



环境保护部机动车排污监控中心

Vehicle Emission Control Center  
Ministry of Environmental Protection

19th ETH Conference on Combustion Generated Nanoparticles

# China Air Quality Status and Emission Reduction from Mobile Sources

Vehicle Emission Control Center-MEP,PRC

1st July 2015, Zurich, Switzerland



# Main Content

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- 1、 Air quality and mobile sources pollutions
- 2、 Main progress and existed problems
- 3、 Future route of transport pollution control



## 1、 Air quality and mobile sources pollutions





## Tough situation of megacities' air quality in China

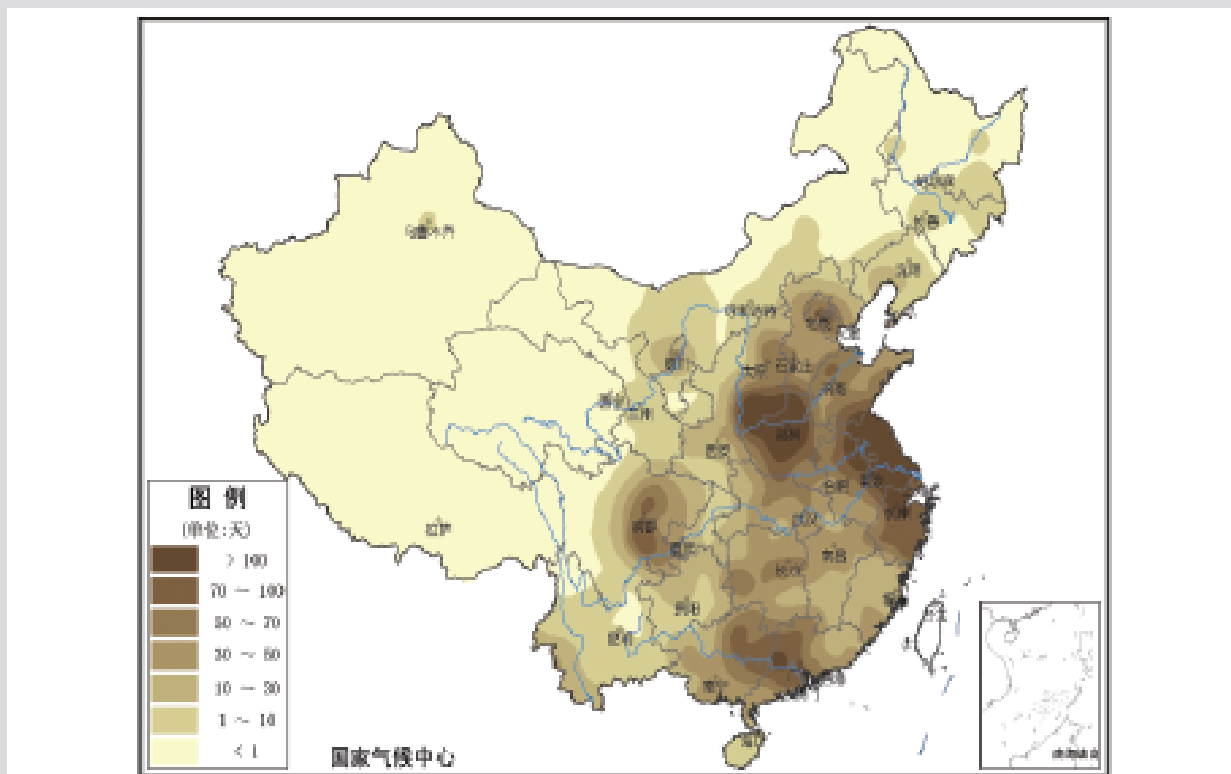


*China Environmental State Public Report 2014* indicates that the situation of China's urban air quality is grim. There are only 8 qualified cities among the 74 cities which was implemented new standard stage 1.



## Tough situation of megacities' air quality in China

In 2013, the average smog day is 35.9 days. The smog days of most areas from middle and southern part of North China to northern part of Yangtze River is 50 to 100 days.



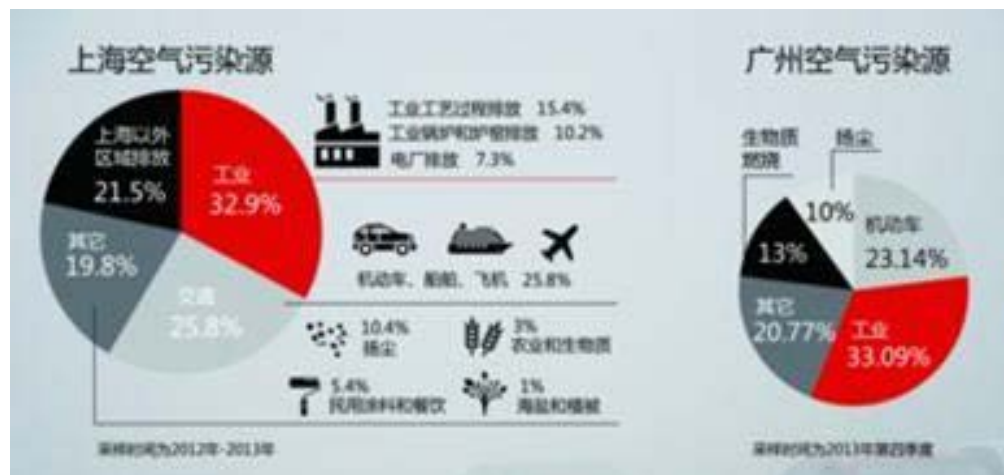


# Important PM emission source: Vehicle

### 北京空气PM2.5本地来源解析报告



Beijing



Shanghai

Guangzhou

Source apportionment of particulate matter shows that vehicle, industrial production, coal, dust are the main contributors of air pollution, account for 85% to 90%. The primary pollution source in Beijing, Hangzhou, Guangzhou and Shenzhen is vehicle.



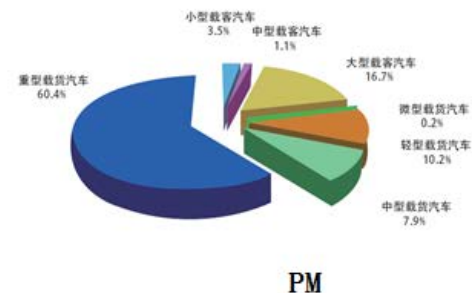
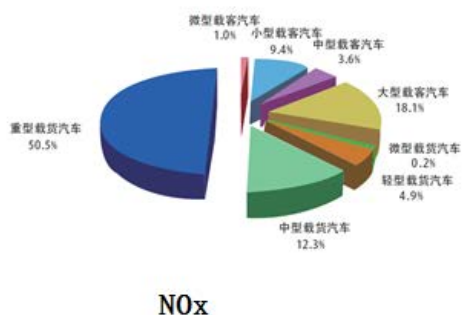
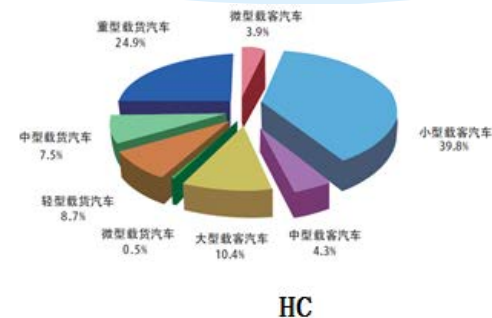
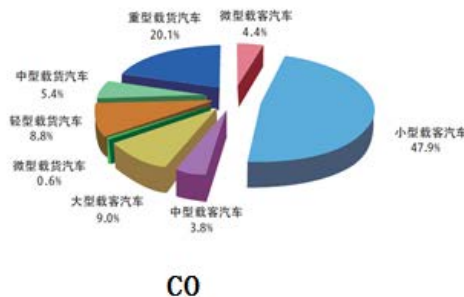
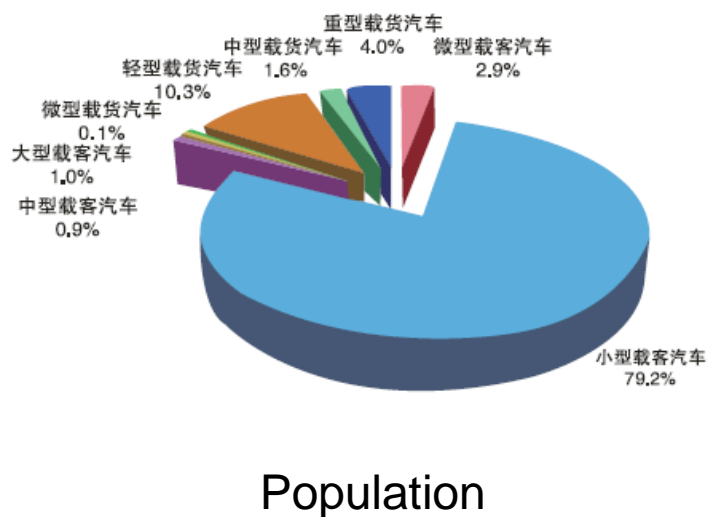
# Current situation of megacities' transport pollution



In 2013, China's vehicle emission amount is 45.709 million tons. CO 34.397 million tons, HC 4.312 million tons, NOX 6.406 million tons, PM 594 thousand tons. Automobile accounted for more than 80 percent CO and HC emissions and over 90 percent NOx and PM emissions.



# Emission contribution rate of different types

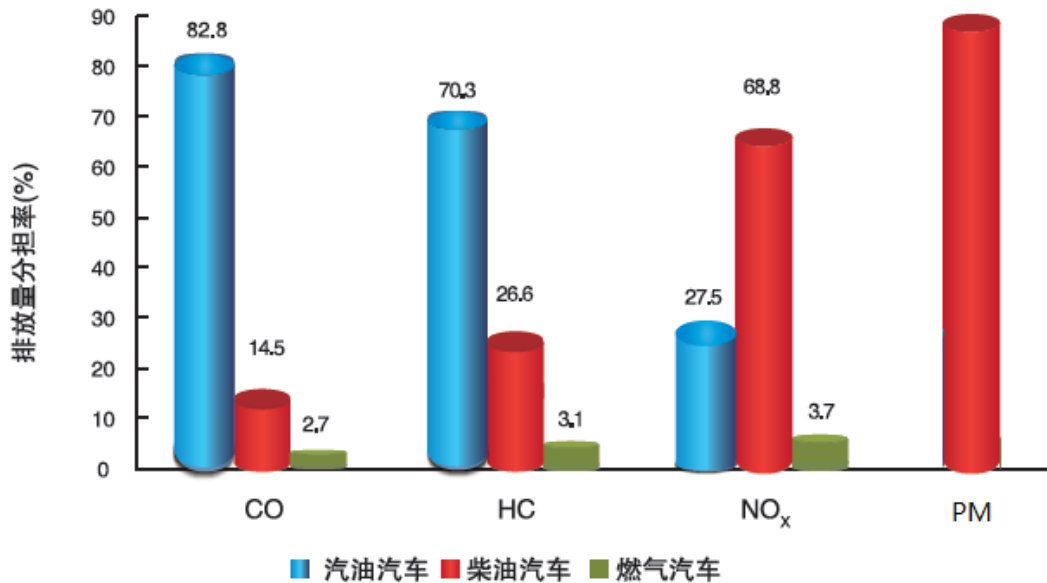


NOx, PM emissions from heavy duty trucks are respectively 2.975 million tons and 343,000 tons, which account for more than half of total emissions, respectively.





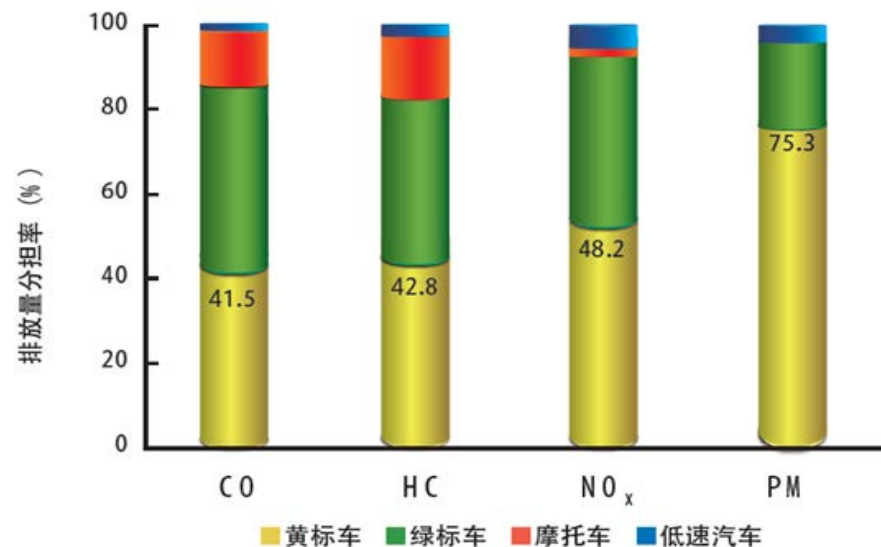
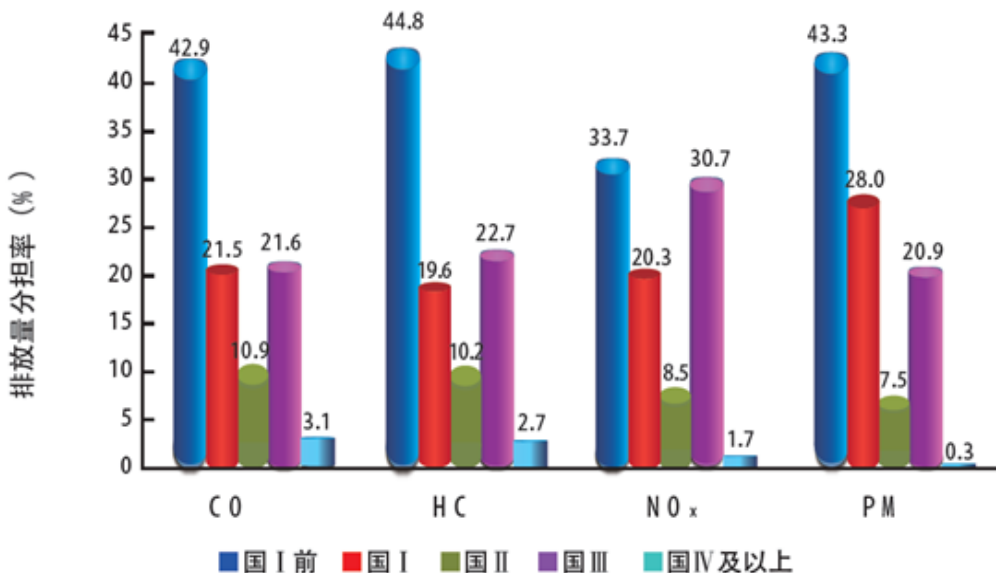
## Emission contribution rate of different fuels



NO<sub>x</sub>, PM emissions from diesel vehicles are respectively 4.048 million tons and 567,000 tons, which account for 68.8%, more than 99% of total emissions.



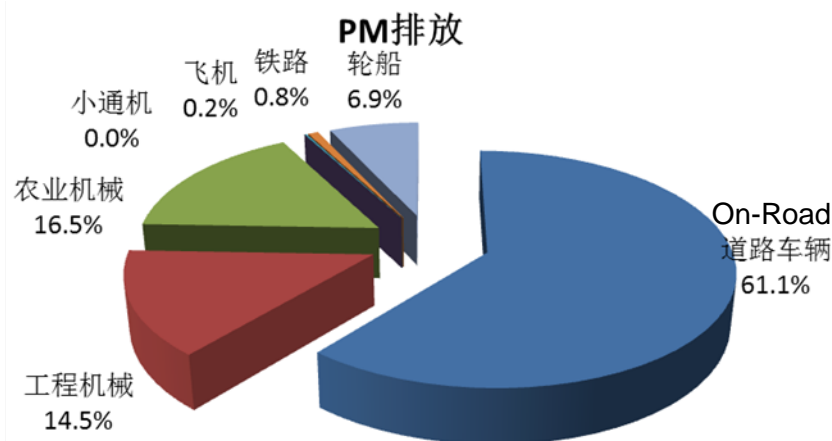
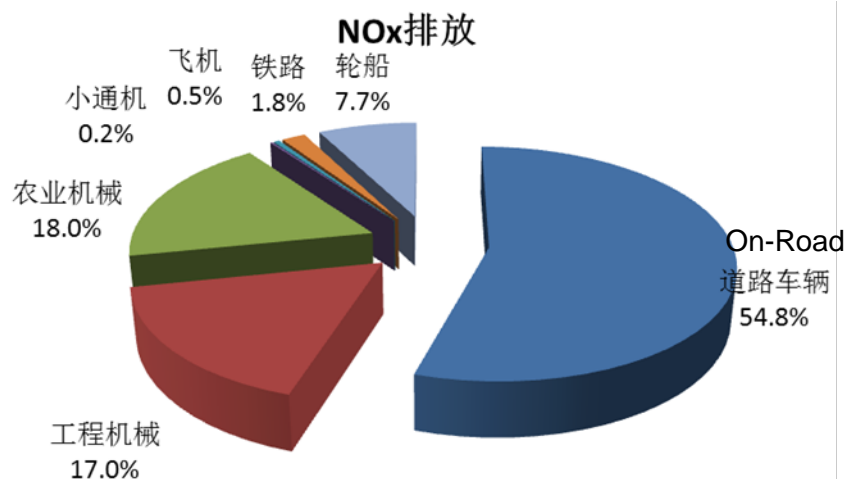
## Emission contribution rate of different standards



In 2013, yellow label vehicle population only accounted for 5.8%. Its CO, HC, NO<sub>x</sub> and PM emissions occupied 41.5%, 42.8%, 48.2% and 75.3%, respectively, which is the key issue of vehicle pollution control.



## Non-road emission is also enormous



In addition to on-road vehicle , there is also a large number of non-road mobile source in China, the main pollutant is NO<sub>x</sub> and PM. As the huge number and strong mobility, there are lots of challenges for non-road emission control.



## Rapid growth of vehicle population



In 2014, China's automobile production and sales amount broke through 23 million, ranked the first for the 6th year in the world, and the population reached 1.37 billion, which brought enormous pressure to the environment and transport.

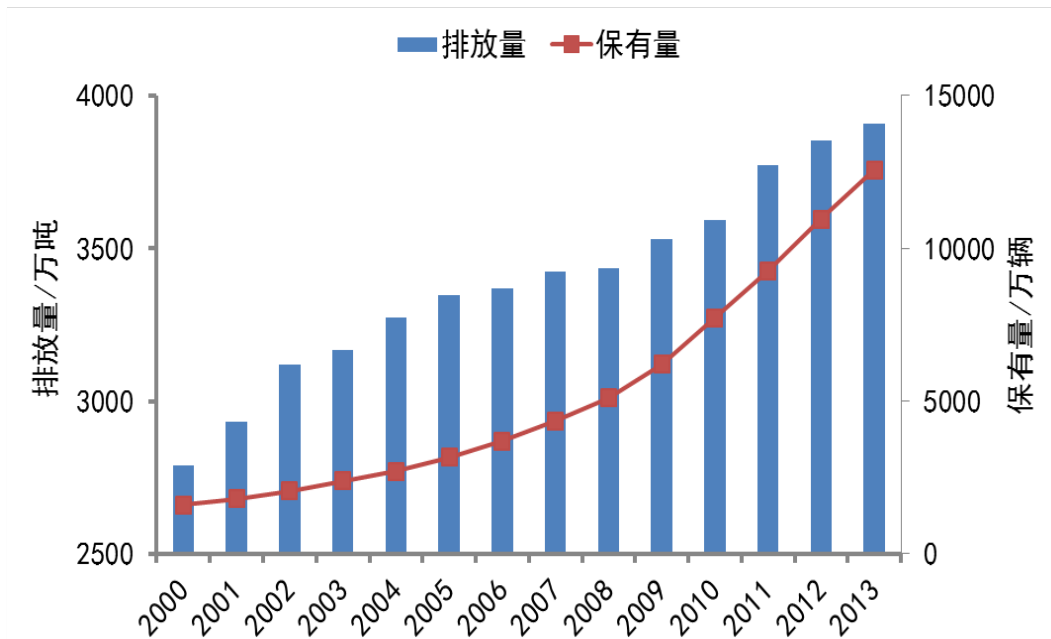


## 2、 Main progress and existed problems





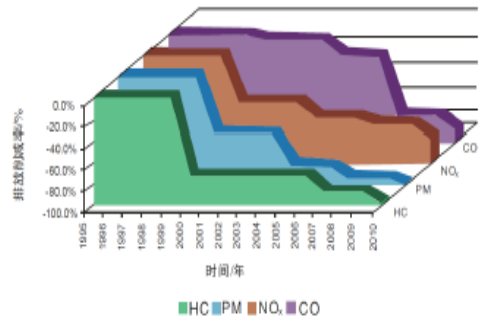
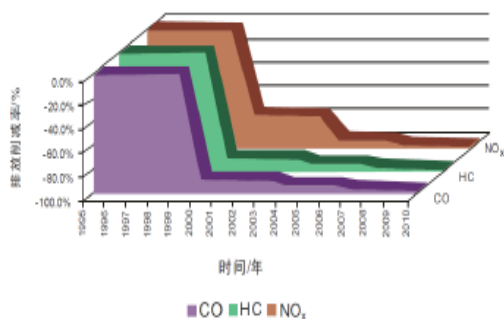
## Vehicle pollution has been initially under control



Vehicle pollution has been initially under control. Compared to 2000, the vehicle population has increased by nearly eight times, but the emission only increased 40%.



# Stricter new vehicle standard

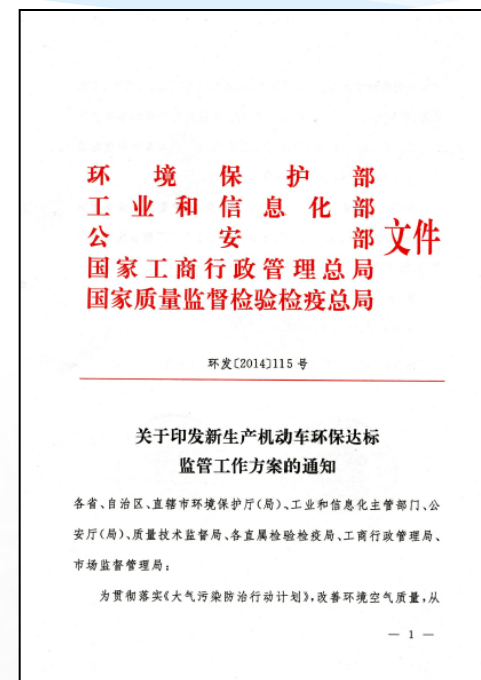


年份		2006	2007	2008	2009	2010	2011	2012	2013	
轻型汽车	柴油车	国 II			国 III					
	汽油车	国 II			国 III		国 IV			
	气体燃料车	国 II			国 III		国 IV			
重型汽车	柴油车	国 II			国 III					国 IV
	汽油车	国 II				国 III			国 IV	
	气体燃料车	国 II			国 III		国 IV		国 V	
摩托车	两轮和轻便摩托车	国 II				国 III				
	三轮摩托车	国 II						国 III		
低速汽车		无控制要求	国 I	国 II						
非道路移动机械	柴油发动机	无控制要求			国 I		国 II			
	小型汽油发动机	无控制要求							国 I	

China has implemented China 4 standard for LDVs and HDVs, and new vehicle standard become stricter gradually. China 5 will be implemented in 2018, Beijing and shanghai have implemented in advance.



## Enhancing compliance management



In order to improve pollution source control, MEP cooperated with other ministry to carry out new vehicle compliance supervision.





## Enhancing in-use vehicle environmental test



31 provinces, cities and districts have been carried out regular inspections of motor vehicles environmental management and environmental inspection label.unqualified vehicles will be prohibited from driving.



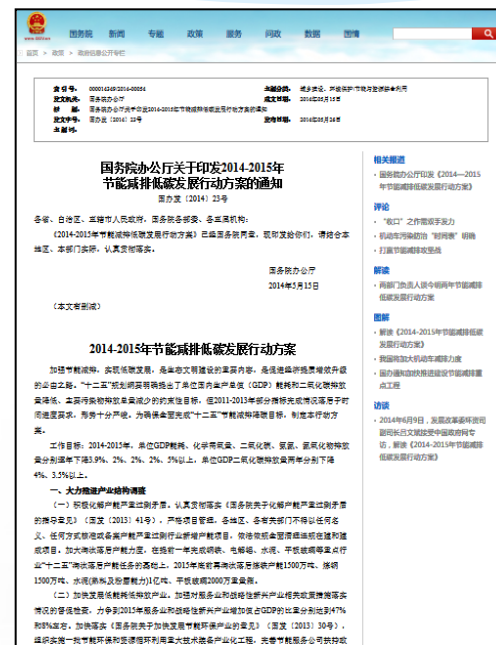
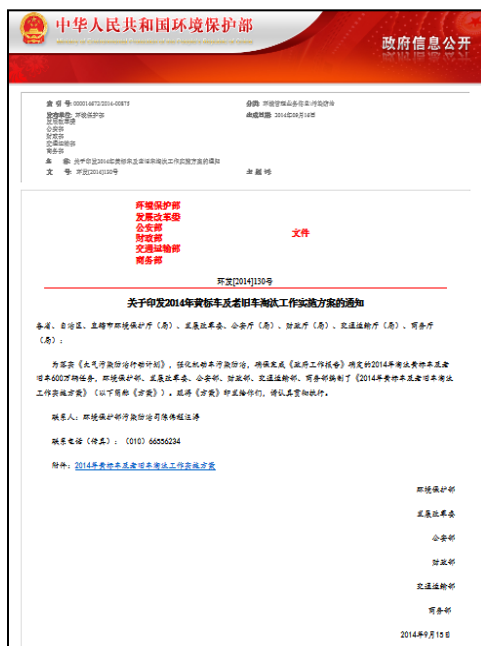
## Strengthening daily supervision of in-use vehicle emissions



In addition to environmental test, many cities carried out road inspection and remote sensing monitoring to strengthen daily supervision of in-use vehicle emissions.



# Accelerating to scrap yellow-label and old vehicles



The State Council and relevant ministries attach great importance to yellow label and old vehicles. In 2014, the total scrapping of yellow label and old vehicle 6 million, exceeding the goal of the task ahead, "Government Work Report" made.



## Accelerating the process of fuel desulfurization

年度 项目	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
车用汽油	II	III			IV			V			
车用柴油	II		III			IV		V			
普通柴油	II				III				IV	V	

Currently, the sulfur content level of gasoline and diesel oil has reached 50ppm. By the end of 2016, it will reach 10ppm, which is one year earlier than originally planned. Beijing, Shanghai, Guangdong, Jiangsu and other places have been implemented in advance.



## Strengthening the management of traffic demand



Through limited license, limited number, traffic control and other measures to effectively control vehicle population and use intensity, enhance traffic demand management.



# Green Transportation in China



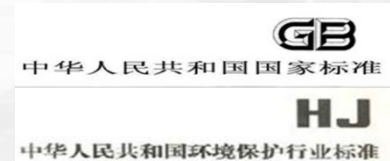
- China Green Freight Initiative(CGFI) started from 2012 by MOT
- Hybrid vehicle and electric vehicle promotion, by 2025 annual sales will be 3 million
- Public transportation promotion, such as metro and BRT



# Existed problems

## 1、 Unperfect laws and regulations

- ❑ Unclear duty
- ❑ Unfair responsibility allocation
- ❑ Insufficient penalties, poor operability
- ❑ Unfulfilled compliance supervision
- ❑ New and in-use vehicle standards can't meet the needs





# Existed problems

## 2、Unclean Fleet and fuel

- ❑ Unfulfilled emission standards
- ❑ Lack of non-road emission control
- ❑ Lack supervision of fuel quality







## Existed problems

### 3、Lack of supervision of environmental protection

- ❑ Lack of supervisory authorities
- ❑ Insufficient staffing level
- ❑ Lack of technical support





# Existed problems

## 4、 Unreasonable transportation plan

- ❑ Lack of scientific city transport plan
- ❑ Insufficient of city TDM research
- ❑ Lack of ITS technical support





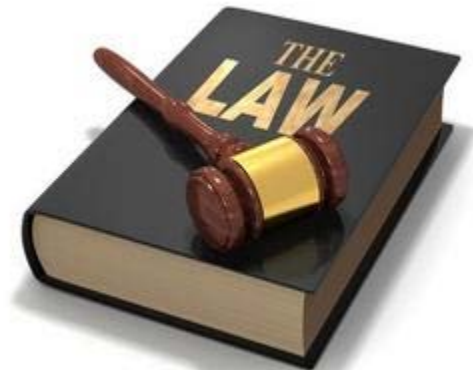
### 3、Future route of transport pollution control





# Perfecting laws and regulations

- Revising Atmospheric Pollution Prevention Law
  - ◆ Clear responsibility and division of labor
  - ◆ Enhancing responsibility of production enterprise
  - ◆ Clear management method combined with vehicle and oil
  - ◆ To carry out full life cycle environmental regulation and recall
- Formulating Motor vehicle pollution control regulations
  - ◆ Refined atmosphere law regulations, more operational





# Standard development

- Accelerating to formulate China6 emissions standards for LDV and HDV
  - ◆ More in line with the actual situation of China
  - ◆ High enforceability
- Accelerating to formulate in-use vehicle environmental test standard
  - ◆ Enhancing in-use vehicle emission limits
  - ◆ Improving in-use vehicle test content
- Improving in-use vehicle standard system
  - ◆ Formulating Vehicle Environmental Conformity Inspection Label
  - ◆ Formulating Road Remote Sensing Measurement Methods for Vehicle Pollutant Emission





# National Clean Diesel Action Plan

## ➤ Implementation object

- ◆ Passenger and freight diesel vehicles for business purpose
- ◆ Engineering machinery, garden machinery, agricultural machinery, port machinery, etc.
- ◆ Inland, coastal vessels
- ◆ Diesel for automotive, NRMM and marine

## ➤ Key projects

- ◆ Clean vehicle plan
- ◆ Clean machinery plan
- ◆ Clean shipping plan
- ◆ Clean diesel plan





# Strengthening the supervision of environmental protection

- Strengthening the regulation of new vehicle production conformity and in-use compliance
- Implementing environmental protection recall system
- To speed up the reform of environmental protection inspection
- Strengthening the regulation of high emission vehicles
- Establishing national, provincial, city vehicle emission monitoring platform





# Enhancing urban traffic demand management

- Rational control on vehicle population
- Decreasing vehicle operation intensity
- Scientifically establishing low emission zone
- Promoting urban intelligent traffic system







# Thank you for your attention !

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