

# LOUISIANA OFFICE OF PUBLIC HEALTH'S HEAVY METAL SURVEILLANCE DATA



Louisiana Department of Health/Office of Public Health/Section of Environmental Epidemiology & Toxicology/Occupational Health & Injury Surveillance Program

The following tables summarize heavy metal laboratory results reported to Louisiana's Occupational Health & Injury Surveillance Program. Louisiana Law requires that healthcare providers, including clinical laboratories, report all laboratory tests for lead, mercury, cadmium, and arsenic. Test results above the action threshold are investigated to determine the source of exposure. The action threshold for each heavy metal is listed below each table. A limitation of this surveillance is that not all cases are captured, and these tables only include cases that are reported. Detailed documents describing how to report a heavy metal case, occupational and non-occupational exposure sources, toxicity and susceptible populations, medical monitoring guidelines and result standards are available at the links below:

[LA Heavy Metal & CO Surveillance website](#)

[LA ABLES article](#)

[Healthcare Provider Guidance:Lead](#)

[Report a case](#)

[Shooting Range Factsheet](#)

For more information about the Heavy Metal Surveillance Program or this report, contact 504.568.8159 or visit

[oph.seetweb@la.gov](mailto:oph.seetweb@la.gov).

## Adult Blood Lead Laboratory Surveillance (Ages 16 years and older)

Blood Tests	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		Average Annual (2007-2017)	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Number of tests received	5572		5453		5641		5932		6496		6695		7982		8280		7724		7057		3736		6415	
Number of patients tested	4458		4350		5007		5298		5502		5682		6274		6804		6471		6012		3318		5380	
Sex																								
Male	3569	80%	3476	80%	3956	79%	4341	82%	4616	84%	4735	83%	5179	83%	5582	82%	5204	80%	4780	80%	2437	73%	4352	81%
Female	889	20%	874	20%	1051	21%	957	18%	886	16%	947	17%	1095	17%	1222	18%	1267	20%	1232	20%	881	27%	1027	19%
Blood lead level (µg/dL)																								
0 to < 10	4060	91%	3922	90%	4625	92%	4979	94%	5193	94%	5287	93%	5894	94%	6476	95%	6165	95%	5773	96%	3089	93%	5042	94%
10 to <25	228	5%	241	6%	246	5%	271	5%	250	5%	330	6%	288	5%	244	4%	241	4%	195	3%	179	5%	247	5%
25 to < 45	145	3%	158	4%	123	2%	43	<1%	48	<1%	62	1%	83	1%	74	1%	56	1%	38	1%	49	1%	80	1%
>=45	25	<1%	29	<1%	13	<1%	5	<1%	11	<1%	5	<1%	9	<1%	10	<1%	9	<1%	7	<1%	1	<1%	11	<1%

This table includes all blood lead tests for adults in Louisiana ages 16 years and older reported electronically and as hard copies by laboratories, physicians, clinics and hospitals. Fewer lab results were received in 2017. This may have affected the number of adult blood lead tests and may be due to multiple logistical factors. Aggregated data are provided to the CDC's Adult Blood Lead Epidemiology Surveillance (ABLES) program annually. The blood lead action thresholds are based on the goals outlined in the CDC's "Healthy People 2020" for improving health and preventing and preventing illness and injury. The CDC aims to reduce blood lead levels of all exposed workers to <10 µg/dL. The action level for women of childbearing age is 10 µg/dL. Percentages may not add up to 100 due to rounding.

### Child Blood Lead Laboratory Surveillance (Ages 6.1 - 15 years)

Blood Tests	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		Average Annual (2007-2017)	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Number of tests received	734		692		786		569		865		854		684		916		929		1236		905		834	
Number of patients tested	694		665		773		542		847		793		664		891		903		1165		875		801	
Sex																								
Male	448	65%	415	62%	441	57%	338	62%	507	60%	450	57%	408	61%	505	57%	547	61%	652	56%	506	58%	474	59%
Female	246	35%	250	38%	332	43%	204	38%	340	40%	343	43%	256	39%	386	43%	356	39%	513	44%	369	42%	327	41%
Blood lead level (µg/dL)																								
0 to < 10	683	98%	659	99%	765	99%	527	97%	839	99%	774	98%	660	99%	881	99%	899	100%	1153	99%	869	99%	792	99%
10 to <25	11	2%	6	1%	7	1%	15	3%	7	1%	17	2%	4	1%	10	1%	4	<1%	9	1%	6	1%	9	1%
25 to < 45	0	0%	0	0%	1	<1%	0	0%	1	<1%	2	<1%	0	0%	0	0%	0	0%	2	<1%	0	0%	1	<1%
>=45	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	<1%	0	0%	0	0%

This table includes all blood lead tests for children in Louisiana between the ages of 6.1 years to 15 years reported electronically and as hard copies by laboratories, physicians, clinics and hospitals. Fewer lab results were received in 2017. This may have affected the number of child blood lead tests and may be due to multiple logistical factors. Reference venous blood lead level:  $\geq 10$  µg/dL (CDC); percentages may not add to 100 due to rounding. Letters about lead exposure awareness are mailed to the parents of children with elevated blood lead levels. The CDC aims to reduce blood lead levels of all exposed persons to  $< 5$  µg/dL.

**LOUISIANA OFFICE OF PUBLIC HEALTH'S HEAVY METAL SURVEILLANCE DATA**  
**Adult Blood Mercury Laboratory Surveillance (Ages 16 years and older)**

Blood Tests	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		Average Annual 2007 - 2017	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Number of tests received	430		664		1159		1252		1105		1321		1048		1102		1265		1454		1225		1093	
Number of patients tested	409		654		1100		1204		1050		1280		1029		1072		1243		1305		1195		1049	
Sex																								
Male	237	58%	332	51%	570	52%	731	61%	661	63%	886	69%	653	63%	637	59%	778	63%	821	63%	659		633	60%
Female	172	42%	322	49%	530	48%	473	39%	389	37%	394	31%	376	37%	435	41%	465	37%	484	37%	536		416	40%
<b>Test Results: Adults (≥ 16 years)</b>																								
<b>BLOOD</b>	409	100%	654	100%	1100	100%	1204	100%	1050	100%	1280	100%	1029	100%	1072	100%	1243	100%	1305	100%	1195	100%	1049	100%
>10 µg/L	19	5%	20	3%	24	2%	25	2%	9	1%	11	1%	15	1%	20	2%	22	2%	13	1%	25	2%	18	2%

This table includes all blood mercury tests for adults in Louisiana ages 16 years and older reported electronically and as hard copies by laboratories, physicians, clinics and hospitals. Mercury blood action thresholds correspond to the biological exposure index (BEI) levels established by the American Conference of Industrial Hygienists for the evaluation of occupational exposures in workers. The Health/Fish Consumption Advisories Program may issue mercury advisories.

**Adult Urine Mercury Laboratory Surveillance (Ages 16 years and older)**

Urine Tests	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		Average Annual 2007 - 2017	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Number of tests received	1079		909		753		1107		569		773		605		743		715		761		581		781	
Number of patients tested	815		449		489		639		463		741		554		720		691		741		552		623	
Number of patients with both Blood and Urine tests	42	3%	21	2%	31	2%	42	2%	30	2%	396	20%	122	8%	56	3%	71	4%	55	3%	53	3%	84	5%
Sex																								
Male	511	63%	289	64%	314	64%	373	58%	293	63%	565	76%	349	63%	389	54%	369	53%	406	55%	303	55%	378	61%
Female	304	37%	160	36%	175	36%	266	42%	170	37%	176	24%	205	37%	331	46%	322	47%	335	45%	249	45%	245	39%
<b>Test Results: Adults (≥ 16 years)</b>																								
<b>URINE</b>	815	100%	448	100%	489	100%	639	100%	461	100%	741	100%	554	100%	720	100%	691	100%	741	100%	552	100%	623	100%
≥20 µg/g creatinine-adjusted	36	4%	34	8%	0	0%	3	<1%	5	1%	1	<1%	1	<1%	0	0%	3	<1%	0	0%	1	<1%	8	1%

This table includes all urine mercury tests for adults in Louisiana ages 16 years and older reported electronically and as hard copies by laboratories, physicians, clinics and hospitals. Mercury urine action thresholds correspond to the biological exposure index (BEI) levels established by the American Conference of Industrial Hygienists for the evaluation of occupational exposures in workers. In 2015, the action level decreased from 35 µg/g creatinine-adjusted to 20 µg/g creatinine-adjusted based on OSHA and BEI guidelines and is reflected from that year forward.

LOUISIANA OFFICE OF PUBLIC HEALTH'S HEAVY METAL SURVEILLANCE DATA  
Child Blood Mercury Laboratory Surveillance (Ages 15 and younger)

Blood Tests	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		Average Annual 2007 - 2017	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Number of tests received	27		62		51		47		76		56		56		72		80		88		122		67	
Number of patients tested	24		59		49		45		74		53		55		70		75		86		120		65	
Sex																								
Male	12	50%	42	71%	30	61%	29	64%	47	64%	27	51%	35	64%	50	71%	42	56%	47	55%	70	58%	39	61%
Female	12	50%	17	29%	19	39%	16	36%	27	36%	26	49%	20	36%	20	29%	33	44%	39	45%	50	42%	25	39%
<b>Test Results: Child (&lt; 16 years)</b>																								
<b>BLOOD</b>	24	100%	59	100%	49	100%	45	100%	74	100%	53	100%	55	100%	70	100%	75	100%	86	100%	120	100%	65	100%
>10 µg/L	1	4%	1	2%	0	0%	1	2%	0	0%	0	0%	0	0%	0	0%	0	0%	1	<1%	0	0%	<1	<1%

This table includes all blood mercury tests for children in Louisiana ages 15 years and younger reported electronically and as hard copies by laboratories, physicians, clinics and hospitals. The mercury blood action thresholds for children are the values recommended in CDC's Case Definitions for Chemical Poisoning. The Health/Fish Consumption Advisories Program may issue mercury advisories.

Child Urine Mercury Laboratory Surveillance (Ages 15 and younger)

Urine Tests	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		Average Annual 2007 - 2017	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Number of tests received	41		16		22		23		22		18		12		8		16		19		4		18	
Number of patients tested	32		16		20		17		22		15		12		8		16		19		4		16	
Number of patients with both Blood and Urine tests	3	5%	2	3%	0	0%	4	6%	4	4%	2	3%	0	0%	0	0%	1	1%	2	2%	1	1%	2	2%
Sex																								
Male	26	81%	9	56%	16	80%	12	71%	14	64%	13	87%	3	25%	5	63%	7	44%	15	79%	3	75%	11	68%
Female	6	19%	7	44%	4	20%	5	29%	8	36%	2	13%	9	75%	3	38%	9	56%	4	21%	1	25%	5	32%
<b>Test Results: Child (&lt; 16 years)</b>																								
<b>URINE</b>	32	100%	16	100%	20	100%	17	100%	22	100%	15	100%	12	100%	8	100%	16	100%	19	100%	4	100%	16	100%
>10 µg/L	2	6%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	5%	0	0%	<1	<1%

This table includes all urine mercury tests for children in Louisiana ages 15 years and younger reported electronically and as hard copies by laboratories, physicians, clinics and hospitals. The mercury urine action thresholds for children are the values recommended in CDC's Case Definitions for Chemical Poisoning.

## LOUISIANA OFFICE OF PUBLIC HEALTH'S HEAVY METAL SURVEILLANCE DATA

## Adult Blood Arsenic Laboratory Surveillance (Ages 16 years and older)

Blood Tests	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		Average Annual 2007-2017	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Number of tests received	478		577		932		997		768		658		831		725		996		1381		1185		<b>866</b>	
Number of patients tested	468		571		912		956		754		642		798		707		980		1234		1121		<b>831</b>	
Sex																								
Male	280	60%	357	63%	539	59%	622	65%	478	63%	419	65%	515	65%	471	67%	609	62%	781	63%	611	55%	<b>517</b>	<b>62%</b>
Female	188	40%	214	37%	373	41%	334	35%	276	37%	223	35%	283	35%	236	33%	371	38%	453	37%	510	45%	<b>315</b>	<b>38%</b>
<b>Test Results: Adults (≥ 16 years)</b>																								
<b>BLOOD</b>	468	100%	571	100%	912	100%	956	100%	754	100%	642	100%	798	100%	707	100%	980	100%	1234	100%	1121		<b>831</b>	<b>100%</b>
≥70 µg/L	0	0%	0	0%	0	0%	0	0%	0	0%	1	<1%	0	0%	0	0%	0	0%	0	0%	0	0%	<b>&lt;1</b>	<b>&lt;1%</b>

This table includes all blood arsenic tests for adults in Louisiana ages 16 years and older reported electronically and as hard copies by laboratories, physicians, clinics and hospitals. The blood action level for adults corresponds to the value cited by CDC/ATSDR for use by primary care practitioners. An arsenic blood action threshold has not been established for children.

## Adult Urine Arsenic Laboratory Surveillance (Ages 16 years and older)

Urine Tests	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		Average Annual 2007-2017	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Number of tests received	972		591		842		1014		740		954		857		1304		1100		1127		1097		<b>963</b>	
Number of patients tested	674		343		497		550		501		864		561		789		640		664		794		<b>625</b>	
Number of patients with both Blood and Urine tests	38	3%	27	3%	46	3%	41	3%	46	4%	17	1%	31	2%	22	1%	64	4%	62	3%	49	3%	<b>40</b>	<b>3%</b>
Sex																								
Male	391	58%	196	57%	306	62%	297	54%	284	57%	606	70%	332	59%	460	58%	324	51%	349	53%	532	67%	<b>371</b>	<b>59%</b>
Female	283	42%	147	43%	191	38%	253	46%	217	43%	258	30%	229	41%	329	42%	316	49%	315	47%	262	33%	<b>255</b>	<b>41%</b>
<b>Test Results: Adults (≥ 16 years)</b>																								
<b>URINE</b>	674	100%	343	100%	497	100%	550	100%	501	100%	864	100%	561	100%	789	100%	640	100%	664	100%	794		<b>625</b>	<b>100%</b>
≥35 µg/L (inorganic & methylated metabolites)	0	0%	0	0%	1	<1%	1	<1%	2	<1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	<b>&lt;1</b>	<b>&lt;1%</b>
≥50 µg/g creatinine-adjusted (organic)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	<b>&lt;1</b>	<b>&lt;1%</b>

This table includes all urine arsenic tests for adults in Louisiana ages 16 years and older reported electronically and as hard copies by laboratories, physicians, clinics and hospitals. The arsenic threshold for adults corresponds to the biological exposure index (BEI) level established by the American Conference of Industrial Hygienists for occupational exposures. The action level for creatinine-adjusted urine tests is based on exposure to organic Arsenic only. ARUP lab reports total creatinine-adjusted As for urine tests. There is no reference interval for this. An arsenic urine action threshold has not been established for children.

## LOUISIANA OFFICE OF PUBLIC HEALTH'S HEAVY METAL SURVEILLANCE DATA

## Adult Blood Cadmium Laboratory Surveillance (Ages 16 years and older)

Blood Tests	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		Average Annual 2007 - 2017	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Number of tests received	165		336		576		540		519		696		729		890		820		767		724		615	
Number of patients tested	160		330		456		476		449		642		671		826		785		752		663		565	
Sex																								
Male	141	88%	270	82%	350	77%	381	80%	326	73%	431	67%	436	65%	598	72%	520	66%	445	59%	352	53%	386	68%
Female	19	12%	61	18%	106	23%	95	20%	123	27%	211	33%	235	35%	228	28%	265	34%	307	41%	311	47%	178	32%
<b>Test Results: Adults (≥ 16 years)</b>																								
<b>BLOOD</b>	160	100%	330	100%	456	100%	476	100%	449	100%	642	100%	671	100%	826	100%	785	100%	752	100%	663		565	100%
≥5 µg/L	3	2%	1	<1%	1	<1%	0	0%	0	0%	0	0%	1	<1%	0	0%	0	0%	1	<1%	1	<1%	<1	<1%

This table includes all blood cadmium tests for adults in Louisiana ages 16 years and older reported electronically and as hard copies by laboratories, physicians, clinics and hospitals. The cadmium blood action threshold is based on requirements established by OSHA for medical surveillance of workers with occupational cadmium exposure. A cadmium blood action threshold has not been established for children.

## Adult Urine Cadmium Laboratory Surveillance (Ages 16 years and older)

Urine Tests	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		Average Annual 2007 - 2017	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Number of tests received	264		285		387		308		283		752		448		484		374		467		440		408	
Number of patients tested	240		282		304		269		257		705		392		430		342		454		420		372	
Number of patients with both Blood and Urine tests	123	31%	184	30%	197	26%	136	18%	92	13%	142	11%	93	9%	261	21%	208	18%	83	7%	70	6%	144	15%
Sex																								
Male	208	87%	240	85%	274	90%	237	88%	232	90%	619	88%	312	80%	336	78%	249	73%	225	50%	233	55%	288	77%
Female	32	13%	42	15%	30	10%	32	12%	25	10%	86	12%	80	20%	94	22%	93	27%	229	50%	187	45%	85	23%
<b>Test Results: Adults (≥ 16 years)</b>																								
<b>URINE</b>	240	100%	282	100%	304	100%	269	100%	257	100%	705	100%	392	100%	430	100%	342	100%	454	100%	420	100%	372	100%
≥3 µg/g creatinine-adjusted	2	<1%	0	0%	0	0%	1	<1%	0	0%	3	<1%	3	<1%	0	0%	3	<1%	2	<1%	3	<1%	2	<1%

This table includes all urine cadmium tests for adults in Louisiana ages 16 years and older reported electronically and as hard copies by laboratories, physicians, clinics and hospitals. The cadmium urine action threshold is based on requirements established by OSHA for medical surveillance of workers with occupational cadmium exposure. A cadmium urine action threshold has not been established for children.