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Inland Transport Committee

Working Party on the Transport of Perishable Foodstuffs

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Other business

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English

**Overview on the Electric Vehicle Safety Global Technical
Regulation GTR 20**

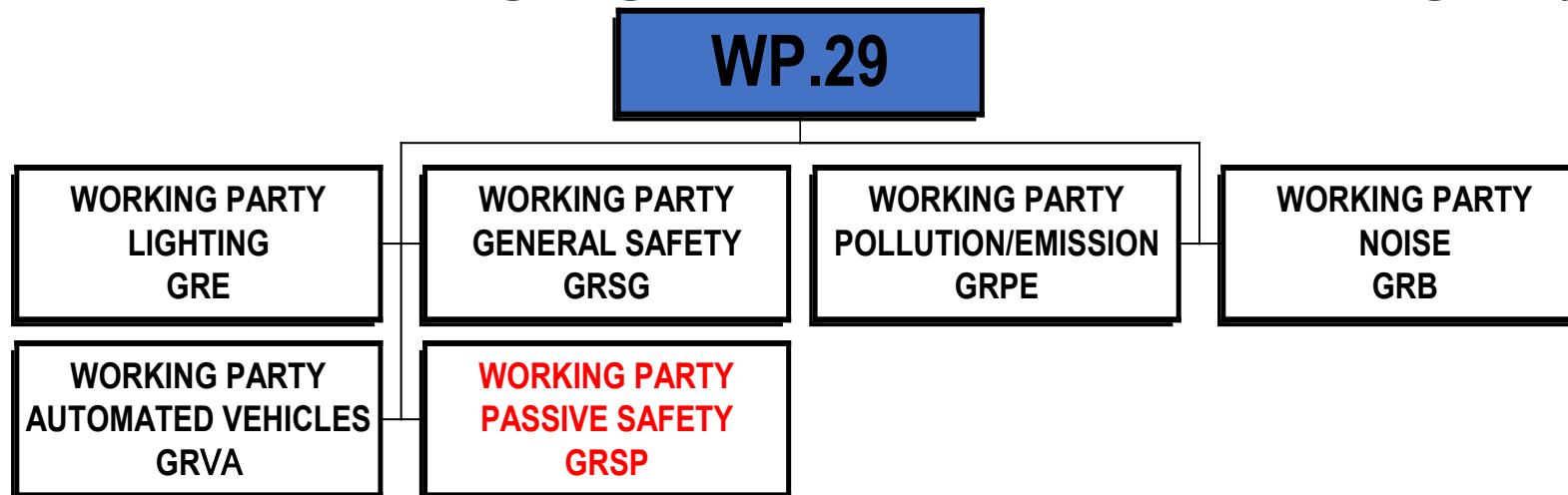
Transmitted by the Chair of GRSP

Overview on the Electric Vehicle Safety Global Technical Regulation GTR 20

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UNECE/WP.29

- UN World Forum for Harmonization of Vehicle Regulations (WP.29) administers 1958 Agreement, 1997 Agreement and 1998 Global Agreement
- Formal sessions are public, held in Geneva with active participation by the industry associations, including standards-setting organizations and consumer groups



1998 GLOBAL AGREEMENT BACKGROUND

- The 1998 Global Agreement entered into force in 2000 (U.S., EU and Japan) to establish global technical regulations (GTRs) for safety and emissions
- To date 40 Contracting Parties (CPs) e.g., Australia, Canada, China, EC, France, Germany, Hungary, India, Italy, Japan, Kazakhstan, Korea, Malaysia, New Zealand, Nigeria, Russia, South Africa, Spain, Sweden, Thailand, Tunisia, Turkey, United Kingdom, USA
- To date 21 GTRs have been established, 11 for safety and 10 emission-related
- GTRs are established by consensus vote; CPs are obligated to start an adoption process into its regulation within 1 year

EVS GTR BACKGROUND

- In 2012, under the 1998 Global Agreement of WP.29, the United States, China, European Union and Japan agreed to a working group to address the safety and environmental concerns associated with electric vehicles (EVs)
- Sub-group on EV and Environment (EVE): focusing on the information exchange and joint research concerning the related impacts of the development of EVs to the environment such as CO2 emissions, energy consumption and efficiency, energy storage (batteries, capacitors, etc.) and infrastructure
- Sub-group on EV Safety (EVS): establishing a Global Technical Regulation (GTR) for EVs ensuring high voltage electrical safety, safety of electrical components, and rechargeable electric energy storage systems (REESS)

Task Force Teams

- TF-1: Protection Against Water – China
- TF-2: Low Electrical Energy/Physical Barriers – CPs and OICA (Alliance)
- TF-3: Electrolyte Leakage – CPs and OICA
- TF-4: REESS Protocol BMS, environment exposure – OICA
- TF-5: Propagation Test – China
- TF-6: State of Charge (SOC) – Japan
- TF-7: Fire Resistance – Korea
- TF-8: Heavy Vehicles and Buses- China
- TF-9: Warning systems – U.S.

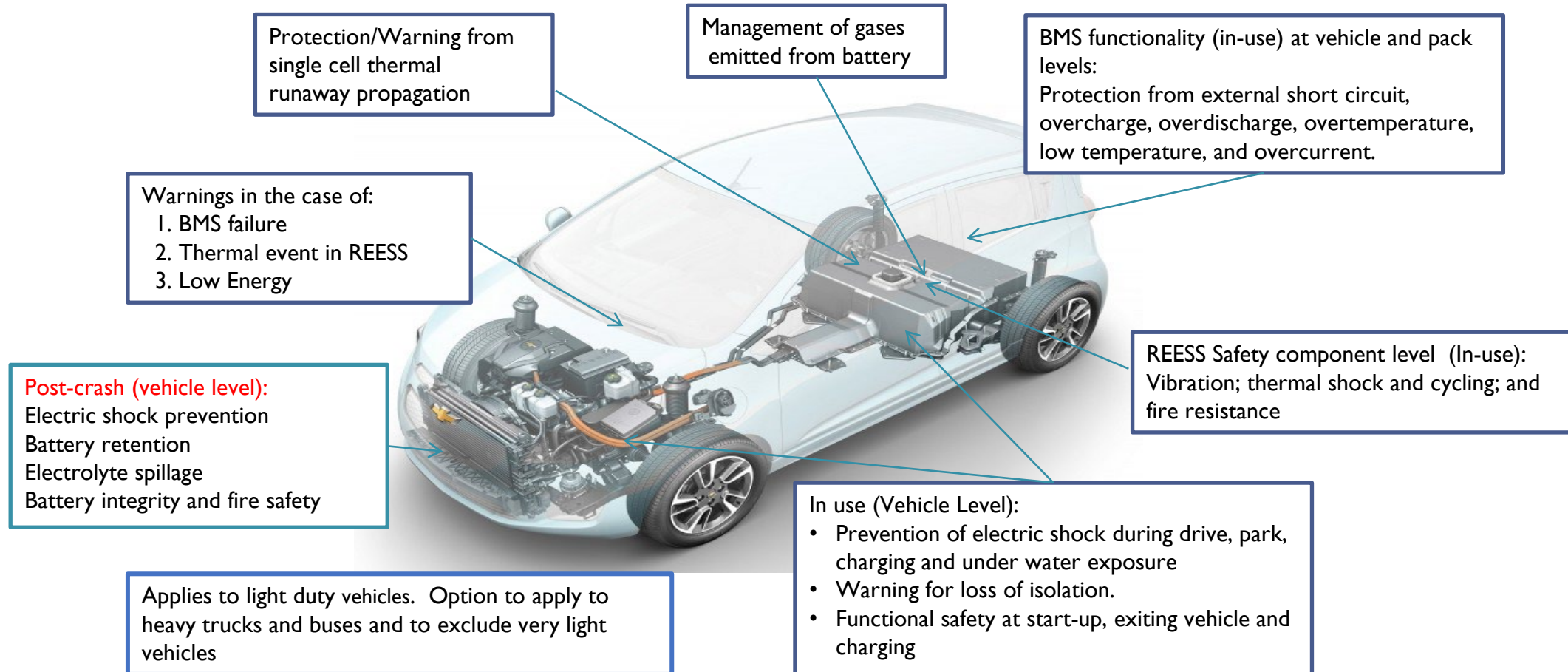
Electric Vehicle Safety (EVS) GTR

- EVS Informal Working Group (IWG) to develop a GTR for EVs ensuring safety associated with high voltage, electrical components and rechargeable electric energy storage systems (REESS). IWG has more than 70 members ranging from CPs, industry standards-setting organizations and vehicle and battery manufacturers, research institutes and laboratories, academia
- Leadership: US/Chair; EU&China/Co-Vice Chairs; Japan/Secretariat
- Phase 1: near-term critical safety requirements
- Phase 2: safety requirements that require long-term research as well as amendments to the GTR due to new information, data, etc.

EVS OBJECTIVES – Phase 1

- GTR written in performance-oriented terms and science-based to address:
 - **In-use:**
 - Occupant protection: protection against electric shock, fire, explosion
 - Safety Performance for Li-Ion rechargeable electric energy storage system (REESS), BMS for over-charge, over-discharge, short circuit, extreme temperatures, vibration, fire resistance...
 - Safety requirements during charging
 - **During and Post-crash:**
 - Electrical isolation; protection against electric shock
 - REESS/Battery crashworthiness: integrity of the battery management system, robustness, survivability, physical battery retention

The EVS GTR was established in 2018 as GTR 20 Safety Requirements (under Phase 1)



EVS GTR Phase 2

After the GTR was established, Phase 2 started in 2019 to:

- Remaining items to consider:
 1. Test procedure for Thermal Propagation
 2. Test procedure for Vibration test
 3. Test procedure for Water immersion
 4. Flammability, toxicity, and corrosiveness of vented gases

Estimated completion of the technical work by end of 2022