

OUTLINE of 8th Report of CEC (Central Environment Council)
(Tentative translation)

Transmitted by the representative of Japan

On 8 April, the Air Quality Committee of the Central Environmental Council submitted 8th report for future emission reductions from automobiles to the Minister of the Environment.

The following is an outline of the 8th Recommendations

1. Measures for the Reduction of Emission from Diesel Engine-powered Vehicles (to be implemented in 2009)

(1) Outline

- Japan's air pollution is very serious due to the abundant Suspended Particulate Matters (SPM) and NOx etc.

- In order to cope with the situation, extensive emission mitigation measures including Diesel Particulate Filters (DPF) , the use of diesel fuel with sulfuric contents less than 10 ppm and the NOx aftertreatment devices will be launched.

(2) Targets

- The objective is the substantial reduction of PM and NOx, basically to the level equal to those of the Emission from gasoline-engine driven vehicles. (partial deviations from substance to substance in passenger cars and medium- and light duty vehicles are expected.)

- Regarding PM, the major subject for the environmental concerns of megalopolises, with the advancement of DPF technologies, so-called "PM-free" where the level of PM is undetectable under the currently available measuring method is sought. For certain type of Gasoline Engine-vehicles*, Emission PM will be regulated at thee comparable level.
* Vehicles of Lean Burn, Direct Injection Gasoline Engines mounted with NOx absorber catalyst.

- As to NOx, the limit for HDVs over 3.5tonnes GVW will be the most stringent level in the world in 2009 and further reductions will be implemented through setting separate in targets for two stages in expectation of the technological advancement hereafter, which will be respectively referred to as "the Next Phase target Values" and "Challenge Target Values".

(3)Date of Implementation

- The date of implementation will be before the end of 2009,
- However, for buses and trucks with 1.7~ 2.5 tonnes GVW and 3.5~12 tonnes GVW, the date of implementation will be 2010.
- As to the “Challenge Target Values”, a Technological Review will be held around 2008, and depending on the requirements at that point of time, the Challenge Target values and date of implementation for their implementation will be finally determined.
(Note: The above-mentioned Technological Review will be conducted taking into account the improvement of the air-quality and the measures taken for CO2 reduction and other factors that might influence the situation at the time.)

2. Measures for the reduction of gasoline vehicles Emission (To be implemented in 2009)

- For certain types of gasoline vehicles which may have problems in the suppression of the PM Emission, the PM Emission regulations will be imposed at the level equal to those applied to diesel vehicles.
- The date of implementation will be before the end of 2009
※ Vehicles mounted with Lean Burn, Direct Injection gasoline engines.

3. PM Measuring Method

- In view of the substantial tightening of the PM regulations, the development of more reliable measuring methods must be completed by the time of the PM Regulation Implementation in 2009.
- In addition to the reduction of PM in volume, the measuring method of other characteristics of PM (such as the number of particles etc) will be researched through the cooperation among government, industry and academia.

4. Other Issues

- The researches on sophisticated OBD System for diesel vehicles and their specific details must be pursued in future.
- As use of the Aftertreatment devices of diesel vehicle emissions are becoming popular, it will become important to maintain their efficacy in use, which calls for future research.

Diesel and Gasoline Vehicle Emission Regulatory Limits to be implemented in 2009

- (Notes : 1. Unit of the Regulatory Limits: (for heavy duty vehicles) g/kWh
 Unit of the Regulatory Limits: (for vehicles other than above) g/km
 2. GVW: Gross Vehicle Weight
 NMHC: Non-Methane Hydrocarbon

Diesel Vehicles

	PM	NOx	NMHC	CO	Target Date
Passenger Cars	0.005g/Km ▲62%	0.08 ▲43%	0.024 0%	0.63 0%	2009
Trucks & Buses GVW≤1.7 ton	0.005g/Km ▲62%	0.08 ▲43%	0.024 0%	0.63 0%	2009
Trucks & Buses 1.7<GVW□3.5ton	0.007g/Km ▲53%	0.15 ▲40%	0.024 0%	0.63 0%	2010(1.7<GVW□2.5ton) 2009(2.5<GVW□3.5ton)
Trucks & Buses 3.5ton<GVW	0.01g/Kwh ▲63%	Next Target 0.7(▲65%) Challenge 0.7/3(▲88%)	0.17 0%	2.22 0%	2010(3.5<GVW□12ton) 2009(12ton<GVW)

Gasoline Vehicles

	PM	NOx	NMHC	CO	Target Date
Passenger Cars	0.005g/Km (New)	0.05 0%	0.024 0%	0.63 0%	2009
Trucks & Buses GVW□1.7 ton	0.005g/Km (New)	0.05 0%	0.024 0%	0.63 0%	2009
Trucks & Buses 1.7<GVW□3.5ton	0.007g/Km (New)	0.07 0%	0.024 0%	0.63 0%	2009
Trucks & Buses 3.5ton<GVW	0.01g/Kwh (New)	0.7 0%	0.17 0%	2.22 0%	2009

Notes

- The Challenge Targets and there respective Implementation Dates will be finally determined after the Technological Review to be held around 2008, taking into consideration of various factors at that point of time.
- The Regulatory Limits to be set on PM from gasoline-vehicle Emission will be applicable only to the gasoline vehicles which have three characteristics concurrently, that is, equipped with Lean Burn, and Direct Injection Engine and provided with NOx Adsorbed Catalyst.

Outline of 8th report of CEC

Environmental Management Bureau,
Ministry of the Environment

Hidenobu KUBOTA



Ministry of the Environment

1

- **Roadside PM & NO_x pollution remains severe**

The government aim is to meet the environmental quality standards for NO_x & SPM mostly by 2010.

- **Governments have lost in several judgment at courts about health impact of air pollution by diesel-vehicles emission.**



Diesel vehicle emission control shall be promoted more strongly



Ministry of the Environment

2

History of discussion in CEC

- ◆ **July 2003** The 7th report of CEC
- ◆ **Oct. 2003** Start of discussion about diesel-vehicle emission reduction after 2005
- ◆ **Jan. 2004~** Hearing from
 - ◆ Oversea governments
 - ◆ Motor vehicle & equipment manufacturers
 - ◆ Catalyst manufacturersetc.
- ◆ **22 Feb. 2005** Proposal of 8th report at CEC
- ◆ **By the end of March 2005**
any public comments to be received
- ◆ **8 April 2005** Finalized 8th report to be published



Points of JP09 standards

- **Basic point**
 - 10ppm sulfur content of diesel fuel
- **NOx emission**
 - Adoption of NOx adsorber catalyst or urea-SCR
 - Indication of not only “next target” but also “challenge target” about HD truck
 - NOx emission level at engine out 1.5g/kWh?
 - NOx reduction ratio by NOx adsorber catalyst → Max reduction ratio of 50%?
- **PM emission**
 - Adoption and development of DPF technology
 - Improvement of PM measurement systems
- ◆ **Subject to be solved**
 - Durability of NOx adsorber catalyst
 - Ability of HCCI (Homogeneous Charge Compression Ignition)
 - Possibility of urea-SCR → Who arrange urea supply facility?
 - Improvement of fuel consumption about NOx adsorber catalyst



Limit Value of Diesel-powered Vehicles (2009 ~)

		PM	NOx	NMHC	CO	Achievement Timing
Passenger car		0.005 ▲ 62%	0.08 (▲ 43%)	0.024 0%	0.63 0%	2009
Trucks	Light-weight (GVW1.7t or less)	0.005 ▲ 62%	0.08 (▲ 43%)	0.024 0%	0.63 0%	2009
	Middle-weight (GVW over 1.7t ~ 3.5t or less)	0.007 ▲ 53%	0.15 (▲ 40%)	0.024 0%	0.63 0%	1.7 ~ 2.5t 2010 2.5 ~ 3.5t 2009
	Heavy-weight (GVW over 3.5t)	0.01 ▲ 63%	(next target) 0.7 (▲ 41%) (challenge target) about 1/3 of 0.7 (▲ 88%)	0.17 0%	2.22 0%	3.5 ~ 12t 2010 over 12t 2009

※ 1 . Unit : Heavy-weight :g/kWh

Except Heavy-weight :g/km

※ 2 . Lower column means ratio of reduction from the new long-term standards
(enforce by 2005).

※ 3 . GVW : Gross weight Vehicle、 NMHC : Non-methane hydrocarbons



What is “Challenge Target Values” for HD vehicles?

- ◆ Higher target values have been established with the expectation of further technological progress.

(Subject)

- ◆ Developments of NOx reduction performance at low-temp.
- ◆ Future prospect of practical utility of HCCI or new technology.
- ◆etc.



- ◆ After verifications have been made around 2008, final decision will be made on the necessity of new target values and the achievement year.



Limit Value of Gasoline-powered Vehicles (2009)

	PM	NOx , NMHC, CO	Achivement periods
Passenger car	0.005	N.C.	2009
Light-weight (GVW1.7t or less)	0.005		
Middle-weight (GVW over 1.7t ~ 3.5t or less)	0.007		
Heavy-weight (GVW over 3.5t)	0.01		

1 Unit : Heavy-weight :g/kWh Except Heavy-weight :g/km
 ※2 GVW : Gross weight Vehicle、 NMHC : Non-methane hydrocarbons

note) Target values of particulate matter are applied only to lean-burn, direct-injection vehicles mounted with storing-type NOx reduction catalyst.



Others Items

- ◆ **New Measurement Method of PM Weight**
 - ❖ the regulation values for PM will reach a level close to the limit of determination with current gravimetric method
- ◆ **Ultra fine particles**
 - ❖ We will keep to support making test procedure in PMP.
- ◆ **On-Board Diagnostic System for diesel vehicles**
 - ❖ The national government should determine the technological elements necessary for a high-level OBD system.
 - ❖ Then, based on the results thereof, automobile manufacturers, etc., should equip diesel vehicles with high-level OBD systems as early as possible.
- ◆ **Bio-diesel Fuel**
 - ❖ It is necessary to mount a catalyst of high oxidation capacity
 - ❖ This fact should be made known widely



International harmonization (8th report)

- ◆ Japan should take whatever steps are possible to realize international harmonization of regulations, etc., so long as no barriers are posed to environmental conservation.
- ◆With respect to large-size vehicles, the state of progress in international regulations harmonization should be taken into consideration in examining challenge target values and their achievement periods at least for heavy-weight vehicles as presented in Section 1.2.



SUMMARY

- ◆ Strengthen of diesel vehicle emission control is necessary for air quality condition
- ◆ Tightening diesel-vehicle emission standards from 2005 enforces.
- ◆ More tightening standards beyond 2005(=JP09 standards) was determined at 8th April by CEC
- ◆ When JP09 standards enforced, emission standards level between gasoline-powered vehicles and diesel-powered ones will become almost same.
- ◆ After the 8th report, international harmonization, such as test-cycle, will become more important item.

