

Battery Council International (BC1) Survey of Blood Lead Levels

July 1 - September 30, 2014
Important: Report in micrograms per deciliter ($\mu\text{g}/\text{dl}$)
 Please return forms to: 312-673-6625 (FAX) or e-mail to bcistats@batterycouncil.org
 no later than October 31, 2014

Code Number:

Actual Number of Employees (including new hires)
Falling into Category July 1 - September 30, 2014

Most Recent Blood Lead Levels	Battery Plants	Secondary Smelters
<5		
5 - 9		
10 - 14		
15 - 19		
20 - 24		
25 - 29		
30 - 34		
35 - 39		
40 - 44		
45 - 49		
50 - 54		
55 - 59		
≥ 60		
Total Number of Applicable Employees	0	

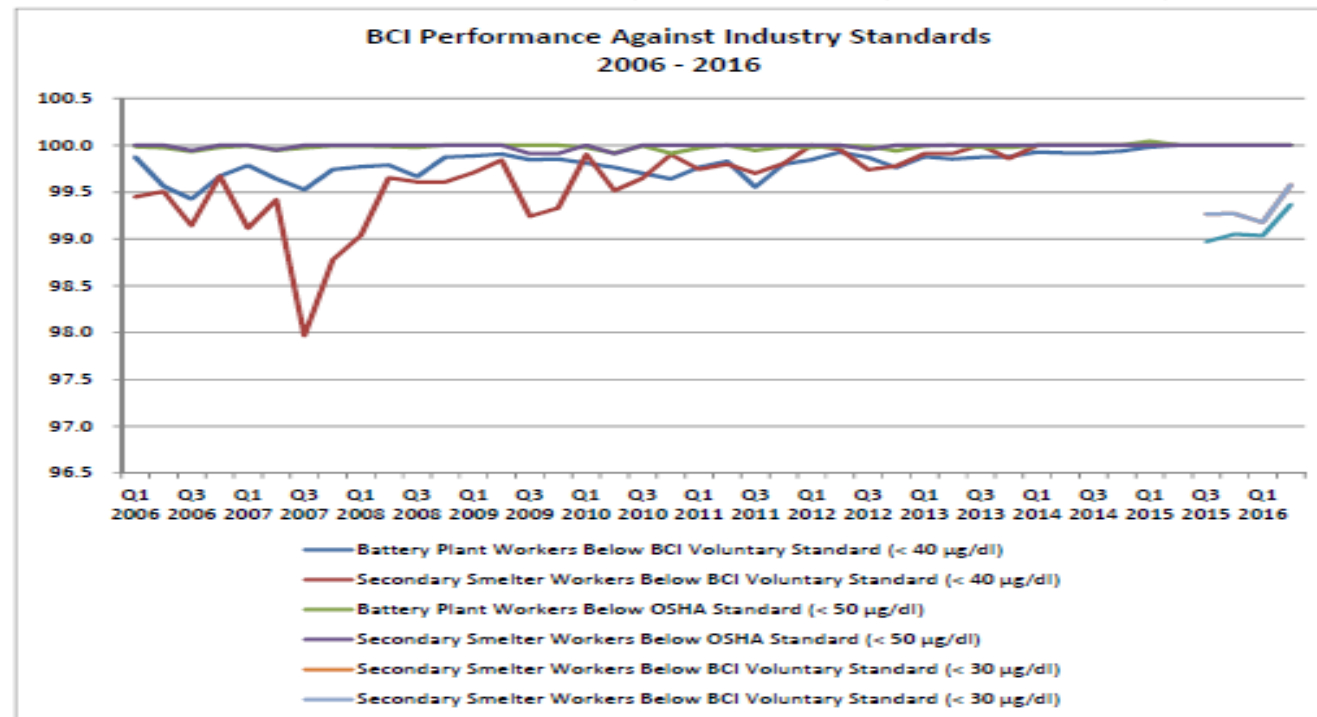
Instructions
 Report in micrograms per deciliter ($\mu\text{g}/\text{dl}$)
 Blood lead levels reported should be the **most recent** level taken for each employee
 For battery manufacturers (including those that perform battery-finishing operations) and smelters, blood lead levels should be reported for all employees including support personnel at the facility who have a blood lead taken at least once per year. If a blood lead has not been taken during the quarter, use the most recent result reported during a prior quarter.





BCI Report of Blood Lead Levels
April 1 - June 30, 2016

Most Recent Blood Lead Levels micrograms per deciliter (µg/dl)	Actual Percentage of Employees (including new hires) falling into category	
	Battery Plants	Secondary Smelters
<5	21.4	15.3
5 - 9	29.6	29.9
10 - 14	23.1	29.0
15 - 19	14.6	16.2
20 - 24	8.2	7.0
25 - 29	2.6	2.2
30 - 34	0.5	0.4
35 - 39	0.1	0.0
40 - 44	0.0	0.0
45 - 49	0.0	0.0
50 - 54	0.0	0.0
55 - 59	0.0	0.0
> 60	0.0	0.0
Number of Employees Reported:	16,941	2,136
Number of Companies Reporting:	14	6
% At or Below BCI Voluntary Standard (≤ 30 µg/dl):	99.4	99.6
% At or Below OSHA Standard (≤ 50 µg/dl):	100.0	100.0



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Table 1. Summary of Blood Lead and Air Lead Levels by Category for 2013 Dataset.

Job Description	Years on Job					Individual Air Lead Levels ($\mu\text{g}/\text{m}^3$)										Blood Lead Levels			
	Number of Employees	Range	Average	Std Dev	Median	All Data					Restricted Data ^a					All Employees			
						Number of Employees	Range	Average	Std Dev	Median	Number of Employees	Average	Std Dev	Median	Number of Employees	Average	Std Dev	Median	
Missing	35	1-24	17.2	8.5	23.0	5	25-66	40.8	15.7	37.0	5	40.8	15.7	37.0	35	12.8	6.7	12.0	
Undefined	2	1-1	1.2	0.03	1.2	-	-	-	-	-	-	-	-	-	2	16.0	14.1	16.0	
Overall	37	1-24	16.3	9.0	22.9	5	25-66	40.8	15.7	37.0	5	40.8	15.7	37.0	37	12.9	6.9	12.0	
BATTERY MANUFACTURERS																			
Battery Assembly	1,892	0-44	11.7	10.3	8.1	1,141	1-777	28.0	37.6	17.8	1,141	28.0	37.6	17.8	2,237	11.1	5.9	11.4	
Case Formation	254	0-35	10.1	8.1	7.9	24	4-18	6.2	4.0	4.0	24	6.2	4.0	4.0	310	6.0	3.9	5.0	
Drivers	319	0-42	11.5	11.0	7.2	107	1-154	23.0	26.4	15.4	107	23.0	26.4	15.4	334	7.7	5.6	6.6	
Finishing/Shipping	2,053	0-45	10.8	9.7	7.6	196	1-140	12.3	18.5	5.5	196	12.3	18.5	5.5	2,244	6.9	4.7	6.0	
Grid Casting/Parts Casting	805	0-46	7.6	7.5	5.0	394	0-563	28.0	36.6	20.0	394	26.6	24.7	19.9	901	14.4	7.0	14.0	
Group Assembly	1,349	1-45	8.3	8.3	4.8	758	2-300	34.3	27.3	28.0	758	34.3	27.3	28.0	1,397	16.8	8.1	17.0	
Janitorial Personnel	206	1-45	9.5	9.0	7.2	73	2-746	31.1	90.7	13.1	73	21.0	32.3	13.0	219	11.2	6.2	10.5	
Maintenance Personnel	939	0-45	8.5	8.5	6.1	259	1-710	27.9	50.0	18.5	259	26.8	36.2	18.5	991	12.7	7.8	12.0	
Office Staff/Management/Lab	966	0-47	11.3	10.4	7.5	329	1-4,058	48.6	266.3	9.5	327	28.7	52.7	9.3	1,016	8.9	6.3	8.0	
Oxide Manufacturing	84	1-35	15.1	11.3	13.1	74	3-895	75.4	135.1	32.0	74	68.2	100.8	32.0	85	13.4	7.3	13.0	
Pasting	904	1-41	8.3	8.1	4.8	659	1-750	54.3	59.4	36.0	659	53.7	57.5	36.0	975	16.7	7.8	16.5	
Plant Supervision (floor)	399	1-45	11.9	10.4	8.4	151	1-133	19.5	21.8	12.7	151	19.5	21.8	12.7	422	11.0	6.7	10.5	
Plate Formation	831	1-44	8.0	8.5	4.5	224	1-229	48.0	45.4	33.4	224	48.0	45.4	33.4	883	8.4	7.0	6.0	
Pollution Control (Water)	31	2-39	13.2	9.9	9.3	10	4-35	13.6	12.9	5.3	10	13.6	12.9	5.3	31	15.5	7.0	15.3	
Other	241	1-44	9.0	9.4	5.2	74	4-757	72.0	128.4	20.8	74	72.0	128.4	20.8	295	7.2	6.0	5.0	
Overall	11,273	0-47	9.9	9.4	6.8	4,473	0-4,058	35.8	86.6	22.0	4,471	33.8	45.6	22.0	12,340	11.1	7.4	10.0	
SECONDARY LEAD SMELTERS																			
Battery Breaking	159	1-39	8.9	8.0	5.6	74	2-4,476	178.9	543.6	76.1	73	100.5	97.3	74.3	164	12.9	6.4	12.9	
Clean-up	47	1-35	9.8	9.6	6.4	23	4-59	25.4	15.9	23.0	23	25.4	15.9	23.0	48	14.2	7.5	13.5	
Drivers	1	1-1	1.2	-	1.2	15	75-11,813	2,213.4	3,130.8	812.7	8	329.8	305.6	210.6	1	2.0	-	2.0	
Extrusion	7	1-18	7.1	5.8	4.3	7	2-21	13.5	6.5	15.6	7	13.5	6.5	15.6	7	15.5	8.1	15.3	
Furnace Personnel	166	1-33	6.2	6.1	3.0	97	4-15,548	586.8	1,662.1	168.0	86	258.0	291.8	102.0	172	15.0	5.7	14.1	
Maintenance Personnel	144	1-40	10.8	9.4	8.1	40	1-968	90.3	165.3	26.5	40	90.3	165.3	26.5	151	16.5	5.6	15.9	
Material Storage and Handling	59	2-31	9.0	8.4	4.9	22	5-19,625	1,481.6	4,188.2	113.6	18	123.0	138.8	77.5	63	12.7	6.8	11.2	
Office Staff/Management/Lab	167	1-49	9.8	10.1	4.0	28	4-1,312	221.6	403.2	25.9	26	97.2	185.0	24.9	175	8.9	6.0	8.4	
Pollution Control (Air)	25	2-29	14.3	8.1	14.0	16	3-958	217.7	326.9	22.0	16	161.9	267.6	15.7	26	14.4	4.6	13.6	
Pollution Control (Water)	15	2-27	5.5	8.4	2.3	3	17-29	24.0	6.3	26.1	3	24.0	6.3	26.1	15	9.7	5.7	9.4	
Refining/Casting	167	1-24	6.4	5.9	3.8	80	4-1,057	215.7	204.9	165.0	80	200.4	167.2	165.0	173	14.5	5.5	14.3	
Other	4	1-35	11.6	16.2	5.4	7	15-1,158	344.1	467.8	136.2	6	208.4	328.4	91.9	13	3.3	5.8	1.0	
Overall	961	1-49	8.6	8.4	4.7	412	1-19,625	411.8	1,478.8	74.6	386	158.4	210.5	65.4	1,008	13.3	6.6	13.4	

^a Air concentrations of 1,000 $\mu\text{g}/\text{m}^3$ were considered potential outliers and were excluded in the estimations.

2014 Air and Blood Lead Data Collection Survey

	A	B	C	D
1	Table 1. Available Category Assignments			
2	Battery Manufacturers	Secondary Smelters		
3	Battery Assembly	Battery Breaking		
4	Case Formation	Clean-up		
5	Drivers	Drivers		
6	Finishing/Shipping	Extrusion		
7	Grid Casting/Parts Casting	Furnace Personnel		
8	Group Assembly	Maintenance Personnel		
9	Janitorial Personnel	Material Storage and Handling		
10	Maintenance Personnel	Office Staff/Management/Lab		
11	Office Staff/Management/Lab	Pollution Control (Air)		
12	Oxide Manufacturing	Pollution Control (Water)		
13	Pasting	Refining/Casting		
14	Plant Supervision (floor)	Other *		
15	Plate Formation			
16	Pollution Control (Water)			
17	Other *			
18	* For those individuals who can not be assigned to a specific category, please assign a value of "Other".			
19				
20				
21				
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30				

Instructions

1. ENVIRON does not want names of employees. For confidentiality reasons, please report information using a unique identifying number (this could be employee ID) to anonymize individuals. This unique number must always be assigned to the same individual in order to link air and blood measurements over time.
2. Enter one measurement per row. Be sure to include employee ID number or unique identifying number on every row. Place measurements from a different date on different rows.
3. There are five tabs requiring data:
 - 1) **Admin-CONFIDENTIAL (TO BE COMPLETED BY PERSON PROVIDING THE DATA)**
 - 2) **Employee Demographics (ONLY NEEDS TO BE COMPLETED ONCE PER EMPLOYEE ID)**
 - 3) **Employee Air Measurements**
 - 4) **Area Air Measurements**
 - 5) **Employee Blood Lead (BL) Measurements**
4. The bold headings are the variable titles; the unbolded text are the categories of responses for each variable.
5. Variables extend past the width of one page on the screen, so please scroll to the right within each tab to see complete list of variables.
6. If no data for a particular field, enter "Unknown" or "Not Applicable," as appropriate.

PLEASE ENTER THE FOLLOWING INFORMATION
(THIS INFORMATION WILL BE KEPT CONFIDENTIAL AND WILL NOT BE STORED WITH THE SURVEY DATA)

Company Name:	
Date of Survey Completion MM/DD/YYYY:	
First and Last Name of Person Completing Survey:	
Phone Number of Person Completing Survey Suggested format (XXX) XXX-XXXX:	
Email Address of Person Completing Survey:	
Facility US Mail Address:	
Facility Physical Address (if different from US mail address is post office):	



Employee Demographics

Employee ID #	Company Name	Date of Birth Suggested format MM/DD/YYYY	Age in Years if No Date of Birth Available	Date that Age was Recorded if No Date of Birth Available Suggested format MM/DD/YYYY	Hire Date Suggested format MM/DD/YYYY	Gender Male, Female, Other, Unknown	Race White, Black or African American, Mixed, Other, Unknown	Ethnicity Not Hispanic or Latino, Hispanic or Latino, Unknown
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Area Air Measurements

- Area Air Lead Sample Date
- Area Air Lead Sample Type
- Area Air Lead Sample Concentration
- Units of Air Lead Sample Concentration
- Area Air Lead Sample Duration Description
- Company Name
- ID or Name of Facility or Plant where Personal Breathing Zone Air Lead Sample Collected
- Address of Facility or Plant where Personal Breathing Zone Air Lead Sample Collected
- State of Facility or Plant where Personal Breathing Zone Air Lead Sample Collected
- Division of Area Air Lead Sample Collection
- Department of Area Air Lead Sample Collection
- Shift of Area Air Lead Sample Collection
- Name of Analytical Lab Used for Analysis of Area Air Sample
- Address of Analytical Lab Used for Analysis of Area Air Sample
- Was the analytical lab used for analysis of the area air sample AIHA Accredited?
- Was exhaust ventilation used at sample collection (e.g., capture hood, enclosure, snorkel hose, etc.)?
- What was the purpose of the area sample collection?
- What activities were going on at the time of sample collection?

Employee BL Measurements

- Employee ID #
- Blood Lead Sample Date
- Blood Lead Sample Type
- Blood Lead Result
- Units of Blood Lead Result
- Company Name
- ID or Name of Facility or Plant where Personal Breathing Zone Air Lead Sample Collected
- Address of Facility or Plant where Personal Breathing Zone Air Lead Sample Collected
- State of Facility or Plant where Personal Breathing Zone Air Lead Sample Collected
- Division at Blood Lead Sample Date
- Department at Blood Lead Sample Date
- Job Title at Blood Lead Sample Date
- Shift at Blood Lead Sample Date
- Respirator Use at Blood Lead Sample Date
- Smoking Status at Blood Lead Sample Date
- Zinc protoporphyrin (ZPP) Result
- Units of Zinc protoporphyrin (ZPP) Result
- Free erythrocyte protoporphyrin (FEP) Result
- Units of Free erythrocyte protoporphyrin (FEP) Result
- Name of Analytical Lab Used for Analysis of Blood Lead Sample
- Address of Analytical Lab Used for Analysis of Blood Lead Sample

Job Description	Individual Air Lead Levels (µg/m ³)		Blood Lead Levels	
	Average*	Median	Average	Median
BATTERY MANUFACTURERS				
Battery Assembly	28.0	17.8	11.1	11.4
Case Formation	6.2	4.0	6.0	5.0
Drivers	23.0	15.4	7.7	6.6
Finishing/Shipping	12.3	5.5	6.9	6.0
Grid Casting/Parts Casting	26.6	19.9	14.4	14.0
Group Assembly	34.3	28.0	16.8	17.0
Janitorial Personnel	21.0	13.0	11.2	10.5
Maintenance Personnel	26.8	18.5	12.7	12.0
Office Staff/Management/Lab	28.7	9.3	8.9	8.0
Oxide Manufacturing	68.2	32.0	13.4	13.0
Pasting	53.7	36.0	16.7	16.5
Plant Supervision (floor)	19.5	12.7	11.0	10.5
Plate Formation	48.0	33.4	8.4	6.0
Pollution Control (Water)	13.6	5.3	15.5	15.3
Other	72.0	20.8	7.2	5.0
Overall	33.8	22.0	11.1	10.0
SECONDARY LEAD SMELTERS				
Battery Breaking	100.5	74.3	12.9	12.9
Clean-up	25.4	23.0	14.2	13.5
Drivers	329.8	210.6	2.0	2.0
Extrusion	13.5	15.6	15.5	15.3
Furnace Personnel	258.0	102.0	15.0	14.1
Maintenance Personnel	90.3	26.5	16.5	15.9
Material Storage and Handling	123.0	77.5	12.7	11.2
Office Staff/Management/Lab	97.2	24.9	8.9	8.4
Pollution Control (Air)	161.9	15.7	14.4	13.6
Pollution Control (Water)	24.0	26.1	9.7	9.4
Refining/Casting	200.4	165.0	14.5	14.3
Other	208.4	91.9	3.3	1.0
Overall	158.4	65.4	13.3	13.4

* Air Lead Levels restricted to responses < 1,000 ug/m³

7/27/2015

Draft: Attorney Client Privileged



Blood Lead Levels																				
	Employees w/ BLL 0-9				Employees w/ BLL 10-19				Employees w/ BLL 20-29				Employees w/ BLL 30-39				Employees w/ BLL ≥40			
	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median
Missing	11	31.4%	17.7	24.3	18	51.4%	16.3	18.6	6	17.1%	19.0	22.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Undefined	1	50.0%	1.2	1.2	0	0.0%	0.0	0.0	1	50.0%	1.2	1.2	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Overall	12	32.4%	16.3	24.1	18	48.6%	16.3	18.6	7	18.9%	16.4	19.7	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
BATTERY MANUFACTURERS																				
Battery Assembly	600	31.7%	9.0	4.3	1,135	60.0%	13.4	10.0	149	7.9%	10.3	6.5	8	0.4%	7.6	5.1	0	0.0%	0.0	0.0
Case Formation	208	81.9%	10.0	7.8	46	18.1%	10.1	8.9	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Drivers	210	65.8%	9.7	7.0	102	32.0%	15.7	9.7	7	2.2%	5.2	4.3	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Finishing/Shipping	1,514	73.7%	9.9	7.1	495	24.1%	13.5	10.9	41	2.0%	13.3	10.1	3	0.1%	8.4	4.3	0	0.0%	0.0	0.0
Grid Casting/Parts Casting	151	18.8%	4.2	1.9	451	56.0%	8.2	6.2	190	23.6%	8.9	6.9	13	1.6%	8.3	5.0	0	0.0%	0.0	0.0
Group Assembly	297	22.0%	5.9	1.8	517	38.3%	8.2	4.6	486	36.0%	9.7	6.8	49	3.6%	9.9	5.8	0	0.0%	0.0	0.0
Janitorial Personnel	85	41.3%	8.2	3.3	99	48.1%	9.1	7.3	22	10.7%	16.6	14.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Maintenance Personnel	359	38.2%	6.4	2.7	388	41.3%	9.8	7.1	174	18.5%	10.2	7.0	18	1.9%	6.9	4.0	0	0.0%	1.9	1.9
Office Staff/Management/Lab	555	57.5%	10.1	7.2	348	36.0%	13.2	9.3	62	6.4%	10.6	6.9	1	0.1%	5.8	5.8	0	0.0%	0.0	0.0
Oxide Manufacturing	27	32.1%	13.8	12.4	44	52.4%	16.2	13.5	10	11.9%	15.4	12.0	3	3.6%	9.7	6.6	0	0.0%	0.0	0.0
Pasting	145	16.0%	6.4	1.9	422	46.7%	9.4	6.1	302	33.4%	7.8	5.0	35	3.9%	6.1	4.2	0	0.0%	0.0	0.0
Plant Supervision (floor)	178	44.6%	10.3	6.3	179	44.9%	13.2	10.9	39	9.8%	12.3	9.1	3	0.8%	25.3	23.0	0	0.0%	0.0	0.0
Plate Formation	533	64.1%	7.6	4.3	217	26.1%	9.0	4.6	80	9.6%	8.0	5.5	1	0.1%	4.8	4.8	0	0.0%	0.0	0.0
Pollution Control (Water)	5	16.1%	16.7	14.0	17	54.8%	14.3	9.3	9	29.0%	9.3	6.5	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Other	167	69.3%	7.7	3.9	59	24.5%	11.7	8.3	15	6.2%	12.6	8.2	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Overall	5,034	44.7%	8.8	5.2	4,519	40.1%	11.3	7.9	1,586	14.1%	9.6	6.6	134	1.2%	8.4	5.0	0	0.0%	0.0	0.0
SECONDARY LEAD SMELTERS																				
Battery Breaking	53	33.3%	3.6	2.3	81	50.9%	11.1	10.9	24	15.1%	13.1	14.3	1	0.6%	14.9	14.9	0	0.0%	0.0	0.0
Clean-up	13	27.7%	5.6	1.9	25	53.2%	10.7	9.2	8	17.0%	12.9	8.4	1	2.1%	14.7	14.7	0	0.0%	0.0	0.0
Drivers	1	100.0%	1.2	1.2	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Extrusion	3	42.9%	7.2	2.8	2	28.6%	8.0	8.0	2	28.6%	6.0	6.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Furnace Personnel	26	15.7%	3.8	2.0	106	63.9%	6.0	2.8	34	20.5%	8.7	5.8	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Maintenance Personnel	13	9.0%	3.7	1.3	89	61.8%	11.9	10.1	41	28.5%	10.7	8.2	1	0.7%	16.4	16.4	0	0.0%	0.0	0.0
Material Storage and Handling	23	39.0%	3.9	2.3	25	42.4%	12.1	9.9	11	18.6%	12.4	9.7	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Office Staff/Management/Lab	102	61.1%	7.0	2.7	53	31.7%	13.4	8.6	12	7.2%	17.9	18.8	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Pollution Control (Air)	2	8.0%	17.0	17.0	20	80.0%	15.3	16.8	3	12.0%	6.2	2.5	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Pollution Control (Water)	8	53.3%	2.3	2.3	6	40.0%	6.4	2.3	1	6.7%	25.9	25.9	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Refining/Casting	30	18.0%	1.9	1.4	113	67.7%	6.6	3.8	23	13.8%	11.0	8.6	1	0.6%	10.3	10.3	0	0.0%	0.0	0.0
Other	2	50.0%	0.7	0.7	2	50.0%	22.5	22.5	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Overall	276	28.7%	4.9	2.3	522	54.3%	9.6	7.0	159	16.5%	11.4	9.3	4	0.4%	14.1	14.8	0	0.0%	0.0	0.0

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Table 1. Summary of Blood Lead and Air Lead Levels by Category for 2013 Dataset.

Job Description	Years on Job					Individual Air Lead Levels ($\mu\text{g}/\text{m}^3$)										Blood Lead Levels			
	Number of Employees	Range	Average	Std Dev	Median	All Data					Restricted Data ^a					All Employees			
						Number of Employees	Range	Average	Std Dev	Median	Number of Employees	Average	Std Dev	Median	Number of Employees	Average	Std Dev	Median	
Missing	35	1-24	17.2	8.5	23.0	5	25-66	40.8	15.7	37.0	5	40.8	15.7	37.0	35	12.8	6.7	12.0	
Undefined	2	1-1	1.2	0.03	1.2	-	-	-	-	-	-	-	-	-	2	16.0	14.1	16.0	
Overall	37	1-24	16.3	9.0	22.9	5	25-66	40.8	15.7	37.0	5	40.8	15.7	37.0	37	12.9	6.9	12.0	
BATTERY MANUFACTURERS																			
Battery Assembly	1,892	0-44	11.7	10.3	8.1	1,141	1-777	28.0	37.6	17.8	1,141	28.0	37.6	17.8	2,237	11.1	5.9	11.4	
Case Formation	254	0-35	10.1	8.1	7.9	24	4-18	6.2	4.0	4.0	24	6.2	4.0	4.0	310	6.0	3.9	5.0	
Drivers	319	0-42	11.5	11.0	7.2	107	1-154	23.0	26.4	15.4	107	23.0	26.4	15.4	334	7.7	5.6	6.6	
Finishing/Shipping	2,053	0-45	10.8	9.7	7.6	196	1-140	12.3	18.5	5.5	196	12.3	18.5	5.5	2,244	6.9	4.7	6.0	
Grid Casting/Parts Casting	805	0-46	7.6	7.5	5.0	394	0-563	28.0	36.6	20.0	394	26.6	24.7	19.9	901	14.4	7.0	14.0	
Group Assembly	1,349	1-45	8.3	8.3	4.8	758	2-300	34.3	27.3	28.0	758	34.3	27.3	28.0	1,397	16.8	8.1	17.0	
Janitorial Personnel	206	1-45	9.5	9.0	7.2	73	2-746	31.1	90.7	13.1	73	21.0	32.3	13.0	219	11.2	6.2	10.5	
Maintenance Personnel	939	0-45	8.5	8.5	6.1	259	1-710	27.9	50.0	18.5	259	26.8	36.2	18.5	991	12.7	7.8	12.0	
Office Staff/Management/Lab	966	0-47	11.3	10.4	7.5	329	1-4,058	48.6	266.3	9.5	327	28.7	52.7	9.3	1,016	8.9	6.3	8.0	
Oxide Manufacturing	84	1-35	15.1	11.3	13.1	74	3-895	75.4	135.1	32.0	74	68.2	100.8	32.0	85	13.4	7.3	13.0	
Pasting	904	1-41	8.3	8.1	4.8	659	1-750	54.3	59.4	36.0	659	53.7	57.5	36.0	975	16.7	7.8	16.5	
Plant Supervision (floor)	399	1-45	11.9	10.4	8.4	151	1-133	19.5	21.8	12.7	151	19.5	21.8	12.7	422	11.0	6.7	10.5	
Plate Formation	831	1-44	8.0	8.5	4.5	224	1-229	48.0	45.4	33.4	224	48.0	45.4	33.4	883	8.4	7.0	6.0	
Pollution Control (Water)	31	2-39	13.2	9.9	9.3	10	4-35	13.6	12.9	5.3	10	13.6	12.9	5.3	31	15.5	7.0	15.3	
Other	241	1-44	9.0	9.4	5.2	74	4-757	72.0	128.4	20.8	74	72.0	128.4	20.8	295	7.2	6.0	5.0	
Overall	11,273	0-47	9.9	9.4	6.8	4,473	0-4,058	35.8	86.6	22.0	4,471	33.8	45.6	22.0	12,340	11.1	7.4	10.0	
SECONDARY LEAD SMELTERS																			
Battery Breaking	159	1-39	8.9	8.0	5.6	74	2-4,476	178.9	543.6	76.1	73	100.5	97.3	74.3	164	12.9	6.4	12.9	
Clean-up	47	1-35	9.8	9.6	6.4	23	4-59	25.4	15.9	23.0	23	25.4	15.9	23.0	48	14.2	7.5	13.5	
Drivers	1	1-1	1.2	-	1.2	15	75-11,813	2,213.4	3,130.8	812.7	8	329.8	305.6	210.6	1	2.0	-	2.0	
Extrusion	7	1-18	7.1	5.8	4.3	7	2-21	13.5	6.5	15.6	7	13.5	6.5	15.6	7	15.5	8.1	15.3	
Furnace Personnel	166	1-33	6.2	6.1	3.0	97	4-15,548	586.8	1,662.1	168.0	86	258.0	291.8	102.0	172	15.0	5.7	14.1	
Maintenance Personnel	144	1-40	10.8	9.4	8.1	40	1-968	90.3	165.3	26.5	40	90.3	165.3	26.5	151	16.5	5.6	15.9	
Material Storage and Handling	59	2-31	9.0	8.4	4.9	22	5-19,625	1,481.6	4,188.2	113.6	18	123.0	138.8	77.5	63	12.7	6.8	11.2	
Office Staff/Management/Lab	167	1-49	9.8	10.1	4.0	28	4-1,312	221.6	403.2	25.9	26	97.2	185.0	24.9	175	8.9	6.0	8.4	
Pollution Control (Air)	25	2-29	14.3	8.1	14.0	16	3-958	217.7	326.9	22.0	16	161.9	267.6	15.7	26	14.4	4.6	13.6	
Pollution Control (Water)	15	2-27	5.5	8.4	2.3	3	17-29	24.0	6.3	26.1	3	24.0	6.3	26.1	15	9.7	5.7	9.4	
Refining/Casting	167	1-24	6.4	5.9	3.8	80	4-1,057	215.7	204.9	165.0	80	200.4	167.2	165.0	173	14.5	5.5	14.3	
Other	4	1-35	11.6	16.2	5.4	7	15-1,158	344.1	467.8	136.2	6	208.4	328.4	91.9	13	3.3	5.8	1.0	
Overall	961	1-49	8.6	8.4	4.7	412	1-19,625	411.8	1,478.8	74.6	386	158.4	210.5	65.4	1,008	13.3	6.6	13.4	

^a Air concentrations of 1,000 $\mu\text{g}/\text{m}^3$ were considered potential outliers and were excluded in the estimations.

Blood Lead Levels																				
	Employees w/ BLL 0-15				Employees w/ BLL 16-19				Employees w/ BLL 20-29				Employees w/ BLL 30-39				Employees w/ BLL ≥40			
	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median
Missing	25	71.4%	17.1	23.0	4	11.4%	15.0	16.1	6	17.1%	19.0	22.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Undefined	1	50.0%	1.2	1.2	0	0.0%	0.0	0.0	1	50.0%	1.2	1.2	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Overall	26	70.3%	16.5	22.9	4	10.8%	15.0	16.1	7	18.9%	16.4	19.7	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
BATTERY MANUFACTURERS																				
Battery Assembly	1,506	79.6%	11.8	8.0	229	12.1%	12.7	9.4	149	7.9%	10.3	6.5	8	0.4%	7.6	5.1	0	0.0%	0.0	0.0
Case Formation	245	96.5%	10.1	8.0	9	3.5%	9.9	7.3	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Drivers	291	91.2%	11.4	7.1	21	6.6%	14.7	11.1	7	2.2%	5.2	4.3	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Finishing/Shipping	1,936	94.3%	10.7	7.5	73	3.6%	13.5	11.2	41	2.0%	13.3	10.1	3	0.1%	8.4	4.3	0	0.0%	0.0	0.0
Grid Casting/Parts Casting	444	55.2%	6.7	3.8	158	19.6%	8.6	7.0	190	23.6%	8.9	6.9	13	1.6%	8.3	5.0	0	0.0%	0.0	0.0
Group Assembly	589	43.7%	6.9	3.5	225	16.7%	8.5	4.8	486	36.0%	9.7	6.8	49	3.6%	9.9	5.8	0	0.0%	0.0	0.0
Janitorial Personnel	155	75.2%	8.6	4.5	29	14.1%	9.0	8.0	22	10.7%	16.6	14.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Maintenance Personnel	618	65.8%	8.0	4.4	129	13.7%	9.1	6.3	174	18.5%	10.2	7.0	18	1.9%	6.9	4.0	0	0.0%	1.9	1.9
Office Staff/Management/Lab	806	83.4%	11.0	7.5	97	10.0%	13.5	12.6	62	6.4%	10.6	6.9	1	0.1%	5.8	5.8	0	0.0%	0.0	0.0
Oxide Manufacturing	59	70.2%	16.2	16.8	12	14.3%	10.8	9.0	10	11.9%	15.4	12.0	3	3.6%	9.7	6.6	0	0.0%	0.0	0.0
Pasting	401	44.4%	8.6	4.2	166	18.4%	8.8	6.1	302	33.4%	7.8	5.0	35	3.9%	6.1	4.2	0	0.0%	0.0	0.0
Plant Supervision (floor)	307	76.9%	11.5	7.6	50	12.5%	13.5	10.9	39	9.8%	12.3	9.1	3	0.8%	25.3	23.0	0	0.0%	0.0	0.0
Plate Formation	686	82.6%	7.7	4.3	64	7.7%	11.0	6.8	80	9.6%	8.0	5.5	1	0.1%	4.8	4.8	0	0.0%	0.0	0.0
Pollution Control (Water)	17	54.8%	12.9	9.3	5	16.1%	21.4	15.3	9	29.0%	9.3	6.5	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Other	204	84.6%	8.3	4.2	22	9.1%	13.2	14.5	15	6.2%	12.6	8.2	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Overall	8,264	73.3%	9.9	6.6	1,289	11.4%	10.6	7.7	1,586	14.1%	9.6	6.6	134	1.2%	8.4	5.0	0	0.0%	0.0	0.0
SECONDARY LEAD SMELTERS																				
Battery Breaking	111	69.8%	7.5	2.4	23	14.5%	11.4	10.9	24	15.1%	13.1	14.3	1	0.6%	14.9	14.9	0	0.0%	0.0	0.0
Clean-up	27	57.4%	8.7	3.3	11	23.4%	9.7	6.5	8	17.0%	12.9	8.4	1	2.1%	14.7	14.7	0	0.0%	0.0	0.0
Drivers	1	100.0%	1.2	1.2	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Extrusion	4	57.1%	8.5	7.4	1	14.3%	4.0	4.0	2	28.6%	6.0	6.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Furnace Personnel	98	59.0%	5.2	2.3	34	20.5%	6.6	4.5	34	20.5%	8.7	5.8	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Maintenance Personnel	73	50.7%	10.3	4.5	29	20.1%	12.2	9.1	41	28.5%	10.7	8.2	1	0.7%	16.4	16.4	0	0.0%	0.0	0.0
Material Storage and Handling	41	69.5%	7.1	2.3	7	11.9%	14.6	18.1	11	18.6%	12.4	9.7	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Office Staff/Management/Lab	144	86.2%	7.9	3.2	11	6.6%	25.3	23.1	12	7.2%	17.9	18.8	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Pollution Control (Air)	18	72.0%	15.8	17.6	4	16.0%	13.6	15.7	3	12.0%	6.2	2.5	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Pollution Control (Water)	13	86.7%	2.3	2.3	1	6.7%	26.6	26.6	1	6.7%	25.9	25.9	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Refining/Casting	105	62.9%	4.8	2.3	38	22.8%	7.9	7.7	23	13.8%	11.0	8.6	1	0.6%	10.3	10.3	0	0.0%	0.0	0.0
Other	3	75.0%	12.2	0.7	1	25.0%	10.1	10.1	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Overall	638	66.4%	7.3	2.5	160	16.6%	10.8	8.5	159	16.5%	11.4	9.3	4	0.4%	14.1	14.8	0	0.0%	0.0	0.0



Table 2. Comparison of BCI 2013/14 Data Set to L Wing Data Set.

Job Description		Years on Job					Individual Air Lead Levels ^a (µg/m ³)					Blood Lead Levels			
	Data Set	Number of Employees	Range	Average	Std Dev	Median	Number of Employees	Range	Average	Std Dev	Median	All Employees			
												Number of Employees	Average	Std Dev	Median
BATTERY MANUFACTURERS															
Battery Assembly	BCI	1,892	0-44	11.7	10.3	8.1	1,141	1-777	1,141.0	37.6	17.8	2,237	11.1	5.9	11.4
	LWing	1,936	0 - 47	11.5	-	-	-	7 - 81.7	36.4	-	36.5	1,936	13.3	-	-
Case Formation	BCI	254	0-35	10.1	8.1	7.9	24	4-18	24.0	4.0	4.0	310	6.0	3.9	5.0
	LWing	819	0 - 43	10.2	-	-	-	4 - 47.6	11.9	-	8.1	819	8.8	-	-
Drivers	BCI	319	0-42	11.5	11.0	7.2	107	1-154	107.0	26.4	15.4	334	7.7	5.6	6.6
	LWing	129	0 - 43	11.2	-	-	-	5 - 66	21.7	-	16.0	129	10.9	-	-
Finishing/Shipping	BCI	2,053	0-45	10.8	9.7	7.6	196	1-140	196.0	18.5	5.5	2,244	6.9	4.7	6.0
	LWing	2,099	0 - 44	11.0	-	-	-	4 - 40	9.0	-	6.5	2,099	8.9	-	-
Grid Casting/Parts Casting	BCI	805	0-46	7.6	7.5	5.0	394	0-563	394.0	24.7	19.9	901	14.4	7.0	14.0
	LWing	906	0 - 43	8.9	-	-	-	4 - 97	27.8	-	22.0	906	15.6	-	-
Group Assembly	BCI	1,349	1-45	8.3	8.3	4.8	758	2-300	758.0	27.3	28.0	1,397	16.8	8.1	17.0
	LWing	2,188	0 - 42	9.9	-	-	-	8 - 169	45.7	-	34.0	2,188	14.9	-	-
Janitorial Personnel	BCI	206	1-45	9.5	9.0	7.2	73	2-746	73.0	32.3	13.0	219	11.2	6.2	10.5
	LWing	250	0 - 39	9.9	-	-	-	4 - 80	24.5	-	16.0	250	12.6	-	-
Maintenance Personnel	BCI	939	0-45	8.5	8.5	6.1	259	1-710	259.0	36.2	18.5	991	12.7	7.8	12.0
	LWing	1,121	0 - 42	10.7	-	-	-	8 - 64	26.0	-	21.2	1,121	15.0	-	-
Office Staff/Management/Lab	BCI	966	0-47	11.3	10.4	7.5	329	1-4,058	327.0	52.7	9.3	1,016	8.9	6.3	8.0
	LWing	1,306	0 - 46	20.5	-	-	-	4 - 59	14.0	-	13.8	1,306	8.8	-	-
Oxide Manufacturing	BCI	84	1-35	15.1	11.3	13.1	74	3-895	74.0	100.8	32.0	85	13.4	7.3	13.0
	LWing	135	0 - 37	12.9	-	-	-	30 - 773	151.1	-	61.6	135	17.4	-	-
Pasting	BCI	904	1-41	8.3	8.1	4.8	659	1-750	659.0	57.5	36.0	975	16.7	7.8	16.5
	LWing	1,147	0 - 44	8.1	-	-	-	15 - 200	92.1	-	67.5	1,147	18.3	-	-
Plant Supervision (floor)	BCI	399	1-45	11.9	10.4	8.4	151	1-133	151.0	21.8	12.7	422	11.0	6.7	10.5
	LWing	493	0 - 42	13.4	-	-	-	6 - 35.5	17.7	-	14.8	493	12.5	-	-
Plate Formation	BCI	831	1-44	8.0	8.5	4.5	224	1-229	224.0	45.4	33.4	883	8.4	7.0	6.0
	LWing	802	0 - 41	8.0	-	-	-	3.2 - 59	30.3	-	23.9	802	10.7	-	-
Pollution Control (Water)	BCI	31	2-39	13.2	9.9	9.3	10	4-35	10.0	12.9	5.3	31	15.5	7.0	15.3
	LWing	70	.25 - 46	11.7	-	-	-	5 - 107	18.4	-	9.0	70	12.0	-	-
Other	BCI	241	1-44	9.0	9.4	5.2	74	4-757	74.0	128.4	20.8	295	7.2	6.0	5.0
	LWing	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Overall	BCI	11,273	0-47	9.9	9.4	6.8	4,473	0-4,058	4,471.0	45.6	22.0	12,340	11.1	7.4	10.0
	LWing	13,401	0 - 47	11.3	-	-	-	-	-	-	-	13,401	12.7	-	-

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Job Description		Years on Job					Individual Air Lead Levels ^a (µg/m ³)					Blood Lead Levels			
	Data Set	Number of Employees	Range	Average	Std Dev	Median	Number of Employees	Range	Average	Std Dev	Median	Number of Employees	All Employees		
												Average	Std Dev	Median	
SECONDARY LEAD SMELTERS															
Battery Breaking	BCI	159	1-39	8.9	8.0	5.6	74	2-4,476	73.0	97.3	74.3	164	12.9	6.4	12.9
	LWing	212	.2 - 42	10.8	-	-	-	30 - 902	253.7	-	197.5	212	14.3	-	-
Clean-up	BCI	47	1-35	9.8	9.6	6.4	23	4-59	23.0	15.9	23.0	48	14.2	7.5	13.5
	LWing	124	0 - 41	10	-	-	-	7 - 350	71.3	-	41.0	124	14.1	-	-
Drivers	BCI	1	1-1	1.2	-	1.2	15	75-11,813	8.0	305.6	210.6	1	2.0	-	2.0
	LWing	38	2 - 43	20	-	-	-	4 - 13	8.3	-	8.0	38	10.2	-	-
Extrusion	BCI	7	1-18	7.1	5.8	4.3	7	2-21	7.0	6.5	15.6	7	15.5	8.1	15.3
	LWing	18	0 - 38	12	-	-	-	12 - 18	15.0	-	15.0	18	18.6	-	-
Furnace Personnel	BCI	166	1-33	6.2	6.1	3.0	97	4-15,548	86.0	291.8	102.0	172	15.0	5.7	14.1
	LWing	362	0 - 41	9	-	-	-	46 - 1080	551.7	-	524.0	362	16.2	-	-
Maintenance Personnel	BCI	144	1-40	10.8	9.4	8.1	40	1-968	40.0	165.3	26.5	151	16.5	5.6	15.9
	LWing	321	0 - 42	12	-	-	-	17 - 293	107.7	-	71.9	321	15.6	-	-
Material Storage and Handling	BCI	59	2-31	9.0	8.4	4.9	22	5-19,625	18.0	138.8	77.5	63	12.7	6.8	11.2
	LWing	133	0 - 37	15	-	-	-	5 - 801	157.9	-	85.0	133	13.5	-	-
Office Staff/Management/Lab	BCI	167	1-49	9.8	10.1	4.0	28	4-1,312	26.0	185.0	24.9	175	8.9	6.0	8.4
	LWing	313	0 - 52	13	-	-	-	4 - 185	56.8	-	15.0	313	11.7	-	-
Pollution Control (Air)	BCI	25	2-29	14.3	8.1	14.0	16	3-958	16.0	267.6	15.7	26	14.4	4.6	13.6
	LWing	74	0 - 39	14	-	-	-	2.4 - 564	100.1	-	21.0	74	14.2	-	-
Pollution Control (Water)	BCI	15	2-27	5.5	8.4	2.3	3	17-29	3.0	6.3	26.1	15	9.7	5.7	9.4
	LWing	75	0 - 39	12	-	-	-	8 - 824	120.9	-	15.0	75	10.7	-	-
Refining/Casting	BCI	167	1-24	6.4	5.9	3.8	80	4-1,057	80.0	167.2	165.0	173	14.5	5.5	14.3
	LWing	344	0 - 39.8	8	-	-	-	38.3 - 550	282.5	-	261.0	344	14.1	-	-
Other	BCI	4	1-35	11.6	16.2	5.4	7	15-1,158	6.0	328.4	91.9	13	3.3	5.8	1.0
	LWing	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Overall	BCI	961	1-49	8.6	8.4	4.7	412	1-19,625	386.0	210.5	65.4	1,008	13.3	6.6	13.4
	LWing	2,014	0 - 52	11	-	-	-	-	-	-	-	2,014	14.2	-	-

a - L Wing data for air lead based upon area samples.

7/27/2015

Job Description		Blood Lead Levels																			
		Employees w/ BLL 0-15				Employees w/ BLL 16-19				Employees w/ BLL 20-29				Employees w/ BLL 30-39				Employees w/ BLL ≥40			
Data Set	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	
BATTERY MANUFACTURERS																					
Battery Assembly	BCI	1,506	79.6%	11.8	8.0	229	12.1%	12.7	9.4	149	7.9%	10.3	6.5	8	0.4%	7.6	5.1	0	0.0%	0.0	0.0
	LWing	1,110	57.3%	11.2	9.3	440	22.7%	11.7	11.4	364	18.8%	12.3	12.3	19	1.0%	7.5	9.4	3	0.2%	4.3	4.3
Case Formation	BCI	245	96.5%	10.1	8.0	9	3.5%	9.9	7.3	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	724	88.4%	9.9	11.6	74	9.0%	12.3	10.9	21	2.6%	11.5	12.5	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Drivers	BCI	291	91.2%	11.4	7.1	21	6.6%	14.7	11.1	7	2.2%	5.2	4.3	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	95	73.6%	11.0	9.1	20	15.5%	11.2	8.1	14	10.9%	12.3	12.5	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Finishing/Shipping	BCI	1,936	94.3%	10.7	7.5	73	3.6%	13.5	11.2	41	2.0%	13.3	10.1	3	0.1%	8.4	4.3	0	0.0%	0.0	0.0
	LWing	1,892	90.1%	10.9	9.2	104	5.0%	12.2	11.0	92	4.4%	12.2	11.4	8	0.4%	5.1	5.9	3	0.1%	1.1	1.1
Grid Casting/Parts Casting	BCI	444	55.2%	6.7	3.8	158	19.6%	8.6	7.0	190	23.6%	8.9	6.9	13	1.6%	8.3	5.0	0	0.0%	0.0	0.0
	LWing	408	45.0%	8.3	8.0	183	20.2%	9.6	10.5	297	32.8%	9.7	9.6	17	1.9%	5.5	9.9	1	0.1%	0.4	0.4
Group Assembly	BCI	589	43.7%	6.9	3.5	225	16.7%	8.5	4.8	486	36.0%	9.7	6.8	49	3.6%	9.9	5.8	0	0.0%	0.0	0.0
	LWing	1,119	51.1%	10.2	9.2	397	18.1%	10.7	8.2	592	27.1%	8.7	9.0	75	3.4%	10.2	8.6	5	0.2%	10.0	8.9
Janitorial Personnel	BCI	155	75.2%	8.6	4.5	29	14.1%	9.0	8.0	22	10.7%	16.6	14.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	151	60.4%	10.1	8.4	58	23.2%	10.2	8.3	40	16.0%	9.2	7.8	1	0.4%	4.0	4.0	0	0.0%	0.0	0.0
Maintenance Personnel	BCI	618	65.8%	8.0	4.4	129	13.7%	9.1	6.3	174	18.5%	10.2	7.0	18	1.9%	6.9	4.0	0	0.0%	1.9	1.9
	LWing	570	50.8%	11.4	6.9	214	19.1%	10.7	10.7	288	25.7%	9.9	9.5	44	3.9%	8.0	6.8	5	0.4%	5.1	6.4
Office Staff/Management/Lab	BCI	806	83.4%	11.0	7.5	97	10.0%	13.5	12.6	62	6.4%	10.6	6.9	1	0.1%	5.8	5.8	0	0.0%	0.0	0.0
	LWing	1,174	89.9%	21.2	12.9	87	6.7%	13.6	14.4	43	3.3%	17.3	16.0	2	0.2%	10.6	10.6	0	0.0%	0.0	0.0
Oxide Manufacturing	BCI	59	70.2%	16.2	16.8	12	14.3%	10.8	9.0	10	11.9%	15.4	12.0	3	3.6%	9.7	6.6	0	0.0%	0.0	0.0
	LWing	44	32.6%	14.8	12.7	46	34.1%	11.0	10.4	35	25.9%	13.7	10.6	9	6.7%	11.5	10.0	1	0.7%	3.0	3.0
Pasting	BCI	401	44.4%	8.6	4.2	166	18.4%	8.8	6.1	302	33.4%	7.8	5.0	35	3.9%	6.1	4.2	0	0.0%	0.0	0.0
	LWing	387	33.7%	7.6	7.2	225	19.6%	10.0	8.7	431	37.6%	8.0	7.3	97	8.5%	6.3	5.1	7	0.6%	5.6	6.1
Plant Supervision (floor)	BCI	307	76.9%	11.5	7.6	50	12.5%	13.5	10.9	39	9.8%	12.3	9.1	3	0.8%	25.3	23.0	0	0.0%	0.0	0.0
	LWing	317	64.3%	12.0	12.7	89	18.1%	15.5	18.9	79	16.0%	15.9	17.1	7	1.4%	19.7	17.2	1	0.2%	3.0	3.3
Plate Formation	BCI	686	82.6%	7.7	4.3	64	7.7%	11.0	6.8	80	9.6%	8.0	5.5	1	0.1%	4.8	4.8	0	0.0%	0.0	0.0
	LWing	628	78.3%	8.0	9.2	68	8.5%	8.4	11.6	97	12.1%	8.3	7.9	9	1.1%	6.7	7.1	0	0.0%	0.0	0.0
Pollution Control (Water)	BCI	17	54.8%	12.9	9.3	5	16.1%	21.4	15.3	9	29.0%	9.3	6.5	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	50	71.4%	11.2	8.8	6	8.6%	17.4	14.0	12	17.1%	11.0	6.1	2	2.9%	11.0	11.0	0	0.0%	0.0	0.0
Other	BCI	204	84.6%	8.3	4.2	22	9.1%	13.2	14.5	15	6.2%	12.6	8.2	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Overall	BCI	8,264	73.3%	9.9	6.6	1,289	11.4%	10.6	7.7	1,586	14.1%	9.6	6.6	134	1.2%	8.4	5.0	0	0.0%	0.0	0.0
	LWing	8,669	64.7%	11.8	11.0	2,011	15.0%	11.2	11.3	2,405	17.9%	10.0	11.2	290	2.2%	8.1	8.4	26	0.2%	5.3	4.0

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Job Description		Blood Lead Levels																			
		Employees w/ BLL 0-15				Employees w/ BLL 16-19				Employees w/ BLL 20-29				Employees w/ BLL 30-39				Employees w/ BLL ≥40			
Data Set	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	Number of Records	Pct. (%) of Total	Avg Years on Job	Median	
SECONDARY LEADSMELTERS																					
Battery Breaking	BCI	111	69.8%	7.5	2.4	23	14.5%	11.4	10.9	24	15.1%	13.1	14.3	1	0.6%	14.9	14.9	0	0.0%	0.0	0.0
	LWing	117	55.2%	9.9	9.5	37	17.5%	10.5	10.5	50	23.6%	12.8	12.0	8	3.8%	12.1	13.4	0	0.0%	0.0	0.0
Clean-up	BCI	27	57.4%	8.7	3.3	11	23.4%	9.7	6.5	8	17.0%	12.9	8.4	1	2.1%	14.7	14.7	0	0.0%	0.0	0.0
	LWing	73	58.9%	8.9	7.0	18	14.5%	12.8	12.9	26	21.0%	13.2	16.0	6	4.8%	3.7	3.8	1	0.8%	1.5	1.5
Drivers	BCI	1	100.0%	1.2	1.2	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	30	78.9%	21.2	14.8	5	13.2%	13.2	8.5	3	7.9%	22.5	27.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Extrusion	BCI	4	57.1%	8.5	7.4	1	14.3%	4.0	4.0	2	28.6%	6.0	6.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	4	22.2%	15.8	15.3	7	38.9%	14.9	14.9	6	33.3%	3.8	3.9	1	5.6%	32.0	32.0	0	0.0%	0.0	0.0
Furnace Personnel	BCI	98	59.0%	5.2	2.3	34	20.5%	6.6	4.5	34	20.5%	8.7	5.8	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	162	44.8%	8.1	7.6	71	19.6%	8.0	7.1	104	28.7%	10.1	10.5	24	6.6%	13.8	14.4	1	0.3%	6.0	6.0
Maintenance Personnel	BCI	73	50.7%	10.3	4.5	29	20.1%	12.2	9.1	41	28.5%	10.7	8.2	1	0.7%	16.4	16.4	0	0.0%	0.0	0.0
	LWing	158	49.2%	10.6	11.9	64	19.9%	12.0	12.0	73	22.7%	14.4	14.5	25	7.8%	11.5	11.1	1	0.3%	16.0	16.0
Material Storage and Handling	BCI	41	69.5%	7.1	2.3	7	11.9%	14.6	18.1	11	18.6%	12.4	9.7	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	80	60.2%	16.3	17.3	24	18.0%	12.5	13.9	23	17.3%	13.3	12.6	6	4.5%	9.3	6.5	0	0.0%	0.0	0.0
Office Staff/Management/Lab	BCI	144	86.2%	7.9	3.2	11	6.6%	25.3	23.1	12	7.2%	17.9	18.8	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	225	71.9%	11.5	11.7	34	10.9%	17.9	19.5	48	15.3%	18.6	17.8	6	1.9%	18.9	22.4	0	0.0%	0.0	0.0
Pollution Control (Air)	BCI	18	72.0%	15.8	17.6	4	16.0%	13.6	15.7	3	12.0%	6.2	2.5	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	37	50.0%	13.2	13.0	20	27.0%	15.4	12.3	16	21.6%	13.3	13.0	1	1.4%	20.0	20.0	0	0.0%	0.0	0.0
Pollution Control (Water)	BCI	13	86.7%	2.3	2.3	1	6.7%	26.6	26.6	1	6.7%	25.9	25.9	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	56	74.7%	11.8	9.0	12	16.0%	10.2	5.2	7	9.3%	16.4	15.5	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
Refining/Casting	BCI	105	62.9%	4.8	2.3	38	22.8%	7.9	7.7	23	13.8%	11.0	8.6	1	0.6%	10.3	10.3	0	0.0%	0.0	0.0
	LWing	190	55.2%	6.9	6.9	72	20.9%	8.0	10.0	67	19.5%	11.3	13.5	13	3.8%	6.4	4.9	2	0.6%	11.5	11.5
Other	BCI	3	75.0%	12.2	0.7	1	25.0%	10.1	10.1	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0	0	0.0%	0.0	0.0
	LWing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Overall	BCI	638	66.4%	7.3	2.5	160	16.6%	10.8	8.5	159	16.5%	11.4	9.3	4	0.4%	14.1	14.8	0	0.0%	0.0	0.0
	LWing	1,132	56.2%	10.4	10.9	364	18.1%	11.1	11.6	423	21.0%	12.9	11.9	90	4.5%	11.6	9.5	5	0.2%	9.3	9.5

7/27/2015



April 2011 Battery Manufacturer Blood Lead Survey Report

Battery Manufacturers	Number Employees		Years on Job		Area Air Lead Levels			Employee Blood Lead Levels														
	Total Number of Employees	Years Range	Years W. Avg.	Area Air Lead Level (Range) µg/m³	Area Air Lead Level (Average)	Area Air Lead Level (W. Avg.)	All Employees Blood Lead Level (W. Avg.)	Employees w/ BLL 0-15			Employees w/ BLL 16-19			Employees w/ BLL 20-29			Employees w/ BLL 30-39			Employees w/ BLL ≥ 40		
Job Description								Number of Employees	Pct.(%) of Total	Years on Job (W. Avg.)	Number of Employees	Pct.(%) of Total	Years on Job (W. Avg.)	Number of Employees	Pct.(%) of Total	Years on Job (W. Avg.)	Number of Employees	Pct.(%) of Total	Years on Job (W. Avg.)	Number of Employees	Pct.(%) of Total	Years on Job (W. Avg.)
Battery Assembly	1936	0 -47	11.5	7 -81.7	36.4	31.5	13.3	1110	57.3%	11.2	440	22.7%	11.7	364	18.8%	12.3	19	1.0%	7.5	3	0.2%	4.3
Median					36.5					9.3			11.4			12.3			9.4			4.3
Case Formation	819	0 -43	10.2	4 -47.6	11.9	11.4	8.8	724	88.4%	9.9	74	9.0%	12.3	21	2.6%	11.5	0	0.0%	0.0	0	0.0%	0.0
Median					8.1					11.6			10.9			12.5			0.0			0.0
Drivers	129	0 -43	11.2	5 -66	21.7	23.0	10.9	95	73.6%	11.0	20	15.5%	11.2	14	10.9%	12.3	0	0.0%	0.0	0	0.0%	0.0
Median					16.0					9.1			8.1			12.5			0.0			0.0
Finishing/Shipping	2099	0 -44	11.0	4 -40	9.0	12.1	8.9	1892	90.1%	10.9	104	5.0%	12.2	92	4.4%	12.2	8	0.4%	5.1	3	0.1%	1.1
Median					6.5					9.2			11.0			11.4			5.9			1.1
Grid Casting/Parts Casting	906	0 -43	8.9	4 -97	27.8	25.9	15.6	408	45.0%	8.3	183	20.2%	9.6	297	32.8%	9.7	17	1.9%	5.5	1	0.1%	0.4
Median					22.0					8.0			10.5			9.6			9.9			0.4
Group Assembly	2188	0 -42	9.9	8 -169	45.7	32.8	14.9	1119	51.1%	10.2	397	18.1%	10.7	592	27.1%	8.7	75	3.4%	10.2	5	0.2%	10.0
Median					34.0					9.2			8.2			9.0			8.6			8.9
Janitorial Personnel	250	0 -39	9.9	4 -80	24.5	26.6	12.6	151	60.4%	10.1	58	23.2%	10.2	40	16.0%	9.2	1	0.4%	4.0	0	0.0%	0.0
Median					16.0					8.4			8.3			7.8			4.0			0.0
Maintenance Personnel	1121	0 -42	10.7	8 -64	26.0	22.9	15.0	570	50.8%	11.4	214	19.1%	10.7	288	25.7%	9.9	44	3.9%	8.0	5	0.4%	5.1
Median					21.2					6.9			10.7			9.5			6.8			6.4
Office Staff/Management/Lab	1306	0 -46	20.5	4 -59	14.0	8.8	8.8	1174	89.9%	21.2	87	6.7%	13.6	43	3.3%	17.3	2	0.2%	10.6	0	0.0%	0.0
Median					13.8					12.9			14.4			16.0			10.6			0.0
Oxide Manufacturing	135	0 -37	12.9	30 -773	151.1	135.3	17.4	44	32.6%	14.8	46	34.1%	11.0	35	25.9%	13.7	9	6.7%	11.5	1	0.7%	3.0
Median					61.6					12.7			10.4			10.6			10.0			3.0
Pasting	1147	0 -44	8.1	15 -200	92.1	74.8	18.3	387	33.7%	7.6	225	19.6%	10.0	431	37.6%	8.0	97	8.5%	6.3	7	0.6%	5.6
Median					67.5					7.2			8.7			7.3			5.1			6.1
Plant Supervision (floor)	493	0 -42	13.4	6 -35.5	17.7	15.4	12.5	317	64.3%	12.0	89	18.1%	15.5	79	16.0%	15.9	7	1.4%	19.7	1	0.2%	3.0
Median					14.8					12.7			18.9			17.1			17.2			3.3
Plate Formation	802	0 -41	8.0	3.2 -59	30.3	18.0	10.7	628	78.3%	8.0	68	8.5%	8.4	97	12.1%	8.3	9	1.1%	6.7	0	0.0%	0.0
Median					23.9					9.2			11.6			7.9			7.1			0.0
Pollution Control (Water)	70	.25 -46	11.7	5 -107	18.4	18.6	12.0	50	71.4%	11.2	6	8.6%	17.4	12	17.1%	11.0	2	2.9%	11.0	0	0.0%	0.0
Median					9.0					8.8			14.0			6.1			11.0			0.0
TOTALS	13401	0 -47	11.3	N/A	N/A	N/A	12.7	8669	64.7%	11.8	2011	15.0%	11.2	2405	17.9%	10.0	290	2.2%	8.1	26	0.2%	5.3
Median					N/A					11.0			11.3			11.2			8.4			4.0

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Draft: Attorney Client Privileged

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April 2011 Secondary Lead Smelter Blood Lead Survey Report

Secondary Lead Smelters	Number Employees		Years on Job		Area Air Lead Levels			Employee Blood Lead Levels														
	Total Number of Employees	Years Range	Years W. Avg.	Area Air Lead Level (Range) $\mu\text{g}/\text{m}^3$	Lead Level (Average) $\mu\text{g}/\text{m}^3$	Lead Level (W. Avg.) $\mu\text{g}/\text{m}^3$	All Employees Blood Lead Level (W. Avg.)	Employees w/ BLL 0-15			Employees w/ BLL 16-19			Employees w/ BLL 20-29			Employees w/ BLL 30-39			Employees w/ BLL ≥ 40		
Job Description								Number of Employees	Pct. (%) of Total	Years on Job (W. Avg.)	Number of Employees	Pct. (%) of Total	Years on Job (W. Avg.)	Number of Employees	Pct. (%) of Total	Years on Job (W. Avg.)	Number of Employees	Pct. (%) of Total	Years on Job (W. Avg.)	Number of Employees	Pct. (%) of Total	Years on Job (W. Avg.)
Battery Breaking	212	.2 - 42	10.8	30 - 902	253.7	209.2	14.3	117	55.2%	9.9	37	17.5%	10.5	50	23.6%	12.8	8	3.8%	12.1	0	0.0%	0.0
Median					197.5					9.5			10.5			12.0			13.4			0.0
Clean-up	124	0 - 41	10.0	7 - 350	71.3	112.3	14.1	73	58.9%	8.9	18	14.5%	12.8	26	21.0%	13.2	6	4.8%	3.7	1	0.8%	1.5
Median					41.0					7.0			12.9			16.0			3.8			1.5
Drivers	38	2 - 43	20.2	4 - 13	8.3	3.1	10.2	30	78.9%	21.2	5	13.2%	13.2	3	7.9%	22.5	0	0.0%	0.0	0	0.0%	0.0
Median					8.0					14.8			8.5			27.0			0.0			0.0
Extrusion	18	0 - 38	12.4	12 - 18	15.0	14.0	18.6	4	22.2%	15.8	7	38.9%	14.9	6	33.3%	3.8	1	5.6%	32.0	0	0.0%	0.0
Median					15.0					15.3			14.9			3.9			32.0			0.0
Furnace Personnel	362	0 - 41	9.0	46 - 1080	551.7	509.7	16.2	162	44.8%	8.1	71	19.6%	8.0	104	28.7%	10.1	24	6.6%	13.8	1	0.3%	6.0
Median					524.0					7.6			7.1			10.5			14.4			6.0
Maintenance Personnel	321	0 - 42	11.9	17 - 293	107.7	101.8	15.6	158	49.2%	10.6	64	19.9%	12.0	73	22.7%	14.4	25	7.8%	11.5	1	0.3%	16.0
Median					71.9					11.9			12.0			14.5			11.1			16.0
Material Storage and Handling	133	0 - 37	14.8	5 - 801	157.9	144.1	13.5	80	60.2%	16.3	24	18.0%	12.5	23	17.3%	13.3	6	4.5%	9.3	0	0.0%	0.0
Median					85.0					17.3			13.9			12.6			6.5			0.0
Office Staff/Management/Lab	313	0 - 52	13.4	4 - 185	56.8	50.0	11.7	225	71.9%	11.5	34	10.9%	17.9	48	15.3%	18.6	6	1.9%	18.9	0	0.0%	0.0
Median					15.0					11.7			19.5			17.8			22.4			0.0
Pollution Control (Air)	74	0 - 39	13.9	2.4 - 564	100.1	58.4	14.2	37	50.0%	13.2	20	27.0%	15.4	16	21.6%	13.3	1	1.4%	20.0	0	0.0%	0.0
Median					21.0					13.0			12.3			13.0			20.0			0.0
Pollution Control (Water)	75	0 - 39	12.0	8 - 824	120.9	73.0	10.7	56	74.7%	11.8	12	16.0%	10.2	7	9.3%	16.4	0	0.0%	0.0	0	0.0%	0.0
Median					15.0					9.0			5.2			15.5			0.0			0.0
Refining/Casting	344	0 - 39.8	8.0	38.3 - 550	282.5	312.6	14.1	190	55.2%	6.9	72	20.9%	8.0	67	19.5%	11.3	13	3.8%	6.4	2	0.6%	11.5
Median					261.0					6.9			10.0			13.5			4.9			11.5
Totals	2014	0 - 52	11.1	N/A	N/A	N/A	14.2	1132	56.2%	10.4	364	18.1%	11.1	423	21.0%	12.9	90	4.5%	11.6	5	0.2%	9.3
Median					N/A					10.9			11.6			11.9			9.5			9.5

Compiled: April 25, 2011

