



## Understanding Blood Lead Levels

### Background

The Occupational Safety and Health Administration (OSHA) was established by Congress in 1970 and charged to protect the health and safety of American workers. In 1978, OSHA established limits for the maximum amount of lead to be permitted in employees' blood. The blood lead levels (BLLs) were phased in over a five-year period beginning with removal of employees having blood lead levels at or above 80  $\mu\text{g}/100\text{ ml}$ .<sup>1</sup> In 1980, the final year of the phase-in, the levels were set to require workers to be removed from lead exposure when BLLs are equal or greater than 50  $\mu\text{g}/100\text{ ml}$  (averaged over a 6-month period), or any time the BLL is equal to or greater than 60  $\mu\text{g}/100\text{ ml}$ . Workers may return to work when their BLL is reduced to a level below 40  $\mu\text{g}/100\text{ ml}$ . During the removal period, the worker is typically assigned other non-lead exposed duties.

### Lead Battery Industry Expertise

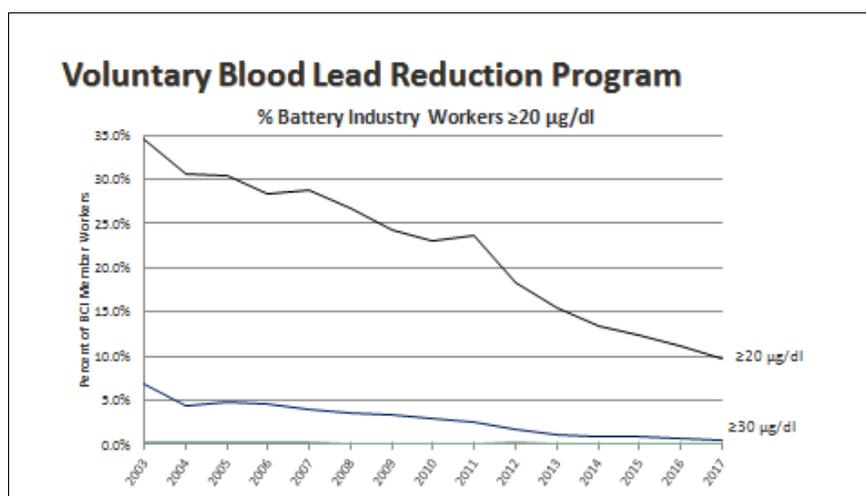
More than 85 percent of lead metal used in the U.S. is consumed by the lead battery industry. This highly-regulated industry employs more than 20,500 workers and operates under some of the most rigorous and extensive worker and environmental standards of any industry worldwide.

### Industry Best Practices to Control Blood Lead

The industry puts occupational health first, meeting health goals significantly more stringent than federal and state requirements. Over the years, Battery Council International (BCI) has developed initiatives to drive continuous improvement in worker health. They include:

- Voluntary Blood Lead Reduction Program
- Global and regional EHS training conferences
- Best practice sharing via BCI Committees
- Educational materials
- Equipment design improvement initiatives to reduce lead releases

***Today the average blood lead level of workers in the lead battery manufacturing and recycling industries is below 11  $\mu\text{g}/\text{dL}$ , which is less than two-thirds the national average for the general population in the 1970s.***



<sup>1</sup> Note: Modern lead standards use the equivalent nomenclature of  $\mu\text{g}/\text{dL}$ .  
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## **Outside the U.S. and Europe**

As part of its commitment to support improved risk management in developing countries and those in transition, the International Lead Association (ILA) has launched a series of guides to describe good working practices and regularly shares knowledge by participating in the training of local facilities and regulators. These guides have been translated into more than a dozen languages. BCI and ILA also support programs to send industrial health experts to developing nations to provide hands-on training and advice to lead-using industries in those nations.

## **Looking Ahead**

Since 1997, BCI members have adopted and met increasingly strict voluntary goals to have all workers' blood lead levels meet targets lower than the OSHA requirements. In June 2017, three leading global trade associations, BCI, ILA, and EUROBAT announced renewed voluntary targets to protect worker health. This major step to improve the protection of workers is made possible by technology advances in the manufacturing process, employee education programs and a commitment from the lead and lead battery sector to make the continuous reduction of employee lead exposure a priority.

BCI members have set a target to have all employees below 25 µg/dL by end of 2019, and all employees below 20 µg/dL by end of 2025.

## **Key Facts**

- 100% of lead battery manufacturing and recycling workers stay well below the blood lead requirements set by OSHA, and have done so for many years.
- U.S. battery manufacturers exceed OSHA blood level standards by providing advanced safety training, hygiene facilities, and modern safety equipment – above and beyond federal and state regulatory requirements.
- Lead battery manufacturing and recycling companies consistently demonstrate year-over-year reductions in employee lead exposures and achieved the 2016 industry voluntary blood lead target of 30 µg/dL.
- At the end of 2016, fewer than 12 percent of employees had a blood lead exceeding the voluntary guidance from the American Conference on Governmental Industrial Hygienists (ACGIH) Biological Exposure Index (BEI) of 20 µg/dL
- The industry has set its own standards to decrease blood lead levels to 25 µg/dL by 2019 and 20 µg /dL by 2025 – well below OSHA requirements.