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Impact of Proposed Regulation on the Lead Battery Market - Focus on Europe and the US

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International Lead Association

IBMA-October 2022

Agenda

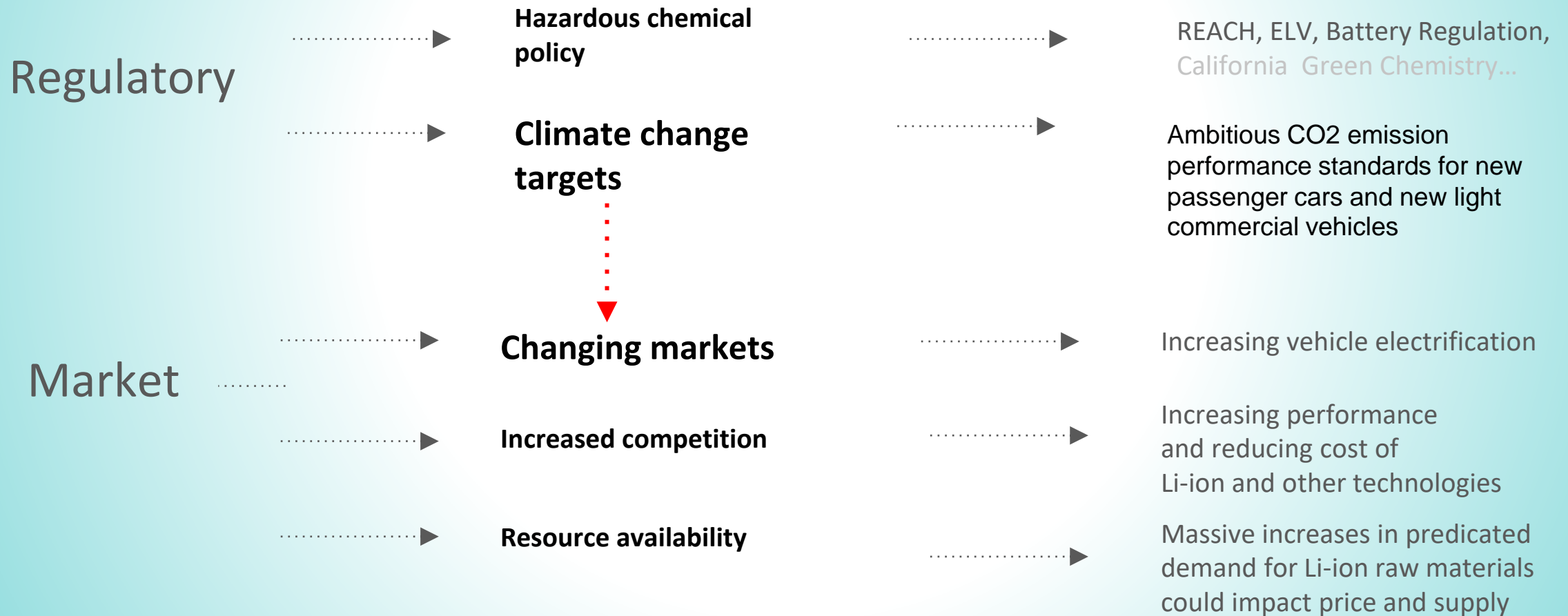


- **Macro trends**
- **EU Battery Regulation Proposal**
- **ELV Annex II 5(b) exemption for lead batteries**
- **EU REACH**

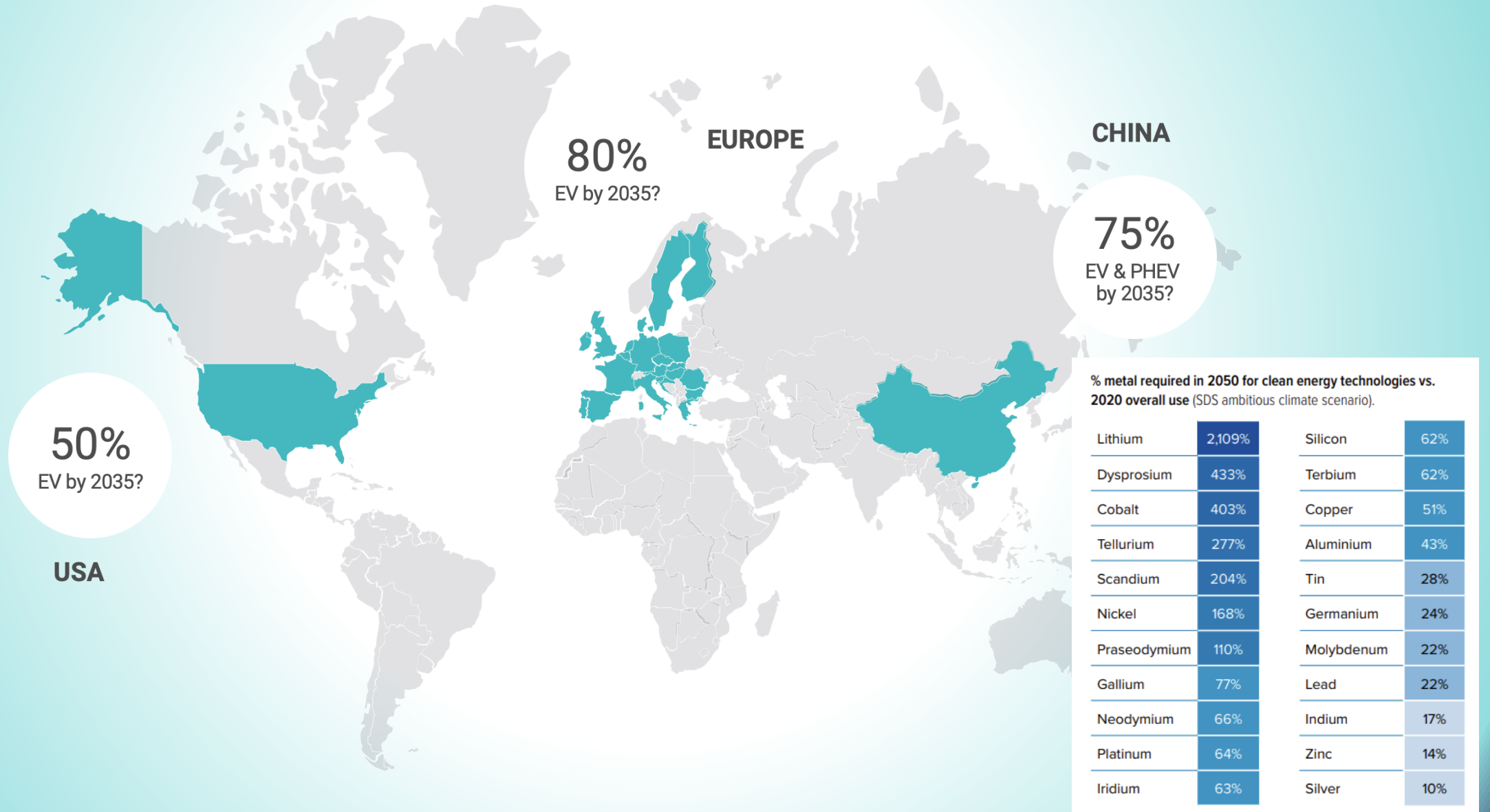
- **US legislation on the move**

Drivers for Change

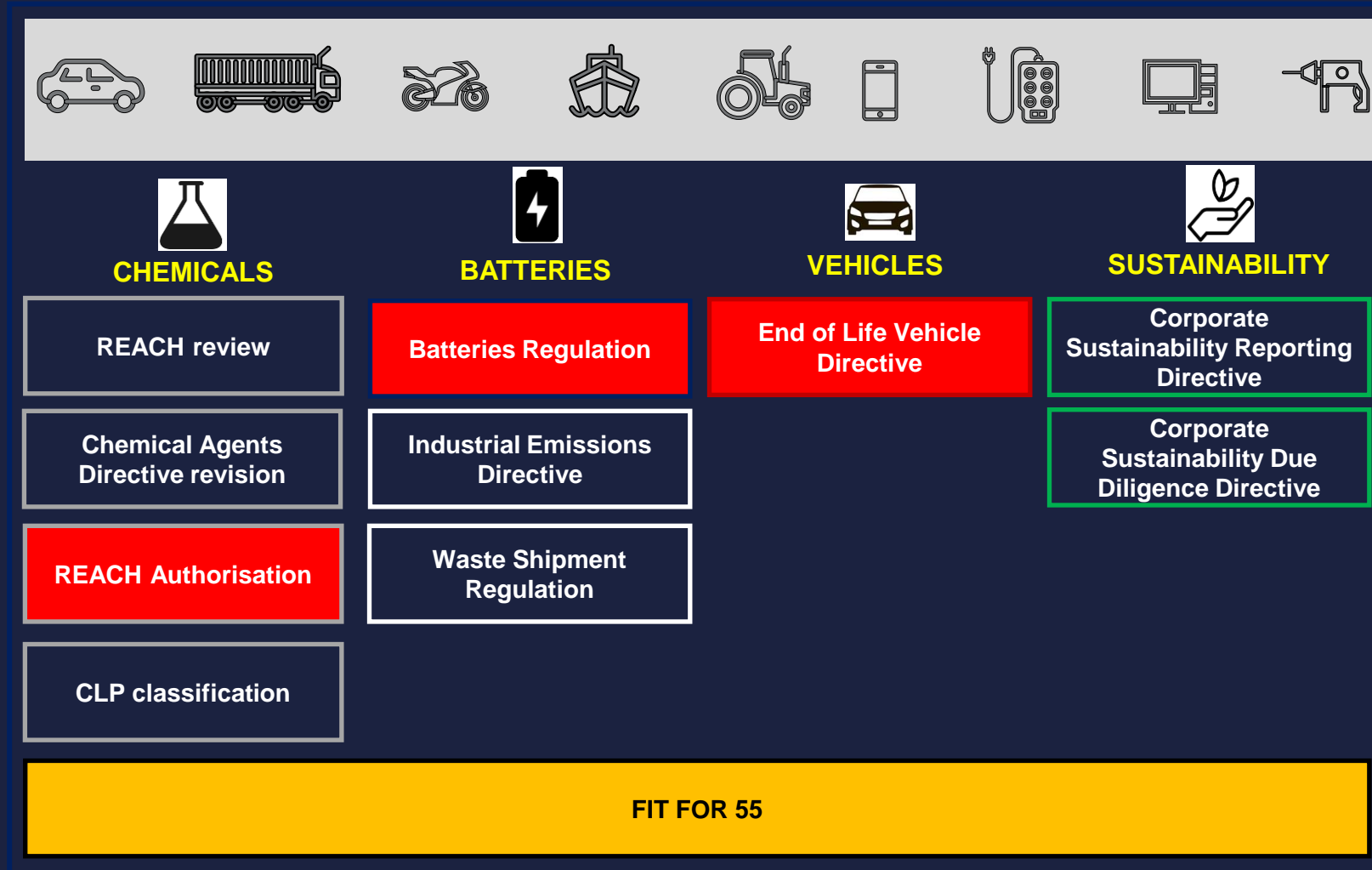
SUBSTITUTION OF LEAD BATTERIES



Regulatory driven EV mandates will increase battery raw material demand



EU- A complex regulatory framework





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EU Battery Regulation

Background to New EU Battery Regulation

- Europe is experiencing rapidly growing demand for high performance, **sustainably produced batteries**, which are one of the key enablers of a **clean energy transition**.
- In order to rise to this challenge, the EU needs a regulatory framework fit for purpose....**existing Battery Directive considered outdated**
- The proposal is part of the **European Green Deal** and related initiatives, including the **new circular economy action plan** and the **new industrial strategy**
- Objective is to **make Europe the centre for development of “sustainable batteries”** to differentiate with other markets
- Focus mainly on lithium ion and beyond but will have some implications for lead based batteries
- Intention that it should apply from 1 January 2022 (will be delayed.....)

Proposal contains ambitious requirements covering entire life cycle of a battery

Sustainability and safety:

e.g. carbon footprint rules, min. recycled content, performance & durability criteria, safety parameters

Labelling and information:

e.g. information on sustainability and data on state of health and expected lifetime

End-of-life management:

e.g. collection targets & obligations, targets for recycling efficiencies & recovered materials, EPR

Obligations of economic operators:

e.g. linked to product requirements and due diligence schemes

Electronic information exchange

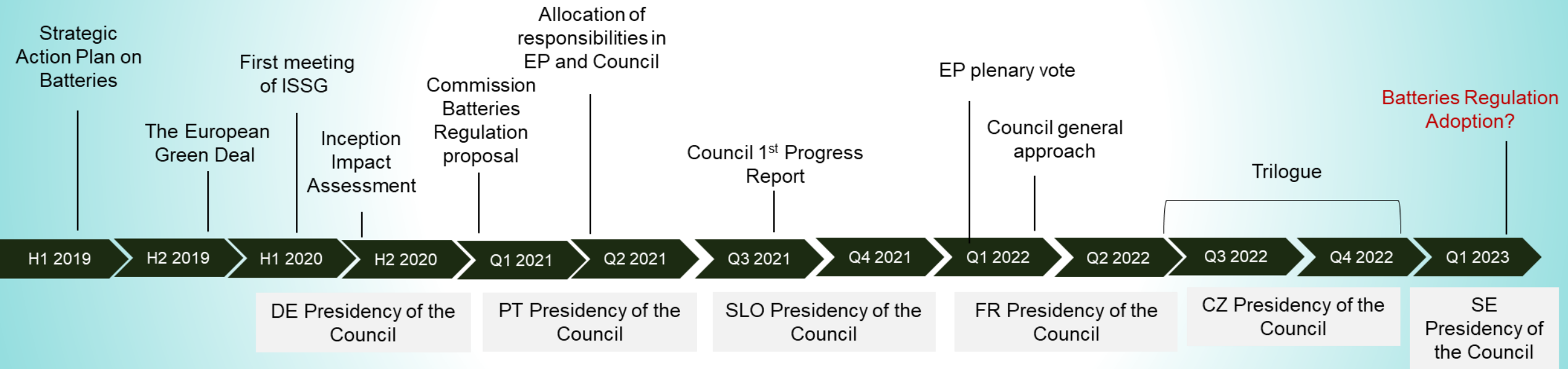
e.g. EU electronic exchange system, battery passport, QR code

- Introduces **new battery category** of EV, alongside existing portable, industrial and automotive
- **restriction** if an unacceptable risk to human health or the environment from the use of a substance
- progressive requirements to **minimise the carbon footprint** of EV batteries and rechargeable industrial batteries
- a **recycled content** declaration requirement, which would apply from 1 January 2027 to industrial batteries, EV batteries and automotive batteries containing cobalt, lead, lithium or nickel in active materials. **Mandatory minimum levels of recycled content** would be set for 2030 and 2035
- **supply chain due diligence** obligations for economic operators that place rechargeable industrial batteries and EV batteries on the market.
- **increased collection rate** targets
- **Increased recycling efficiency** and **material recovery** targets
- The setting up, by 1 January 2026, of an electronic exchange system for battery information, with the creation of a **battery passport** (i.e. electronic record) for industrial battery and EV batteries
- requirements relating to the operations of **repurposing and remanufacturing for a second life** of industrial and EV batteries

Lead Battery Recycling

- **Increased recycling efficiency targets:**
 - lead-acid batteries (recycling of 75 % by average weight **by 2025**, 80 % by **2030**)
 - lithium-based batteries (65 % by average weight by 2025, 70 % by 2030)
- **Increased material recovery:**
 - 90 % for cobalt, copper, lead and nickel, and **35 %** for lithium, to be achieved by the **end of 2025**
 - 95% for cobalt, copper, lead and **75%** for lithium, to be achieved by the **end of 2030**
- **Producers of batteries shall have extended producer responsibility requirements including the obligation to:**
 - organise the separate collection of waste batteries and the subsequent transport, preparation for repurposing and remanufacturing, treatment and recycling of waste batteries
 - producers may entrust a producer responsibility organisation to carry out the extended producer responsibility obligations on their behalf including the reporting of the level of recycling and recycling efficiencies
 - Producers must **finance** the activities

Pathway through the legislative process





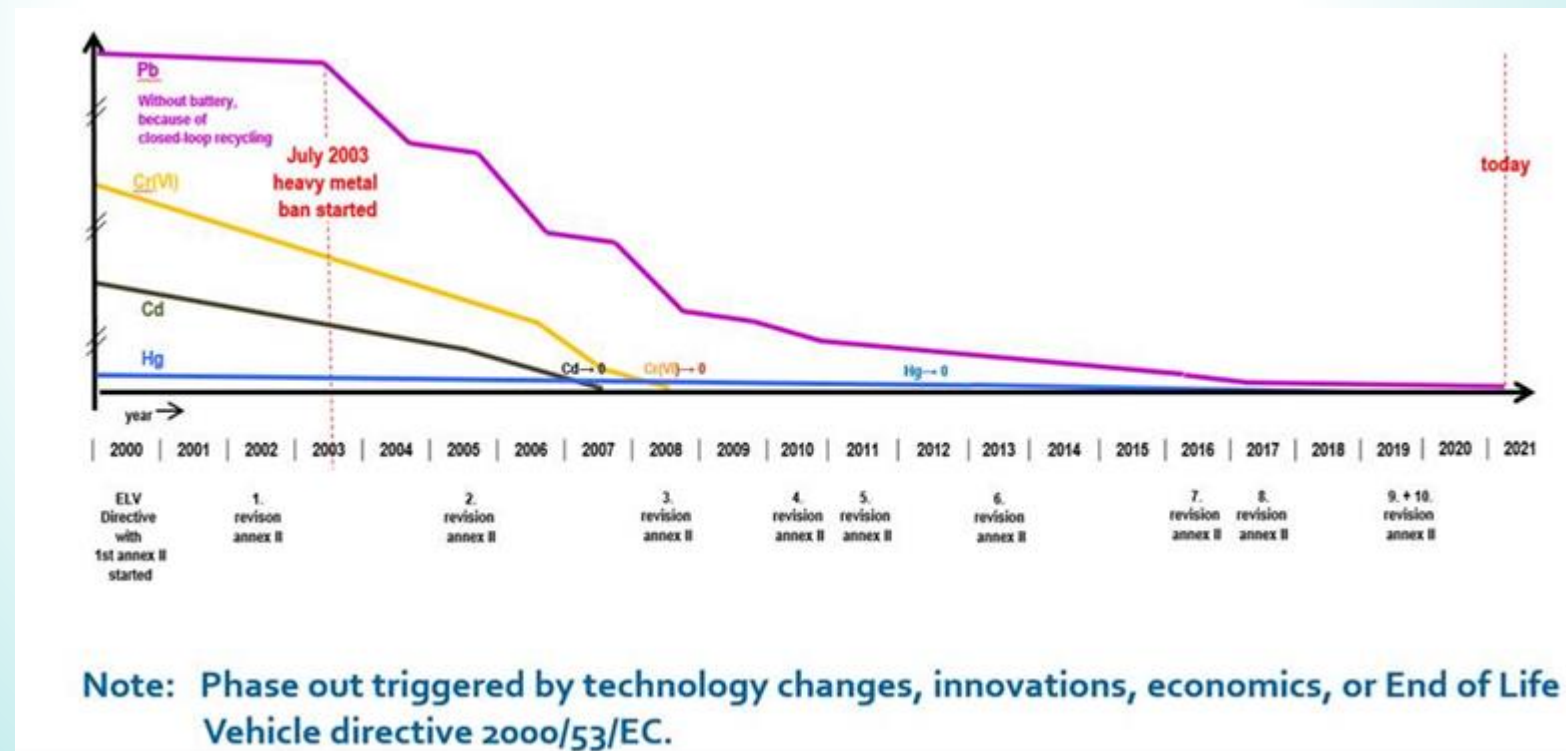
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EU End-of-Life Vehicles Exemption 5(b)-Lead Batteries

ELV Directive-Heavy Metal Bans

Art. 4.2 (a)

[...] Member States shall ensure that **materials and components of [M1 & N1] vehicles put on the market after 1 July 2003 do not contain lead, hexavalent chromium, cadmium and mercury** other than in cases listed in **Annex II** under the conditions specified therein





- **“lead is avoidable in 48 V, as well as the currently less prevalent 24 V batteries, in mild hybrid vehicles. “**
- **“The consultants do not believe that cold cranking in 12 V Li-ion is a major barrier for their implementation. However, there is remaining doubt regarding the functional safety provided by 12 V Li-ion SLI batteries”**
- **“lead-based batteries are avoidable in 24 and 48 V applications and these can be removed from the scope of this exemption”**

ELV 11th ATP Commission Proposal - 2022

To grant exemption Commission assess whether the use of lead based batteries can be avoided.....(i.e viable alternative lead-free technology exists for mass-market application).

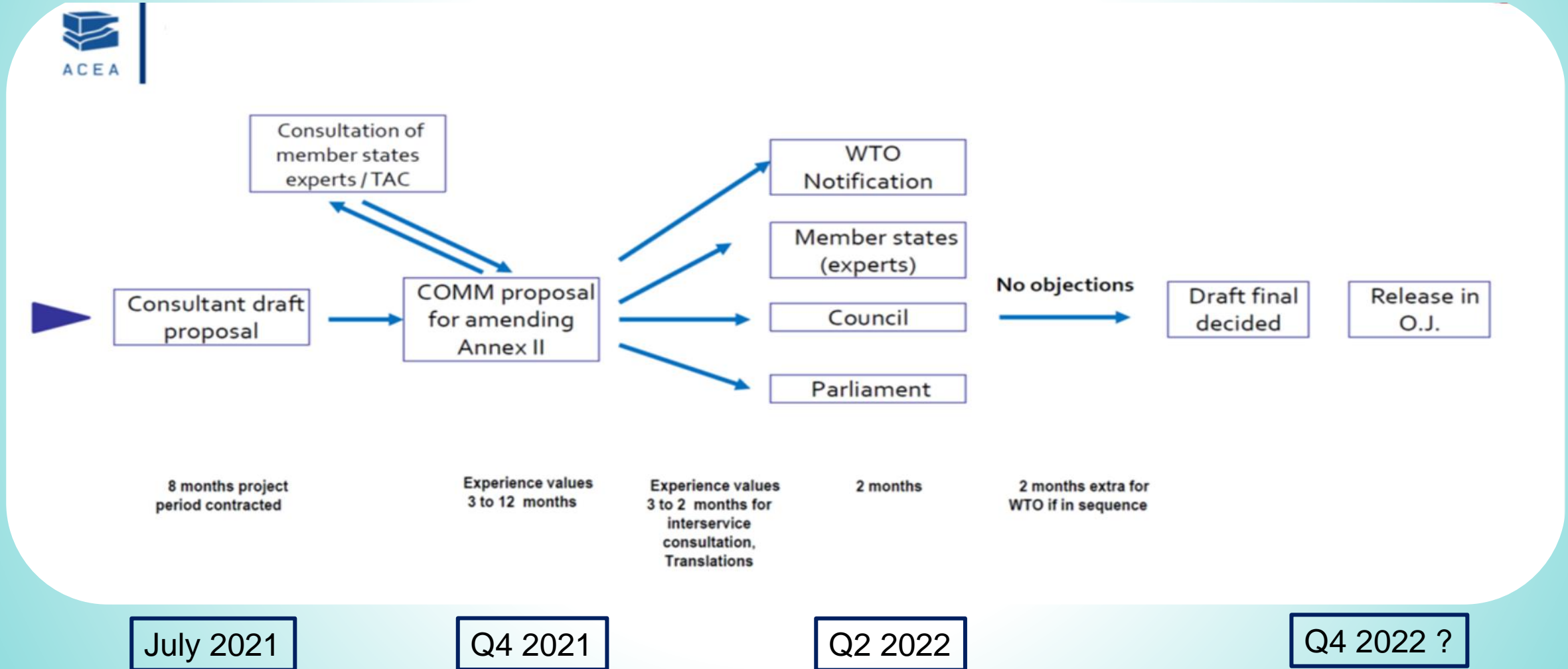
<i>Lead and lead compounds in components</i>		
5(a). Lead in batteries in high-voltage systems (4) that are used only for propulsion in M1 and N1 vehicles	Vehicles type approved before 1 January 2019 and spare parts for these vehicles	X
5(b)(i). Lead in batteries used in 12 V applications	Vehicles and spare parts for these vehicles ⁽³⁾	X
5(b)(ii). Lead in batteries for battery applications not included in entry 5(a) and entry 5(b)(i)	Vehicles type approved before 1 January 2024 and spare parts for these vehicles	X

← >75V banned in 2019

← 12V Exemption to be reviewed by 2025

← All other voltages banned after 2024

Timeline-Reasonable Worst Case

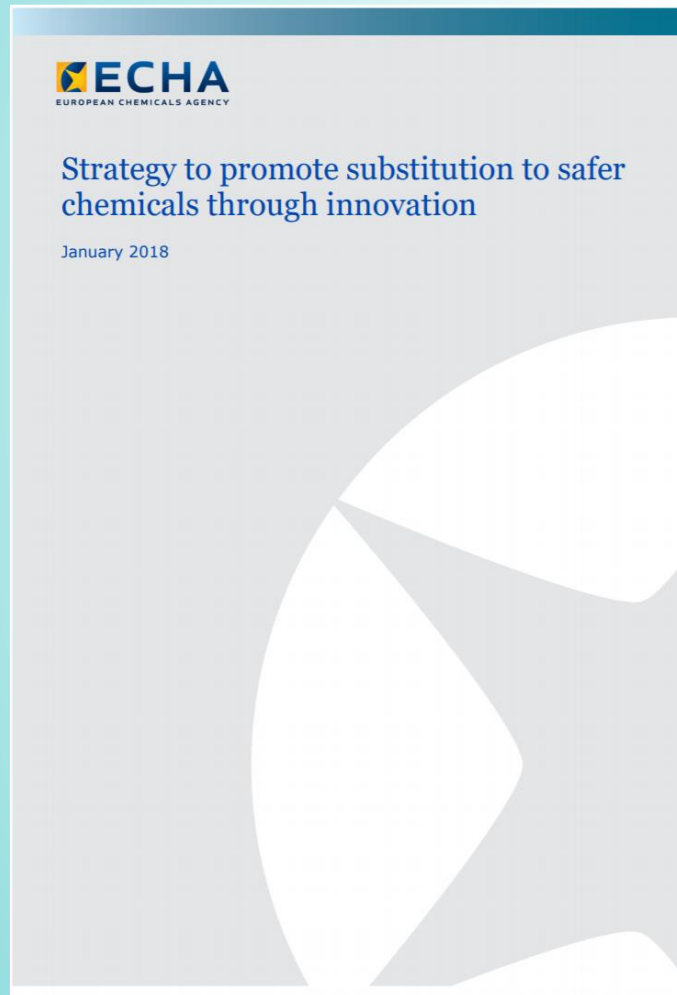




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EU REACH





EU REACH Authorisation

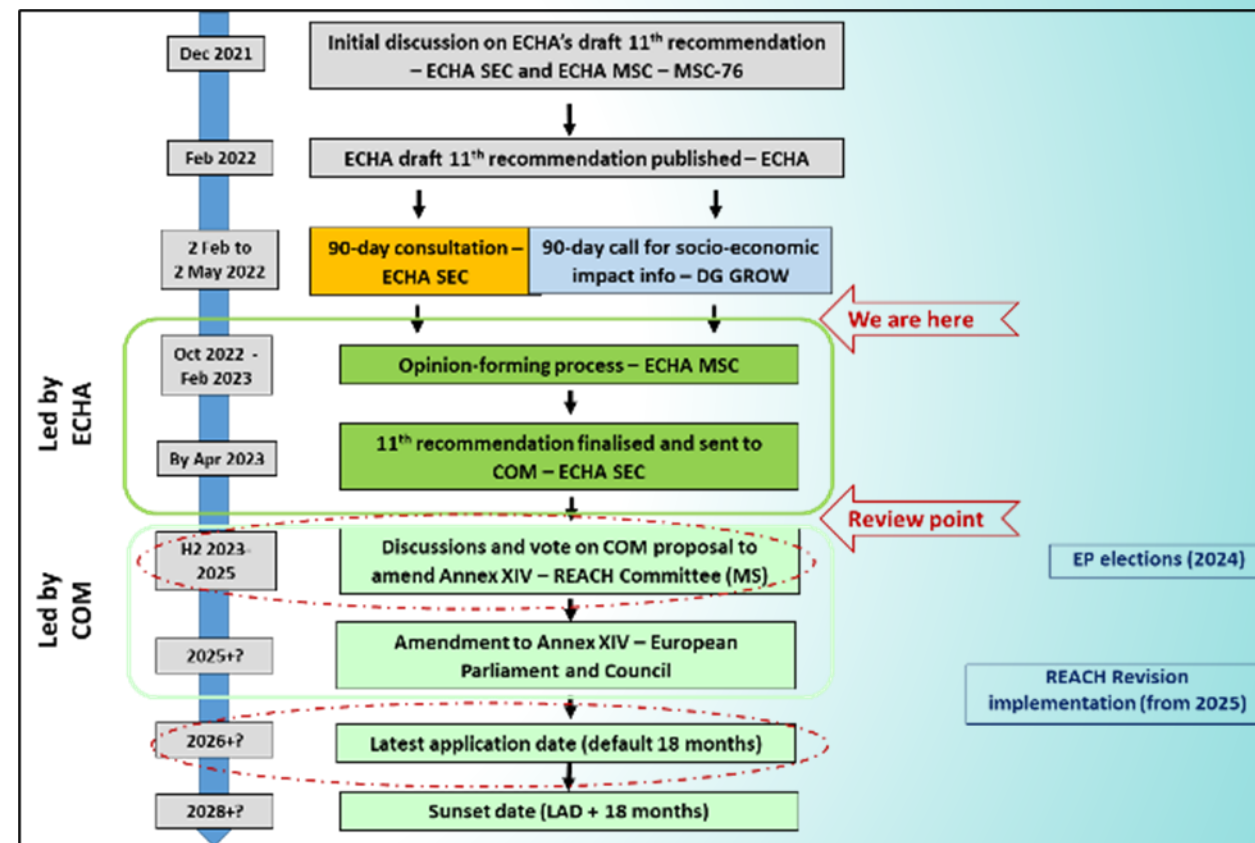
- To **progressively replaced SVHC's by suitable alternative substances or technologies** where economically and technically viable

EU REACH Restriction

- To protect human health and the environment from unacceptable risks posed by chemicals. Restrictions **may limit or ban the manufacture, placing on the market or use of a substance**

Lead metal (and other battery Pb compounds) included in the EU candidate list of Substances of Very High Concern

- Pb metal included in **Candidate list** in 2018 and now currently undergoing assessment by ECHA for potential inclusion in **10th 11th Annex XIV Recommendation**
- Authorisation of lead metal would have widespread consequences as **ALL uses of lead would be in scope** and would signal an eventual EU phase out.....





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North America

A New Administration Means Major Shifts in Federal Policies



- **Clean Energy and Climate Change**
 - Carbon Reduction policies
Enforcement @ EPA
- **Commitment to Environmental Justice**
 - Strong political pressures from key constituent groups
- **“Respect for Science”**
 - Pressures to contrast with prior administration’s treatment of academic expertise
- **Opportunities potentially presented by the Administration’s commitment to US jobs/supply chain protection**
 - American Jobs Plan infrastructure bill
 - \$2 *Trillion* package
- **Significant funding earmarked for batteries**
 - Focus on EV, but major opportunities for all battery chemistries

All major lead industry regulations are now or will soon be under review

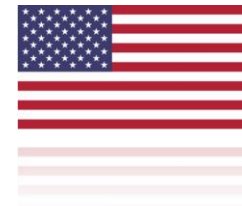
- Like Europe, the USA is also heading into a phase of legislative reform/update that has implications for sites producing lead and manufacturing lead batteries
- Major regional difference is **lack of any substantive market substitution legislation** on the horizon in the U.S
- Market driven substitution of 12V Pb with Li also less likely in medium term due to reduced demand for EVs vs Europe

Environmental

- National Ambient Air Quality Standard (NAAQS) (2022)
- National Emissions Standards for Hazardous Air Pollutants (NESHAP)
- New Source Performance Standards (NSPS)
- Toxic Substances Control Act (TSCA) (~2025?)
- Superfund Soil Cleanup Screening Levels

OSHA

- Federal workplace lead regulations (~2022)
- State OSHA implementations (California, Washington, Oregon)



Tesla Y
Tesla still leads ~70%



Ford Lightning
Innovative pickups



Cadillac Lyriq
More niche vehicles coming

Increasing from 5% to 15% EV sales by 2027

The extinction event for lead batteries is greatly exaggerated.....





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Questions