



Introduction to Lead Batteries

Public Workshop on Lead Batteries and Alternatives

Mark O. Thorsby, CAE

Executive Vice President

Battery Council International

November 6, 2017

About Battery Council International

- 200+ members represent nearly 100% of U.S. lead battery sales and recycling
- Significant U.S. manufacturing base
 - More than 20,550 manufacturing jobs
 - Average wages \$83,606 (mining and recycling)
 - Average wage \$62,343 (battery manufacturing)
 - \$11.2 billion in GDP; \$28.5 billion in output
 - 129+ million car batteries sold annually (most made in NA)



Vital Power: Advanced Lead Batteries

- Power nearly 255 million cars and trucks (U.S.)
- Optimize wind, solar and green energy storage
- Backup energy for telecommunications, data centers, hospitals, etc.
- Motive power for golf carts, forklifts, railroad engines and more



BCI Concerns About DTSC's Process

- Fewer than 30 days to address important issues and correct misstatements in the background paper
- Background paper and agenda suggest a predetermined outcome for the process

Correcting the Record

- No real potential exposure concerns
- No potential significant/widespread impacts
- Other errors in DTSC background paper
- See our white paper for discussion of criteria and references



Virtually No Potential Exposure for Car and Truck Owner/Operators

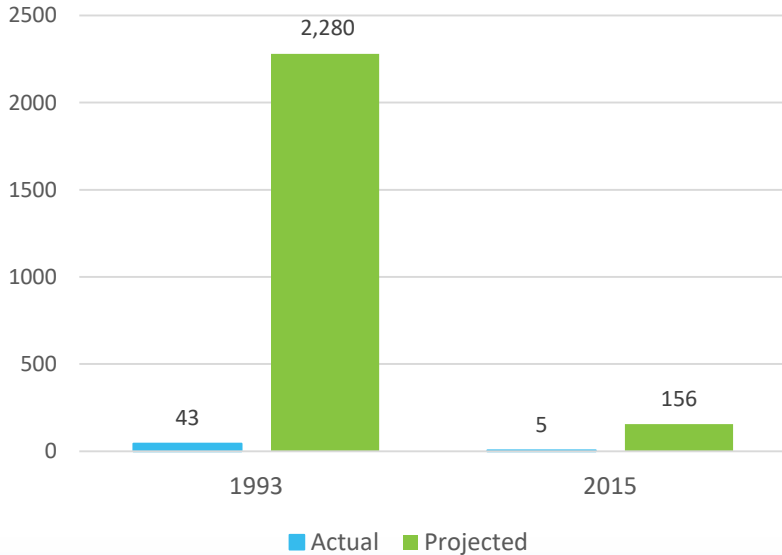
- SLI batteries typically sealed, confined to engine bay
 - No day-to-day contact with drivers
 - No lead exposure even when batteries are replaced

Virtually No Potential Exposure from Other Sources

- Lead battery facilities comply with existing stringent water, air, solid waste controls
 - All California facilities are in L.A. Basin - SCAQMD air constraints tightest in U.S.
 - EPA estimates new emission control technology in recycling facilities resulted in a 68% reduction in lead emissions between 2012-2014*
- Lead battery industry ranks very low as a lead emission source
 - 85%+ of all lead is used in batteries
 - BUT only 1.7% of total U.S. lead emissions from manufacturers and recyclers combined
 - Primary source of emissions = piston aircraft (48%), electricity generators, steel mills

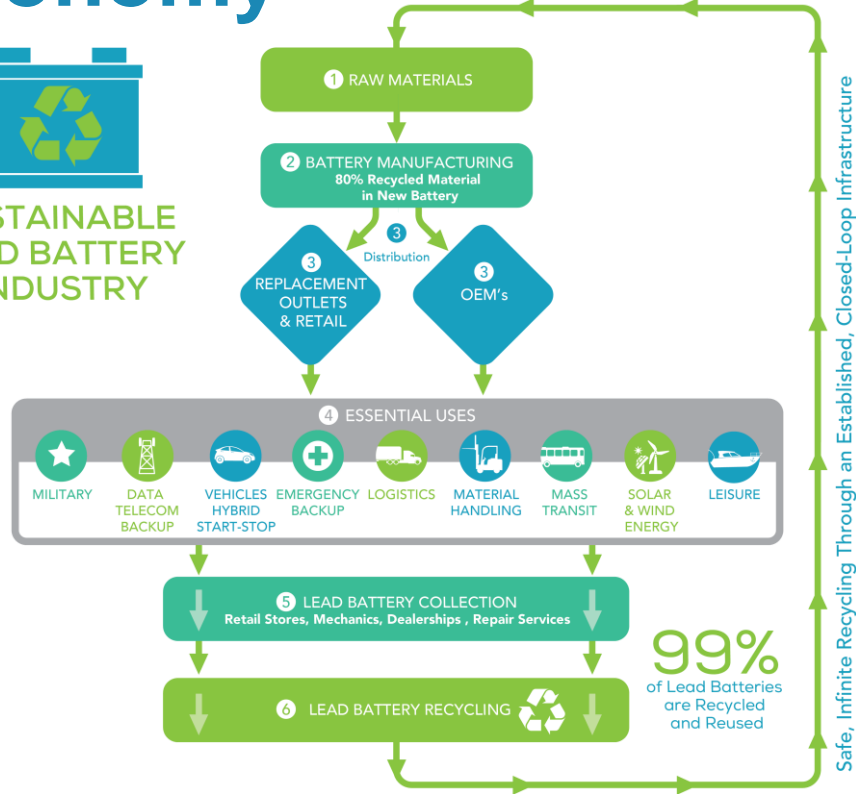


Decline in Lead Battery Incidents Over Three Decades



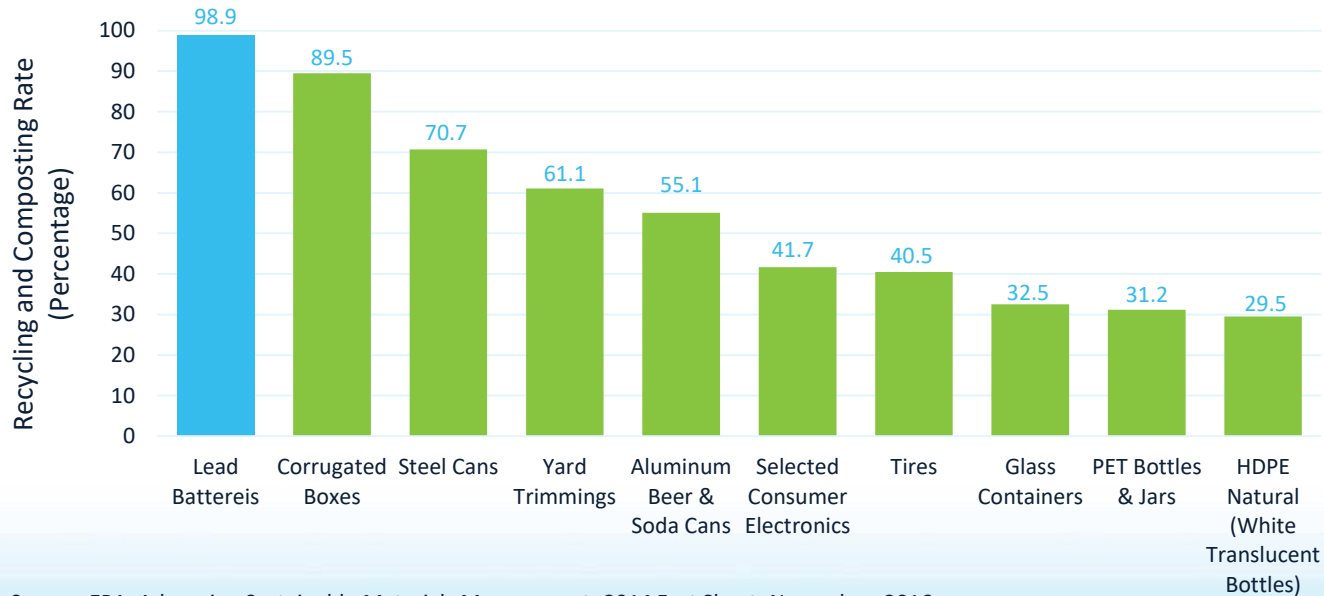
- NHTSA report is outdated – nearly a quarter century old
- Today's batteries are redesigned and improved
- NHTSA report and data limitations
 - Thin, unconfirmed descriptions
 - Battery reports are not categorized by chemistry

Nearly 100% Recycling: A True Circular Economy



EPA Ranks Lead Batteries as the Most Recycled Consumer Product in the U.S.

Environmental Protection Agency (EPA) Recycling and Composting Rates, 2014



Source: EPA: Advancing Sustainable Materials Management: 2014 Fact Sheet, November, 2016



Nearly 100% Recycling: Infinite Recycling Without Loss of Performance

- DTSC misconstrues BCI's recycling rate number
 - Statistically derived using conservative life estimates; long-life batteries under-counted
 - Does not mean <1% of batteries not recycled; only a relative handful don't go directly for recycling; almost all eventually do
- No other battery chemistry can equal (closest still below 5%)
 - DTSC's focus on a mistaken "loss rate" of 1% fails to grasp that 95%+ of other battery types are going straight to landfills
- DTSC "Conceptual Exposure Model" very misleading



Considering Alternatives

- No experience with large scale manufacture or recycling of lithium ion batteries, or how to control pollution
 - Manufacturing and mining occurs almost entirely overseas, often in “conflict mineral” areas
 - Potential health and environmental concerns for many constituents, including nickel, manganese, cobalt and solvents
 - No “drop-in” replacements and extraordinarily expensive
- A premature mandated shift from lead batteries would disproportionately burden low income residents and others who rely on used vehicles



Lead Battery Units & Materials Are Almost 100% Recycled & Reused for New Batteries

Comparison of Recycled and Reused Materials by Battery Type

	No. of Units Recycled	% of Recycled Materials in New Batteries	% of Cell Components Recyclable by Standard Methods*
Lead batteries	> 99%	80%	100%**
Li-ion batteries	< 5%	0	35%***

Source: *Linda Gaines, Argonne National Labs

**Lead battery components: Lead, plastic, sulfuric acid

***Li-ion batteries: Cathode active material, anode active material, copper, aluminum, electrolyte solvent, plastics, steel, carbon, binder, thermal insulation, electronic parts.



Conclusion

“Adding new responsibilities to the Department must be undertaken holistically while considering the resources and funding available. Doing anything less robs the community of a real solution and sets government up for failure.”

—Governor Jerry Brown, Oct. 10, 2017

