

Toxic Substance-Related Illness

Agent: Multiple, including pesticides, heavy metals (e.g., lead, cadmium, mercury, arsenic), occupational dusts or fibers (e.g., coal, silica, asbestos), gases (e.g., carbon monoxide, methane) or radioactive materials.

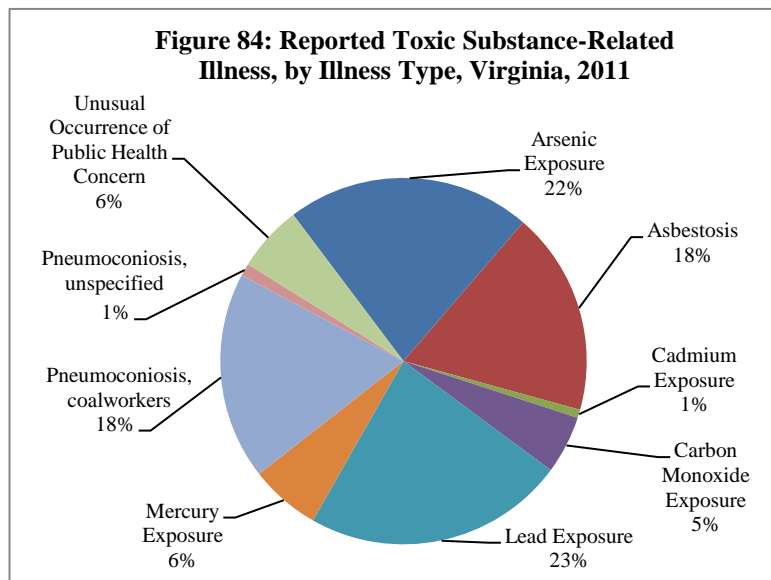
Mode of Transmission: Varies depending on agent; can include absorption through skin, ingestion, or inhalation.

Signs/Symptoms: Varies depending on agent, dose of exposure, and duration of exposure. Chronic occupational dust or fiber exposure may increase the risk of lung cancer, mesothelioma and nonmalignant lung disorders. Heavy metals, gases and pesticides may damage nervous, digestive, or reproductive systems.

Prevention: Eating, drinking, or smoking should not occur in contaminated work areas. Hands and face should be washed with soap and water after contacting toxic materials. After working with potential toxic substances, showering and changing clothes should occur at the worksite, if possible. Preventive measures include strict adherence to safety guidelines and requirements.

Other Important Information: Improving public and healthcare professional awareness and recognition of various toxic substance exposures can help reduce subsequent illness.

During 2011, 273 cases of toxic substance-related illness were reported in Virginia. This is 25% fewer than the five-year average of 366.6 cases per year. A determination of illness is based upon a physician's diagnosis or on a laboratory finding outside an occupational standard, or when no standard exists, outside expected normal values. The two most frequently reported toxic substance-related illnesses were lead and arsenic exposure, followed closely by asbestosis and coalworkers pneumoconiosis, (Figure 84).



Additional toxic substance-related illnesses reported during 2011 included unspecified pneumoconiosis and exposures to cadmium, carbon monoxide, and mercury. Illness from exposure to rarely reported substances were also captured. These “unusual occurrences of public health concern” included exposures to aerosol cleaners, noxious fumes, methyl bromide, and ethylene glycol. Many of these unusual exposures were reported through death certificates or claims from the Virginia Workers’ Compensation Commission (WCC).

Arsenic has continued to be one of the most frequently reported toxic substance exposures. Since 2007, when 18 cases were reported, there has been a significant increase each year to the 59 cases reported in 2011. This increase is due to more complete reporting of persons with arsenic levels above normal laboratory values due to electronic laboratory reporting. Previously, these reports were rarely received from physicians or laboratory directors. The same phenomenon is seen, to a lesser extent, in reporting of mercury and cadmium exposure. Most of the arsenic and mercury reports were based on elevated blood or urine levels for total arsenic or mercury; further speciation for the more dangerous forms of inorganic arsenic or mercury is rarely provided. Reported cases of adult lead exposure continue to show a general decrease. In 2011, 63 cases of elevated blood lead levels in adults were reported compared with 140 cases in 2005. Greater awareness of the dangers of lead exposure, as well as enforcement of workplace lead standards have contributed to the decrease in reported exposures.

Among other frequently reported conditions, 87% of those reported with pneumoconiosis worked in the coal mining industry, and of these, 59% died from this condition based on information obtained from death certificates. The 14 persons with reported carbon monoxide exposures worked in various industries; all of the exposures were reported through death certificates and resulted from either accidental or deliberate exposure to fire, vehicle exhaust, charcoal grills, or generators. Although asbestosis accounted for 18% of all toxic substance-related illness in 2011, the number of reported cases has dropped over the past decade. The average age of those reported with asbestosis was 78 years, which is reflective of exposures occurring before regulatory standards and guidelines came into effect. All but one of the asbestos exposures were reported through death certificates, and of these, 45% listed asbestosis as a primary cause of death. The remaining asbestos case was reported through the WCC.

Among all toxic exposures, the highest percentage of cases (51%) occurred in the 60 year and older age group, with an incidence rate of 9.8 per 100,000, followed by the 50-59 year age group, with a rate of 4.1 per 100,000. No cases of toxic substance exposure (excluding childhood lead) occurred in persons less than 20 years of age. Race information was not reported for 40% of toxic substance-related cases. Where race information was provided, incidence in the white population was more than double the rate in the black population (2.7 and 1.0 per 100,000, respectively). Eighty-five percent of all cases occurred in males and the incidence was more than five times that in females (5.9 and 1.0 per 100,000, respectively). As in previous years, the southwest region, where coal mining and battery manufacturing industries are concentrated, had the highest incidence rate at 6.5 per 100,000. Other regions of the state had incidence rates ranging from 2.0 to 4.3 per 100,000.

Children with exposure to lead are not discussed in this section. For that information, see the “Lead - Elevated Blood Levels in Children” section of this report.