Adult Blood Lead Reporting in Oregon, 2006-2010

Oregon Health Authority
PUBLIC HEALTH DIVISION
Office of Environmental Public Health

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List of terms and abbreviations used in this report:

ABLES:	Adult Blood Lead Epidemiology and Surveillance
BLL:	Blood lead level
CSTE:	Council of State and Territorial Epidemiologists
EPHT:	Environmental Public Health Tracking
LBPP:	Lead-Based Paint Program
OHA:	Oregon Health Authority
OR-OSHA:	Oregon Occupational Safety and Health Division
PHD:	Public Health Division
RRP:	Renovation, Repair and Painting
µg/dL:	micrograms per deciliter

Executive Summary

Elevated blood lead levels are a serious public health issue. Although lead can be found in homes and the environment, adults are primarily exposed to lead through inhalation or ingestion of lead-containing dust or fumes in the workplace. Children can be exposed when adults bring lead home from the workplace, or engage in hobbies with materials that contain lead, and this can result in serious and permanent damage.

Oregon is one of 40 states that participate in the Adult Blood Lead Epidemiology and Surveillance (ABLES) program. The public health objective of the ABLES program corresponds to the Healthy People 2020 objective OSH-7, which is to reduce the proportion of persons who have elevated (≥10 µg/dL) blood lead concentrations from work exposures.

This report summarizes adult lead tests in individuals 16 years of age or older. Between 2006 and 2010, there were 33,400 tests for blood lead, of which nearly 14% (4,604) were greater than or equal to 10 µg/dL. These 4,604 tests represent 998 different individuals, indicating an average of 4.6 tests per person over the five-year period. Individuals with blood lead levels between 10 and 24 µg/dL were mostly male (79.5%) and between the ages of 30 and 49 years (47.5%). Roughly half the individuals had an identified occupational exposure source, while the source was unknown in the other half.

There were 583 tests with results of 25 µg/dL or greater, representing 167 different individuals. These individuals were predominantly male (95.8%), and more likely to have an occupational source (79.6%).

For individuals with a work-related exposure, the most common industry was storage battery manufacturing, followed by painting and wall covering contractors and iron and steel mills. For non-occupational cases, the most common source of exposure was shooting firearms.

Oregon is making progress in meeting the Healthy People 2020 goal of reducing the prevalence of adults with blood lead levels (BLL) of 10 µg/dL or higher. Mean lead levels continue to decline in the U.S., but some groups have excess risk. In addition to the ABLES program, the Public Health Division regulates lead paint inspection and abatement work, as well as administers the new Renovation, Repair and Painting (RRP) rule.

Oregon relies on partnerships to develop and implement intervention strategies. Examples include a close partnership with the Oregon Healthy Homes and Childhood Lead Poisoning Prevention Program to identify children at risk from adult “take home” exposures; a data sharing agreement between Oregon ABLES and Oregon Occupational Safety and Health Division (OR-OSHA) is also in place for quarterly listings of employers with any employees who have an elevated blood lead level of 25 µg/dL or higher. This data sharing allows OR-OSHA to make the best use of its resources to focus on serious hazards.

Expanded data collection of industry and occupation for cases of blood lead levels of 10 µg/dL or higher will help inform future prevention efforts and intervention strategies for the Oregon ABLES program.

Introduction

Lead and its uses

Lead is a naturally occurring, soft, malleable metal found in soil and rocks, and has been used throughout history for a variety of purposes. It can be combined with other metals to create lead alloys (e.g., brass, bronze); these are used to make batteries, ammunition, and other metal products. Lead and lead alloys are used in many industries, including mining, manufacturing, and construction. Workers in these industries can be exposed to lead by ingesting it or inhaling its fumes and/or dust.

Lead was historically used in substances such as paint, ceramics, caulk, electrical fittings, gasoline, and solder. Today, the amount of lead in these products has decreased or been completely phased out. The United States Consumer Product Safety Commission banned lead paint (as well as toys and furniture coated with lead paint) in September 1977[†]; many homes built before then have lead-based paint on many surfaces. In addition, lead-based paints are still used on some structures (e.g., bridges, railways) due to their resistance to rust and corrosion. Significant exposure can occur when this paint is removed.[1,2] Tables 1 and 2 show different jobs/industries and non-occupational sources of lead exposure.[1,4]

Lead-related symptoms

Elevated blood lead levels are a serious health problem. Adult exposure to lead typically occurs when dust and fumes are inhaled and/or when lead from lead-contaminated hands, food, water, cigarettes, and clothing is ingested. Lead absorbed through the respiratory and digestive systems is released into the blood, which distributes the lead throughout the body. Approximately 90% of total body lead accumulates in the bones, where it is stored for decades. Lead does not permanently remain in bone but is gradually released back into the body.[1,4] Lead serves no useful purpose in the body; exposure to lead can result in anemia, nervous system damage, kidney problems, hypertension, decreased fertility, and increased level of miscarriages. Often, individuals with elevated blood lead levels do not appear sick. However, recent evidence suggests that lead exposure at levels

Table 1.

Jobs/industries with potential lead exposure
▪ Abrasive blasting
▪ Ammunition/explosives production
▪ Battery manufacturing and recycling
▪ Brass, copper, and lead foundries
▪ Bridge reconstruction and maintenance
▪ Ceramic glaze mixing
▪ Indoor firing ranges
▪ Lead fishing weight production
▪ Lead production or smelting
▪ Lead soldering
▪ Radiator manufacturing and repair
▪ Renovation, remodeling, demolition, or paint preparation of pre-1978 housing
▪ Scrap metal (including electronics) handling and recycling
▪ Welding, burning, and torching of old painted metal
▪ Working with lead alloys

[†] Code of Federal Regulations, Title 16 — Commercial Practices CFR 1303

previously believed to be of little concern can result in adverse chronic health effects if the exposure is maintained for many years.[3,4]

In the United States in 2009, over 7,600 adults were reported by 40 states to have elevated blood lead levels (BLLs) greater than or equal to 25 micrograms per deciliter (µg/dL). Ninety-four percent of these adults with an identified exposure source to lead were exposed at work.[3] In contrast, the average BLL for the general population in the U.S. is <2 µg/dL.[4,5]

It is estimated that 2-3% of children with BLLs of 10 µg/dL or greater are exposed from lead unintentionally brought home by a parent from the workplace.[6] Exposure to lead can result in permanent and irreversible effects in children, including lower intelligence, behavior and learning problems, hyperactivity, impaired speech and language, kidney and liver damage, slowed growth, and hearing damage.

Table 2.

Non-occupational sources of lead exposure
▪ Car or boat repair
▪ Cosmetics (e.g., kohl eye make-up)
▪ Folk remedies (e.g., azarcon, some Ayurvedics)
▪ Furniture refinishing
▪ Glazing/pottery making
▪ Lead-glazed tableware or cooking vessels
▪ Making stained glass
▪ Melting lead for bullets, fishing weights, or toys
▪ Moonshine (homemade liquor from a still)
▪ Pica (ingestion of lead-containing non-food items)
▪ Recreational target shooting
▪ Remodeling/renovation of pre-1978 housing
▪ Retained lead bullets or fragments
▪ Soldering or welding
▪ Working with lead alloys

Program Description and Objectives

Oregon is one of 40 states that participate in the Adult Blood Lead Epidemiology and Surveillance (ABLES) Program, a state-based surveillance† program of laboratory reported adult blood lead levels. Elevated lead levels have been a targeted condition in Oregon since 1991. At that time, Oregon Administrative Rules (OARs) 333-017 and 333-018 were revised to make lead levels a reportable condition to the Public Health Division.[7] The public health objective of the ABLES program corresponds to objective 20.7 in Healthy People 2010, which is to reduce the number of adults who have blood lead levels of 25 micrograms per deciliter (µg/dL) or greater. In 2009, the ABLES program updated its case definition for an elevated BLL to a blood lead concentration ≥10 µg/dL to reflect new knowledge regarding the toxicity of lead at lower doses.[4] This correlates with the more current Healthy People 2020 objective OSH-7 to reduce the proportion of persons who have elevated (≥10 µg/dL) blood lead concentrations from work exposures. Additional objectives of Oregon ABLES are to:

- Identify adults with elevated BLLs and determine the source of their exposure;
- Assure they receive appropriate medical management;
- Assist individuals, employers, and medical providers to reduce or eliminate exposures;
- Identify other family members who may be affected; and
- Develop intervention strategies and educational information to prevent future lead exposures.

Case definition

Oregon ABLES defines an elevated blood lead level as an adult (16 years of age or older) with a BLL greater than or equal to 10 µg/dL. However, at this time we provide case management for adults with a BLL greater than or equal to 25 µg/dL. All workers employed in Oregon who undergo blood lead testing are eligible for inclusion in our database, except self-employed individuals and those who fall under Federal OSHA's jurisdiction (for example, longshoremen, Federal workers, and contractors at Federal facilities). We report all cases greater than or equal to 10 µg/dL to the National Institute for Occupational Safety and Health (NIOSH). In addition, we provide a list of employers who had one or more employees with a BLL greater than or equal to 25 µg/dL at least quarterly to Oregon OSHA.

† Surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event, with the ultimate purpose of reducing morbidity and mortality and to improve health (Centers for Disease Control and Prevention, 2001).

Lead Reporting in Oregon, 2006-2010

For surveillance purposes, an elevated lead level is defined as an individual with BLL ≥10 µg/dL. However, staff only interview cases with BLL ≥25 µg/dL. Demographic information is obtained, along with information about both the work and home environment. For cases where the exposure results from a person's work, information is collected on the employer, work location, personal protective practices, and presence of children or pregnant women in the home. Health care providers and employers may also be contacted in order to gather additional information. Since individuals with BLLs between 10-25 µg/dL are not interviewed, there is often missing information about exposure source, work-relatedness, and other demographic information. For results <10 µg/dL, only the information provided by the laboratory is available. For this report, we analyzed Oregon ABLES lead registry data from 2006-2010.

Overall, 33,404 blood test results for individuals aged 16 years or older were reported to the Oregon Public Health Division between 2006 and 2010. Of these, over 86% (28,800) were blood lead levels <10 µg/dL. Overall, nearly 14% (4,604) of all lead tests received were blood lead levels ≥10 µg/dL (Table 1).

Table 1. Number of lead tests entered into surveillance system, by year and blood lead level, Oregon, 2006-2010

Year	<10 µg/dL (%)	10-24 µg/dL (%)	≥25 µg/dL (%)	Total	Total ≥10 µg/dL (%)
2006	5,774 (83.8)	1,003 (14.6)	109 (1.6)	6,886 (100.0)	1,112 (16.1)
2007	5,657 (85.2)	835 (12.6)	145 (2.2)	6,637 (100.0)	980 (14.8)
2008	5,539 (86.7)	694 (10.9)	154 (2.4)	6,387 (100.0)	848 (13.3)
2009	5,623 (86.7)	771 (11.9)	90 (1.4)	6,484 (100.0)	861 (13.3)
2010	6,207 (88.5)	718 (10.0)	85 (1.2)	7,010 (100.0)	803 (11.5)
Total	28,800 (86.2)	4,021 (12.0)	583 (1.7)	33,404 (100.0)	4,604 (13.8)

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Table 2 shows the number of new adults tested each year, by blood lead level. The number of adults with BLL ≥10 µg/dL has generally declined over the time period. There was an increase in 2010, but we are unable to confirm this as a trend until more data are collected.

Table 2. Number of new adults* with elevated blood lead concentration, by year and blood lead level, Oregon, 2006-2010

Year	10-24 µg/dL	25-39 µg/dL	40-59 µg/dL	≥60 µg/dL	Total
2006	217	26	7	0	250 (25.0)
2007	170	34	7	0	211 (21.1)
2008	154	25	13	2	194 (19.4)
2009	102	22	5	1	130 (13.0)
2010	188	19	5	1	213 (21.3)
Total (%)	831 (83.3)	126 (12.6)	37 (3.7)	4 (0.4)	998 (100.0)

*Adults may be tested multiple times in a given year. However, only the highest level over the entire period is counted here.

Table 3 describes the demographic characteristics including gender, age, state of residence, and the source of the exposure, by an individual's highest blood lead level. Among those with blood lead levels of 10-24 µg/dL, 79.5% were male, nearly half (47.5%) were between 30 and 49 years of age, and nearly half (49.9%) were from occupational exposures, however nearly half were of unknown work-relatedness. Women comprised a small percent of total cases (7.7%). However, gender was unknown in 10.0% of cases. Individuals with BLLs ≥25 µg/dL tended to be males (95.8%) between 30 and 49 years of age (43.7%). Where occupational status was known, 79.6% of adults with BLLs ≥25 µg/dL had high lead levels due to work exposures. Overall, exposure source was unknown in nearly 44% of cases.

Table 3. Number of adults reported to Oregon Public Health Division's lead registry by demographic characteristics and blood lead level, 2006-2010[a]

Demographic characteristic	10-24 µg/dL		≥25 µg/dL		Total	
	Number	Percent	Number	Percent	Number	Percent
Total adults	831	83.3	167	16.7	998	100.0
Gender						
Male	661	79.5	160	95.8	821	82.3
Female	76	9.2	1	0.6	77	7.7
Unknown	94	11.3	6	3.6	6	10.0

Table continued on next page

Table 3 continued

Demographic characteristic	10-24 µg/dL		≥25 µg/dL		Total	
	Number	Percent	Number	Percent	Number	Percent
Age (years)						
16-29	146	17.6	29	17.4	175	17.5
30-49	395	47.5	73	43.7	468	46.9
≥50	290	34.9	65	38.9	355	35.6
Place of residence						
Oregon[b]	800	96.3	159	95.2	959	96.1
Out of state	31	3.7	8	4.8	39	3.9
Exposure source						
Occupational[c]	415	49.9	133	79.6	548	54.9
Nonoccupational	1	0.1	14	8.4	15	1.5
Unknown	415	49.9	20	12.0	435	43.6
Total tests	**4,021**		**583**		**4,604**	

a. Excluded 28,800 records with BLL <10 µg/dL
b. Unknown residence is assumed to be Oregon
c. If an individual has a work-related exposure as well as a non-occupational exposure, they are coded here as occupational

For the 15 non-occupational cases, the most likely exposure source was shooting firearms (7, 46.7%), followed by lead casting of fishing weights or bullets (4, 26.7%) and remodeling/painting (2, 13.3%) (data not shown).

Table 4 describes the industries where work-related cases were employed, by blood lead level category. The majority of cases were in the storage battery manufacturing category (42.4%). Painting and wall covering contractors had the next highest percentage (8.0%), followed by iron and steel mills (7.3%). Industry was unknown in over 29% of cases.

Table 4. Primary industry* for 548 workers with blood lead levels ≥10 µg/dL, Oregon, 2006-2010

	10-24 µg/dL		≥25 µg/dL		Total	
Industry description	Number	Percent	Number	Percent	Number	Percent
Storage battery manufacturing	197	47.5	35	26.5	232	42.4
Painting and wall covering contractors	26	6.3	18	13.6	44	8.0

Table continued on next page

Table 4 continued

	10-24 µg/dL		≥25 µg/dL		Total	
Industry description	Number	Percent	Number	Percent	Number	Percent
Iron and steel mills	40	9.6	0	0.0	40	7.3
Recyclable material merchant wholesalers	2	0.5	18	13.6	20	3.7
Other automotive mechanical and electrical repair and maintenance	2	0.5	15	11.4	17	3.1
Other	6	1.4	29	22.0	35	6.4
Unknown	142	34.2	18	13.5	160	29.2
Total	**415**	**75.7**	**133**	**24.3**	**548**	**100.0**

*North American Industrial Classification System (NAICS)

Among Oregon residents, the rates of new (incident) and existing (prevalent) cases can be examined graphically over the time period (Figures 1 and 2). Both measures take each person's highest blood level per year. For prevalent cases, the rates of elevated blood lead levels greater than or equal to 25 µg/dL has generally declined, while no clear trend is apparent among adults with levels greater than or equal to 10 µg/dL. For incident cases, rates greater than or equal to 25 µg/dL have declined, while rates greater than or equal to 10 µg/dL have shown significant variability.

Figure 1. Oregon prevalence rates of adults aged 16 years and older with elevated blood lead levels, 2006-2010

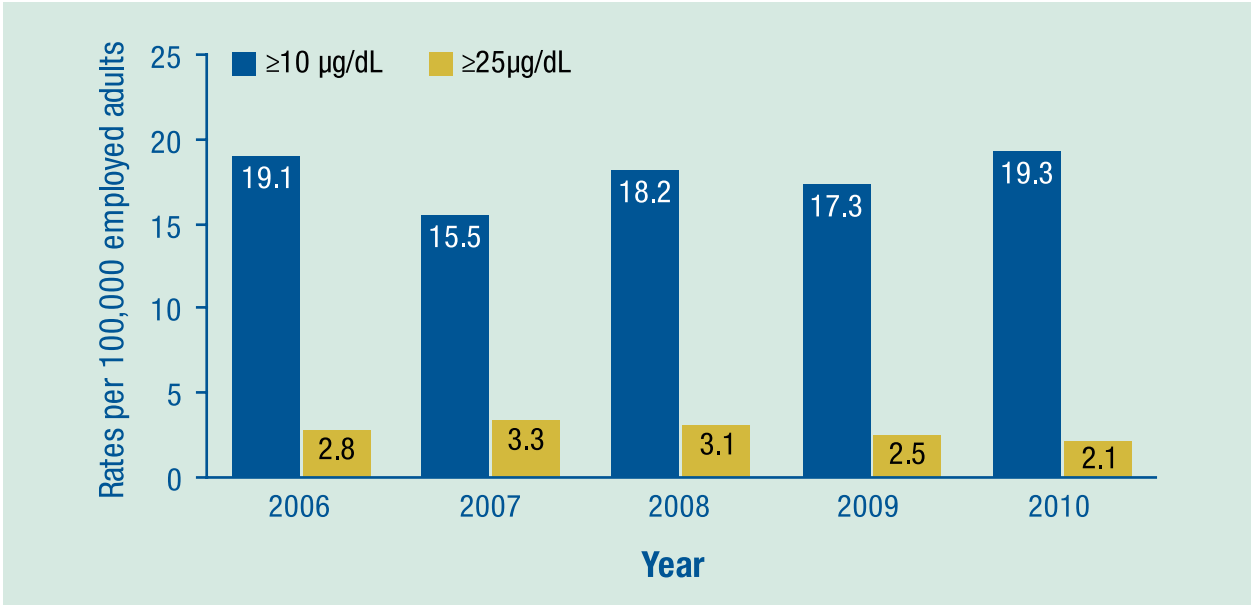

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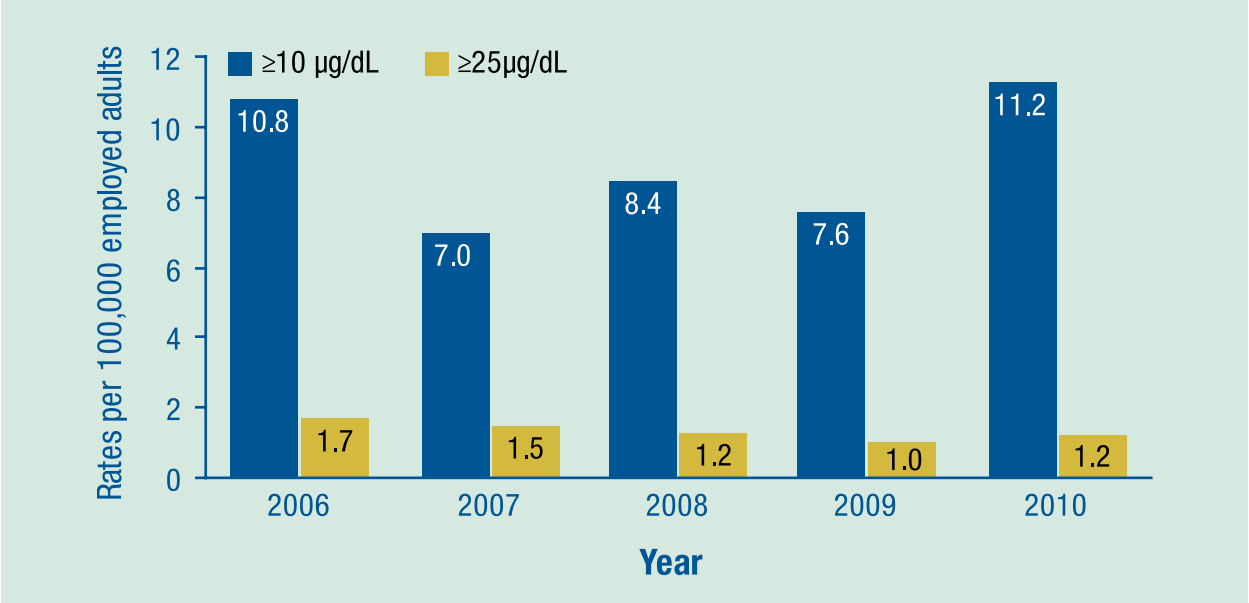
Figure 2. Oregon incidence* rates of adults aged 16 years and older with elevated blood lead levels, 2006-2010



*An incident case is a case with an elevated BLL reported in the calendar year, but not reported in the the immediately preceeding year with an elevated BLL.

Adult Lead Exposure: Prevention Through Partnerships

Oregon Occupational Safety and Health Division's lead standards provide specific safety requirements for employees who may be exposed to lead. These rules apply to general industry, construction, and agriculture (see box). While once considered protective, these standards are based on health data that are over 30 years old. More recent studies indicate that adverse health effects from lead (acute and chronic) occur at lower levels than previously realized.[4] While mean levels of lead in the U.S. adult population continue to decline,[8] some groups face an increased risk. Factors associated with increased risk include:

- Younger age;
- Race/ethnicity (e.g. Mexican Americans, African Americans are at higher risk);
- Poverty;
- Residence in pre-1978 housing;
- Occupational and non-occupational activities that bring an individual into contact with lead.[9]

Data collection by states participating in the ABLES program is essential to find where disparities exist and to develop and implement intervention strategies.

More information about the OR-OSHA rules pertaining to lead exposure can be found in sections 1910.1025 of the General Occupational Safety and Health Rules (Division 2), Toxic and Hazardous Substances (Z); 1926.62 (Division 3), Occupational Health and Environmental Controls (D); and 437-004-9600 (Division 4), Agriculture (Z).

Oregon OSHA (OR-OSHA)

The Oregon ABLES program has a collaborative relationship with Oregon OSHA. For example, the ABLES program met with Oregon OSHA in 2009 to discuss implementation of the new National Emphasis Program (NEP) to reduce lead exposures in general industry and construction. Oregon OSHA then developed and published a program directive for the NEP. As part of this coordinated effort, Oregon ABLES now provides OR-OSHA with information (firm name, industry code, address, and contact information) for any firm with a work-related BLL of 25 µg/dL or higher at a minimum of a quarterly basis. This allows OR-OSHA to focus on the worksites at highest risk; new industries listed that were not in a previous report, as well as any construction employers, are referred as soon as possible for inspection.

Other Oregon Public Health Division programs

Oregon Lead-Based Paint Program (LBPP)

In addition to the ABLES program, the Oregon Public Health Division also has rules regulating professionals working with lead-based paint. The Lead-Based Paint Program (LBPP) regulations require that individuals and/or firms offering or providing lead-paint abatement services in Oregon must be certified by the LBPP. These rules prohibit specific work practices, such as open flame torching or uncontained power-washing, that can produce serious lead hazards. In addition, the

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Environmental Protection Agency (EPA) issued a new rule (effective April 2010) called the Lead: Renovation, Repair and Painting Rule or RRP. This rule applies to renovators and maintenance professionals who work in housing, child care facilities, and schools built prior to 1978. The Public Health Division jointly administers the RRP rule in Oregon with the Construction Contractors Board (CCB). Although the law was designed to lower the risk of lead exposure to a million American children in the places they frequent, the restricted work practices and other regulations also protect workers. However, some individuals are exempt from this rule (e.g., homeowner performing renovation work in his/her own home).

Oregon Healthy Homes and Childhood Lead Poisoning Prevention Program

Oregon ABLES collaborates with the Oregon Healthy Homes and Childhood Lead Poisoning Prevention Program, which works to eliminate childhood lead poisoning as well as reduce environmental exposure to lead. The two programs coordinate surveillance, case management and prevention efforts. For cases of elevated blood lead levels in adults, ABLES recommends testing of children in the household. Conversely, in cases of child lead poisoning, the Childhood Lead Poisoning Prevention Program recommends testing family or household members to identify potential exposures, including any take-home exposures. The Oregon Childhood Lead Screening Questionnaire includes a question that addresses occupational/hobby exposures and is another way to identify adults at risk for lead poisoning. The second page of this document, designed for parents, lists occupations, hobbies, and other potential sources of lead exposure.

Other organizations

Council of State and Territorial Epidemiologists (CSTE)

Oregon participates collaboratively with the Council of State and Territorial Epidemiologists (CSTE), an organization of member states and territories representing public health epidemiologists. CSTE promotes the effective use of data to guide public health practice and thus improve the public's health. CSTE adopted a position statement that the ABLES programs be designated the initial core component of state-based occupational health and safety surveillance.[6] In addition, CSTE has requested that Federal OSHA update its lead standards for both general industry as well as construction.[10]

National Adult Blood Lead Epidemiology and Surveillance (ABLES) Program

In response to new information regarding the toxicity of lead at levels previously thought to be of little concern, the National ABLES program reduced the threshold for an elevated BLL from 25 µg/dL to 10 µg/dL in 2009. Efforts are under way to increase collection of industry and occupation data from cases in Oregon who fit this criterion. These data should inform our future prevention efforts and put prevention of elevated blood lead levels in alignment with the Healthy People 2020 target.

Oregon Environmental Public Health Tracking (EPHT) Program

Oregon is participating in a national effort to bring elevated blood lead levels in adults into the Environmental Public Health Tracking (EPHT) networks of participating states. Oregon EPHT brings together environmental and health data to drive actions to improve the health of communities. Since occupation is a recognized source of exposure for many physical and chemical hazards also found in the environment, including occupational lead exposure will improve the utility of tracking as a tool to answer questions about the relationships between environmental exposures and health effects.

Discussion

Elevated blood lead levels continue to persist in Oregon. Between 2006 and 2010, there were 4,604 tests with EBLL ≥ 10 µg/dL. This represents 998 different individuals. Overall, the number of tests during the time period has increased, especially for lead levels <10 µg/dL. This could reflect an increase in testing in both males and females. However, a much larger percentage of test results < 10 µg/dL are conducted on women (29.9%) (data not shown) compared to 7.7% in women with results of ≥10 µg/dL. This likely indicates that more women of childbearing age are being screened for lead. Although the Centers for Disease Control and Prevention (CDC) does not recommend blood lead testing for all pregnant women in the United States, they do recommend that state and local public health agencies identify populations at increased risk for lead exposure, and that routine blood lead testing be adopted in populations with specific risk factors for lead exposure.[11] Some state and local health departments have developed risk assessment questionnaires to help them determine a woman's risk of lead poisoning. For example, Multnomah County, which is Oregon's most populous county, offers free lead screenings to pregnant women.

While overall the number of tests in the lowest blood lead levels have increased, there has been a decline in the prevalence of elevated blood lead levels, especially those ≥25 µg/dL. These results are consistent with national trends, and may reflect better control of lead hazards in the workplace.[3] However, true declines in prevalence and incidence rates may not be due only to decreased exposure. There has been a decrease in jobs in the manufacturing sector where exposure to lead might be more common. For example, in Oregon manufacturing employment has decreased by nearly 21% over the time period (205,900 in 2006 to 162,900 in 2010), while construction employment decreased by nearly 29% (97,100 in 2006 to 69,000 in 2010).[12]

Overall, for elevated BLLs, work-related exposures account for a majority of cases, especially at levels of 25 µg/dL or greater. Sectors with increased risk continue to be manufacturing and construction, even with declines in employment in these areas. Industry was unknown for a large proportion of individuals with blood lead levels between 10 and 24 µg/dL. Hopefully, increased data collection for those individuals will identify future priority focus areas. Non-occupational exposures make up a small proportion of cases in Oregon. However, relatively more non-occupational exposures are at higher lead levels (≥25 µg/dL). The reasons for this finding include 1) lack of resources to investigate unknown exposure sources at lower BLLs; and 2) the possibility that these individuals were more likely to have lead-related symptoms, and were therefore more likely to get tested. However, the data do indicate a need for educational materials and outreach for those involved in shooting and loading firearms. This is consistent with national trends.[3]

The true burden of elevated lead blood lead levels in Oregon cannot be fully ascertained by the ABLES surveillance system. Not all employers will provide blood lead testing to all lead exposed workers, as required by Oregon OSHA regulations. In addition, some laboratories might not report all elevated lead tests as required by Oregon statute. Adults exposed to lead through hobbies are not likely to be tested unless they experience symptoms. For these reasons, the data presented in this report likely underestimate the true burden of lead exposure in the state. Studies in California

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have shown that with the exception of battery manufacturing, the percentage of companies testing for blood lead is inadequate.[13] However, surveillance systems can be an important tool for identifying the situations where lead poisoning in adults is occurring. Findings can be used to identify intervention efforts. In addition, collaborations between ABLES states and OSHA offices can help to more quickly identify problem employers and industries.

For More Information

Oregon Occupational Safety and Health Division (OR-OSHA)

OR-OSHA enforces the lead standards and also offers many no-cost, confidential services to both employers and employees upon request. OR-OSHA also investigates complaints from workers and concerned health care providers. Consultations can be requested vie e-mail, online, through an OSHA field office, or by calling **1-800-922-2689**.

Oregon Public Health Division (OPHD)

OPHD provides information and assistance for cases of lead overexposure in children and adults, as well as information about lead-based paint, lead-safe practices, and the Renovation, Repair and Painting (RRP) rule. More information is available by visiting the program (**www.healthoregon.org/lead**) website or by calling **1-877-290-6767**.

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