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

GENEVA, June 8th 2018

Chair: Andrey KOZLOV, Russian Federation
Co-Chair: Jongsoon LIM, The Republic of Korea
Secretary: Mark POLSTER, Ford
During 173\textsuperscript{rd} WP.29 session in Geneva (14-17 November 2017) 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)
VIAQ ToR and Mandate for the Second Stage

✓ The Chair of the IWG on Vehicles Interior Air Quality (VIAQ) presented a status report on the ongoing activities of the group (GRPE-76-35). He recalled that the original mandate of the group ended in November 2017. He highlighted the conclusion of the work by the tabled proposal for a new Mutual Resolution on recommendations to harmonize test procedures of interior air emissions generated from interior materials (ECE/TRANS/WP.29/2017/136) which was adopted by WP.29 and AC.3 during 173rd WP.29 session in Geneva (14-17 November 2017). He recalled that WP.29 endorsed the extension of the mandate of the IWG on VIAQ until November 2020 to extend the work and consider not only emissions generated by interior materials, but also gases from other sources that enter into the vehicle cabin.

✓ As Chair for the new stage of the IWG on VIAQ, the expert from the Russian Federation highlighted the existing standards on VIAQ in his country. He presented the revised Terms of Reference for the IWG on VIAQ (GRPE-76-27) which were adopted by GRPE.
ToR for the Second Stage

**Terms of reference**

- Identify and collect the information and research data on interior air quality and its relevance for vehicles, taking into account the activities being carried out by various governments, and non-governmental organizations.
- Identify and understand the current regulatory requirements with respect to vehicle interior air quality in different markets.
- Identify, review and assess existing test procedures suitable for the measurement of harmful substance into the vehicle cabin (including test modes, sample collection methods and analysis methods, etc.)
- Develop provisions and test procedures in a recommendation by including Part 3 in the Mutual Resolution No. 3.
ToR for the Second Stage

- **Timeline**

  - **WP.29**
    - 2018: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
    - 2019: 12
    - 2020: 180

  - **GRPE**
    - 2018: 76, 77
    - 2019: 78, 79
    - 2020: 80, 81

  - **VIAQ**
    - 2018: 11, 12, 13
    - 2019: 14, 15, 16, 17, 18
    - 2020: 19, 20, 21

  - **Timeline Events**
    - **January 2020:** Submit the draft document to GRPE
    - **June 2020:** Adoption of the draft document by GRPE
    - **November 2020:** Adoption of the draft document by WP.29

- Half of working items almost closed
- Make a drafting group
- Develop provisions and harmonized test procedures.
- VIAQ recommendation (a new part of M.R.3)

- **VIAQ Madate**
12th VIAQ IWG Meeting

- Paris, France, March 28-29th 2018
- Two days

13th VIAQ IWG Meeting

- Geneva, Switzerland, June 6th 2018
- Half a day
Working Items

1. Vehicle Category
2. Test Vehicle age/millage
3. Substances to be Measured
4. Meteorological Conditions
5. Test Conditions
6. Test Modes
7. HVAC Modes
8. Test Procedure
9. Measurement Methods
10. Sampling Points
11. Sampling Method
12. Test Protocol
1. Vehicle Category

Agreed Item

Category 1-1
New cars from series production
Millage
3 000 - 15 000 km
### 3. Substances to be Measured

<table>
<thead>
<tr>
<th>Russian Standard</th>
<th>Agreed substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde CH$_2$O</td>
<td>Carbon monoxide CO</td>
</tr>
<tr>
<td>Nitrogen dioxide NO$_2$</td>
<td>Nitrogen oxide NO</td>
</tr>
<tr>
<td>Nitrogen oxide NO</td>
<td>Nitrogen dioxide NO$_2$</td>
</tr>
<tr>
<td>Carbon monoxide CO</td>
<td>Formaldehyde CH$_2$O</td>
</tr>
<tr>
<td>Saturated hydrocarbons (C$_2$H$_6$…C$<em>7$H$</em>{16}$)</td>
<td>Methane CH$_4$ (only for natural gas vehicles)</td>
</tr>
<tr>
<td>Methane CH$_4$</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Korea</th>
<th>For discussion (see VIAQ-13-04)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide CO</td>
<td></td>
</tr>
<tr>
<td>Nitrogen oxide NO</td>
<td></td>
</tr>
<tr>
<td>Nitrogen dioxide NO$_2$</td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Particulate matter (PM)</td>
</tr>
</tbody>
</table>
10. Sampling Points

The point between headrests of front seats
4. Meteorological Conditions / 5. Test Conditions

Tests of influence of wind speed and direction to concentration of substances inside a vehicle cabin at idling

Wind speed:
- 0 m/s
- 1 m/s
- 2 m/s
- 3 m/s
- 4 m/s
- 5 m/s

Wind direction:
- 0 deg.
- 45 deg.
- 90 deg.

Test facility is the wind tube in NAMI test center
6. Test Modes / 7. HVAC Modes

Different combinations of vehicle movement and HVAC modes was carried out:

1. Movement at constant speed
   - 50 km/h
   - 90 km/h
   - 110 km/h
   - 130 km/h

2. Idling

3. Acceleration from speed of 60 km/h at WOT to speed of 130 km/h and free coasting down to speed of 60 km/h

On each of the driving and idling modes, the measurements of the pollutants were made during the performances of the following operating modes of the ventilation and recirculation systems:

<table>
<thead>
<tr>
<th>Recirculation mode</th>
<th>Off</th>
<th>Minimal</th>
<th>Medium</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>On</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Next VIAQ IWG Meeting

14th VIAQ IWG Meeting (TBD)
- Moscow, Russia, 7-8th November 2018
- Two days

15th VIAQ IWG Meeting (TBD)
- Geneva, Switzerland, January 2018 during 78th GRPE session
- Half a day