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agenda item 12.1.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 83

(Emissions of M1 and N1 categories of vehicles)

Transmitted by the Expert from the International Organization of  
Motor Vehicle Manufacturers (OICA)

Note: The text reproduced below was prepared by the expert from OICA in order to fully harmonize the text of Regulation No. 83 to Directive 98/77/EC. It is based on the text of a document distributed without a symbol (informal document No. 14) during the forty-fourth session of GRPE (TRANS/WP.29/GRPE/44, para. 63). On request of GRPE (TRANS/WP.29/GRPE/45, paras. 50-53), the expert from OICA prepared this revision taking into account the input from the experts from Germany, Poland, the United Kingdom and OICA.

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Note: This document is distributed to the Experts on Pollution and Energy only.

**A. PROPOSAL**

Insert a new paragraph 8.2.7.3.1., to read:

"8.2.7.3.1. The test results shall also be excluded from the conformity check of vehicles within the sample:

- (i) that have been issued with an approval certificate indicating compliance with the emission limits of category A in paragraph 5.3.1.4 of the 05 series of amendments to Regulation when those vehicles have been regularly operated on fuel having a sulphur level exceeding 150 mg/kg (petrol fuel) or 350 mg/kg (diesel fuel), or
- (ii) that have been issued with an approval certificate indicating compliance with the emission limits of category B in paragraph 5.3.1.4 of the 05 series of amendments to Regulation when those vehicles have been regularly operated on petrol or diesel fuel having a sulphur level exceeding 50 mg/kg."

Paragraph 11.1.2.2., amend to read:

"11.1.2.2. Subject to the provisions of paragraphs 11.1.4., 11.1.5., 11.1.6. and 11.1.7., Contracting Parties applying this Regulation shall grant ....."

Paragraph 11.1.3.2., amend to read:

"11.1.3.2. Subject to the provisions of paragraphs 11.1.4., 11.1.5., 11.1.6. and 11.1.7., approvals granted ...

... the vehicle type approved meets the requirements of this Regulation as required by paragraph 11.1.2.2. above."

Paragraph 11.1.6.1., amend to read:

"11.1.6.1. By exception to the requirements of paragraphs 11.1.2. and 11.1.3. Contracting Parties may continue to approve vehicles and may continue to recognise the validity of existing approvals that indicate compliance with:

- (i) the requirements of paragraph 5.3.1.4.1. of the 04 series of amendments to this Regulation when the vehicles are intended for export to, or for first use in, countries where the use of unleaded petrol is not widely available, and
- (ii) the requirements of paragraph 5.3.1.4.2. of the 04 series of amendments to this Regulation when the vehicles are intended for export to, or for first use in, countries where unleaded petrol having a maximum sulphur level of 150 mg/kg or less is not widely available, and

- (iii) the requirements of paragraph 5.3.1.4.3. of the 04 series of amendments to this Regulation when the vehicles are intended for export to, or for first use in, countries where diesel fuel having a maximum sulphur level of 350 mg/kg or less is not widely available."

Paragraph 11.1.6.2., should be deleted

Paragraph 11.1.6.3., renumber as paragraph 11.1.6.2.

Insert new paragraphs 11.1.7., 11.1.7.1. and 11.1.7.2., to read:

"11.1.7. Approvals to the Regulation as amended by the 05 series of amendments

11.1.7.1. By exception to the requirements of paragraph 11.1.2.2. and 11.1.3.2. Contracting Parties may continue to approve vehicles and may continue to recognize the validity of approvals granted to vehicles to the requirements of paragraph 5.3.1.4. (concerning category A emissions) of the 05 series of amendments to this Regulation when the vehicles are intended for export to, or for first use in, countries where unleaded petrol or diesel fuels having maximum sulphur levels of 50 mg/kg or less are not widely available.

11.1.7.2. By way of derogation to the obligations of Contracting Parties to this Regulation, approvals granted indicating compliance with the emission limits of category A in paragraph 5.3.1.4. of the 05 series of amendments to this Regulation, shall cease to be valid in the European Community from:

- (i) 1 January 2006 for vehicles of category M having a maximum mass less than or equal to 2,500 kg or vehicles of category N<sub>1</sub> (Class I), and on
- (ii) 1 January 2007 for vehicles of category M having a maximum mass greater than 2,500 kg or vehicles of category N<sub>1</sub> (Class II or III).

unless the Contracting Party which has granted the approval notifies other Contracting Parties applying this Regulation that the vehicle type approved meets the requirements of this Regulation as required by paragraph 11.1.2.2. above."

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## **B. JUSTIFICATION**

### **Introduction**

There is extensive documentation describing the dependence of new emission regulations and driving performance on fuel quality. The results of the European and U.S. Auto Oil Programmes established that fuel quality has a significant effect on vehicle emissions and that improved fuel quality must be linked to the increasing demands placed on vehicle technologies. Fuel quality, both for diesel and petrol, is important from a technical point of view for two main reasons:

- The enabling of advanced emissions aftertreatment technology
- Durability of engine components and emissions aftertreatment technology

Of the fuel parameters that have an environmental influence, sulphur content is the property that can poison aftertreatment devices and currently causes the most problems in-use.

### **Analysis**

In general, individual countries/regions define their own specific exhaust emissions and fuel quality legislation according to their environmental requirements. This means that the two issues must be linked together in the development of the appropriate local legislation. As more countries apply ECE Regulations, the absence of accompanying fuel quality specifications to enable the necessary vehicle technologies to operate correctly on the market fuels for extended periods of time, becomes more critical.

The exhaust emissions standards contained in Regulation No. 83.05 represent a substantial reduction in exhaust emissions compared with earlier versions of this Regulation. This will necessitate the fitting of advanced emission control systems that are generally sensitive to fuel quality. A problem occurs when the market fuel available is not of sufficient quality and in particular the sulphur content is too high so that the technologies applied in low emissions vehicles run into technical difficulties. The existing technical literature and the most recent results provided for the European Commission sulphur review (2000) indicate that even sulphur-free fuels are required to enable the operation of some advanced emission control systems, e.g. diesel DeNOx storage catalysts and CRT (catalytic regenerating trap) systems. The efficiency of petrol DeNOx storage catalysts and the performance of other existing and future after treatment technologies, such as 3-way catalysts, diesel oxidation catalysts, and diesel particle filters, deteriorate significantly when operated on fuel with high sulphur content.

OICA proposes that the ECE emissions regulations are amended to ensure that if sufficient market fuel quality is not widely available in the sales region/territory, then some of the emissions requirements relating to the impact of long term operation on those fuels (in-service compliance) will not be applied in that particular region or territory.

## Conclusion

It has become clear that more stringent emissions standards can only be introduced to a country's legislation when the availability of the appropriate petrol and diesel fuel quality can be guaranteed. Currently, there is no formal requirement in the ECE Regulation No. 83.05 to link the introduction of emissions legislation with fuel quality specifications. In order to align the fuels and emissions legislation, amendments to Regulation No. 83.05 are proposed.

Since the main problem for after-treatment systems is high sulphur levels, a requirement should be introduced that the certification and in-use emission standards of Regulation No. 83.05 must not be applied in a particular territory when

- a) petrol and diesel fuels containing sulphur < 150 ppm, and < 350 ppm respectively, for vehicles that are required to comply with Regulation No. 83.05 section 5.3.1.4. category A emission limits,
- b) petrol and diesel fuels containing sulphur < 50 ppm, for vehicles that are required to comply with Regulation No. 83.05 section 5.3.1.4. category B emissions limits,

are not widely available in that particular territory.

This would permit vehicles to be certified to Regulation No. 83.04 emissions standards if it is known that fuel with an appropriate sulphur content is not available in the sales region, so that emission control devices which are less sensitive to sulphur can be fitted to the vehicles.

The Regulation No. 83.05 in-use test would also not be valid if it could be demonstrated that the vehicle aftertreatment system has been subjected to regular use of fuel containing higher sulphur content than that permitted.

However, the long-term goal must be to solve these technical and environmental problems by ensuring the supply of the appropriate fuel quality (for all fuel parameters) for advanced vehicle technologies.

Therefore, OICA proposes to consider the above stated amendments to Regulation No. 83.05.

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