

Environmental Health Indicators

Whether we consider climate change or water quality, it is clear that our environment affects us both directly and indirectly. While some environmental health issues have existed since the beginning of the human race, most have become evident in the last few centuries. These problems have emerged as a result of our growing and changing population. The industrial revolution has created air and water pollution problems as well as overcrowding and sanitation issues. As of June 2009, over 6.7 billion people inhabited the earth.

The environment plays a role in many health issues previously discussed including birth defects, cancer, respiratory diseases, and many infectious diseases. Other concerns include allergies, fertility, and exposure to animal and insect vectors. In Iowa, public health officials are especially concerned with the quality of their drinking water, recreational waters, indoor and outdoor air quality, lead poisoning, safe housing, and hazardous and solid waste.

As we attempt to provide food, water, and shelter for the world's population, we must remain aware of how our actions affect our local and global environment. At the same time, we must monitor and attempt to prevent any adverse health conditions that are caused by interactions with the environment.

ISSUES IN IOWA...

- ✓ Drinking water quality
- ✓ Recreational water quality
- ✓ Indoor and outdoor air quality
- ✓ Lead poisoning
- ✓ Safe housing
- ✓ Hazardous and solid waste

Childhood Blood Lead Poisoning

Childhood lead poisoning has significant effects on the health of children and on community health. Lead has adverse effects on nearly all organ systems in the body. It is especially harmful to the developing brains and nervous systems of children under the age of six years. At very high blood lead levels, children can suffer severe brain damage or even die. At blood lead levels as low as 10 micrograms per deciliter ($\mu\text{g/dL}$), a child's intelligence, hearing, and growth are affected. In a community, the presence of lead-poisoned children can be associated with an increase in the number of children with developmental deficits and learning disorders. This places an unnecessary and expensive burden on the educational system. The presence of lead-poisoned children also requires substantial community public health resources for medical and environmental case management services.

High blood lead levels have adverse effects on nearly all organ systems in the body, and are especially harmful to children.

Most cases of childhood lead poisoning are caused by lead-based paint, which is found in most homes built before 1960. Young children who live in pre-1960 homes become lead-poisoned when they put paint chips or exterior soil in their mouths or when they get house dust and soil on their hands and put their hands in their mouths.

Although lead poisoning can cause serious health problems – including death – most lead-poisoned children demonstrate no visible symptoms. This makes it much more important to have an effective program to prevent childhood lead poisoning.

Most cases of childhood lead poisoning are caused by lead-based paints found in homes built before 1960.

Since 1992, the Iowa Department of Public Health (IDPH) has recommended that all children in Iowa under the age of six years be tested for lead poisoning. In addition, state and federal laws require that all children under the age of six and covered by Medicaid be tested for lead poisoning. Finally, all Iowa children must now receive at least one blood lead test before the

age of mandatory school attendance.

In Iowa, blood lead testing is conducted by the Title V Child's Health Program, local health departments, and by many private physicians. The IDPH childhood blood lead level surveillance system tracks all testing in the state. Thus, blood lead testing results collected as required by Medicaid, as well as those collected from voluntary testing of non-Medicaid children are reported to IDPH.

In the following tables, data are presented for children who were born in calendar year 2001 and 2002 and who received at least one blood lead test before their sixth birthday. Children followed for blood lead poisoning may be tested multiple times. The test results that are presented in the following tables reflect the highest blood lead level for any particular child.

For each county, the number of children receiving a blood lead test who were identified with blood levels greater than or equal to 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$). A blood level of 10 $\mu\text{g}/\text{dL}$ has been identified by the Centers for Disease Control and Prevention as the threshold for lead poisoning in children and is categorized as "high" for the graphs. Additional data, such as the percent of children in each birth cohort who were tested for lead poisoning, are also presented.

For Iowa children born in 2001-2002, 75.8 percent were tested for lead poisoning, and 5.6 percent of these children had blood lead levels greater than or equal to 10 $\mu\text{g}/\text{dL}$.

Of the children born in Iowa in 2001, 71.1 percent received at least one blood test before their sixth birthday (range by county: 32.4 to 100 percent), and 6.1 percent of these children had blood levels greater than or equal to 10 $\mu\text{g}/\text{dL}$ (range by county: 0.0 to 23.7 percent). Of the children born in Iowa in 2002, 80.4 percent received at least one blood test before their sixth birthday (range by county: 38.2 to 100 percent), and 5.1 percent of these children had blood levels greater than or equal to 10 $\mu\text{g}/\text{dL}$ (range by county: 0.0 to 20 percent).

Percent of Children Tested for Blood Lead Poisoning, 2001-2002

	County	2001	2002	County	2001	2002	
	Counties with Average Population < 10,000	Adair	76.9%	74.3%	Lucas	88.0%	84.1%
Adams		57.9%	71.4%	Monona	56.6%	70.1%	
Audubon		95.1%	93.8%	Monroe	72.3%	100.0%	
Clarke		68.9%	86.4%	Osceola	32.4%	60.3%	
Davis		43.2%	43.9%	Palo Alto	58.3%	78.2%	
Decatur		78.0%	75.3%	Pocahontas	43.1%	67.5%	
Fremont		65.6%	97.3%	Ringgold	69.8%	85.2%	
Greene		92.9%	100.0%	Taylor	100.0%	100.0%	
Howard		72.7%	82.0%	Van Buren	44.6%	56.1%	
Humboldt		70.1%	87.0%	Wayne	87.2%	100.0%	
Ida		69.6%	78.1%	Worth	100.0%	100.0%	
				Total	70.1%	80.6%	
Counties with Average Population 10,000 – 20,000		Allamakee	76.5%	97.3%	Hardin	100.0%	100.0%
		Appanoose	65.7%	62.3%	Iowa	67.8%	78.8%
	Buena Vista	48.8%	75.7%	Jefferson	63.6%	67.3%	
	Butler	98.5%	84.4%	Keokuk	53.2%	64.3%	
	Calhoun	77.9%	97.0%	Kossuth	77.7%	84.5%	
	Cass	84.1%	80.8%	Louisa	73.6%	76.5%	
	Cedar	85.1%	89.1%	Lyon	42.6%	68.2%	
	Cherokee	75.2%	81.7%	Mitchell	38.8%	55.1%	
	Chickasaw	82.1%	87.3%	Montgomery	73.7%	100.0%	
	Clay	57.8%	86.8%	O'Brien	42.3%	60.9%	
	Clayton	77.0%	83.0%	Page	66.0%	92.4%	
	Crawford	84.0%	88.5%	Poweshiek	74.1%	88.6%	
	Delaware	63.2%	70.3%	Sac	68.0%	91.1%	
	Dickinson	33.5%	38.2%	Shelby	86.7%	89.2%	
	Emmet	41.6%	63.8%	Tama	90.7%	98.2%	
	Floyd	77.8%	84.6%	Union	75.4%	87.7%	
	Franklin	100.0%	100.0%	Winnebago	77.9%	87.7%	
	Hamilton	74.9%	90.5%	Wright	92.9%	95.7%	
	Hancock	75.9%	100.0%	Total	71.8%	82.2%	
Counties with Average Population > 20,000	Boone	76.3%	90.7%	Lee	66.4%	75.2%	
	Buchanan	70.8%	77.3%	Mahaska	82.1%	100.0%	
	Carroll	69.0%	74.6%	Marion	83.5%	95.0%	
	Cerro Gordo	94.7%	96.2%	Marshall	100.0%	100.0%	
	Clinton	97.4%	98.3%	Muscatine	74.9%	93.8%	
	Des Moines	93.8%	100.0%	Plymouth	58.0%	80.5%	
	Fayette	92.3%	100.0%	Sioux	55.2%	74.5%	
	Henry	95.4%	87.9%	Wapello	100.0%	100.0%	
	Jackson	89.1%	98.6%	Webster	83.4%	94.5%	
	Jasper	54.1%	65.1%	Winneshiek	74.5%	88.8%	
			Total	81.3%	90.0%		
MSA Counties	Benton	69.5%	71.6%	Linn	71.6%	77.4%	
	Black Hawk	90.7%	57.0%	Madison	57.0%	71.6%	
	Bremer	77.3%	77.3%	Mills	77.3%	88.3%	
	Dallas	78.3%	62.3%	Polk	62.3%	75.1%	
	Dubuque	68.4%	47.4%	Pottawattamie	47.4%	51.9%	
	Grundy	74.4%	85.9%	Scott	85.9%	85.8%	
	Guthrie	71.1%	70.3%	Story	70.3%	81.3%	
	Harrison	40.0%	56.6%	Warren	56.6%	68.5%	
	Johnson	56.9%	52.1%	Washington	52.1%	69.2%	
	Jones	78.3%	53.9%	Woodbury	53.9%	74.4%	
			Total	67.4%	76.6%		
State Total		71.1%	80.4%				

¹Children born in years 2001, 2002

Source: Iowa Department of Public Health, Bureau of Lead Poisoning Prevention

Elevated Levels of Blood Lead: Children Born in 2001¹

	Counties with Average Population < 10,000					Counties with Average Population 10,000 – 20,000					Counties with Average Population > 20,000					MSA Counties																																																																																																																																																																		
	County	# Born	# Tested	≥ 10 µg/dL	Total % High	County	# Born	# Tested	≥ 10 µg/dL	Total % High	County	# Born	# Tested	≥ 10 µg/dL	Total % High	County	# Born	# Tested	≥ 10 µg/dL	Total % High																																																																																																																																																														
Counties with Average Population < 10,000	Adair	65	50	3	6.0%	Lucas	108	95	17	17.9%	Counties with Average Population 10,000 – 20,000	Allamakee	170	130	9	6.9%	Hardin	232	232	33	14.2%	Counties with Average Population > 20,000	Boone	291	222	12	5.4%	Lee	411	273	23	8.4%	MSA Counties	Benton	305	212	14	6.6%	Linn	2,846	2,037	114	5.6%	Bremer	238	184	7	3.8%	Madison	172	98	7	7.1%	Dallas	526	412	16	3.9%	Mills	181	140	6	4.3%	Dubuque	1,178	806	32	4.0%	Polk	6,110	3,804	145	3.8%	Grundy	125	93	4	4.3%	Pottawattamie	1,222	579	17	2.9%	Guthrie	135	96	7	7.3%	Scott	2,214	1,902	97	5.1%	Harrison	160	64	1	1.6%	Story	924	650	16	2.5%	Johnson	1,372	781	13	1.7%	Warren	511	289	6	2.1%	Jones	198	155	13	8.4%	Washington	330	172	17	9.9%						Woodbury	1,623	875	89	10.2%						Total	1,970	1,381	127	9.2%						Total	7,717	6,271	461	7.4%	Total	21,966	14,796	716	4.8%																State Total	37,610	26,728	1,623	6.1%
						Total	1,970	1,381	127	9.2%							Total	7,717	6,271	461	7.4%		Total	21,966	14,796	716	4.8%																	State Total	37,610	26,728	1,623	6.1%																																																																																																																																		
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¹Children tested before six years of age

Source: Iowa Department of Public Health, Bureau of Lead Poisoning Prevention

Elevated Levels of Blood Lead: Children Born in 2002¹

	Counties with Average Population < 10,000					Counties with Average Population 10,000 – 20,000					Counties with Average Population > 20,000					MSA Counties																																																																																																																																																																																																																									
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Counties with Average Population < 10,000	Adair	74	55	3	5.5%	Lucas	107	90	7	7.8%	Counties with Average Population 10,000 – 20,000	Allamakee	186	181	12	6.6%	Hardin	190	190	18	9.5%	Counties with Average Population > 20,000	Boone	290	263	16	6.1%	Lee	404	304	19	6.3%	MSA Counties	Benton	303	238	20	8.4%	Linn	2,751	2,128	93	4.4%	Bentley	207	159	5	3.1%	Madison	208	149	4	2.7%	Black Hawk	1,602	1,487	99	6.7%	Mills	163	144	7	4.9%	Black Hawk	1,602	1,487	99	6.7%	Polk	6,140	4,612	121	2.6%	Bremer	255	244	9	3.7%	Pottawattamie	1,180	612	15	2.5%	Bremer	255	244	9	3.7%	Scott	2,275	1,952	90	4.6%	Dallas	604	604	22	3.6%	Story	922	750	24	3.2%	Dallas	604	604	22	3.6%	Warren	489	335	3	0.9%	Dubuque	1,151	789	28	3.5%	Washington	308	213	8	3.8%	Dubuque	1,151	789	28	3.5%	Woodbury	1,592	1,185	102	8.6%	Grundy	127	127	4	3.1%	Total	22,039	16,885	683	4.0%	Grundy	127	127	4	3.1%	Guthrie	148	112	8	7.1%	Washburn	1,443	947	19	2.0%	Guthrie	148	112	8	7.1%	Wright	162	155	15	9.7%	Harrison	171	98	2	2.0%	Wright	162	155	15	9.7%	Harrison	171	98	2	2.0%	Jackson	212	209	14	6.7%	Jackson	212	209	14	6.7%	Johnson	1,443	947	19	2.0%	Jasper	458	298	11	3.7%	Johnson	1,443	947	19	2.0%	Jasper	458	298	11	3.7%	Jones	207	159	5	3.1%	Jones	207	159	5	3.1%	State Total	38,274	25,464	1,685	6.6%	State Total	38,274	25,464	1,685	6.6%

¹Children tested before six years of age

Source: Iowa Department of Public Health, Bureau of Lead Poisoning Prevention

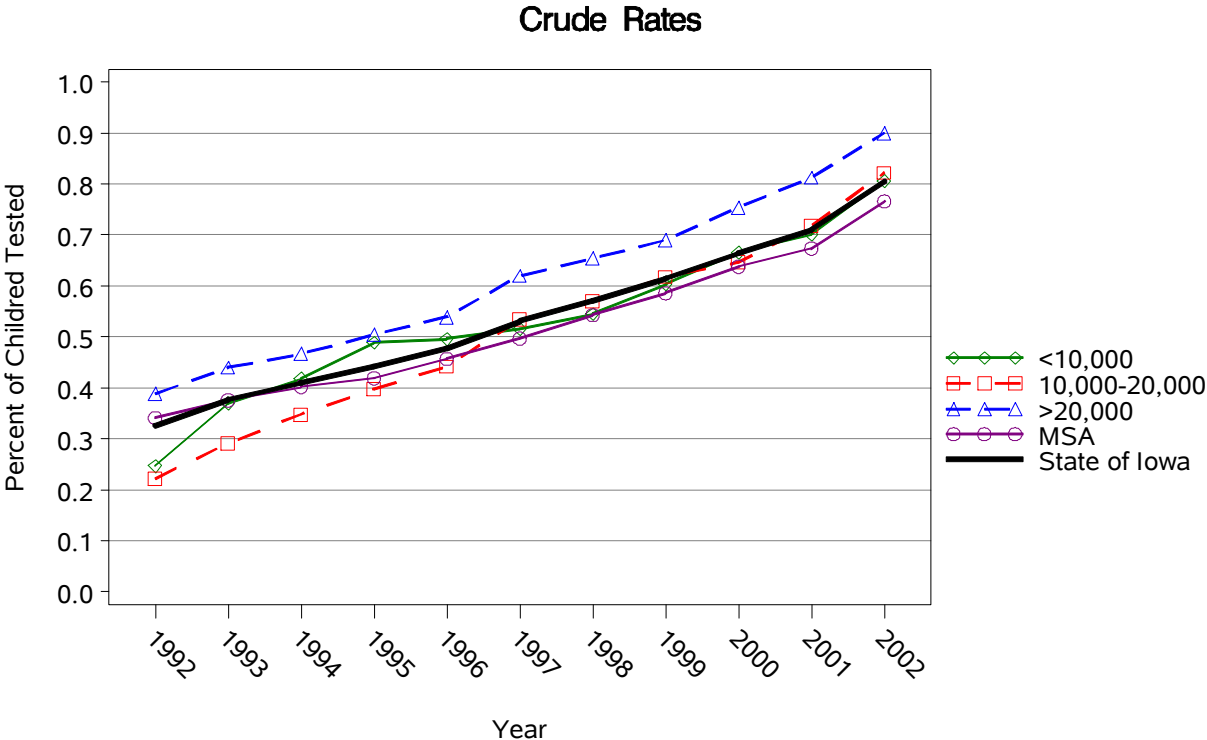
Elevated Levels of Blood Lead: Children Born in 2001-2002¹

	County	Number Tested	% with High Levels	County	Number Tested	% with High Levels	
	Counties with Average Population < 10,000	Adair	105	5.7%	Lucas	185	13.0%
Adams		57	12.3%	Monona	139	15.1%	
Audubon		103	7.8%	Monroe	141	7.1%	
Clarke		188	9.0%	Osceola	68	2.9%	
Davis		104	1.9%	Palo Alto	146	4.1%	
Decatur		128	8.6%	Pocahontas	82	3.7%	
Fremont		131	4.6%	Ringgold	90	4.4%	
Greene		198	10.6%	Taylor	155	13.5%	
Howard		171	5.3%	Van Buren	87	4.6%	
Humboldt		176	5.1%	Wayne	159	17.0%	
Ida		130	18.5%	Worth	154	5.2%	
				Total	2,897	8.6%	
Counties with Average Population 10,000 – 20,000		Allamakee	311	6.8%	Hardin	422	12.1%
		Appanoose	188	5.3%	Iowa	263	8.0%
	Buena Vista	310	3.9%	Jefferson	197	2.5%	
	Butler	268	6.0%	Keokuk	159	3.8%	
	Calhoun	170	4.7%	Kossuth	264	0.8%	
	Cass	250	5.2%	Louisa	270	3.7%	
	Cedar	324	5.6%	Lyon	167	7.2%	
	Cherokee	182	12.6%	Mitchell	129	6.2%	
	Chickasaw	232	3.9%	Montgomery	240	6.7%	
	Clay	282	2.5%	O'Brien	166	11.4%	
	Clayton	313	7.3%	Page	263	13.7%	
	Crawford	382	6.8%	Poweshiek	320	6.9%	
	Delaware	278	5.0%	Sac	150	6.7%	
	Dickinson	117	0.9%	Shelby	238	5.0%	
	Emmet	135	5.9%	Tama	430	10.2%	
	Floyd	295	6.4%	Union	222	14.0%	
	Franklin	247	9.3%	Winnebago	202	2.5%	
	Hamilton	296	6.8%	Wright	300	10.7%	
	Hancock	212	4.7%	Total	9,194	6.8%	
Counties with Average Population > 20,000	Boone	485	5.8%	Lee	577	7.3%	
	Buchanan	448	6.5%	Mahaska	494	8.1%	
	Carroll	335	5.4%	Marion	721	2.4%	
	Cerro Gordo	934	3.9%	Marshall	1,080	13.7%	
	Clinton	1,180	5.5%	Muscatine	1,081	6.8%	
	Des Moines	968	10.2%	Plymouth	406	5.7%	
	Fayette	392	7.1%	Sioux	606	6.4%	
	Henry	417	5.0%	Wapello	885	7.2%	
	Jackson	421	8.3%	Webster	863	5.6%	
	Jasper	547	3.3%	Winneshiek	326	6.1%	
			Total	13,166	6.8%		
MSA Counties	Benton	450	7.6%	Linn	4,165	5.0%	
	Black Hawk	2,934	6.6%	Madison	247	4.5%	
	Bremer	428	3.7%	Mills	284	4.6%	
	Dallas	1,016	3.7%	Polk	8,416	3.2%	
	Dubuque	1,595	3.8%	Pottawattamie	1,191	2.7%	
	Grundy	220	3.6%	Scott	3,854	4.9%	
	Guthrie	208	7.2%	Story	1,400	2.9%	
	Harrison	162	1.9%	Warren	624	1.4%	
	Johnson	1,728	1.9%	Washington	385	6.5%	
	Jones	314	5.7%	Woodbury	2,060	9.3%	
			Total	31,681	4.4%		
State Total	56,938	5.6%					

¹Children tested before six years of age

Source: Iowa Department of Public Health, Bureau of Lead Poisoning Prevention

Tested for Blood Lead: Children Born in 1992-2002



Elevated Levels of Blood Lead: Children Born in 1992-2002

