

Informal document GRPE-81-08  
81<sup>th</sup> GRPE, 9 -11 June 2020  
Agenda item 12

# **Status Report of the VIAQ (Vehicle Interior Air Quality) Informal Working Group**

Geneva, June 9-11<sup>th</sup> 2020

Chair: Andrey KOZLOV, Russian Federation

Co-Chair: Jongsoon LIM, The Republic of Korea

Secretary: Andreas WEHRMEIER, BMW

Regarding to Terms of reference for the 2<sup>nd</sup> stage of VIAQ IWG activity it was developed provisions and test procedures in a recommendation by including Part 3 in the Mutual Resolution No. 3.

Final text of Mutual Resolution M.R.3 was published at UNECE site on 1 of November 2018 as the document **ECE/TRANS/WP.29/1143**

United Nations



**Economic and Social Council**

**ECE**/TRANS/WP.29/1143

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Inland Transport Committee

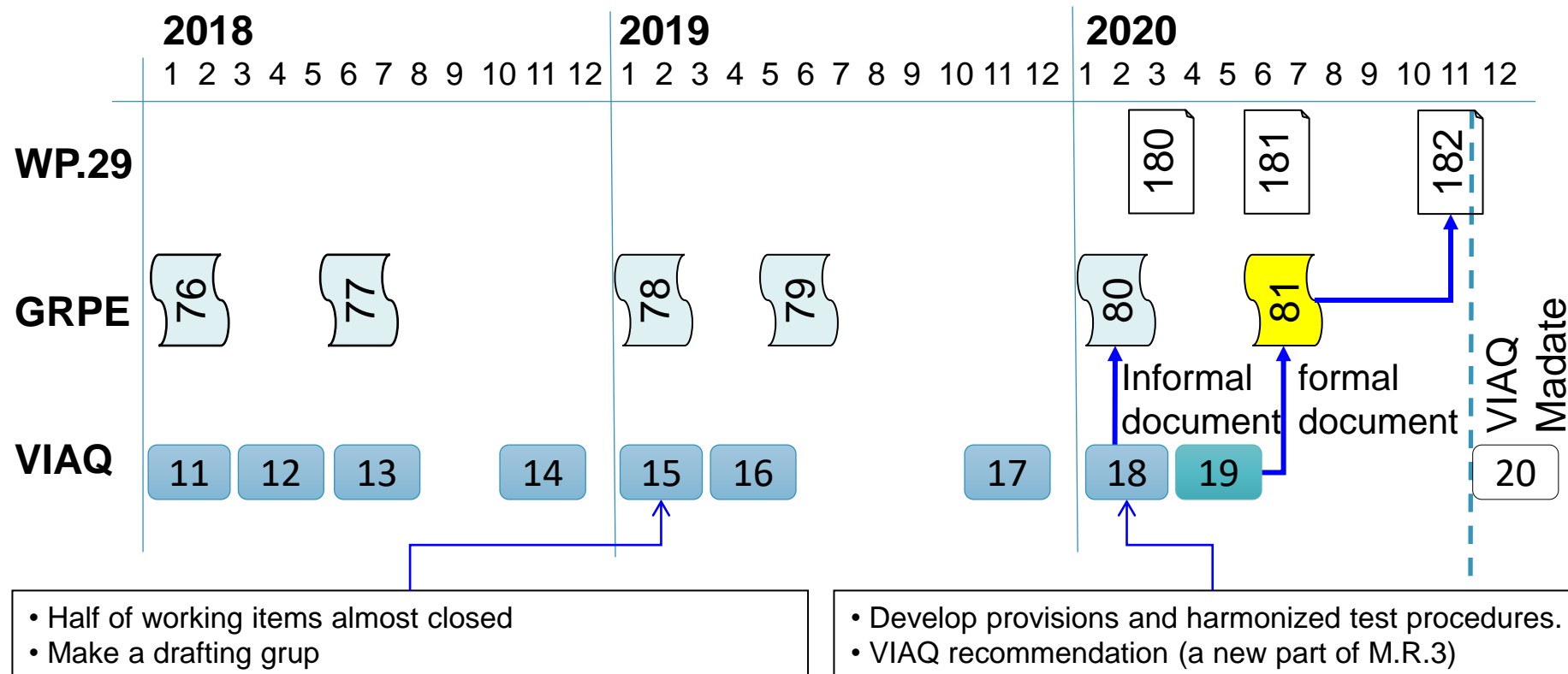
**World Forum for Harmonization of Vehicle Regulations**

**Mutual Resolution No. 3 (M.R.3) of the 1958 and the 1998 Agreements**

**Concerning Vehicle Interior Air Quality (VIAQ)**

The text reproduced below was adopted on 14 November 2017 by the World Forum for Harmonization of Vehicle Regulations (WP.29) regarding the Agreement Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be fitted and/or be used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions (1958 Agreement) and on 15 November 2017 by the Executive Committee AC.3 of the Agreement Concerning the Establishing of Global Technical Regulations for Wheeled Vehicles, Equipment and Parts which can be fitted and/or be used on Wheeled Vehicles (1998 Agreement) (ECE/TRANS/WP.29/1118, paras. 99-100 and 101). It is based on document ECE/TRANS/WP.29/2017/136.

## ● Timeline



- **January 2020:** Draft document was submitted to 80<sup>th</sup> GRPE session
- **June 2020:** Adoption of the draft document by 81<sup>st</sup> GRPE session
- **November 2020:** Adoption of the draft document by WP.29

## ➤ **19<sup>th</sup> VIAQ IWG Meeting**

- Paris, France, 9-10<sup>th</sup> March 2020
- Two days

# **Amendment to Mutual Resolution (M.R.3) on VIAQ**

**During last two years by Informal Working Group was developed amendment to Mutual Resolution 3 concerning Vehicle Interior Air Quality. The main updates are**

- 1. Updated the part I for technical rationale and justification taking into account emissions from tested vehicle entering to the cabin with exhaust gases**
- 2. Updated the description of existing regulations and standards in part I**
- 3. Added the part III describing the test procedure for emissions entering to the vehicle cabin with exhaust gases**
- 4. Added 2 annexes describing Idle test setup and the form of the test report**

**NO changes in part II describing test procedure for emissions from interior materials are made.**

**Proposal for an amendment to Mutual Resolution (M.R.3) is the working document  
ECE/TRANS/WP.29/GRPE/2020/16**





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Item 12 of the provisional agenda

**Vehicles Interior Air Quality (VIAQ)**

## **Proposal for an amendment to Mutual Resolution (M.R.3) of the 1958 and the 1998 Agreements concerning Vehicle Interior Air Quality (VIAQ)**

**Submitted by the Informal Working Group on Vehicles Interior Air Quality (VIAQ)\***

The text reproduced below was prepared by the Informal Working Group on Vehicles Interior Air Quality (VIAQ). The Informal Working Group on VIAQ presented a first draft of this proposal (GRPE-80-21) at the eightieth session of GRPE (see report ECE/TRANS/WP.29/GRPE/80, para. 67).

### **III. Emission entering to the vehicle cabin with exhaust gases**

#### **1. Purpose**

The part III of the Mutual Resolution contains the provisions and harmonized test procedure for the measurement of interior air quality concerning the protection of the driver and passengers from harmful emissions entering the vehicle cabin with exhaust gases.

#### **2. Scope and application**

This part of Mutual Resolution applies to category 1-1 vehicle, as defined in the Special Resolution No. 1.<sup>2</sup>

#### **3. Definitions**

For the purpose of this part, the following definitions apply:

- 3.1. "*Test vehicle*" means the new vehicle from series production to be tested, mileage from 3,000 – 15,000 km;
- 3.2. "*Test substances*" means the substances to be measured and are carbon monoxide (CO), nitrogen monoxide (NO), nitrogen dioxide (NO<sub>2</sub>);
- 3.3. "*Background concentration*" means the test substance concentrations in the ambient air when the test vehicle engine is OFF;
- 3.4. "*Idle test*" refers to the test in which test substances are sampled from the interior air of a test vehicle parked outside with its rear facing the wind direction and with the engine running at minimal idle speed;
- 3.5. "*Constant speed test*" refer to the test in which test substances are sampled from the interior air of a test vehicle moving at a constant speed;
- 3.6. "*Sampling point*" means a point between the headrests of the front seats.

## 4. Abbreviations

### 4.1. General abbreviations

VIAQ	Vehicle Interior Air Quality
HVAC	Heating, Ventilation and Air Conditioning

### 4.2. Chemical symbols and abbreviations

CO	Carbon monoxide [CAS#: 201230-82-2]
NO	Nitrogen monoxide [CAS#: 10102-43-9]
NO <sub>2</sub>	Nitrogen dioxide [CAS#: 10102-44-0]

## 5. General provisions

5.1. When instructed to include this test procedure in national standards, Contracting Parties are invited to adopt this part of Mutual Resolution regarding the measurement of interior air emissions entering into the cabin with exhaust gases.

5.2. This part of the Mutual Resolution does not hold regulatory status within Contracting Parties. Contracting Parties refer to the VIAQ recommendation when used for the assessment on vehicle interior air quality with the technical prescriptions of their own standards or regulations.

5.3. There are several test methods available for assessing vehicle interior air quality and this Mutual Resolution takes into account these existing standards. There are two type of tests, each with their own testing methodology. These test modes would be subject to optional acceptance by Contracting Parties depending on their situations. Contracting Parties may optionally decide on the test type.

## 6. Normative references

- 6.1. ISO 16000-1:2004 Indoor air – Part 1: General aspects of sampling strategy.
- 6.2. UN Regulation No. 83 - Rev.5 – Uniform provisions concerning the approval of vehicles with regard to the emission of pollutants according to engine fuel requirements (Annex 4a - Appendix 7).

## 7. Requirements for the test vehicle

- 7.1. Test vehicles should only be new vehicles from serial production. Used vehicles are not included. The selection of vehicles should be based on a worst case to minimize testing cost. For the purpose of emissions entering into the cabin with exhaust gases equipment for air purification is only allowed in the test cars if it is serial equipment.
- 7.2. The new vehicle should have been run in for between 3000 and 15000 km.
- 7.3. General inspection of the test vehicle should be performed before testing.

## 8. Requirements for the test apparatus, instrument, equipment and facility

- 8.1. Test facility.
  - 8.1.1. During the tests contamination from outside sources has to be prevented. Therefore, background measurements of the test substances have to be done before and after the test and in constant speed mode. Background concentrations have to be less than 25% of limit concentration. Difference between measurements of background concentrations before and after the test runs should not be more than 10% of limit concentration.



# New Part III of M.R.3 on VIAQ

8.1.2. For the purpose of an idle test it is possible to use natural wind (if within the specification) or an air blower to provide uniform air flow along the tested vehicle with a velocity of  $2\pm 1$  m/s.

8.1.3 Test facility for idle test is an open parking zone.

8.1.4. Test road for constant speed test is a paved road with a gradient of maximum 6.0%.

8.2. Measurement method.

8.2.1. Measurement of test substances concentration in interior air is possible with using of either on-line or off-line measurement.

8.2.2. On-line measurement should be the preferred method and is carried out directly inside the tested vehicle with appropriate gas analysis equipment.

8.2.3. Off-line measurement should only be used in case of impossibility to maintain on-line measurement equipment inside the vehicle and is carried out by sampling of interior air probes in sealed bags.

8.3. Sampling method.

8.3.1. Sampling method in case of off-line measurement should be as follows:

8.3.2. The sampling system shall consist of: inverter for power supply to sampling system, air pump with flow rate of 2 l/min, air flow meter, clock, sampling bag of at least 30 l and connecting tubes.

8.3.3. The flow rate and duration of sampling is set in accordance with the required sample volume necessary for two parallel samples from one sampling point and is regulated by the requirements of the appropriate measurement procedures and the analytical parameters of the gas analyzer used.

In case of emissions measurement from exhaust gases with on-line gas analyzers for CO, NO, NO<sub>2</sub> at least 5 measurements during 15 minutes have to be collected and then use averaged value as a result.

8.4. Test substance concentration measurement methods.

8.4.1. For nitrogen oxides (NO, NO<sub>2</sub>):

- (a) Chemiluminescence (CLD);
- (b) High-sensitive electrochemical detection (ECD).

8.4.2. For carbon monoxide (CO):

- (a) Infrared photoacoustic spectroscopy (IRPAS);
- (b) Electrochemical detection (ECD);
- (c) None dispersive Infrared detector (NDIR).

8.5. Test substance concentration measurement limits.

8.5.1. The measuring equipment should provide the lower and upper limits of measurable concentrations of the test substances at the presence of other components as in the table below.

<i>Test substance</i>	<i>Lower limit of measurement, not less than, mg/m<sup>3</sup></i>	<i>Upper limit of measurement, not more than, mg/m<sup>3</sup></i>
Nitrogen monoxide NO	0.03	4.0
Nitrogen dioxide NO <sub>2</sub>	0.02	2.0
Carbon monoxide CO	1.0	50.0



8.6. Additional measurement equipment.

8.6.1. For tests using additional measurement equipment the following are to be used: thermometer, relative humidity meter, barometer, anemometer. Limit of permissible basic error for the above mentioned equipment is presented in the table.

<i>Parameter</i>	<i>Limit of permissible basic error</i>
Temperature	±1°C
Relative humidity	±2.5%
Atmospheric pressure	±0.1 kPa
Wind velocity	±(0.2 +2% from measured value) m/s
Flow rate	±5%

## 9. Test procedure, test mode, and test conditions

9.1. The preparation procedure.

9.1.1. Take out cabin air filter and replace by new uncontaminated one.

9.1.2. Check vehicle for tightness (sealings, windows, doors, trunk, roof). A vehicle with defective components should not be tested.

9.1.3. Ensure exhaust pipe is representative of serial production. Visually check exhaust pipe for tightness.

9.1.4. Before testing substance concentration, the measurement equipment or sampling system should be placed inside the test vehicle and warmed up ahead of the test start time in accordance with the equipment manual.

9.2. Test conditions.

9.2.1. Ambient temperature in the range from -7°C to 30°C.

9.2.2. Relative humidity from 30% to 90%.

9.2.3. Atmospheric pressure from 85 to 110 kPa

# New Part III of M.R.3 on VIAQ

- 9.3. Idle test.
- 9.3.1. Ensure the wind speed is equal to  $2\pm 1$  m/s in case of testing at natural air movement.
- 9.3.2. Park the vehicle in a position so the wind direction, natural or simulated, achieves a linear speed of air perpendicular to the rear of the test vehicle.
- 9.3.3. Locate the sensors to measure wind speed, temperature and humidity on the vehicle center line behind the test vehicle 0.5 m from the rear of the vehicle and 1.0 m from ground. During sampling, the sensors shall continually monitor at this location.
- 9.3.4. Verify the uniformity of the wind to ensure it is constant across the width of the vehicle within the airflow tolerance and perpendicular to the rear of the vehicle. To verify the uniformity, measure the wind speed at two additional points 0.5 m on each side of the vehicle prior to sampling (see Annex V). To verify the wind is perpendicular to the vehicle, use a multi-axis flow meter or another method to verify that the cross wind is less than 15% of the wind airflow at all three locations prior to testing.
- 9.3.5. Start the engine and warm-up vehicle by driving for a minimum 15 minutes.
- 9.3.6. After warm-up, park the vehicle by backing into the previous position, such that the wind will force the exhaust gases back towards the vehicle. Set the vehicle's climate system to air conditioner: OFF; recirculation: ON and make sure that outside flaps do not open during test; temperature: manual and coolest level; fan: highest level; dashboard vent: all open and horizontal, and rear vents: closed.
- 9.3.7. With the engine off, ventilate vehicle for 5 minutes with all doors and windows open. Then close the doors and windows. Check the door seals, windows, doors, trunk, and roof.
- 9.3.8. During sampling, no people shall be inside the test vehicle. With the engine off, measure the background test substances concentrations. Start measuring wind speed, temperature and humidity at the center point 0.5 m behind the vehicle and 1.0 m from ground. Sample at least 5 air measurements from a location between the front seats during 15 minutes and then use the averaged value as a result. If sampling into a bag for off-line analysis then take two samples, each over 15 minutes, one sample for the reported measurement and one as a backup in case of failure. Stop all measurements and proceed to the idle measurement.
- 9.3.9. Open the door, start the engine, confirm the climate system settings, exit and close the door. This operation should take about one minute. With the engine running in an idle condition measure the vehicle interior test substances concentration level. Start measuring wind speed, temperature and humidity at the center point 0.5 m behind the vehicle and 1.0 m from ground. Sample at least 5 air measurements from a location between the front seats, take during 15 minutes. If sampling into a bag for post analysis then take two samples, each over 15 minutes, one sample for the reported measurement and one as a backup in case of failure.
- 9.3.10. Stop all measurements, open the door and switch engine off. Take another background measurement according to paragraph 9.3.8. Vehicle idle test is complete.



- 9.4. Constant speed test.
- 9.4.1. Start the engine and warm-up vehicle by driving for a minimum 15 minutes.
- 9.4.2. After warm-up, park the vehicle and set the vehicle's climate system to air conditioner: ON; recirculation: ON and make sure that outside flaps do not open during test; temperature setting: 20°C in automatic climate system or middle position for manual system; fan: highest level; dashboard vent: all open and horizontal, and rear seat vents: closed.
- 9.4.3. With the engine off, ventilate vehicle for 5 minutes with all doors and windows open. Then close the doors and windows. Check the door seals, windows, doors, trunk, and roof.
- 9.4.4. During sampling, no people shall be inside the test vehicle. With the engine off measure the background test substances concentrations. Start measuring wind speed, temperature and humidity at 1.0 m from ground. Sample at least 5 air measurements from a location between the front seats during 15 minutes and then use averaged value as a result. If sampling into a bag for on-site analysis then take two samples, each over 15 minutes, one sample for the reported measurement and one as a backup in case of failure. Stop all measurements and proceed to the constant speed measurement.
- 9.4.5. Start the engine, confirm the climate system settings. Only two persons are allowed inside the car during the driving test. Start driving and accelerate smoothly to a speed of 50 km/h. Measure the vehicle interior test substance concentration level. Sample at least 5 air measurements from a location between the front seats during 15 minutes. If sampling into a bag for post analysis then take two samples over 15 minutes, one sample for the reported measurement and one as a backup in case of failure.
- 9.4.6. Stop all measurements, park the vehicle and switch engine off. Take another background measurement according to paragraph 9.4.4. Vehicle constant speed test is complete.

## 10. Calculation, presentation of results, precision and uncertainty

- 10.1. Calculation of results: take at least 5 measurements from gas analyzers and use mean values as results.
- 10.2. Data reporting shall use the format in Annex VI. Additions to the report should be agreed on between the client and the laboratory.

## 11. Performance characteristics

- 11.1. Calibration procedure.
  - 11.1.1. Calibration should be done according to GTR 15.
  - 11.1.2. Calibration can be done by certified gas mixtures or preparation with a gas mixture generator (dynamic gas divider) used for the preparation of binary calibration gas mixtures within the permissible relative deviation of the dilution ratio from the nominal value within  $\pm 2\%$ ; calibration gas mixtures (CGM) of calibrated components (NO in nitrogen, NO<sub>2</sub> in nitrogen, CO in nitrogen) with concentration error  $\pm 5\%$ ; diluent gas in a balloon (synthetic air or nitrogen) with minimum purity 99.999%; connecting tubes from chemically inert materials.
  - 11.1.3. Preliminarily prepare 3 to 4 variants of dynamic gas divider valves setting to achieve analyzed gas concentration levels in the measurement range.
  - 11.1.4. Consistently set certain analyzed gas concentration level and measure it with calibrated gas analyzer. The difference between the set and measured concentration values (the main relative measurement error), should not exceed 25%.
  - 11.1.5. In case of exceedance of allowable measurement error, perform the gas analyzer calibration procedure in accordance to the user manual.
  - 11.1.6. One point calibration should be checked before and after each test set.



# New Part III of M.R.3 on VIAQ

- 11.2. Cleaning procedure for Tedlar Bags.
- 11.2.1. The Tedlar Bag shall be filled with Nitrogen 5.0 to the half of the bag volume. Afterwards the bag is sealed by closing the port. The bag containing Nitrogen is heated up to 100°C for 24 hours in a dry oven. Afterwards the bag will be evacuated, filled again with Nitrogen to check the blind values using adsorbents like e.g. DNPH, Tenax or Carbotrap. If the check is passed, the bag can be used, otherwise the cleaning procedure has to be repeated.

## 12. Quality assurance/quality control

- 12.1. The tests proceeded in accordance to paragraph 9. of part III are valid if all quality requirements listed in this paragraph are fulfilled.
- 12.2. Quality control requirements for idle test are listed in the table below.

<i>Subclauses</i>	<i>Description</i>	<i>Criterion</i>	<i>Frequency</i>	<i>Comments</i>
9.3.1 9.3.3	Wind speed	2±1 m/s	Each test	
9.3.2 9.3.4	Wind direction	±15 deg.	Each test	Perpendicular to rear of the test vehicle
9.3.3	Relative humidity	30 to 90%	Each test	
9.3.3	Atmospheric pressure	85 to 110 kPa	Each test	
9.3.3	Ambient temperature	-7 to +30°C	Each test	
9.3.4	Uniformity of the wind	±0,2 m/s	Each test	Measure the wind speed at two additional points 0.5 m on each side of the vehicle prior to sampling (see Annex V).
9.3.8	Background test substance concentrations	<25% of MAC*	Before test	Control for all measured test substances
9.3.10	Background test substance concentrations	<25% of MAC* and not more than 10% of MAC from concentrations before test (p.9.3.8)	After test	Control for all measured test substances

\*MAC – maximal allowable concentration set by contracting party

# New Part III of M.R.3 on VIAQ

12.3. Quality control requirements for constant speed test are listed in the table below.

<i>Subclauses</i>	<i>Description</i>	<i>Criterion</i>	<i>Frequency</i>	<i>Comments</i>
9.4.4	Ambient temperature	-7 to +30°C	Each test	
9.4.4	Relative humidity	30 to 90%	Each test	
9.4.4	Atmospheric pressure	85 to 110 kPa	Each test	
9.4.4	Background test substance concentrations	<25% of MAC*	Before test	Control for all measured test substances
9.4.6	Background test substance concentrations	<25% of MAC* and not more than 10% of MAC from concentrations	After test	Control for all measured test substances
		before test (p.9.4.4)		

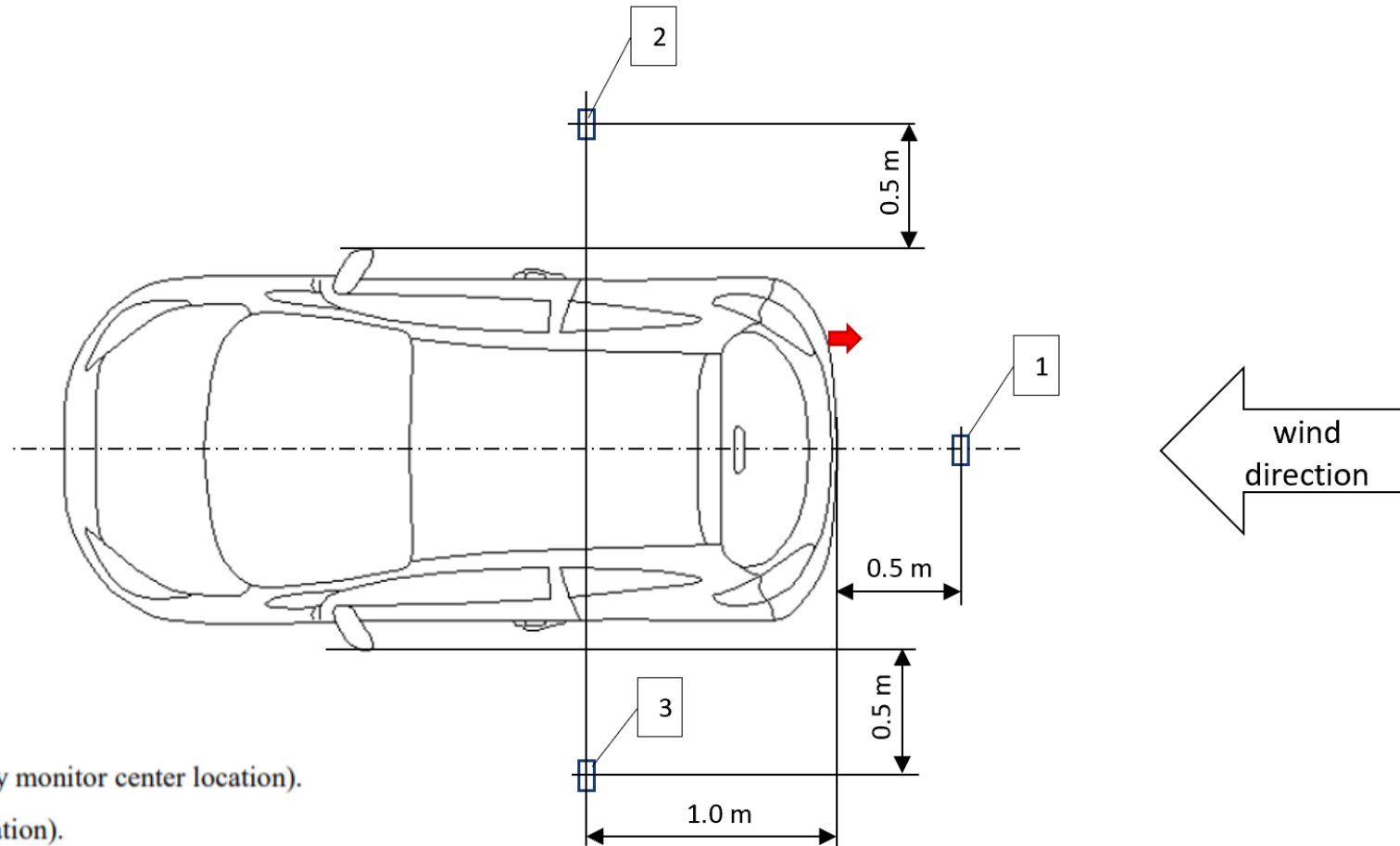
\*MAC – maximal allowable concentration set by contracting party

12.4. Quality control requirements for gas analysis are listed in the table below.

<i>Subclauses</i>	<i>Description</i>	<i>Criterion</i>	<i>Frequency</i>	<i>Comments</i>
11.1	Gas analyzer calibration	±25%	Daily	Procedure in accordance to 11.1
11.2.1	Tedlar bag cleaning	Bag within nitrogen is heated up to 100°C for 24 hours	Before each test	

## Annex V

### Idle test setup





# New Part III of M.R.3 on VIAQ

## Annex VI

### Test report of emissions entering to the vehicle cabin with exhaust gases

#### Reporting Format and Data Exchange

The data exchange file shall be constructed as follows. Test substance concentrations as well as any other relevant parameters shall be reported and exchanged as a csv-formatted data file. Parameter values shall be separated by a comma, ASCII-Code #h2C. The decimal marker of numerical values shall be a point, ASCII-Code #h2E. Lines shall be terminated by carriage return, ASCII-Code #h0D. No thousand separators shall be used.

#### Headers of the Reporting and Data Exchange File

<i>Line #</i>	<i>Parameter</i>	<i>Basic Data Type [A=Alpha or N=Numeric (max length, fractional digits)]</i>	<i>Data Type [Enumeration on String, Decimal, Integer]</i>	<i>Total Digits</i>	<i>Fractional Digits</i>	<i>Minimum Value</i>	<i>Maximum Value</i>	<i>Allowed Values for: Enumeration or Description or Units</i>
1	Process Code	N(2)	Integer			0	99	Version of Test Report. 1 <sup>st</sup> dataset is N=0, highest value is the latest correction of existing dataset
2	Name of Witness	A(250)	String					Only if applicable. Full name of witness, company name and contact information for certification of test. Use "Self-Certified" if no witness is required.

## Conclusions on the second stage of VIAQ IWG activity

- During two years was formulated, discussed and agreed all working items concerning emissions entering to the vehicle cabin with exhaust gases
- Amendment to Mutual Resolution (M.R.3) on VIAQ was developed and presented to GRPE
- Informal working group discussed future of vehicle interior air quality improvement and concluded to start with a broad scope of different outside pollutants including biological active particle like virus and to focus on the most relevant pollutants during the activities of the 3rd stage

- The mandate of VIAQ IWG will expire November 2020.
- The IWG concluded to continue work on stage 3
- The Terms of reference and rules of procedure was agreed on 19<sup>th</sup> VIAQ meeting
- The main objective of the 3<sup>rd</sup> stage is the issues of the vehicle interior air quality, addressing outside air pollutants entering into the vehicle cabin and the interior air cleaning efficiency
- The IWG asks GRPE for the new mandate till November 2025



## **Terms of reference and rules of procedure for the Informal Working Group on Vehicle Interior Air Quality (VIAQ)**

# 1. Background

1.1 VIAQ informal working group developed a new Mutual Resolution No.3 on Vehicle Interior Air Quality taking into account emissions of chemical substances from the interior materials. This issue is linked to evaporative emissions from chemical compounds used in some of the vehicles' interior elements, such as the dashboard, seat etc. The mutual resolution contains provisions and harmonized test procedures for the measurement of interior air emissions from interior materials.

1.2 On the second stage, exhaust gas entry from the tailpipe of the vehicle is taken into account. The amendment of Mutual Resolution No.3 contains provisions and harmonized test procedures for the measurement of interior air pollution from exhaust gases of a tested vehicle. The list of test substances includes CO, NO, and NO<sub>2</sub>.

1.3 Another, probably most important, source of interior air pollution is ambient air, which could contain many harmful substances emitted by other vehicles, power plants, industry etc. The group considered the inclusion in the scope of interior air pollutants from outside sources as a possible extension of the mandate at third stage. As an extension of the existing Mutual Resolution on VIAQ, this will take into account not only interior air emissions generated from interior materials and exhaust gases from the vehicle entering into the cabin but also outside air pollution sources. The list of outside air pollutions could include CO, NO, NO<sub>2</sub>, SO<sub>2</sub>, O<sub>3</sub> volatile organic compounds (VOC), aldehydes, aromatic and aliphatic hydrocarbons, particulate number (PN) and mass (PM) and microbiological substances, e.g. allergens, fungi, bacteria and viruses. As an extension of the existing Mutual Resolution on VIAQ, this will take into account not only interior air quality but also the air cleaning efficiency of the vehicle air handling & treatment system.

## 2. Procedural Background

2.1 At the 173rd WP.29 session Proposal for a new Mutual Resolution (M.R.3) for of the 1958 and the 1998 Agreements concerning Vehicle Interior Air Quality (VIAQ) was adopted (ECE/TRANS/WP.29/2017/136). Final text of Mutual Resolution M.R.3 was published at UNECE site on 1 of November 2018 as the document ECE/TRANS/WP.29/1143

2.2 At the 172nd WP.29 session, WP.29 endorsed the extension of the mandate of the IWG on VIAQ until November 2020 to extend the work to consider not only emissions generated by interior materials, but also exhaust gases from the tailpipe that enter into the vehicle cabin. (ECE/TRANS/WP.29/1131, para44)

2.3 At the 80th GRPE session, the Chair of the IWG on Vehicles Interior Air Quality presented the draft amendment of Mutual Resolution No. 3 (GRPE-80-21) and requested an extension of the mandate of the IWG on VIAQ until November 2025 to expand the work to consider interior air pollution from outside sources. (ECE/TRANS/WP.29/GRPE/80, para 67)



# 3. Objective

3.1 The VIAQ informal working group will have an open structure, which will enable the exchange of information and experiences on relevant regulations, policy measures and harmonization efforts.

3.2 This proposal expands on the issues of the vehicle interior air quality, addressing outside air pollutants entering into the vehicle cabin and the interior air cleaning efficiency, to develop a test procedure in a recommendation by including Part 4 in the Mutual Resolution No. 3.

- 4.1 The following terms of reference describe the main tasks of the IWG.
- (a) Identify and collect the information and research data on outside and interior air quality and its relevance for vehicles, taking into account the activities being carried out by various governments, and non-governmental organizations.
  - (b) Identify and understand the current regulatory requirements with respect to vehicle interior air quality and incoming air cleaning efficiency in different markets.
  - (c) Identify, review and assess existing test procedures suitable for the measurement of harmful substances while entering into the vehicle cabin and the interior air cleaning efficiency (including test modes, sample collection methods and analysis methods, etc.)
  - (d) Develop provisions and test procedures in a recommendation by including Part 4 in the Mutual Resolution No. 3.

5.1 The work of the group on Vehicle Interior Air Quality should be completed by November 2025. An extension of the mandate of the group should be considered in due time by GRPE, if necessary.

- (a) January 2021: Discussion for the directions and working items.  
Data collection and analysis
- (b) January 2022: Analysis of existing test procedures
- (c) June 2022: Report to GRPE Concept of test procedure
- (d) January 2023: Tests by VIAQ IWG members
- (e) January 2024: Start working with draft document and verify test procedure
- (f) January 2025: Submit the draft document to GRPE
- (g) June 2025: Adoption of the draft document by GRPE
- (h) November 2025: Adoption of the draft document by WP.29

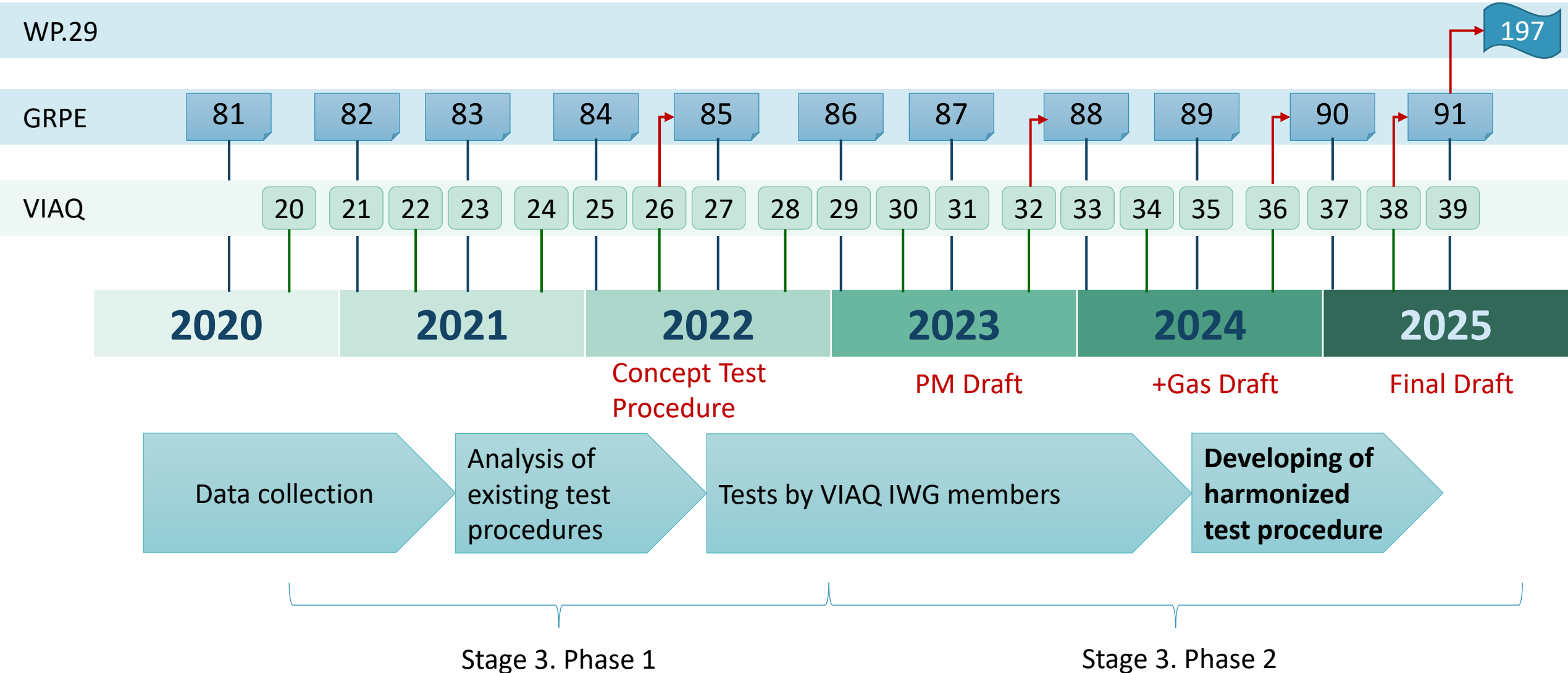


# 6. Scope and work items

- 6.1 Interior air emissions emitted from interior materials
  - (a) Continue to work, review, and assess the harmonized test procedures
  - (b) Update the interior emissions section 2 for the Mutual Resolution
  
- 6.2 Substances from exhaust gases entering to the vehicle cabin
  - (a) Continue to work, review, and assess the harmonized test procedures
  - (b) Update section 3 for the Mutual Resolution
  
- 6.3 Outside air pollutants entering into the vehicle cabin and their cleaning efficiencies
  - (a) Collect the information and research data on relevant air pollutants and similar issues, and understand the current regulatory requirements with respect to vehicle interior air quality in different markets.
  - (b) Review, assess and develop new test procedures suitable for the measurement methods of air pollutants entering into the vehicle cabin and their cleaning efficiencies (including test modes, sample collection methods and analysis methods, etc.)
  - (c) Discuss the potential of air pollutants in the vehicle interior air with toxicologists.
  - (d) Develop a draft for test procedures in a recommendation.

- 7.1 The following rules of procedure describe the functioning principles of the informal working group.
- (a) The IWG is open to all participants from any country or organization of WP.29 and its subsidiary bodies. A limitation of the number of participants for the IWG is not foreseen.
  - (b) A Chair (Russian Federation), a vice chair (Republic of Korea) and a secretary (OICA) will manage the IWG.
  - (c) The official language of the IWG will be English.
  - (d) All documents and/or proposals shall be submitted to the secretary of the group in a suitable electronic format, preferably in line with the UNECE guidelines in advance of the meetings. The group may refuse to discuss any item or proposal, which has not been circulated 5 working days in advance of the scheduled meetings.
  - (e) The informal group shall meet regularly in conjunction with the GRPE sessions, presuming the availability of meeting rooms. Additional meetings will be organized upon demand.
  - (f) An agenda and related documents will be circulated to all members of the informal working group in advance of all scheduled meetings.
  - (g) The work process will be developed by consensus. When consensus cannot be reached, the Chair of the informal group shall present the different points of view to GRPE. The Chair may seek guidance from GRPE as appropriate.
  - (h) The progress of the informal group will be routinely reported to GRPE orally or as an informal document by the Chair or the secretary.
  - (i) All working documents shall be distributed in digital format. The specific VIAQ section on the UNECE website shall continue to be utilised.

# Timeline





➤ **20<sup>th</sup> VIAQ IWG Meeting (TBD)**

- Brussels, Belgium, 9 - 10<sup>th</sup> November, 2020
- Two days