

Automotive Industry's Road to Emissions and Waste Reduction; Today and Tomorrow

PRTR North American Public Meeting

Montreal, QC Canada

February 26th 2020



Introduction



Gary Vegh

Senior Environmental Toxicologist
ERA Co-Founder



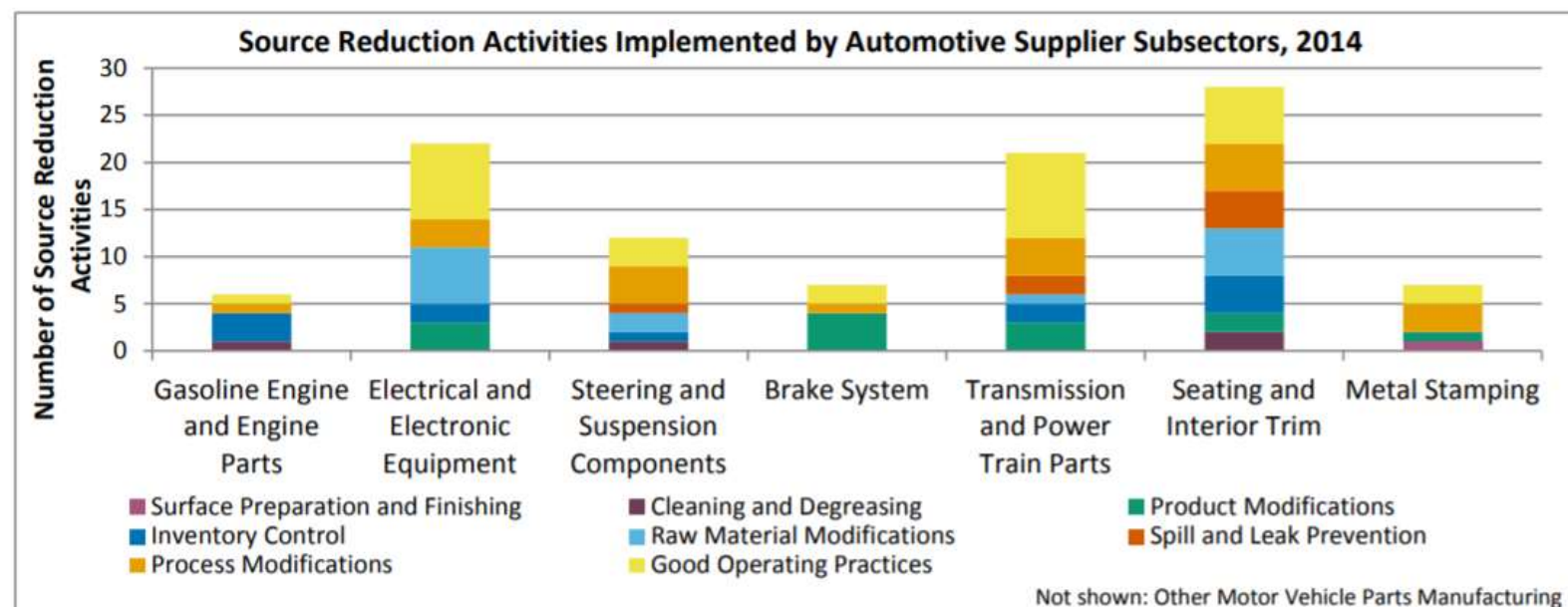
Pollution Prevention Initiatives by the Automotive Industry



P2 & Automotive Suppliers

Examples of Pollution Prevention in the Automotive Supply Chain

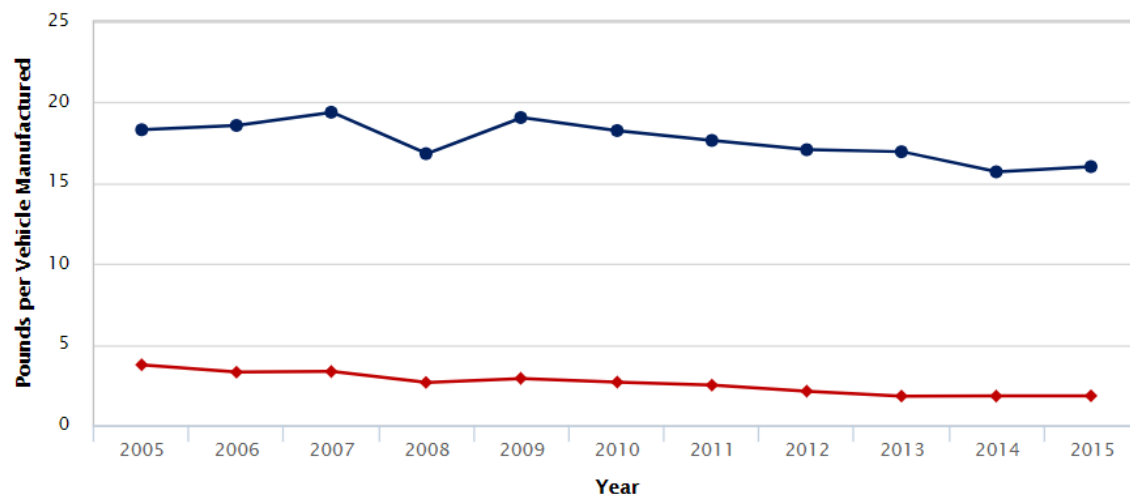
The following graph shows that automotive suppliers reported implementing over 200 new source reduction activities in 2014. Many of these facilities also provided descriptive information about their pollution prevention efforts. Samples of the types of entries you can find in the TRI P2 Search tool are listed below.



Examples of Pollution Prevention Activities Initiated by Automotive Suppliers

TRI Releases in the Automotive Industry

TRI Waste Managed and Releases per Motor Vehicle Produced, 2005–2015



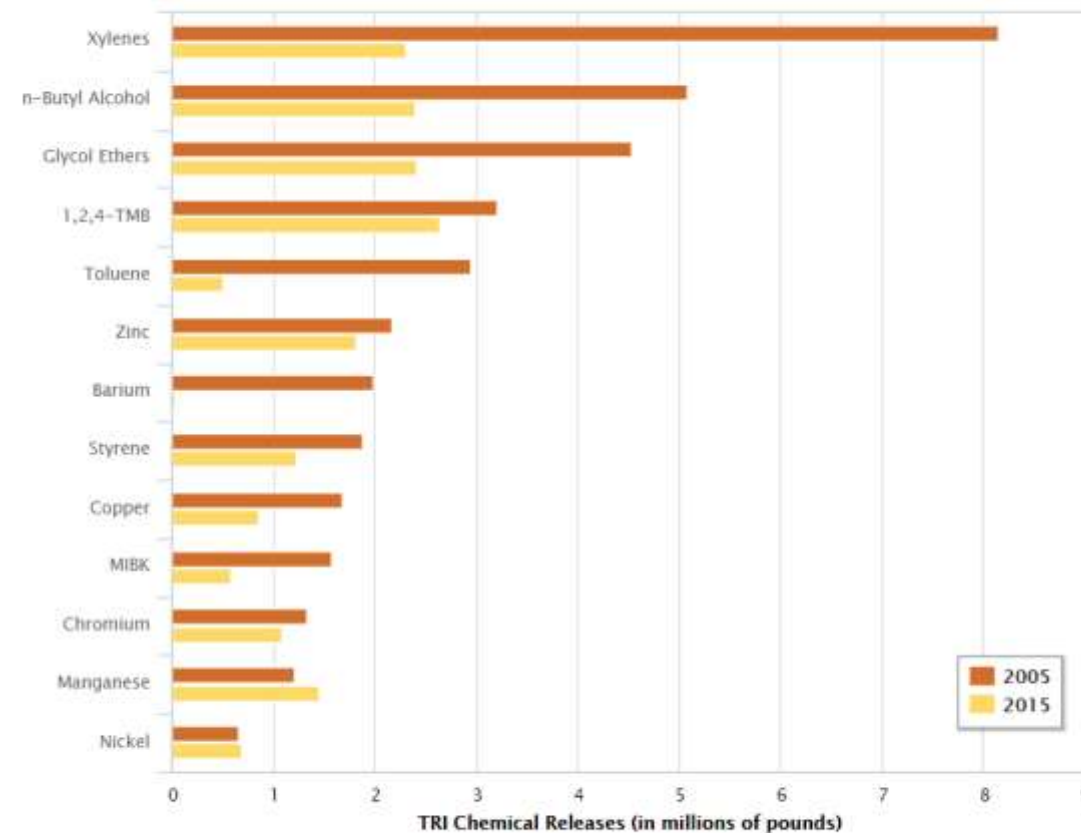
Click on legend items below to customize items displayed in the chart

TRI Waste Managed Per Vehicle TRI Releases per Vehicle

Notes: 1) Quantities per vehicle are calculated by dividing the automotive manufacturing sector's annual waste managed and releases, respectively, by U.S. vehicle production. Automotive manufacturing sectors include: Motor Vehicle Manufacturing (NAICS 3361), Motor Vehicle Body and Trailer Manufacturing (NAICS 3362), and Motor Vehicle Parts Manufacturing (NAICS 3363). 2) Managed waste quantities include release quantities.

Sources: U.S. EPA Toxics Release Inventory - 2015 National Analysis Dataset, Retrieved January 2017; Federal Reserve Board of Governors, 2005-2015

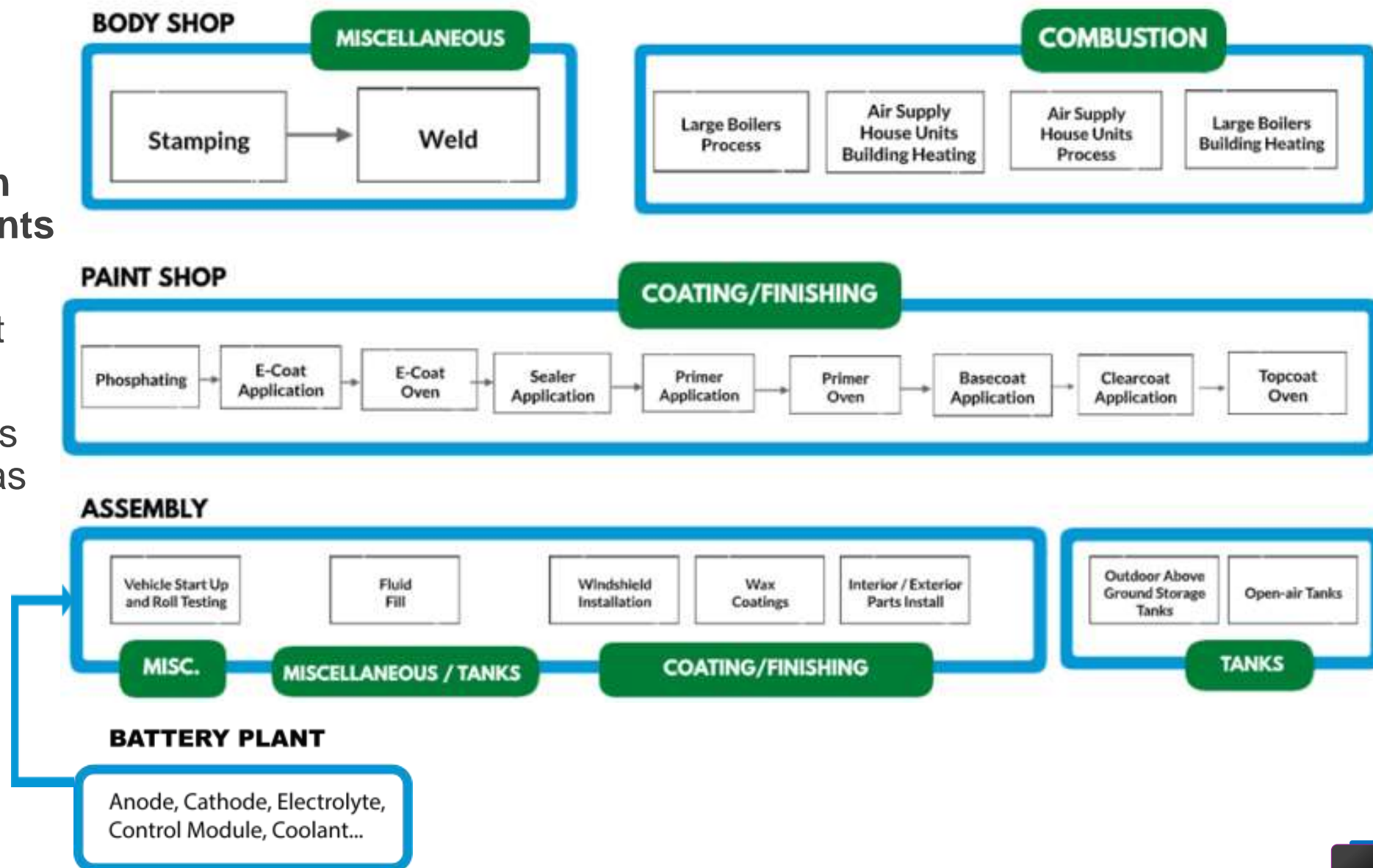
TRI Chemicals Released from Automotive Manufacturing Facilities during 2005 and 2015



Era Has Been Managing Chemicals for Facilities, Including the Automotive Industry (30+ industries for 25 years)



- ERA has extensive experience in tracking **chemical/materials in large automotive plants**
- Electric Vehicles are being manufactured at Automotive plants
- Some of these facilities have **Battery Plants** as part of the Assembly plant





Use of Dip Tanks
Great transfer efficiency
(100%) No waste!!



Reuse of Purge Solvents
(Material Reuse)
(Reduction of material usage)

Zero Landfill Waste (for the Entire Facility Operations)

2017 GM Landfill-Free sites

- Waste paper and cardboard to recycling
- Liquid hazardous waste to cement kiln as fuel
- General trash to waste-to-energy burner (steam production for energy)
- Batteries, halide lamps and fluorescent bulbs to recycling
- Aluminum cans and engine plant aluminum to trading and recycling. Reuse internal at the plant
- Plastics, Composites, and Elastomers

GM's 152 LANDFILL-FREE FACILITIES



Packaging Waste

A lot of waste is generated from packaging

Reduction in packaging waste by incorporating re-useable/returnable containers

(totes, pallets, drums,...etc.)

Practices regarding packaging has to be reviewed and reassessed

Reduce Packaging Weight

Increase Part Density (packing parts more tightly)

Coordination with Suppliers





**Treasure Hunts for Energy Use
Reduction**
(solar, windfarms, EV's...etc.)

[Environmental Topics](#)[Laws & Regulations](#)[About EPA](#)

SmartWay

[SmartWay Home](#)[Learn about SmartWay](#)[Participate in SmartWay](#)[Meet the SmartWay
Partners and Affiliates](#)

SmartWay Global Freight Supply Chain Programs

Global Green Freight Action Plan

**Using EPA Smartway for Logistics
(Emission reduction from the
supply chain)**

...ated the development of the Global Green Freight Action Plan, a road map and blueprint for countries to develop programs to reduce freight emissions. The Action Plan is intended to help develop new programs and support the alignment and harmonization of existing programs and incorporate control of air pollutants into freight sustainability efforts.

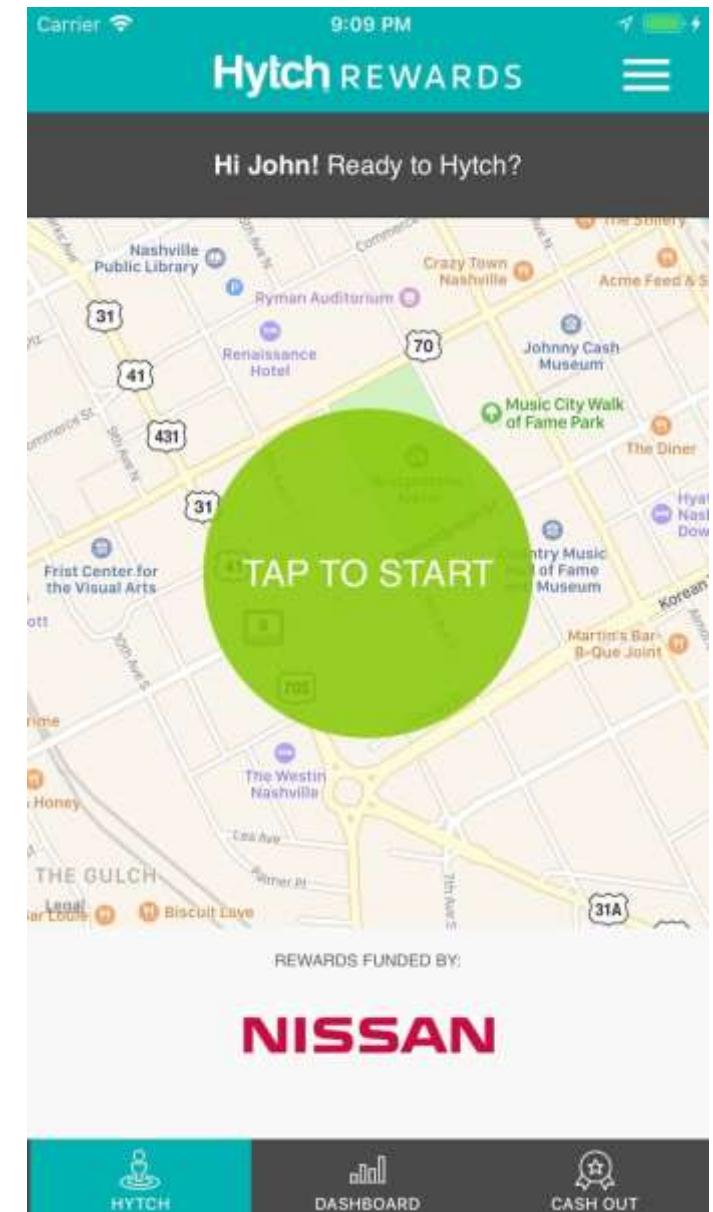
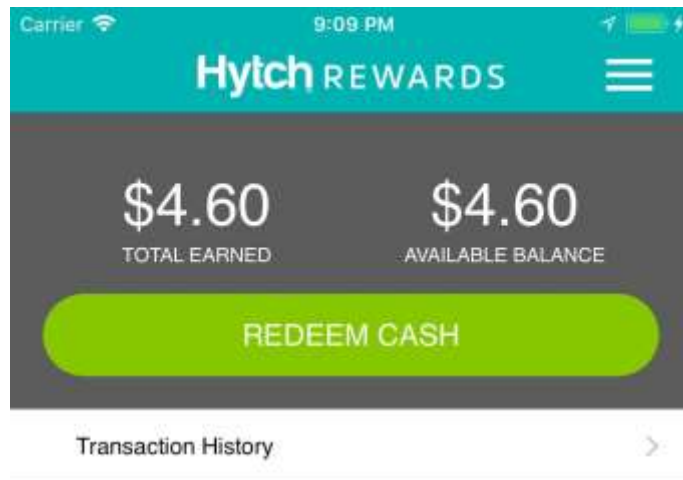
...different countries and regions have developed variations of freight sustainability programs using their own methods, standards, and metrics, the Smart Freight Centre formed the Global Logistics Emissions Council (GLEC) to help standardize and harmonize programs and practices. GLEC has created a standard methodology framework for green freight programs, the Framework for Logistics Emissions Methodologies, which draws on SmartWay tools and methods.

Related Information

[EXIT](#)

- [Global Green Freight](#)
- [Global Green Freight Action Plan - Technical Background Report \(PDF\)](#)
(240 pp, 6.4MB, April 2015, [About PDF](#))
- [Heavy-Duty Diesel Initiative](#)
- [Smart Freight](#)

[SmartWay Latest News](#)



**Using Car Share programs for employees
(Providing transportation to automotive plants)**

Biodiversity programs at facilities

Planting of clover (reduction of water consumption, GHG emissions, and providing flowers for pollinators)

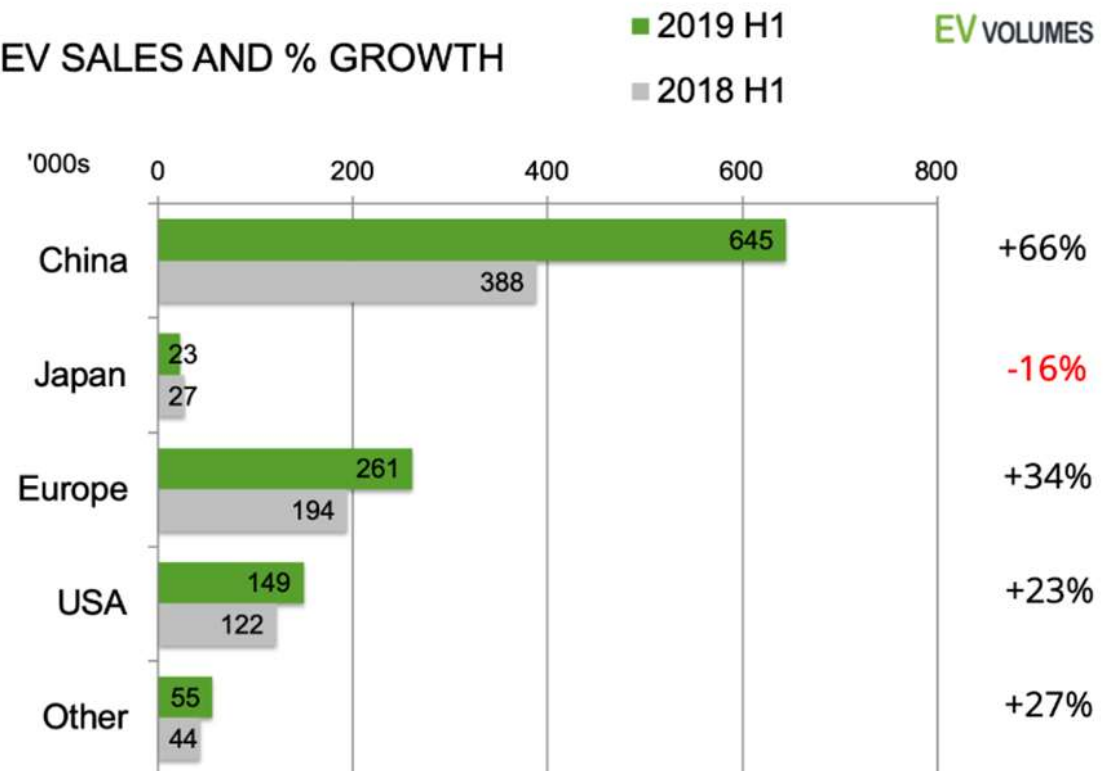


EV Sales Are Growing with a Lot More Models Being Offered to the Consumer

2019 Monthly/Q4 Sales Chart : Annual

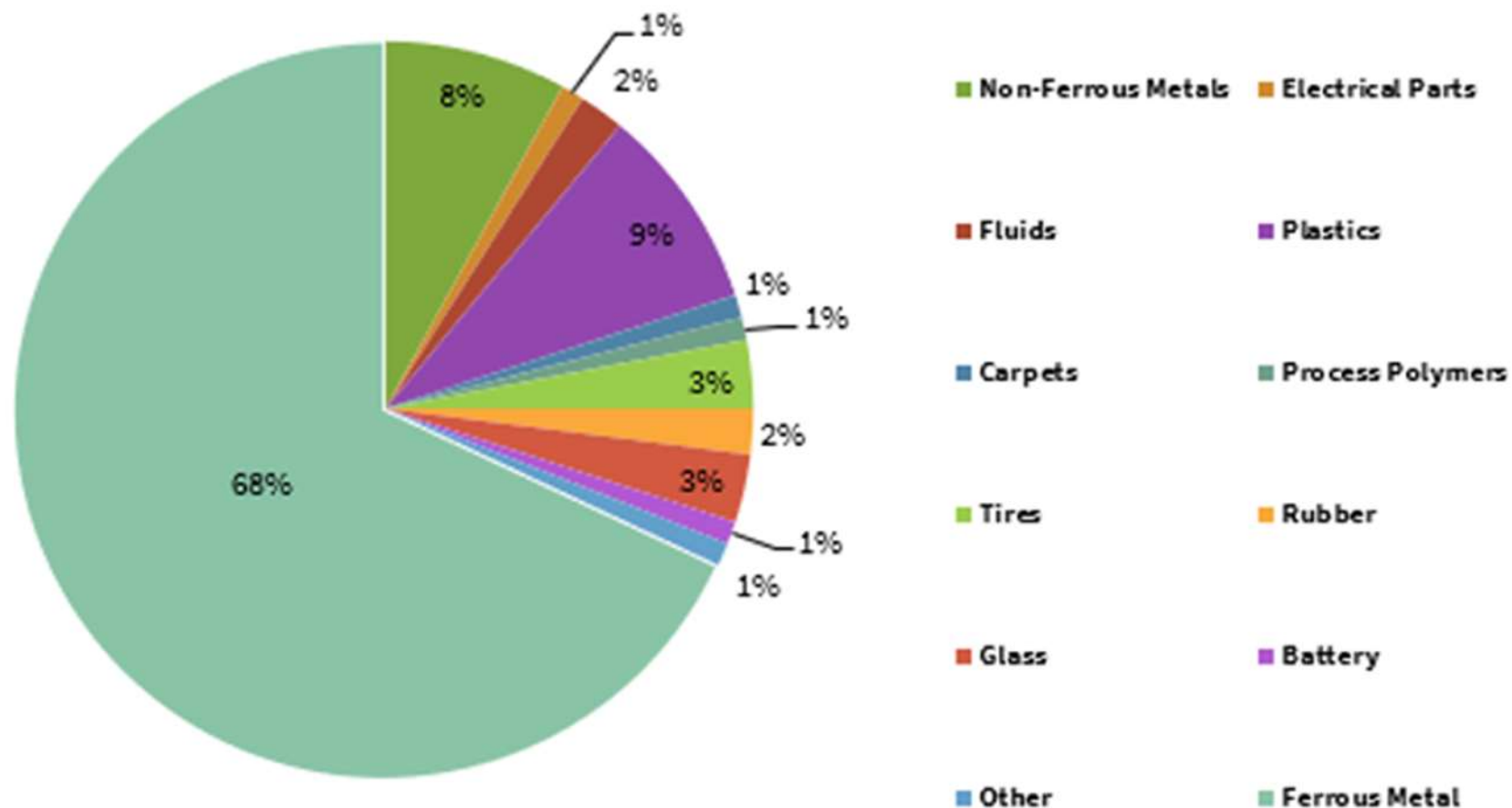
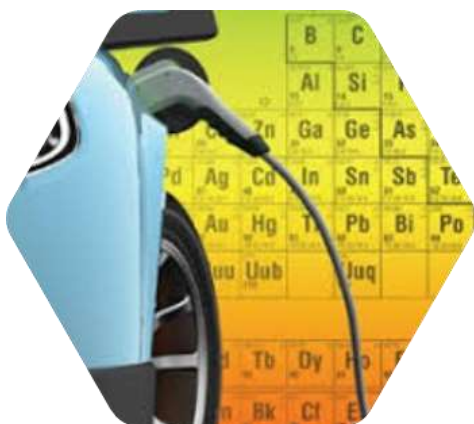
2019 U.S. EV SALES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Tesla Model 3*	6,500	5,750	10,175	10,050	13,950	21,225	12,550	12,350	19,100	-	-	-
Toyota Prius Prime*	1,123	1,205	1,820	1,399	1,914	1,144	2,950	2,500	1,650	2,318	2,790	2,817
Tesla Model X*	775	900	2,175	1,050	1,375	2,725	1,225	1,825	1,675	-	-	-
Chevrolet Bolt EV*	925	1,225	2,166	910	1,396	1,659	985	1,720	2,125	-	-	-
Tesla Model S*	725	825	2,275	825	1,025	1,750	975	1,050	1,100	-	-	-
Nissan LEAF	717	654	1,314	951	1,216	1,156	938	1,117	1,048	887	1,140	1,227
Honda Clarity PHEV*	1,192	1,213	1,311	981	816	1,030	800	840	400	595	795	755
Ford Fusion Energi*	557	573	611	585	605	675	720	620	700	-	-	-
BMW 530e*	376	414	436	416	727	908	444	606	310	305	421	499
Chrysler Pacifica Hybrid*	436	589	383	347	390	391	385	395	415	-	-	-
Audi e-tron				253	856	726	678	593	434	462	621	746
Chevrolet Volt*	675	615	1,230	405	408	333	250	274	350	-	-	-
Volkswagen e-Golf	164	118	581	400	264	366	460	689	554	637	366	264
BMW i3 (BEV + REX)	255	350	359	331	439	473	304	385	467	359	918	214
Kia Niro PHEV*	279	505	230	245	329	351	325	300	375	308	325	309
Mitsubishi Outlander PHEV	133	157	341	163	232	222	213	277	176	255	372	269

EV SALES AND % GROWTH



New Era of Chemicals to be Tracked

The materials making up our “traditional” vehicles are changing with EV’s



Era's Program Can Track Battery Components, Battery Packs Etc.

 Anode (-)

 Cathode (+)

 Electrolyte

 Metals

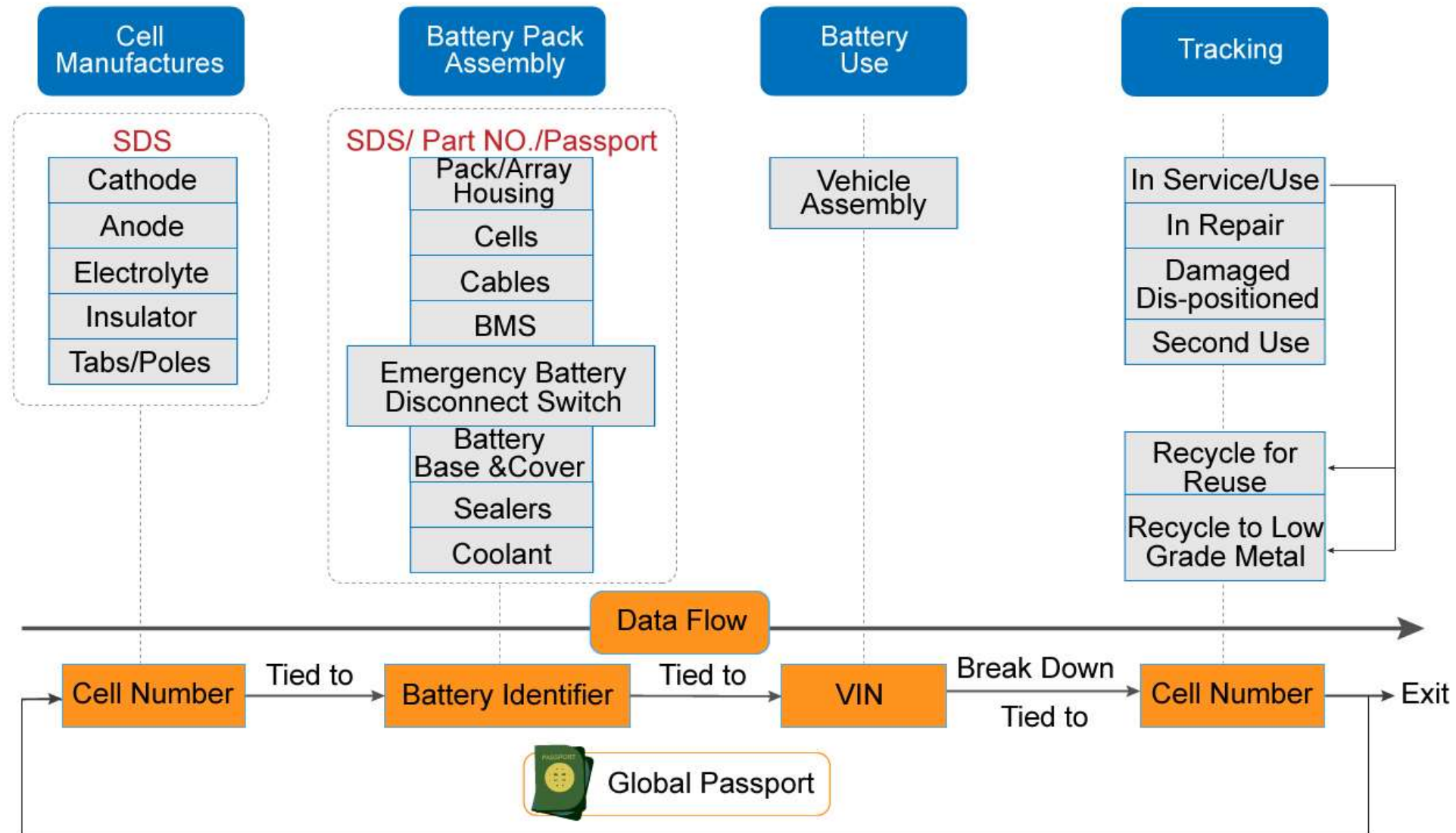
 Composite (Plastic Housing)

 Coolant

 Control Module



Total Battery Tracking Workflow



Thankyou

Questions?



ERA Conference Ingenuity at Work

EHS technology conference focusing on
collaboration, automation, and AI.
Be part of the 2020 Vision.
September 28 - 30, 2020.
Colony Club, Detroit.

[LEARN MORE](#)

