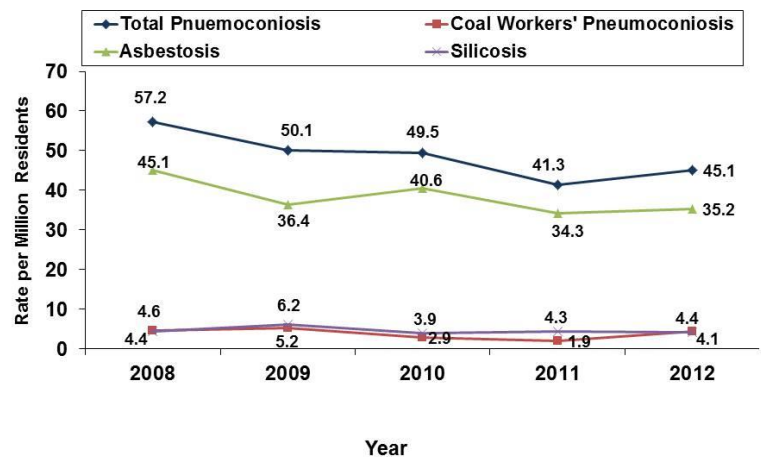


Figure 12. Age-standardized rates of hospitalization for pneumoconiosis Georgia, 2008-2012



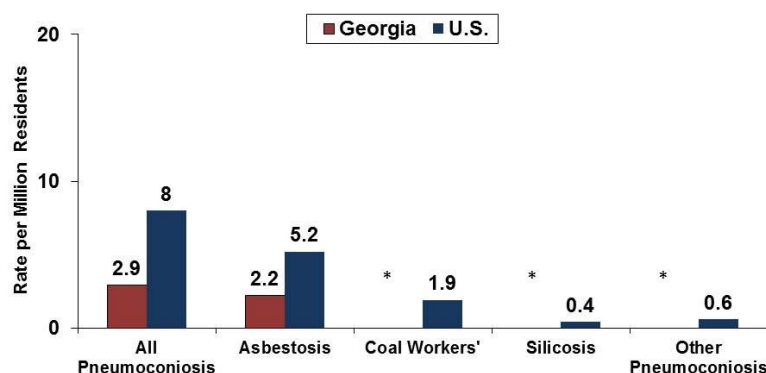
\*No data available for national estimates after 2010  
Sources: Georgia Hospital Discharge Data; National Hospital Discharge Survey

Source: Georgia Hospital Discharge Data

## Indicator 10: Pneumoconiosis Mortality, 2010-2012

Data for pneumoconiosis were obtained from the Georgia Office Vital Records. There were 12 deaths caused by pneumoconiosis among Georgia residents in 2012, a decrease from 17 deaths in 2010, and 13 deaths in 2011. Of the deaths in 2012, 9 were due to asbestosis, less than five were from silicosis, less than five deaths from coal workers' pneumoconiosis, and less than five were due to other or unspecified pneumoconiosis. The age-standardized total pneumoconiosis death rate for 2012 was 2.6 per million Georgia residents. The age-standardized rate of deaths from asbestosis was 1.8 per million Georgia residents. These rates were slightly lower than the 2010 rates for Georgia. The 2010 Georgia mortality rates for all pneumoconiosis deaths, as well as asbestosis mortality rate were lower than the national rate (Figure 13).

Figure 13. Age-standardized pneumoconiosis death rates, Georgia and U.S., 2010



\* Rates not calculated for < 5 cases; National Data not available after 2010  
Sources: Georgia Vital Statistics; National Center for Health Statistics

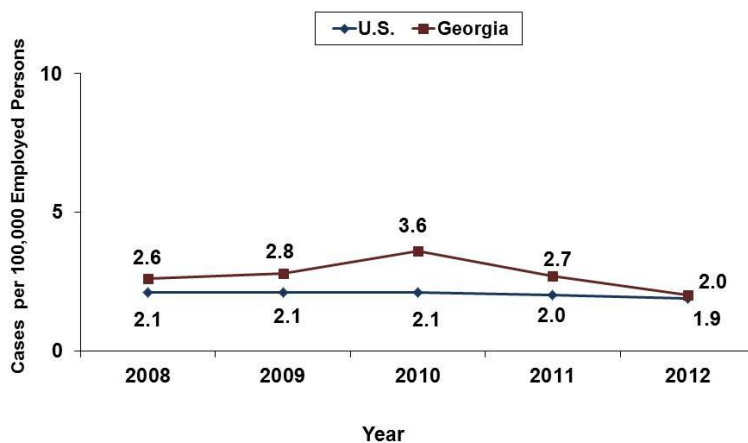
### Indicator 11: Acute Work-Related Pesticide Poisonings Reported to Poison Centers, Georgia, 2008-2012

Pesticides are designed to kill and harm living organisms, particularly insects, plants, animals, or fungi. Workers who handle pesticides are at an increased risk for exposure, resulting in adverse health effects such as eye and skin irritation, headache, difficulty breathing, asthma, cancer, and Parkinson's disease.<sup>4,10</sup> The number of work-related pesticide poisonings is estimated from reported calls to Poison Centers and is obtained from the American Association of Poison Control Centers. In Georgia, 88 work-related pesticide poisonings were reported in 2012. The number of work-related pesticide poisonings increased from 2008 to 2010 and declined in 2011 and 2012 (Table 11). The annual number of reported pesticide poisonings per 100,000 employed persons aged 16 years and older increased in 2009 (96) and 2010 (151). There was a corresponding increase in the incidence rate of pesticide poisoning cases, which increased from 1.8 per 100,000 in 2008 to 3.6 per 100,000 in 2010 before it declined to 2.0 per 100,000 in 2012. The rate of work-related pesticide poisonings in Georgia was higher than the national rate during 2008-2012 (Figure 14).

**Table 11. Annual number of reported work-related pesticide poisoning cases, Georgia, 2008-2012**

	2008	2009	2010	2011	2012
Number of reported pesticide poisonings	82	96	151	116	88

Figure 14. Annual incidence rate of reported pesticide poisoning cases, Georgia and U.S., 2008-2012



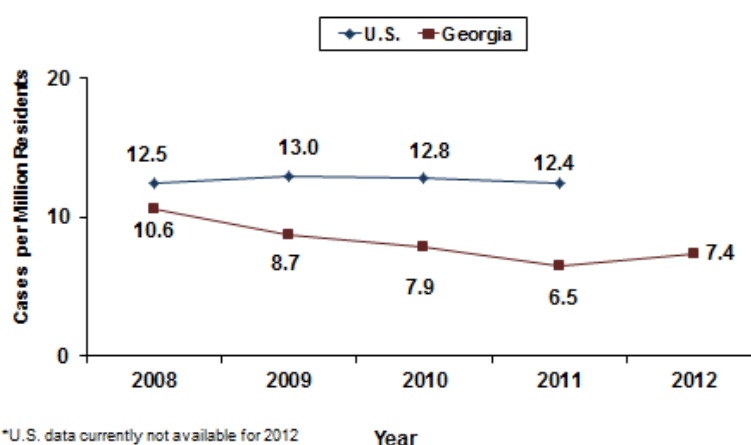
Source: American Association of Poison Control Centers

## Indicator 12: Incidence of Malignant Mesothelioma, Georgia, 2008-2012

Mesothelioma is a rare, but fatal, cancer of the mesothelial tissue lining the lung cavity, abdominal cavity, heart sac, and/or testis sac. Exposure to asbestos and related fibrous material is the only well-established risk factor for mesothelioma. It is estimated that 90% of mesothelioma cases are caused by exposure to asbestos and related fibers. The majority of cases are attributed to workplace exposures. Most cases of malignant mesothelioma are diagnosed at an already advanced stage of disease. With a latency period of 20-40 years, the incidence of malignant mesothelioma presented in this report is not indicative of current exposures. A person who was diagnosed with asbestosis in 2012 may have been exposed to asbestos during 1972-1992. Therefore, it may take many years before reductions in occupational exposure affect the incidence. Tracking malignant mesothelioma will help to document the burden of disease and to identify previously unrecognized settings in which workers may continue to be at risk of asbestos exposures.<sup>4</sup> In Georgia, the number of new cases of mesothelioma decreased from 71 in 2008 to 53 in 2012 (Table 12). The age-standardized mesothelioma incidence rate per million Georgia residents decreased from 10.6 in 2008 to 6.5 in 2011, and then increased slightly to 7.4 in 2012. The incidence rate of mesothelioma in Georgia was lower than the national rate during 2008-2011 (Figure 15).

Table 12. Number of incident mesothelioma cases, Georgia, 2008-2012					
	2008	2009	2010	2011	2012
Number of mesothelioma cases	71	61	55	45	53

Figure 15. Annual age-standardized mesothelioma incidence rate, Georgia and U.S., 2008-2012



\*U.S. data currently not available for 2012  
Sources: Georgia Comprehensive Cancer Registry;  
North American Association of Central Cancer Registries



### Indicator 13: Elevated Blood Lead Levels (BLL) among Adults, Georgia, 2008-2012

Lead is a toxic metal found both in the environment and the workplace. Exposure to lead can have adverse effects on multiple organ systems and cause permanent damage. Exposure to low doses of lead have been associated with hypertension, cognitive dysfunction, adverse effects on renal function, and adverse effects on female reproductive outcomes. The blood lead level is a biological indicator of recent exposure to lead. Lead poisoning is mainly an occupational health issue for adults. Parents who unintentionally bring lead home from the workplace can expose their children to lead. It is estimated that 24,000 children in the United States have elevated blood lead levels of 10 µg/dL or more from lead being brought home from work by their parents. Some of the adverse health effects from lead exposure experienced by children include neurologic damage, learning disabilities, and behavior problems.<sup>4</sup> Industries with the highest risk of exposures to lead include battery manufacturing, secondary smelting refining of nonferrous metals, and painting and paper hanging.<sup>11</sup> The federal Occupational Health and Safety Administration (OSHA) requires BLL monitoring for employees who meet certain exposure criteria. The average blood lead level for the general population is less than 1.5 µg/dL. Adult BLL is considered elevated at 10 µg/dL or greater (prior to 2009, BLL was considered elevated at 25 µg/dL or greater), however, toxicity may occur at levels as low as 5 µg/dL.<sup>4</sup>

The number of incident cases aged 16 years and older with elevated BLL of 10 µg/dL or greater that were reported to the Georgia Adult Blood Lead Epidemiology (ABLES) Program increased from 151 cases in 2008 to 514 cases in 2012 (Table 13). Elevated BLL incidence rates of 10 µg/dL or greater have more than doubled since 2008 (Figure 16). In 2012, Georgia had 202 prevalent cases aged 16 years and older with elevated blood lead levels of 25 µg/dL or greater (137 of which were newly identified or incident cases). Of these cases, 43 residents had elevated blood lead levels of 40 µg/dL or greater (27 incident cases). The number of reported incident cases of elevated BLL of 25 µg/dL or greater decreased from 151 in 2008 to 137 in 2012; however, 2012 represented an increase from a low of 108 incident cases in 2010. This resulted in an incident rate that decreased from 3.3 per 100,000 in 2008 to 2.5 per 100,000 in 2010 and increased again to 3.1 per 100,000 in 2012. Incidence rates of elevated blood lead levels of 25 µg/dL or greater in Georgia were similar to the national rates in 2008 and 2009, and below national rates in 2010 (Figure 17). National data for 2011 and 2012 were not available for comparison.

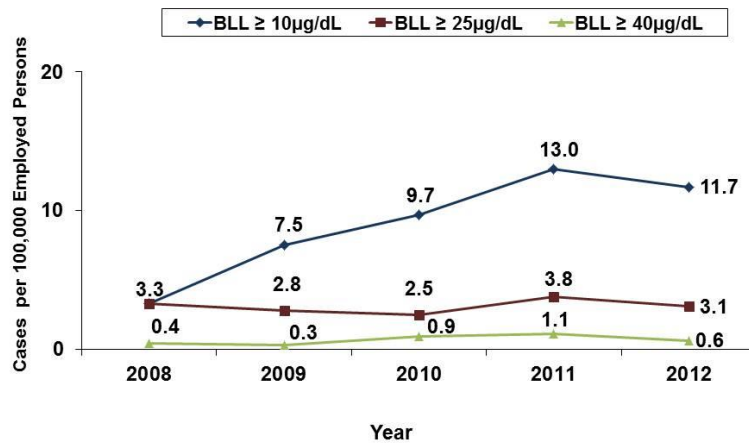
**Table 13. Number of incident cases of elevated\* blood lead levels, Georgia, 2008-2012**

	2008	2009	2010	2011	2012
Incident cases blood lead levels ( $\geq 10$ µg/dL)	151	323	411	555	514
Incident cases blood lead levels ( $\geq 25$ µg/dL)	151	120	108	163	137
Incident cases blood lead levels ( $\geq 40$ µg/dL)	20	15	38	46	27

\*Note: Elevated among persons aged 16 years or older

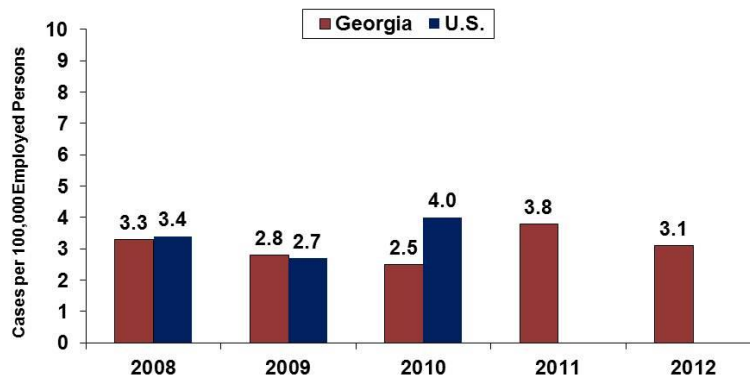


Figure 16. Annual incidence rate of elevated blood lead levels among persons aged 16 years and older, Georgia, 2008-2012



Source: Adult Blood Lead Epidemiology Surveillance (ABLES) Program

Figure 17. Annual incidence rate of elevated blood lead levels ( $\geq 25\mu\text{g/dL}$ ) among persons aged 16 years and older, Georgia and U.S., 2008-2012



\*U.S. data not available for 2011 and 2012

Source: Adult Blood Lead Epidemiology and Surveillance (ABLES) Program

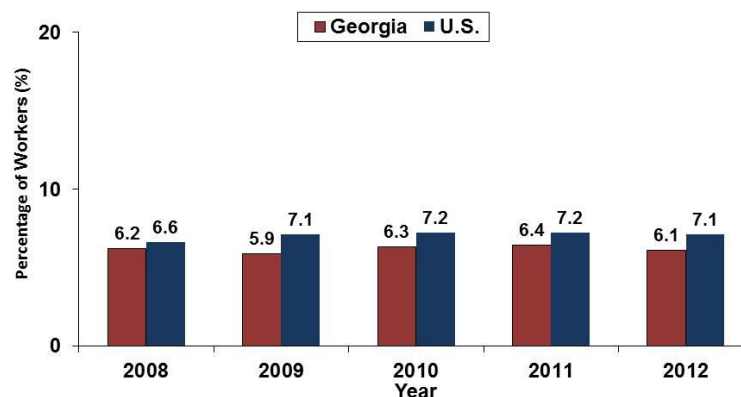
#### Indicator 14: Workers employed in industries at high risk for occupational morbidity, Georgia, 2008-2012

In 2012, over 3 million work-related injuries and illnesses were reported by employers in the private industry sector in the United States.<sup>4</sup> The Bureau of Labor Statistics (BLS) reported an estimated injury and illness incidence rate of 3,400 cases per 100,000 full-time workers in the United States in 2012. Some industries have been identified as high risk for occupational morbidities based on having significantly higher injury and illness rates compared to the national average.<sup>4,12</sup> These high risk industries are listed in Appendix 4 (page 54) and include the average number of persons who were employed in these industries in Georgia during 2012. There were more than 200,000 workers employed in high risk industries in Georgia during 2012 (Table 14). This is a decrease from the numbers observed in all previous years except 2009. The percentage of persons employed in high risk industries was 6.1% in 2012, a slight decrease from the years 2010-2011 (Figure 18).

**Table 14. Number of workers employed in industries at high risk industries for occupational injury and illness, Georgia, 2008-2012**

	2008	2009	2010	2011	2012
Number of workers	224,152	200,601	209,071	213,006	207,203

Figure 18. Percentage of workers employed in industries with high risk of occupational morbidity, Georgia and U.S., 2008-2012



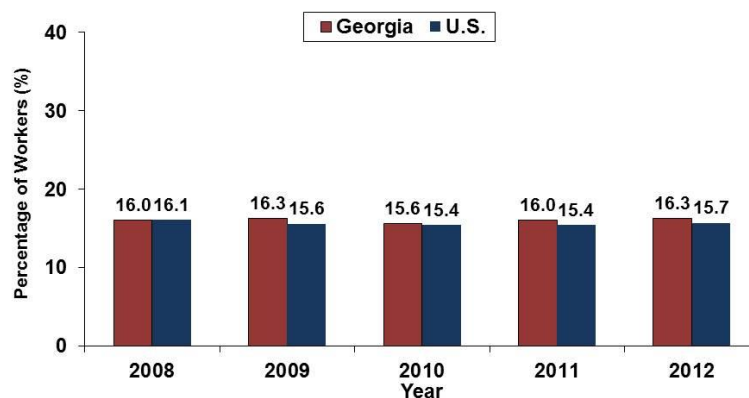
Source: U.S. Census Bureau County Business Patterns (CBP)

### Indicator 15: Workers employed in occupations at high risk for occupational morbidity, Georgia, 2008-2012

The risk of injuries and illnesses is significantly higher for certain occupations than the national average, such as police and sheriff patrol officers, roofers, and taxi drivers.<sup>4</sup> High risk occupations are listed in Appendix 5 (page 56) and include the average number of persons who were employed in these occupations in Georgia in 2012. More than 500,000 Georgia workers were employed in occupations at high risk for occupational morbidities in 2012 (Table 15). The percentage of employed persons who worked in high risk occupations in Georgia increased slightly from 16.0% in 2008 to 16.3% in 2012 (Figure 19).

<b>Table 15. Number of workers employed in occupations at high risk for occupational morbidities, Georgia, 2008-2012</b>					
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Number of workers	541,561	523,430	490,390	515,390	513,266

Figure 19. Percentage of workers employed in occupations with high risk of occupational morbidity, Georgia and U.S., 2008-2012



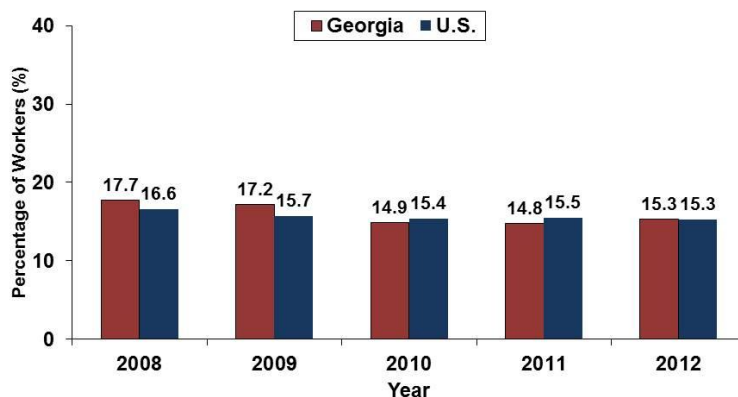
Source: Bureau of Labor Statistics' Current Population Survey (CPS)

## Indicator 16: Workers employed in industries and occupations at high risk for occupational mortality, Georgia, 2008-2012

The risk of occupational fatalities is significantly higher for certain industries (such as construction and transportation) and occupations (such as fire fighters and security guards) than the national average.<sup>4,12</sup> Between the years 2008-2012, an average of 122 workers in Georgia died as a result of injuries sustained on the job. High risk industries and occupations are listed in Appendix 6 (page 58) and Appendix 7 (page 60), respectively. In 2012, almost 550,000 workers in Georgia were employed in industries at high risk for occupational mortality, a decrease from 2008; however, a slight increase from 2010 and 2011. Additionally, more than 450,000 workers were employed in high risk mortality occupations in Georgia (Table 16). The percentage of workers employed in these industries and occupations is presented in Figures 20 and 21.

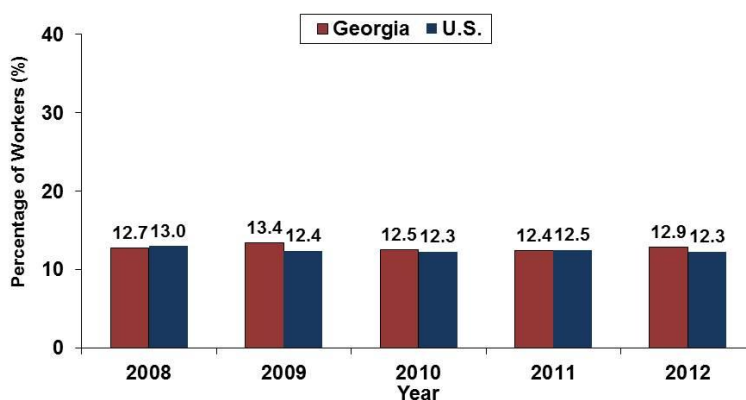
<b>Table 16. Number of workers employed in industries and occupations at high risk for occupational mortality, Georgia, 2008-2012</b>					
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Number of workers in high fatality risk industries	686,871	632,352	530,981	537,526	547,507
Number of workers in high fatality risk occupations	494,467	490,528	444,561	450,279	463,019

Figure 20. Percentage of workers employed in industries with high risk of occupational mortality, Georgia and U.S., 2008-2012



Source: Bureau of Labor Statistics' Current Population Survey (CPS)

Figure 21. Percentage of workers employed in occupations with high risk of occupational mortality, Georgia and U.S., 2008-2012



Source: Bureau of Labor Statistics' Current Population Survey (CPS)

## **Indicator 17: Occupational Safety and Health Professionals, Georgia, 2008-2012**

A sufficient number of trained occupational safety and health (OSH) professionals are needed to help prevent work-related injuries and illnesses. OSH professionals include occupational medicine physicians, occupational health nurses, industrial hygienists, and safety health professionals. These professionals provide primary, secondary, and tertiary occupational health preventive services, including workplace evaluations and safety assessments, onsite medical care, and treatment of injuries. The American Medical Association has recommended that there be at least one OSH physician per 1,000 employees.<sup>4</sup> Rates of OSH professionals are monitored within each state to determine the need for increased education or recruitment activities.<sup>2,4</sup>

Estimated numbers of OSH professionals in Georgia during 2008-2012 were obtained from current rosters and directories of each cited professional organization and are shown in Table 17. In general, the number of board certified OSH professionals has decreased since 2008 in Georgia. The number of board-certified safety health professionals increased from 336 in 2008 to 367 in 2012. Table 18 shows the rate of OSH professionals per 100,000 employed persons in Georgia. In 2012, there were approximately two occupational health physicians, three industrial hygienists, and eight safety health professionals per 100,000 employees in Georgia. The rate of OSH physicians in Georgia per 1,000 employees is 0.02, which is much lower than the American Medical Association's recommended rate. Rates of OSH professionals in Georgia were slightly lower than national rates 2008-2012.

**Table 17. Estimated number of occupational safety and health professionals, Georgia, 2008-2012**

	2008	2009	2010	2011	2012
Board-certified occupational medicine physicians	96	102	94	N/A	88
Members of the American College of Occupational and Environmental Medicine (ACOEM)	103	101	99	N/A	94
Board certified occupational health nurses	183	185	169	N/A	N/A
Nurse members of the American Association of Occupational Health Nurses (AAOHN)	238	218	N/A	N/A	145
Board-certified industrial hygienists	149	154	158	N/A	114
Industrial hygienist members of the American Industrial Hygiene Association	199	189	191	N/A	187
Board-certified safety health professionals	336	345	343	N/A	367
Safety engineer members of the American Society of Safety Engineers (ASSE)	796	745	748	N/A	783

\*Note: Data is unavailable for 2011. Data for certain professions are also unavailable for all years.

**Table 18. Rate of occupational safety and health professionals per 100,000 employed persons Georgia and United States, 2008-2012**

	Georgia					United States				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Board-certified occupational medicine physicians	2.1	2.4	2.2	N/A	2.0	1.9	2.2	2.1	N/A	2.1
Members of the American College of Occupational and Environmental Medicine (ACOEM)	2.3	2.3	2.3	N/A	2.1	3.0	3.0	2.9	N/A	2.7
Board-certified occupational health nurses	4.0	4.3	4.0	N/A	N/A	4.0	4.1	3.9	N/A	N/A
Nurse members of the American Association of Occupational Health Nurses (AAOHN)	5.2	5.0	N/A	N/A	3.3	5.4	4.6	N/A	N/A	3.3
Board-certified industrial hygienists	3.3	3.6	3.7	N/A	2.6	4.8	5.1	5.2	N/A	3.3
Industrial hygienist members of the American Industrial Hygiene Association	4.4	4.4	4.5	N/A	4.3	6.1	5.9	5.6	N/A	6.0
Board-certified safety health professionals	7.4	8.0	8.1	N/A	8.4	7.9	8.6	8.8	N/A	9.2
Safety engineer members of the American Society of Safety Engineers (ASSE)	17.4	17.2	17.6	N/A	17.9	22.0	21.5	22.5	N/A	22.7

\*Note: Data is unavailable for 2011. Data for certain professions are also unavailable for all years.

### Indicator 18: OSHA Enforcement Activities, Georgia, 2008-2012

The federal Occupational Safety and Health Administration (OSHA) was established in 1970 with the mission to “assure as far as possible every working man and woman in the nation has safe and healthful working conditions.”<sup>4</sup> Some of OSHA’s activities include standards development, enforcement, education, and compliance assistance. OSHA enforcement activities are measured through the number of inspections.<sup>4,12</sup> OSHA conducts both referral (i.e. from outside health agency or media) and non-referral inspections at worksites. Since Georgia is a Federal OSHA state, public sector workers (state and county) and farms with 10 or fewer employees are not covered. Data on the number of inspections and workers covered under OSHA jurisdiction in Georgia were obtained from annual OSHA inspection reports, which contain summary data on OSHA inspections and number of employees covered by these inspections. The Bureau of Labor Statistics data on Covered Employees and Wages were used to estimate the number of Georgia workers employed and number of establishments.

The number of establishments under OSHA jurisdiction in Georgia decreased from 273,604 in 2008 to 260,901 in 2012 (Table 19). The number of Georgia establishments that were inspected by OSHA increased from approximately 1,500 establishments in 2008-2010 to approximately 1,850 establishments from 2011-2012. This represents an increase from 0.5-0.6% of establishments to 0.7% of establishments under OSHA jurisdiction that were inspected. However, the percent of inspections remained lower than the national average during 2008-2012. The total number of employees covered under OSHA jurisdiction decreased during 2008-2012, however the number of employees whose work areas were inspected by OSHA increased from 57,512 to 74,781 (Table 20). This resulted in an increased percentage of Georgia employees under OSHA jurisdiction whose work areas were inspected by OSHA (from 1.4% in 2008 to 2.3% in 2012). These percentages were lower than the national average during 2008-2012.

<b>Table 19. OSHA inspections among establishments, Georgia, 2008-2012</b>					
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Number of establishments under OSHA jurisdiction	273,604	268,871	265,112	257,275	260,901
Number of establishments inspected by OSHA	1,452	1,500	1,592	1,851	1,867
Percent of establishments under OSHA jurisdiction inspected by OSHA	0.5%	0.6%	0.6%	0.7%	0.7%
National percent of establishments under OSHA jurisdiction inspected by OSHA	1.2%	1.2%	1.1%	1.1%	1.0%



<b>Table 20. OSHA inspections among employees, Georgia, 2008-2012</b>					
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Number of employees under OSHA jurisdiction (excluding miners and farm workers)	4,012,043	3,777,968	3,734,985	3,221,707	3,274,614
Number of employees whose work areas were inspected by OSHA	57,512	75,104	92,262	74,057	74,781
Percent of employees under OSHA jurisdiction whose work areas were inspected by OSHA	1.4%	2.0%	2.3%	2.3%	2.3%
National percent of employees under OSHA jurisdiction whose work areas were inspected by OSHA	3.5%	3.9%	3.6%	3.3%	3.0%

### Indicator 19: Workers' Compensation Awards, Georgia, 2008-2012

In the event that an employee experiences a work-related injury or illness, medical expenses and some lost wages can be covered through workers' compensation benefits. All workers in Georgia are eligible for state workers' compensation except for federal and self-employed employees. Workers' compensation awards can be used as a measure of the economic burden of occupational injuries and illnesses.<sup>4,12</sup> The estimated amount of workers' compensation awards in Georgia during 2008-2012 were obtained from the National Academy of Social Insurance. Workers' compensation benefits paid to Georgia workers with occupational injuries or illnesses decreased from approximately \$1.60 billion in 2008 to \$1.45 billion in 2012 (Table 21). This represents an average of \$418 for every worker in Georgia who was eligible for workers' compensation in 2008 and \$399 for workers eligible in 2012.

**Table 21. Workers' compensation awards, Georgia, 2008-2012**

	2008	2009	2010	2011	2012
Total amount of workers' compensation benefits paid	\$1,601,604,000	\$1,492,696,000	\$1,410,753,000	\$1,389,746,000	\$1,451,811,000
Average amount of workers' compensation benefits paid per covered worker	\$418	\$416	\$398	\$388	\$399

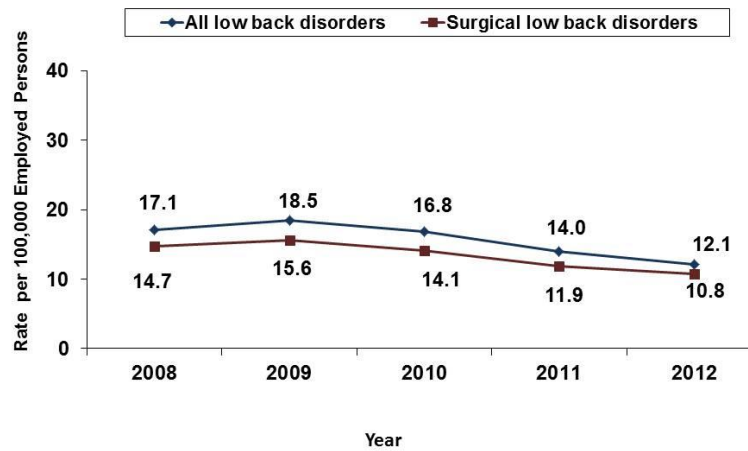
**Indicator 20: Work-related low back disorder hospitalizations, Georgia, 2008-2012**

Approximately two-thirds of all low back pain cases are attributed to work-related activities. Hospitalizations due to low back disorders result in high medical costs, high absenteeism, major impairment and disability, and reduced work performance and productivity. Nearly 40% of workers' compensation costs are due to low back disorders. The burden of low back disorder hospitalizations can be reduced through prevention efforts implemented for high-risk job activities.<sup>4</sup> Hospital discharge data from the Georgia Hospital Association were used to estimate rates of low back disorder hospitalizations among residents age 16 years and older during 2008-2012. In 2012, there were 529 low back disorder hospitalizations in Georgia for which workers' compensation was the primary payer. This was a decrease from the 782 low back disorder hospitalizations that occurred in 2008 (Table 22). The rate of hospitalizations per 100,000 employed persons decreased from 17.1 in 2008 to 12.1 in 2012 (Figure 22). Among the 529 low back disorder hospitalizations that occurred in 2012 in Georgia, 471 required surgery. The rate of surgical low back disorder hospitalizations per 100,000 employed persons decreased from 14.7 in 2008 to 10.8 in 2012. In 2010, rates of low back disorder hospitalizations in Georgia were higher compared to national rates; however, rates were slightly lower for hospitalizations that required surgery (Figure 23).

**Table 22. Number of work-related low back disorder hospitalization, Georgia, 2008-2012**

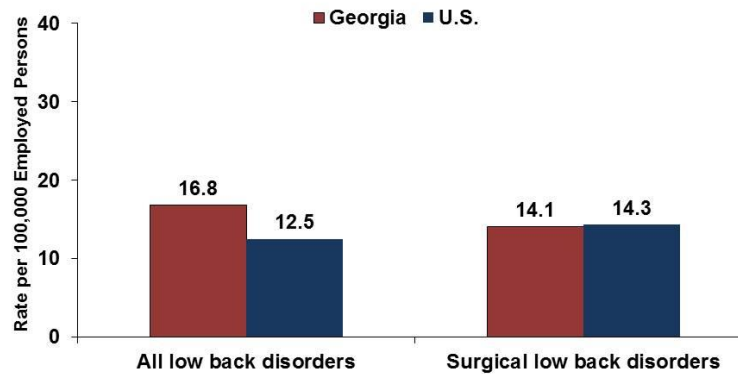
	2008	2009	2010	2011	2012
Low back disorder hospitalizations	782	803	714	598	529
Surgical low back disorder hospitalizations	672	674	597	506	471

Figure 22. Rate of work-related low back disorder hospitalizations, Georgia, 2008-2012



Source: Georgia Hospital Discharge Data

Figure 23. Rate of work-related low back disorder hospitalizations, Georgia and U.S., 2010

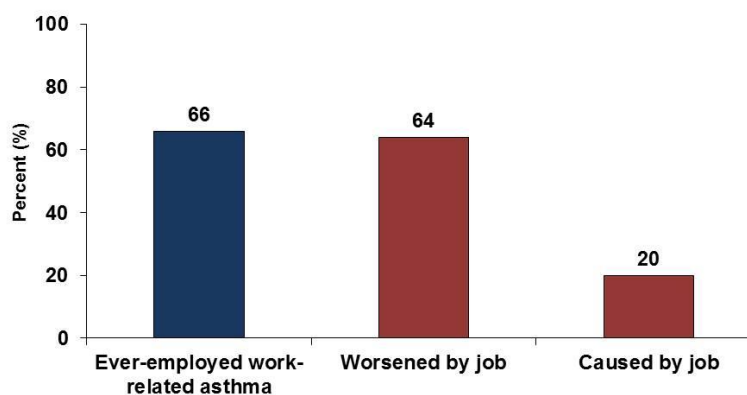


\*U.S. data unavailable for 2011 and 2012  
Source: Georgia Hospital Discharge Data

## Indicator 21: Work-Related Asthma, Georgia, 2012-2013

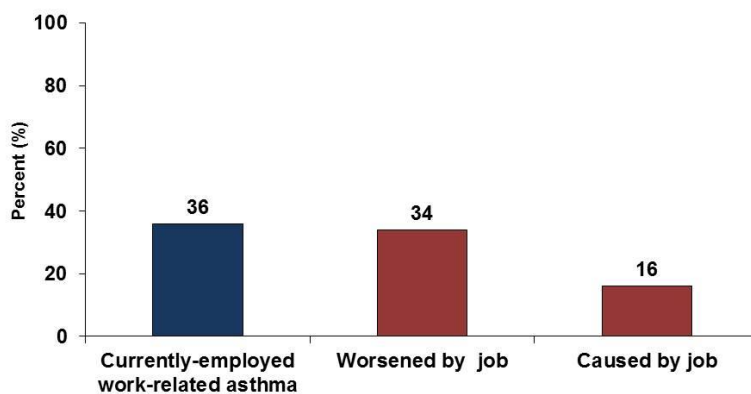
Work-related asthma (WRA) is an occupational lung disease that is preventable. Work-related asthma can be either existing asthma that is worsened by factors related to the environment of the workplace (work-exacerbated asthma) or a new onset of asthma attributed to the workplace environment (occupational asthma).<sup>13</sup> Examples of some chemicals associated with WRA by industry/occupation are listed in Appendix 8 (page 62). Identification of WRA provides direct opportunities for prevention and intervention activities. Data combined from the 2012-2013 Georgia Behavioral Risk Factor Surveillance System (BRFSS) Asthma Call-back Surveys were used to estimate the percent of ever-employed adults in Georgia who have been told by a health professional that their asthma was work-related. The proportion of adults reported to have work-related asthma is likely to be underestimated because work-related asthma is underdiagnosed in the United States.<sup>13</sup> Overall, approximately 8.3% of adults in Georgia have doctor-diagnosed asthma. Among these adults with asthma, approximately 66% of adults who were ever-employed had work-related asthma, with 64% indicating their asthma was made worse by their job and 20% indicating their asthma was caused by their job (Figure 24). Among adults with asthma, approximately 36% of currently employed Georgia adults have work-related asthma, with 34% indicating their asthma was made worse by their current job and 16% indicating their asthma was caused by their current job (Figure 25). WRA is higher among current employees who are male, non-Hispanic white, aged 35-54 years, or who earn less than \$50,000 annually (Table 23). Occupational conditions can be improved to reduce or prevent WRA among employees. Targeted strategies to reduce or eliminate workplace exposures for persons with WRA, such as substituting chemicals or engineering and administrative controls, will aid in the prevention of new onset asthma cases and slow the progression of work-exacerbated asthma.<sup>13</sup>

Figure 24. Proportion of ever-employed adults with current asthma who report their asthma is work-related, Georgia, 2012-2013



Source: Georgia BRFSS Asthma Call-Back Survey

Figure 25. Proportion of currently-employed adults with current asthma who report their asthma is work-related, Georgia, 2012-2013



Source: Georgia BRFSS Asthma Call-Back Survey

<b>Table 23. Prevalence (%) of work-related asthma among adults with asthma who were ever-employed, Georgia, 2012-2013</b>	
<b>Overall</b>	66% (57% - 76%)
<b>Sex</b>	
Male	79% (65%-93%)
Female	60% (49%-71%)
<b>Race/Ethnicity</b>	
White, non-Hispanic	73% (63% - 83%)
Black, non-Hispanic	52% (35% -70%)
Hispanic	N/A
<b>Age Group</b>	
18-34	N/A
35-54	70% (58%-82%)
55+	64% (54%-73%)
<b>Income (annual)</b>	
≤\$24,999	64% (48% - 79%)
\$25,000-\$49,999	68% (49% – 88%)
\$50,000+	62% (44%-79%)

\*Note: N/A indicates insufficient sample size to produce reliable estimates

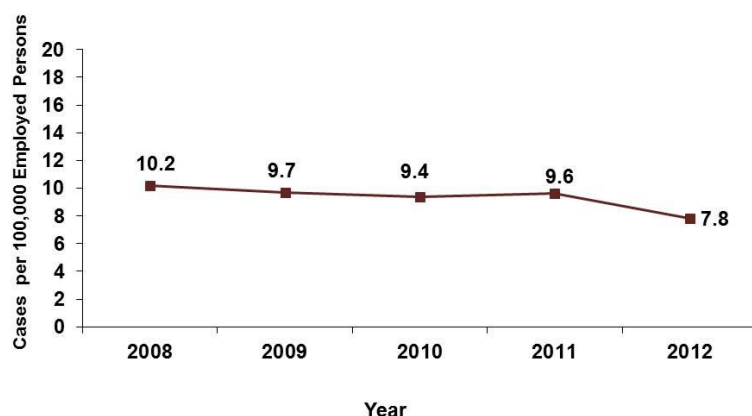
## Indicator 22: Work-Related Severe Traumatic Injury Hospitalizations

Acute work-related trauma refers to some of the most severe occupational injuries, often requiring intensive medical intervention only capable of being delivered by hospitals with rated Level I - IV Trauma Centers.<sup>14,15</sup> The resulting injuries often lead to long-term pain, disability, and even death, which results not only in burdens on workers, but is also extremely costly for workers' compensation systems.<sup>4</sup> Many severe traumatic injuries can be prevented through proper workplace safety practices. Accurately characterizing the burden of traumatic occupational injuries will help identify priority areas and inform occupational injury prevention efforts.<sup>14</sup> Georgia inpatient hospital discharge data were used to estimate the annual number and the annual rate of severe traumatic injury hospitalizations in Georgia during 2008-2012. Hospitalizations were considered work-related severe traumatic injuries if the primary payer was workers' compensation and the primary diagnosis had an ICD-9 code in the range of 800-959.9. Injury diagnostic codes in this range have been estimated to have an Abbreviated Injury Scale (AIS) severity of 3 or above, which means they have a high probability of hospital admission.<sup>4</sup>

In 2012, there were 340 hospitalizations due to severe traumatic injury where workers' compensation was the expected payer. This was a decrease from 2008, where there were 496 hospitalizations due to occupational traumatic injuries (Table 24). The rate of hospitalization per 100,000 employed persons decreased from 10.2 in 2008 to 7.8 per 100,000 employed persons in 2012. From 2009 – 2011 the rate remained relatively stable, between 9.4 and 9.7 hospitalizations per 100,000 employed persons (Figure 26). As traumatic occupational injuries and fatalities occur across many occupational groups and industry sectors, surveillance is critical to identifying where preventative measures can be implemented, such as management practices, safety training, and equipment improvements.<sup>14</sup>

<b>Table 24. Number of work-related severe traumatic injury hospitalizations, Georgia, 2008-2012</b>					
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Number of hospitalizations	496	421	400	411	340

Figure 26. Annual rate of work-related severe traumatic injury hospitalizations, Georgia, 2008-2012



Source: Georgia Hospital Discharge Data

### **State Specific Indicator 1: Arthritis among Employees, Georgia, 2013**

Arthritis is the most frequent cause of disability in the United States, affecting nearly 46 million adults. It is a painful condition consisting of approximately 100 diseases and is known to cause work limitations.<sup>16</sup> Data from the 2013 Georgia Behavioral Risk Factor Surveillance System (BRFSS) was used to estimate the prevalence of employees in Georgia who had doctor-diagnosed arthritis (including osteoarthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia). An estimated 15% of employees in Georgia had doctor-diagnosed arthritis (approximately 680,000 individuals), which represents a slight increase from the prevalence observed in 2011 (13%) and 2012 (14%). About 17% of female employees were diagnosed with arthritis while about 14% of male employees were diagnosed with arthritis. Prevalence of arthritis increased with age; employees aged 45-54, 55-64, and 65+ years were significantly more likely to be diagnosed with arthritis than employees in younger age groups (Table 25). About 19% of non-Hispanic white employees were diagnosed with arthritis compared to 13% of non-Hispanic black employees and 6% of Hispanic employees. About 29% (approximately 169,000 individuals) of employees said that arthritis or joint symptoms affects whether they work, the type of work they do, or the amount of work they do. This measure of arthritis-attributable work limitation shows that a considerable number of Georgia employees can benefit from interventions that include simple workplace accommodations such as flexible work schedules, ergonomic work stations, and efforts to promote maintaining a healthy weight and physical activity; all of which may help ease the pain of arthritis. As the workforce ages, due to employees working longer, it is becoming increasingly more important to have arthritis interventions, such as arthritis-management education classes, available as well as health and disability insurance.<sup>17</sup>



<b>Table 25. Prevalence (%) of currently employed adults with arthritis, Georgia, 2013</b>	
<b>Overall</b>	15% (14%-17%)
<b>Sex</b>	
Male	14% (12%-16%)
Female	17% (16%-19%)
<b>Race/Ethnicity</b>	
White, non-Hispanic	19% (17%-21%)
Black, non-Hispanic	13% (10%-16%)
Hispanic	6% (3%-10%)
<b>Age Group</b>	
18-44	7% (5%-9%)
45-54	22% (19%-26%)
55-64	34% (30%-38%)
65+	32% (25%-39%)
<b>Income (annual)</b>	
≤\$24,999	15% (12%-18%)
\$25,000-\$34,999	14% (10%-18%)
\$35,000-\$49,999	13% (10%-17%)
\$50,000+	18% (16%-20%)

## **State Specific Indicator 2: Workplace Secondhand Smoke Exposure, Georgia, 2014**

Secondhand smoke is a known major contributor to indoor air pollution and is known to cause lung cancer, chronic conditions, and diseases of the respiratory and cardiovascular systems.<sup>18, 19</sup> In 2006, the U.S. Surgeon General reported there is no safe level of secondhand smoke exposure.<sup>18</sup> Although, there is much knowledge about the impact of secondhand smoke on the body, many non-smoking employees are still exposed to the dangers of secondhand smoke on the job. Data from the 2014 Georgia Adult Tobacco Survey (ATS) were used to estimate the percent of non-smoking employees in Georgia who were exposed to secondhand smoke at work (indoor or outdoor). An estimated 12% of non-smoking Georgia employees (approximately 782,000 individuals) were exposed to secondhand smoke at work during the past seven days prior to the survey. Exposure to secondhand smoke was higher among employees who were female, were non-Hispanic black, were between ages 18-34 years, or earned an annual income less than \$70,000 (Table 26). Construction workers, blue collar workers, and service workers are among some of the groups who experience high levels of secondhand smoke exposure compared to other workers.<sup>19</sup> “Eliminating smoking in indoor spaces is the only way to fully protect nonsmokers from secondhand smoke exposure. Separating smokers from nonsmokers, cleaning the air, and ventilating buildings do not eliminate secondhand smoke exposure”.<sup>18, 19</sup>

Adoption of model smoke-free workplace policies can protect workers from the health effects of secondhand smoke exposure by prohibiting indoor smoking, smoking in company owned vehicles, and smoking at outdoor company worksites where two or more employees are working. Smoke free workplace policies also lead to more efficient work environments as they have been shown to reduce worker absenteeism, cleaning and maintenance costs, health insurance premiums, liability claims, and cigarette consumption.<sup>18, 20</sup>

<b>Table 26. Prevalence (%) of non-smoking employees exposed to secondhand smoke at work, 2014</b>	
<b>Overall</b>	12% (9% - 15%)
<b>Sex</b>	
Male	11% (8%-15%)
Female	13% (9%-18%)
<b>Race/Ethnicity</b>	
White, non-Hispanic	12% (9%-17%)
Black, non-Hispanic	11% (7%-19%)
Hispanic	15% (8%-27%)
<b>Age Group</b>	
18-44	15% (10%-22%)
45-54	12% (7%-21%)
55-64	8% (6%-12%)
65+	9% (5%-15%)
<b>Income (annual)</b>	
≤\$29,999	14% (8%-22%)
\$30,000-\$49,999	18% (11%-28%)
\$50,000-\$69,999	15% (7%-28%)
\$70,000+	7% (5%-10%)

## References

1. U.S. Department of Health and Human Services. (2012 Aug 22) Occupational Safety and Health—Healthy People 2020. Washington DC. Retrieved Aug 27, 2012, from <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicId=30>.
2. Oklahoma State Department of Health, Injury Prevention Service. Oklahoma Occupational Health Indicators, 2003-2007. September 2010.
3. Massachusetts Department of Public Health. Putting Data to Work: Occupational Health Indicators for Massachusetts. April 2011.
4. Council of State and Territorial Epidemiologists. Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants. June 2015.
5. U.S. Department of Labor Bureau of Labor Statistics. Geographic Profile of Employment and Unemployment, 2008. (2010 Mar)
6. U.S. Department of Labor Bureau of Labor Statistics. Geographic Profile of Employment and Unemployment, 2010. (2011 Aug)
7. U.S. Department of Labor Bureau of Labor Statistics. Geographic Profile of Employment and Unemployment, 2012. (2013 Aug)
8. National Institute of Neurological Disorders and Stroke (2012 July 20). Carpal Tunnel Syndrome Fact Sheet. Retrieved Aug 12, 2012 from [http://www.ninds.nih.gov/disorders/carpal\\_tunnel/detail\\_carpal\\_tunnel.htm#203513049](http://www.ninds.nih.gov/disorders/carpal_tunnel/detail_carpal_tunnel.htm#203513049).
9. Shuford H. and Restepo T. NCCI Research Brief: Carpal Tunnel Claims Rank Second among Major Lost Work Time Diagnoses. (2005 April)
10. National Institutes of Health. Agricultural Health Study (AHS), Retrieved Jun 2, 2015 from, <http://aghealth.nih.gov/>.
11. Centers for Disease Control and Prevention. Adult Blood Lead Epidemiology and Surveillance—United States, 2008-2009. MMWR 2011; 26 (25), 841-845.
12. Florida Department of Health, Division of Environmental Health. Occupational Health Indicators, Florida, 2000-2007. 2011.
13. Centers for Disease Control and Prevention. Work-Related Asthma—38 States and District of Columbia, 2006-2009. MMWR 2012; 61 (20), 375-378.

14. National Institute for Occupational Safety and Health. Traumatic Occupational Injury Research Needs and Priorities: A Report by the NORA Traumatic Injury Team. Retrieved July 14, 2015, from <http://www.cdc.gov/niosh/docs/98-134/pdfs/98-134.pdf>.
15. Centers for Disease Control and Prevention (CDC). CDC Injury Research Agenda: Acute Injury Care. Retrieved July 14, 2015 from, <http://www.cdc.gov/injury/ResearchAgenda/pdf/AcuteInjuryCare-a.pdf>.
16. Centers for Disease Control and Prevention. State-Specific Prevalence of Arthritis Attributable Work Limitations—United States, 2003. *MMWR* 2007; 56 (40), 1045-1049.
17. Caban-Martinez, A.J., et al. (September 2011). Arthritis, Occupational Class, and the Aging U.S. Workforce. *American Journal of Public Health*: 101 (9), 1729-1734.
18. U.S. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006.
19. Centers for Disease Control and Prevention (2012 March 1). Secondhand Smoke (SHS) Facts. Retrieved June 25, 2012 from, [http://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/secondhand\\_smoke/general\\_facts/index.htm](http://www.cdc.gov/tobacco/data_statistics/fact_sheets/secondhand_smoke/general_facts/index.htm)
20. Americans for Nonsmoker's Rights (March 2011). Model Policy for A Smokefree Workplace. Retrieved April 23, 2012 from, <http://www.no-smoke.org/pdf/modelworkplacepolicy.pdf>.

## Data Sources and Limitations

### Survey of Occupational Injuries and Illnesses

The Survey of Occupational Injuries and Illnesses (SOII) is an annual sample survey of employers conducted by the U.S. Department of Labor, Bureau of Labor and Statistics (BLS). Employers are surveyed on all employee work-related injuries and illnesses that resulted in one or more days away from work, death, loss of consciousness, restricted work, or medical treatment beyond first aid. The survey provides estimated numbers and incidence rates of work-related injuries and illnesses among private sector workers at the state and national levels. **Limitations:** The SOII uses a probability sample and is not a census of all employers. Therefore, it is subject to sampling error. In addition, employers are only required to report on up to 30 cases; which means all cases may not be reported if an employer has over 30 cases. The military, self-employed individuals, farms with fewer than 11 employees, and federal agencies are excluded from the survey.

### Georgia Hospital Discharge Data

Records of patient discharges from all licensed non-federal acute care inpatient facilities in Georgia are collected by the Georgia Hospital Association (GHA). Only discharges of Georgia residents who were seen in a Georgia facility are included. Information about patient demographics, diagnoses, and source of payment are included. Since the data does not include specific information about work-relatedness, the proxy of workers' compensation coded as the primary payer is used to indicate a work-related hospitalization. **Limitations:** The majority of individuals with work-related illnesses do not file for workers' compensation. Self-employed and federal employees are not covered by state workers' compensation. Individuals can be counted more than once if readmitted. Discharges include both people living and who have died.

### Census of Fatal Occupational Injuries

The Census of Fatal Occupational Injuries (CFOI) is a federal-state cooperative program conducted by the U.S. Department of Labor, Bureau of Labor Statistics (BLS) in all 50 states and the District of Columbia that provides counts of fatal work injuries. In order for the fatality to be included in the census the person must have been working at the time of the incident, engaged in work activity, or present the incidents site as required by the job. CFOI covers private wage and salary workers, the self-employed, and public sector workers. To provide the most complete data as possible, CFOI uses multiple sources (including death certificates, workers' compensation reports, police and medical examiner reports, and news reports) to identify and verify fatal worker injuries. Some of the information collected includes occupation, equipment involved, and circumstances of the event. **Limitations:** CFOI publishes findings according to the Occupational Injury and Illness Classification (OIIC) system rather than the International Classification of Diseases (ICD) system. Thus, CFOI data may not be comparable to causes of death documented on death certificates. CFOI reports work-related fatalities by the state in which the incident occurred, not by state of residence. Since the denominator data used to calculate rates are based on state of residence, state rates

may be overestimated or underestimated, depending on whether incidents occur in-state or out-of-state. Also, fatalities of people younger than 16 years may be included in the numerator but are not included in the denominator data.

### **Georgia Vital Records**

Mortality data from the Georgia Department of Public Health's Office of Vital Records were used to determine numbers of pneumoconiosis deaths. The Vital Records Office maintains the death certificates of all deaths occurring in the state. Deaths of Georgia residents are included, regardless of the state in which the death occurred. Causes of death are coded according to the 10<sup>th</sup> revision of the International Classification of Diseases (ICD-10). **Limitations:** Death certificates identify only a small percentage of people who have pneumoconiosis. The cause of death listed on the death certificate and coding of those causes may not be accurate. Also, the number of contributing causes of death listed on deaths certificates varies by the person completing the record. Persons whose death is due to a work-related illness or injury may not have been exposed in the state where the death occurred. Georgia mortality data were not available for 2009 due to data quality.

### **American Association of Poison Control Centers/Georgia Poison Control Center**

Numbers of pesticide poisonings in the state were obtained from the American Association of Poison Control Centers (AAPCC), which administers the Toxic Exposure Surveillance System. The Georgia Poison Center (GPC) and all other state poison control centers report statewide data to the AAPCC. The Georgia Poison Center (GPC) has operated a 24-hour poison emergency treatment information service since 1970. The GPC provides assistance and expertise in the medical diagnosis and management of human and animal poisonings. GPC is one of the busiest and most up-to-date front-line toxicology information centers in the nation. In 2009, the GPC received 115,669 calls into its emergency phone service lines (about 317 calls per day). **Limitations:** All poisonings are not reported to the poison center. Since the data in this report includes only persons who called the GPC, the number of pesticide poisonings reported may be underestimated.

### **Georgia Comprehensive Cancer Registry**

The Georgia Comprehensive Cancer Registry (GCCR) was used to determine the incident number of malignant mesothelioma cases in the state. The GCCR is a statewide population-based cancer registry that collects all cancer cases newly diagnosed among Georgia residents. The Georgia Department of Public Health has designated the Georgia Center for Cancer Statistics at the Rollins School of Public Health at Emory University as its agent for collecting and editing cancer data. Data collection for the GCCR began in 1995. GCCR participates in the National American Association of Central Cancer Registries (NAACCR), which provides ongoing development and cancer registries and the establishment of registry standards. GCCR is gold certified by NAACCR as high quality. An evaluation of GCCR showed that 100% of cancer cases are true cases. The cancer registry data also represents 98% of Georgia's population. **Limitations:** Since cancer is a disease of long latency, current incidence is not indicative of current exposures. The residence of the case may not

have been the state of exposure. Not all cases of malignant mesothelioma are caused by occupational exposures.

### **Adult Blood Lead Epidemiology and Surveillance Program**

The Georgia Adult Blood Lead Epidemiology and Surveillance (ABLES) program is a state-based surveillance program, funded through the CDC National Institute for Occupational Safety and Health (NIOSH), that collects clinical laboratory-reported adult blood lead levels of Georgia persons aged 15 years or older. The program collects and analyzes data to identify the incidence and prevalence of elevated blood lead levels in the adult population to measure trends in lead exposure and effectively intervene to prevent lead over-exposures. **Limitations:** The elevated blood lead cases in this report are all report cases, which may include both occupational and non-occupational exposures. The rates reported may be overestimated if some cases were not due to occupational exposures. Some elevated blood-levels due to occupational exposures may not be captured. Though employers are required by the Occupational Health Safety Administration (OSHA) to provide blood lead testing for exposed workers, all employers do not provide testing. Also, individuals who are self-employed may not get tested.

### **Georgia Board of Workers' Compensation**

The number of amputations and carpal tunnel syndrome claims filed through workers' compensation were obtained from the Georgia Board of Workers' Compensation (GBWC). Established by the Georgia legislature in 1920, more than 3.8 million Georgia workers are covered by the workers' compensation law which provides for specific benefits to be paid to employees who sustain work-related injuries or illnesses, such as replacement for a portion of lost wages, medical payments, vocational rehabilitation services, and other benefits. Georgia law requires that all employers, including public corporations and nonprofit organizations that have at least three full-time or part-time employees, to have workers' compensation insurance coverage. **Limitations:** Federal employees, railroad employees, farmers and farm laborers, self-employed individuals, and domestic servants are not covered by workers' compensation. Also, the majority of eligible workers who have a work-related injury or illnesses do not file for state workers' compensation.

### **Georgia Behavioral Risk Factor Surveillance System**

The Georgia Behavioral Risk Factor Surveillance System (BRFSS) was used to estimate the prevalence of arthritis among employees and the BRFSS Asthma Call-back Survey (ACBS) was used to estimate the proportion of work-related asthma. Established by the Centers and Disease Control and Prevention (CDC) in 1984, the BRFSS is a cross-sectional random-digit-dialed telephone survey of non-institutionalized civilian adults age 18 years and older conducted annually in all 50 states, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands. This state-based surveillance system collects information on health risk behaviors, preventive health practices, and healthcare access primarily related to chronic disease and injury. BRFSS respondents who said they work full-time, part-time, or have been out of work for less than a year and who said 'yes' to having ever been told by a doctor



or other health professional that they have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia were considered employees with doctor-diagnosed arthritis. BRFSS respondents who said yes to ever being diagnosed with asthma are asked to participate in the ACBS. Administered since 2006, the ACBS collects detailed information on asthma, including symptoms, health-care utilization, medication use, knowledge of asthma, cost of asthma care, work-related asthma, co-morbid conditions, and complementary and alternative medicine use for asthma. **Limitations:** Prevalence estimates of arthritis may be underestimates of the true burden because all employees with arthritis may not have been diagnosed. Also, the BRFSS is based on self-reported data; therefore, results may be subject to recall bias. The ACBS may be subject to self-selection bias, since ACBS participants are BRFSS respondents who agreed to be called-back. These participants may have more severe asthma or be more likely to attribute asthma to their work. Information on work-relatedness is not available in BRFSS for those who refused to participate.

### **Georgia Adult Tobacco Survey**

State-level data from the 2014 Georgia Adult Tobacco Survey (ATS) was used to estimate the prevalence of employees exposed to secondhand smoke at work. The ATS, is a cross-sectional random-digit dialed telephone survey of non-institutionalized civilian adults age 18 years and older. The survey was designed with the purpose of obtaining representative data on key outcome indicators at the state and public health district level for monitoring and evaluating progress toward the goals of the CDC's National Tobacco Control Program. The ATS includes questions relating to general health, tobacco use, smoking cessation, smoke-free and tobacco-free policies, existing chronic conditions and diseases, and opinions and attitudes related to tobacco and policy. **Limitations:** The ATS is based on self-reported data; therefore, results may be subject to recall bias.

## Appendix 1. Georgia Population and GA and U.S. Civilian Employment Demographics, Aged 16 Years and Older, 2012

	GA Population	GA Civilian Employment	U.S. Civilian Employment
<b>Total Number</b>	7,704,086	4,379,000	142,469,000
<b>Sex</b>			
Male	48.3%	52.9%	53.0%
Female	51.7%	47.1%	47.0%
<b>Age Group</b>			
16-17 years	3.6%	0.8%	1.0%
18-64 years	81.6%	95.4%	93.9%
65+ years	14.8%	3.8%	5.1%
<b>Race</b>			
White	64.4%	65.4%	80.6%
Black	30.2%	28.3%	11.1%
Other*	4.1%	6.3%	8.3%
<b>Hispanic origin*</b>			
Hispanic	7.8%	7.7%	15.4%

\* Persons of Hispanic origin may be of any race (white, black, other)

\*Other includes Asians, American Indians, Alaskan Natives/Pacific Islanders

## Appendix 2. Examples of Industries by Major 2012 Census Industry Codes

Industry Code	2012 Census Industry Title	Industry Examples
<b>0170-0290</b>	Agriculture, Forestry, Fishing, and Hunting	Crop production; Animal production; Logging; Fishing
<b>0370-0490</b>	Mining, Quarrying, and Oil and Gas Extraction	Oil and gas extraction; Coal mining; Metal ore mining
<b>0770</b>	Construction	Building construction; Street and bridge construction; Painting and wall covering
<b>1070-3990</b>	Manufacturing	Glass manufacturing; Motor vehicle manufacturing; Beverage manufacturing; Textile mills
<b>4070-5790</b>	Wholesale and Retail Trade	Motor vehicle wholesalers, Grocery stores; Gasoline stations; Department stores
<b>6070-6390, 0570-0690</b>	Transportation and Utilities	Air transportation; Truck transportation; Postal Service; Natural gas distribution; Electric power generation
<b>6470-6780</b>	Information	Newspaper publishers; Radio and television broadcasting; Internet service providers
<b>6870-7190</b>	Financial Activities	Banking and related activities; Insurance carriers, Real estate; Automotive equipment and leasing
<b>7270-7790</b>	Professional and Business Services	Legal services; Scientific, and technical consulting services; Architectural, engineering services; Computer system design; Management of companies and enterprises; Landscaping services; Waste management and remediation services
<b>7860-8470</b>	Education and Health Services	Elementary and secondary schools; Colleges and universities; Business, technical, and trade schools; Offices of physicians; Nursing care facilities; Individual and family services; Child day care services

<b>8560-8690</b>	Leisure and Hospitality	Independent artists, performing arts, spectator sports; Museums; Restaurants; Drinking places; Rooming and boarding houses
<b>8770-9290</b>	Other Services	Automotive repair and maintenance; Barber shops; Religious organizations; Dry cleaning and laundry services
<b>9370-9590</b>	Public Administration	Executive offices and legislative bodies; Justice, public order, and safety activities; Administration of environmental quality and housing programs; National security and international affairs

For more information on the 2012 Census Industry codes, go to  
<http://www.bls.gov/cps/cpsoccind.htm>

### Appendix 3. Examples of Occupations by Major 2010 Census Occupation Codes

Occupation Code	2010 Census Occupation Title	Occupation Examples
<b>0010-0950</b>	Management, Business, and Financial Operations	Chief executives; Legislators; Marketing and sales managers; Financial managers; Management analysts; Accountants
<b>1000-3540</b>	Professional and Related Occupations	Computer programmers; Statisticians; Chemical engineers; Psychologists; Lawyers; Secondary school teachers; Artists, Athletes; News analysts, reporters and correspondents; Healthcare practitioners
<b>3600-4650</b>	Service Occupations	Nursing, psychiatric, and home health aides; Physical therapist assistants; Dental assistants; Fire fighters; Crossing guards; Cooks; Bartenders; Janitors and building cleaners; Grounds maintenance workers; Barbers; Child care workers
<b>4700-4965</b>	Sales and Related Occupations	Cashiers; Retail salespersons; Insurance sales agents; Travel agents; Telemarketers; Real estate brokers and sales agents
<b>5000-5940</b>	Office and Administrative Support Occupations	Bill and account collectors; Tellers; Customer service representatives; Secretaries and administrative assistants; Couriers and messengers; Data entry keyers;
<b>6000-6130</b>	Farming, Fishing, and Forestry Occupations	Agricultural inspectors; Animal breeders; Fishers and related fishing workers; Hunters and trappers; Forest and conservation workers; Logging workers
<b>6200-6940</b>	Construction and Extraction Occupations	Carpenters; Brickmasons; Cement masons; Concrete finishers; Sheet metal workers;

		Electricians; Roofers; Highway maintenance workers; Pipelayers, plumbers, Oil, gas, and mining
<b>7000-7630</b>	Installation, Maintenance, and Repair Occupations	Aircraft mechanic; Automotive service technician; Telecommunications line installers and repairers; Home appliance repairers; Electrical power-line installers and repairers; Locksmiths;
<b>7700-8965</b>	Production Occupations	Engine and other machine assemblers; Food batchmakers; Welding, soldering, and brazing workers; Printing machine operators; Tailors, Shoe repairers; Power plant operators; Tire builders
<b>9000-9750</b>	Transportation and Material Moving Occupations	Aircraft pilots and flight engineers; Bus drivers; Railroad conductors; Industrial truck and tractor operators; Refuse and recyclable material collectors; Tank car, truck, and ship loaders

For more information on the 2010 Census Occupation codes, go to <http://www.bls.gov/cps/cpsoccind.htm>

#### Appendix 4. Average Number of Employees in Industries at High Risk\* for Morbidity, Georgia, 2012

2007 NAICS Industry Title	Average Number
Cotton Ginning	856
Sugarcane Milling	0
Fluid Milk Manufacturing	375
Animal Slaughtering Except Poultry	1,265
Rendering and Meat Byproduct Processing	750
Seafood Canning	175
Soft Drink and Ice Manufacturing	1,459
Leather and Hide Tanning and Finishing	10
Truss manufacturing	550
Wood Container and Pallet Manufacturing	1,669
All Other Wood Product Manufacturing	1,706
Tire Retreading	313
Porcelain Electrical Supply Manufacturing	0
Concrete Pipe Manufacturing	224
Other Concrete Product Manufacturing	1,720
Rolling and Drawing of Purchased Steel	375
Secondary Smelting and Alloying of Aluminum	175
Foundries	1,750
Forging and Stamping	1,568
Kitchen Utensil, Pot, and Pan Manufacturing	0
Architectural and Structural Metals Manufacturing	9,908
Other Metal Container Manufacturing	750
Other Fabricated Wire Product Manufacturing	181
Precision Turned Product Manufacturing	557
Industrial Pattern Manufacturing	0
All Other Miscellaneous Fabricated Metal Product Man.	1,039
Agricultural Implement Manufacturing	4,353
Sawmill and Woodworking Machinery Manufacturing	94
Paper Industry Machinery Manufacturing	133
Food Product Machinery Manufacturing	730
Commercial Laundry, Dry Cleaning, and Pressing	175
Industrial and Commercial Fan and Blower Manufacturing	175
Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	60
Light Truck and Utility Vehicle Manufacturing	60
Heavy Duty Truck Manufacturing	1,750
Motor Vehicle Body and Trailer Manufacturing	2,529
Motor Vehicle Seating and Interior Trim Manufacturing	750
Motor Vehicle Metal Stamping	1,557
Ship and Boat Building	1,750
Metal Household Furniture Manufacturing	60

Institutional Furniture Manufacturing	476
Beer, Wine, and Distilled Alcoholic Beverage Wholesalers	5,368
Pet and Pet Supplies Stores	2,522
Air Transportation	26,594
Marine Cargo Handling	1,750
Other Support Activities for Transportation	173
Couriers and Messengers	17,122
Refrigerated Warehousing and Storage	3,649
Veterinary Services	9,517
Other Ambulatory Health Care Services	8,496
Specialty Hospitals Except Psychiatric and Substance Abuse	7,071
Nursing and Residential Care Facilities	61,201
Spectator Sports	2,649
Skiing Facilities	0
Special Food Services	19,064
<b>Total</b>	<b>207,203</b>

Data Source: U.S. Census Bureau County Business (CBP) Patterns.

NAICS = North American Industry Classification System (NAICS)

\*High Risk based on having significantly higher risk of work-related injury or illness compared to the national average

\*Data in this table are limited to the private sector workforce only. Farms, self-employed, public administration, and state/federal government are not included.



## Appendix 5. Average Number of Employees in Occupations at High Risk\* for Morbidity, Georgia, 2012

2010 Census Occupation Title	Average Number
Athletes, coaches, umpires, and related workers	7,363
Emergency medical technicians and paramedics	1,402
Nursing, psychiatric, and home health aides	30,705
First-line supervisors/managers of correctional officers	0
Police and sheriff patrol officers	0
Transit and railroad police	0
Animal control workers	0
Food servers, non-restaurant	4,861
First-line supervisors/managers of landscaping, lawn service, and grounds keeping	2,946
Janitors and building cleaners	38,510
Maids and housekeeping cleaners	31,012
Nonfarm animal caretakers	6,422
Reservation and transportation ticket agents and travel clerks	2,532
Meter readers, utilities	899
Forest and conservation workers	0
Boilermakers	0
Brick masons, block masons, and stonemasons	940
Carpenters	26,840
Construction laborers	44,044
Pile-driver operators	0
Glaziers	0
Pipe layers, plumbers, pipefitters, and steamfitters	7,182
Reinforcing iron and rebar workers	0
Roofers	4,928
Structural iron and steel workers	892
Highway maintenance workers	0
Miscellaneous construction and related workers	794
Mining machine operators	0
Roof bolters, mining	0
Aircraft mechanics and service technicians	9,337
Automotive glass installers and repairers	0
Automotive service technicians and mechanics	28,644
Bus and truck mechanics and diesel engine specialists	4,238
Heating, air conditioning, and refrigeration mechanics and installers	13,281
Industrial and refractory machinery mechanics	12,570
Telecommunications line installers and repairers	7,777
Coin, vending, and amusement machine servicers and repairers	895

Food processing workers	3,589
Welding, soldering, and brazing workers	16,274
Lay-out workers, metal and plastic	0
Model makers and patternmakers, wood	0
Sawing machine setters, operators, and tenders, wood	1,739
Stationary engineers and boiler operators	0
Cementing and gluing machine operators and tenders	0
Cleaning, washing, and metal pickling equipment operators and tenders	0
Cooling and freezing equipment operators and tenders	0
Etchers and engravers	0
Molders, shapers, and casters, except metal and plastic	604
Paper goods machine setters, operators, and tenders	1,299
Tire builders	0
Helpers--production workers	1,948
Production workers, all other	22,438
Flight attendants	12,576
Bus drivers	2,101
Driver/sales workers and truck drivers	100,851
Taxi drivers and chauffeurs	5,733
Railroad conductors and yardmasters	2,955
Subway, streetcar, and other rail transportation workers	0
Sailors and marine oilers	0
Transportation attendants, except flight attendants	0
Hoist and winch operators	0
<b>Total</b>	<b>513,266</b>

\*Data Source: Bureau of Labor Statistics' Current Population Survey (CPS)

\*High Risk based on having significantly higher risk of work-related injury or illness compared to the national average

\*Data in this table are limited to the private sector workforce only. Farms, self-employed, public administration, and state/federal government are not included.

## Appendix 6. Average Number of Employees in Industries at High Risk for Occupational Mortality, Georgia, 2012

2010 Census Industry Title	Average Number
Crop Production	14,178
Animal Production	14,901
Forestry, Except Logging	0
Logging	0
Fishing, Hunting, Trapping	2,603
Support Activities for Agriculture and Forestry	1,604
Oil and Gas Extraction	0
Coal Mining	781
Metal Ore Mining	0
Nonmetallic Mineral Mining and Quarrying	1,326
Support Activities for Mining	0
Construction	299,673
Animal Food, Grain, and Oilseed milling	3,649
Sugar and Confectionery Products	1,678
Miscellaneous Petroleum and Coal Products	0
Cement, Concrete, Lime, and Gypsum Product Mfg.	2,269
Iron and Steel Mills and Steel Product Mfg.	2,294
Nonferrous Metal Production and Processing (Except Aluminum)	0
Foundries	0
Ship and Boat Building	1,569
Sawmills and Wood Preservation	6,768
Veneer, Plywood, and Engineered Wood Product Mfg.	4,509
Recyclable Material Wholesalers	2,071
Farm Product Raw Materials Wholesalers	587
Farm supplies wholesalers	3,294
Wholesale Electronic Markets, Agents, and Brokers	4,543
Rail Transportation	12,001
Water Transportation	0
Truck Transportation	71,124
Taxi and Limousine Service	6,345
Pipeline Transportation	1,246
Scenic and Sightseeing Transportation	0
Services Incidental to Transportation	21,446
Sound Recording Industries	325
Other Consumer Goods Rental	3,662
Commercial, Industrial, and Other Intangible Assets Rental and Leasing	4,446
Landscaping Services	34,348
Waste Management and Remediation Services	8,585
Drinking Places, Alcoholic Beverages	6,967
Commercial and Industrial Machinery and Equipment Repair and	8,715

Maintenance	
<b>Total</b>	<b>547,507</b>

\*Data Source: Bureau of Labor Statistics' Current Population Survey (CPS)

\*High Risk based on having significantly higher risk of work-related fatality compared to the national average

\*Data in this table are limited to the private sector workforce only and includes self-employed workers

## Appendix 7. Average Number of Employees in Occupations at High Risk for Occupational Mortality, Georgia, 2012

2010 Census Occupation Title	Average Number
Farm, ranch, and other agricultural managers	13,741
Athletes, Coaches, Umpires, and Related Workers	8,416
Announcers	1,362
Fire Fighters	342
Security guards and gaming surveillance officers	19,894
Crossing Guards	0
First-line supervisors/managers of landscaping, lawn service, & groundskeeping workers	6,859
Pest Control Workers	8,478
Grounds Maintenance Workers	33,936
Tour and Travel Guides	0
First-line Supervisors/Managers of Farming, Fishing, and Forestry Workers	1,100
Miscellaneous Agricultural Workers	10,016
Fishers and Related Fishing Workers	20,255
Logging Workers	0
First-line Supervisors/Managers of Construction Traders and Extraction Workers	0
Boilermakers	0
Brick masons, Block masons, and Stonemasons	2,310
Cement Masons, Concrete Finishers, and Terrazzo Workers	2,124
Construction Laborers	58,610
Paving, Surfacing, and Tamping Equipment Operators	1,133
Operation Engineers and Other Construction Equip. Ops.	6,982
Electricians	18,515
Glaziers	0
Insulation Workers	1,984
Painters, Construction and Maintenance	16,179
Roofers	4,928
Structural Iron and Steel Workers	892
Helpers, Construction Trades	2,622
Highway Maintenance Workers	0
Miscellaneous Construction and Related Workers	794
Derrick, Rotary Drill, and Service Unit Operators, Oil, Gas, and Mining	0
Earth Drillers, Except Oil and Gas	919
Mining Machine Operators	0
Roustabouts, Oil and Gas	0
Other Extraction Workers	0
First-line Supervisors/Managers of Mechanics, Installers, and Repairers	11,485
Bus and Truck Mechanics and Diesel Engine Specialists	4,238

Heavy Vehicle and Mobile Equipment Service Technicians and Mechanics	3,750
Maintenance and Repair Workers, General	8,157
Maintenance Workers, Machinery	4,334
Millwrights	0
Electronic Power-line Installers and Repairers	2,203
Riggers	0
Molders and Molding Machine Setters, Operators, and Tenders, Metal and Plastic	0
Welding, Soldering, and Brazing Workers	16,274
Chemical Processing Machine Setters, Operators, and Tenders	3,539
Aircraft Pilots and Flight Engineers	10,279
Driver/Sales Workers and Truck Drivers	109,555
Taxi Drivers and Chauffeurs	8,832
Motor Vehicle Operators, All Other	1,065
Locomotive Engineers and Operators	0
Railroad Brake, Signal, and Switch Operators	0
Railroad Conductors and Yardmasters	2,955
Sailors and Marine Oilers	0
Ship and Boat Captains and Operators	0
Ship Engineers	0
Service Station Attendants	1,831
Conveyor Operators and Tenders	0
Crane and Tower Operators	0
Industrial Truck and Tractor Operators	27,300
Refuse and Recyclable Material Collectors	208
Material Moving Workers, All Other	4,623
<b>Total</b>	<b>463,019</b>

\*Data Source: Bureau of Labor Statistics' Current Population Survey (CPS)

\*High Risk based on having significantly higher risk of work-related fatality compared to the national average

\*Data in this table are limited to the private sector workforce only and includes self-employed workers

## Appendix 8. Chemicals Associated with Occupational Asthma

Chemical Name	Alternate Name	Occupation or Industry
<b>Acrylates &amp; Methacrylates</b>		
Ethyl cyanoacrylate	Ethyl-2-cyanoacrylate	Building airplane models
Methyl 2-cyanoacrylate		Using adhesives
Ethyl methacrylate		Manicurist
Methyl methacrylate		Nurse
Ethoxylated bisphenol A diacrylate		Autobody shop worker
<b>Metals</b>		
Aluminum		Solderer
Chromium and compounds		Printer, plater, welder, tanner
Cobalt		Hard metal grinder, diamond polisher
Nickel and compounds		Metal plating; welder
Palladium		Assembly line worker
Platinum		Platinum refinery
Tungsten carbide		Grinder
Zinc chloride fume		Solderer
<b>Aldehydes</b>		
Formaldehyde		Hospital staff
Glutaraldehyde	Cidex	Hospital endoscopy unit
<b>Amines</b>		
Ethylenediamine	1,2-Diaminoethane	Shellac handler; photographer
Hexamethylene tetramine		Lacquer handler
N,N-Dimethyl-1,3-propanediamine	DMAPA	Ski manufacturer
Triethylene tetramine		Manufacturing aircraft filters
EPO 60		Mold maker
Trimethylhexanediamine + Isophorondiamine		Floor covering material salesman
4-Methylmorpholine		Manufacturing polyurethane foam
Piperazine dihydrochloride		Pharmaceutical and chemical manufacturing
p-Phenylene diamine		Fur dyeing
Ethanolamine	2-Aminoethanol	Beauty culture
N,N-Dimethylethanolamine		Spray painter
N-(2-hydroxyethyl)ethylenediamine	Aminoethylethanolamine	Solderer; cable jointer
Triethanolamine		Metal worker
<b>Acid Anhydrides</b>		
Chlorendic anhydride		Mechanic
Hexahydrophthalic anhydride		Chemical worker
Himic anhydride		Manufacturing flame retardant

Maleic anhydride		Manufacturing polyester resin
Methyltetrahydrophthalic anhydride		Using curing agent
Phthalic anhydride		Producing resins
Pyromellitic dianhydride		Using epoxy adhesives
Tetrachlorophthalic anhydride		Using epoxy resins
Trimellitic anhydride		Using epoxy resins
<b>Preservatives/Disinfectants</b>		
Benzalkonium chloride		Using cleaning product
1,2-Benzisothiazolin-3-one		Chemical manufacturing
Chloramine T		Chemical manufacturing; brewery; janitorial/cleaning
Chlorhexidine	Hibiclens	Nurse
Hexachlorophene		Hospital staff
Isononanoyl oxybenzene sulfonate		Laboratory technician
Lauryl dimethyl benzyl ammonium chloride		Using floor cleaner
Methylchloro-isothiazolinone		Chemical manufacturing
<b>Isocyanates</b>		
Dicyclohexylmethane 4,4-diisocyanate	Hydrogenated MDI	Manufacturing polyurethane products
Hexamethylene diisocyanate	HDI	Spray painter
Isophorone diisocyanate	IPDI	Spray painter
Methylene bisphenyl isocyanate	MDI; Diphenylmethane diisocyanate	Foundry
Naphthalene diisocyanate	NDI	Rubber manufacturing
Polymethylene polyphenyl isocyanate	PPI	Paint shop worker
Toluene diisocyanate	TDI	Producing polyurethanes; floor varnisher
<b>Plastic &amp; Rubber Dusts</b>		
Azodicarbonamide	1,1'-Azobisformamide	Rubber and plastic manufacturing
Plexiglass (dust)	Lucite; Methyl methacrylate polymer;	Factory worker
Polyvinyl chloride (heated)		Meat wrapper
Polyvinyl chloride (dust)		Manufacturing bottle caps
Polyethylene (heated)		Paper wrapper
Polypropylene (heated)		Manufacturing bags
<b>Pyrolysis Products</b>		
Rosin core solder	Rosin flux pyrolysis products	Electronics worker; manufacturing solder flux
Zinc chloride fume		Solderer; locksmith
<b>Fungicides</b>		
Bis(tri-n-butyltin)oxide	Tributyltin oxide	Exposure to carpet deodorizer



Captafol	Difolatan	Chemical manufacturing
Chlorothalonil	Tetrachloroisophthalonitrile	Farmer
<b>Other Chemicals</b>		
Aluminum smelting	Yet to be identified substance or mixture (? aluminum, ? fluorides) that can cause "potroom asthma" in workers at electrolytic reduction facilities	Potroom worker
Ammonium persulphate		Hairdresser
Diazonium salt	e.g., diazonium tetrafluoroborate and p-diethylaminobenzenediazonium chloride;	Manufacturing photocopy paper; manufacturing fluorine polymer precursor
Diocetyl-phthalate		PVC production worker
Drugs		Pharmacist; pharmaceutical worker
Ethylene Oxide		Nurse
Furfuryl alcohol		Foundry mold making; wool dye house
Ninhydrin		Laboratory worker
Nitrogen chloride		Indoor pool lifeguards
Oil mist, mineral	Metalworking or machining fluids, cutting oils (may contain numerous additives and contaminants)	Toolsetter and automobile plant
Styrene		Plastics factory
Sulfites		Water plant; food processor
Tetramethrin		Exterminator
Tetrazene		Detonator manufacturing
Textile dyes		Textiles, dye manufacturing
Triglycidyl isocyanurate		Spray painter
Urea formaldehyde	Kaurit S	Resin and foam manufacturing

Source: <http://www.haz-map.com/OA1.html>

