

Inspection and Maintenance system in Japan

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1. Progress of motorization - Worldwide phenomena:

The number of motor vehicles used in Japan was about 75.8 million at the beginning 2001. The number of registered vehicle is increased at 1.3% compared to the preceding year. The number of car is occupied at 10% of the entire world. The number of registered motor vehicles was 13.9 million on March 2000. The number of motor vehicle is decreased at 1.9% from the previous year.

The number of motor vehicles used in Asian countries was about 128 million in the year of 1998. The number of registered vehicle is increased at 2.5 % compared to the preceding year. The number of car is occupied at 17% of the entire world. The number of registered motor vehicles was 126 million in the late of 1990s. The number of motor vehicle is increased at 12 % from the previous year. Motorization is a phenomenon not only in industrialized countries but also in Asian countries².

2. Automobiles and Air Pollution³

The condition of air pollution caused by NO₂, SPM and photochemical oxidants is still serious, especially in large cities. Mainly, automobile contributes to air pollution. Recently, diesel vehicle in freight transport are increasing. The increase may partially offset the progress of air quality improvement.

1. NO₂

Annual means of atmospheric NO₂ concentration have been relatively stable in recent years. In FY 1997, 95.3% of ambient air pollution monitoring stations and 65.7% of roadside air pollution monitoring stations satisfied the environmental quality standards. In the areas applied for the Automobile NO_x Law, 78.95 % of ambient air pollution monitoring stations and 34.3% of roadside air pollution monitoring stations satisfied the environmental quality standards.

2.SPM

Annual means of SPM concentration have been relatively stable in recent years. In FY 1997, 61.9% of ambient air pollution monitoring stations and 34% of roadside air pollution monitoring stations satisfied the environmental quality standards.

3. Photochemical oxidants

Almost no monitoring stations in Japan satisfy the environmental quality standards for photochemical oxidant, which states that hourly values shall not exceed 0.06 PPM. In 1998, 135 days of warnings for photochemical oxidants were issued in 22 prefectures.

3. System of Laws and Registrations Related to Motor Vehicles⁴

Toward the prevention of environmental pollution and the effective utilization of natural resources, the following laws and regulations have been stipulated in the chart. The Ministry of Environmental has set forth environmental quality standards for each of the air pollutants SO₂, CO, SPM, NO_x and photochemical oxidant and noise level in accordance with the Basic Environment Control Law. Following the Air Pollution Control Law, the Ministry of Environmental has stipulated the permissible limit for each of the emissions (CO, HC, NO_x and diesel smoke) that are emitted from motor vehicles. The Ministry of Environment has set forth the permissible limit for each of the motor vehicle noise level based on the Noise Control Act.

The Ministry of Transport has implemented the motor vehicle emissions control regulations and motor vehicle noise control regulations by means of the Safety Regulations for Road Vehicles so that the permissible limits stipulated under the provisions of the Air Pollution Control Law and the Noise Control Act are assured. (Safety Regulations, Article 30 and 31).

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² JAMA. Vehicle statistics 2000 (Syuyoukoku jidousya toukei :in Japanese).55.

³ <http://www.env.go.jp/en/org/aret/ch1.html>

⁴ Japan Automobile Standards Internationalization Center. Country Report: System Related to Motor Vehicle Safety and Environment in Japan.(21).

4. Recent History of Motor Vehicle Pollution Control Regulation

1. Short term targets

Central Council for Environmental Pollution Control submitted the recommendation "Future Policy for Motor Vehicle Exhaust Emission Reduction" in December 1989. Following the recommendation, the reduction of NOx and particulate matters from diesel vehicles are revised in March 1991.

- (1) The measuring mode has been changed from the 10 mode to 10 +15 mode in the case of gasoline or LPG fueled passenger motor vehicles, light-duty and medium-duty motor vehicles, mini sized trucks as well as diesel-powered passenger motor vehicles and light duty motor vehicles.
- (2) For gasoline or LPG fueled heavy duty motor vehicles, the NOx emissions have been reduced by 19%. In addition, the measuring mode has been switched from the gasoline, LPG 6 mode to the gasoline, LPG 13 mode, while the control method has been changed from concentration control (ppm) to weight control (g/kWh).
- (3) For diesel Powered light duty and diesel powered medium-duty motor vehicles, the NOx emission has been reduced by 33% or 35 % (direct injection type only). Furthermore, a control for particulate matters has been newly introduced. As for diesel smoke emission; it has been decreased by 20 %. In the case of diesel powered medium-duty motor vehicles, the measuring mode has been switched from the diesel 6 mode to the 10+15 mode while the control method has been changed from concentration control (ppm) to weight control (g/kWh).
- (4) For diesel-powered passenger motor vehicles and diesel heavy motor vehicles, a control regulation for particulate matters has been newly introduced. As for diesel smoke emissions, it has been reduced by 20 %.

2. Long term target

The Central Council for Environmental Pollution Control also submitted the long term target of the recommendation in December 1989. According to the long term target, NOx emissions from medium-duty and heavy duty motor vehicles (gasoline or LPG) and the Safety Regulation for Road Vehicles has been revised. The control regulation was strengthened from Oct 2000 for gasoline or LPG fueled motor vehicles. Based on the control regulations, CO, HC, NOx emissions will be reduced by 68 %-69%. The control regulations were strengthened from Oct 2001. As regards mini sized trucks, it will be strengthened from Oct 2002.

- (1) Tightened control for NOx emitted from medium duty vehicle (gasoline fueled truck and buses. Effective from 1994. As for heavy duty: effective from 1995.
- (2) Diesel powered smaller sized passenger vehicles, light duty motor vehicles and medium duty vehicles with a manual transmission ; NOx reduction by 10-46%, PM reduction by 60-64% and diesel smoke by 38% from Oct 1997.
- (3) Diesel powered medium sized passenger motor vehicles, medium duty motor vehicles with an automatic transmission and heavy duty motor vehicles; NOx reduction by 10-46%, PM reduction by 60-64%, and diesel smoke by 38% from Oct 1998.

3. Reduction of Overall amount of motor vehicle NOx emissions in Designated areas (Motor Vehicle NOx , Overall Amount Reduction Law)

The designated areas are municipality of Tokyo, Kanagawa, Saitama, Chiba, Hyogo and Osaka including Tokyo 23 wards and 173 townships.

The motor vehicle NOx Overall Amount Reduction Law consists of the following measures:

- (1) Basic policy for NOx overall amount and measures for reduction by national and local governments)
- (2) Regulation category for motor vehicle permitted
- (3) Guidance for business operators on NOx reduction.

Emission standards in Japan

1951 Vehicle I&M

1973 Emission Standards start

1978 Emissions Standards

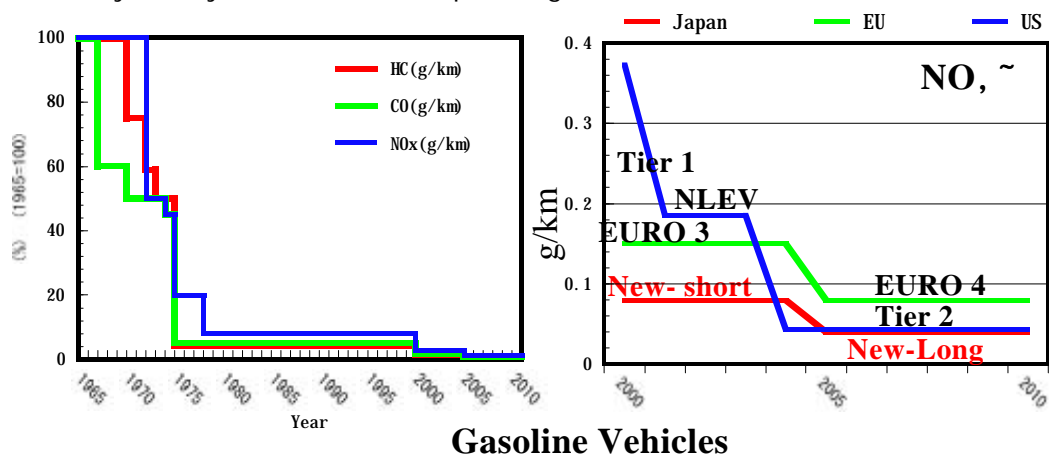
(the most rigorous in the world)

3-way Catalytic Converter for passenger cars

1980 Phased out Lead Gasoline

2000 New-Short term Emission Standards Benzene 1%

2005 New-Long Emission Standards

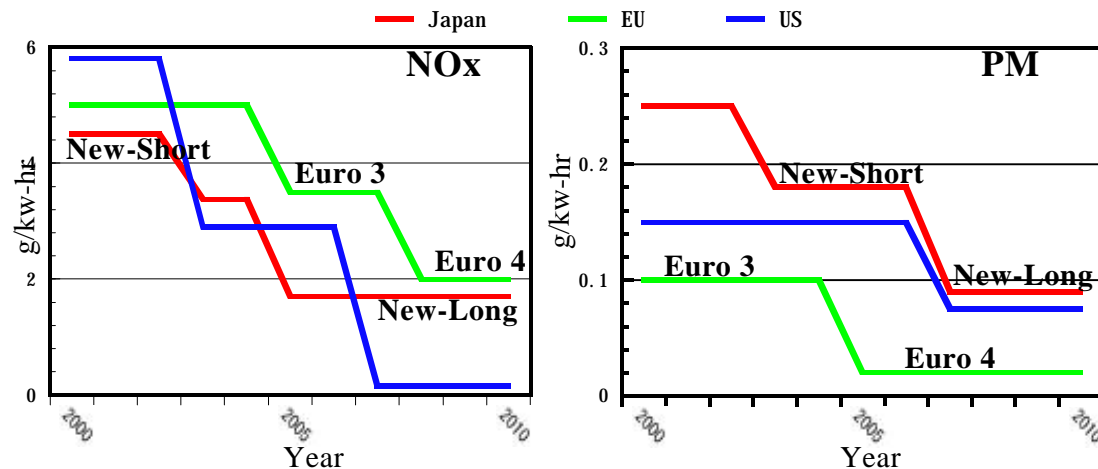


Heavy-Duty Diesel NOx & PM Standards

Sulphur content

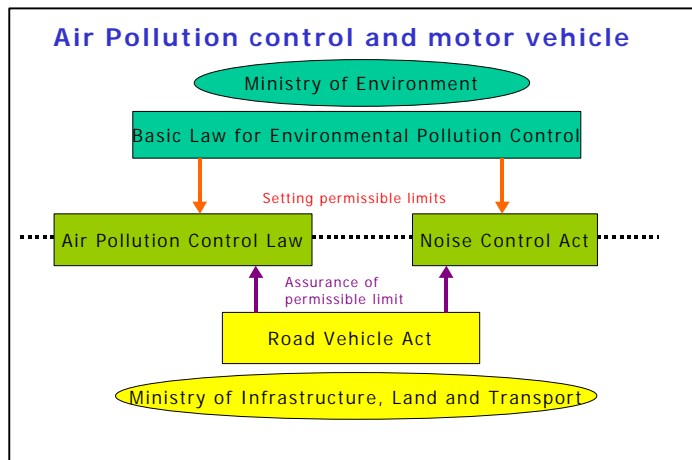
1997 : 500ppm

2005 : 50ppm



5. Registration of motor vehicles

Motor vehicle that is subject to registration based on the Road Vehicle Act, must be registered and have a license plate attached with sealed before they can be driven on public roads⁵. Vehicle registration serves two objectives. One is the "official endorsement of ownership" (legal registration). Legal registration ensures stable and smooth distribution of motor vehicles. Legal registration also leads to mortgages while minimizing the risk of thefts. The other object is the "clarification of motor vehicle usage"(administrative registration). Administration registration updates statistics about vehicles, ensure smoother recall operations, trace crimes involving vehicles, and other purposes.



6. Inspection of motor vehicles

Vehicle inspection has been undergone inspection conducted by the Ministry of Land, Infrastructure and Transport (or by the Light motor Vehicle Inspection organization authorized by the Ministry in the case of mini-sized motor vehicles) and is provided with a motor vehicle inspection certificate. Three-wheeled/four/wheeled mini-sized motor vehicles and small-motor cycle are also obligated to undergo inspection. The Road Vehicles Act requires a motor vehicle not to be offered for operation unless it meets the technical standards for safety as well as for pollution prevention.

Motor vehicles are inspected regularly to confirm their structure and Equipment with safety regulations. This increases vehicles safety and prevents pollutions while enabling smoother road traffics and saving more energy. The Road Vehicles Act defines "Safety Regulations for Road Vehicles".

The motor vehicle inspection is conducted to determine the conformity of motor vehicles with regard to the Safety Regulations for Road Vehicles. No motor vehicle is allowed to be operated on the road unless it has passed the motor vehicle inspection and it has obtained a valid motor vehicle inspection certificate. The existing motor vehicle inspection system was established when the Road Vehicle Act was enacted in 1951. Since then the motor vehicle inspection system has been revised several times. The following motor vehicles are subjected to the motor vehicle inspection

1. Ordinary sized motor vehicles
2. Small sized motor vehicles(in the case of two wheeled motor vehicles, those with an engine displacement exceeding 250cc)
3. Three and four wheeled mini sized motor vehicles
4. Large sized special motor vehicles

Among these motor vehicles, the inspection for those other than mini-sized motor vehicles is conducted at the Local Land Transport Offices. With regard to the inspection for mini sized motor vehicles, the Road Vehicles Act was revised in June 1972 in consideration of occurrence of traffic accidents and environmental pollutions. Due to the strength of exhaust emission regulations, the inspection became mandatory for three-four wheeled mini-sized motor vehicles in October 1973. With a view to stabilizing the management foundation and privatization, following the principle of independence, the Road Vehicle Act was revised in May 1987 to prescribe the return of governmental investment, the Light Motor Vehicle Inspection Organization became private corporation in October 1987.

⁵ <http://www.motnet.go.jp/unyue/html/car04e.htm>

When motor vehicles fail to pass the renewal inspection, or when used-motor vehicles fail to pass the initial inspection or preliminary inspection, a limited motor vehicle inspection certificate is issued. When the failed points, which are written in the certificate, are serviced by maintenance and repair shops, re-presentation of the motor vehicle is omitted. They only have to submit a limited Safety Regulation conformity certificate.

There are 53 main office of vehicle inspection centers, 38 branch offices and 2 sub-branch offices in Japan in the year of 1998. In the year of 1996, 6,726 thousand units of vehicles were submitted. As renewal inspection, 22.2 million units of vehicle were submitted in the same year. With respect to renewal inspection procedure, 26,333 designated maintenance and repair shop and 61,500 service shops can complete the process if inspection and maintenance at the Land and Transport Office on behalf of user.

The number of motor vehicles subject to the national registration was 5.8 million in the year of 1999. The figure had decreased at 0.3% the preceding decade.

7. Check and Maintenance system

The users of motor vehicles carry the periodical check and maintenance once a year in the case of passenger motor vehicles for private use. Trucks can be checked every six months for private use. For business use, users carry out vehicles every month. The check points covers the entire construction and devices of a motor vehicles such as the running system, suspension system, power train system, electric system, engine, the steering system and brake system. When vehicles have special construction and devices or their operation system is unique, the necessary checks and services are carried out.

1. Human resource aspect

(1) License and training course:

The motor vehicle mechanics' skill certificate system was established in order to improve motor vehicle service techniques. The certification system was based on Road Vehicles Act. Those who wish to be a mechanics must take a written test and practical test for qualification. There are four type of qualifications: first class, second class, third class and special mechanics. The qualification is in accordance with the year of practical experience of motor vehicle maintenance services.

Ministry of Infrastructure, Land and Transport designate training course. In the skill certification system, there is a exemption of the skill certificate tests for the applicants who passed certain level of test and the applicants who have finished the motor vehicle mechanic training course.

Type of qualification for motor vehicle mechanics	Practical experience requirements
First class	After 3 years of the qualification of the second class
Second class	After 3 years of the qualification of the third class
Third class	1 year
Special mechanics	3 years

2. Qualification and maintenance service business

The motor vehicle mechanics' skill certificate system is closely related to the motor vehicle maintenance business and maintenance service. Those who are qualified as the first class, the second class or he third class mechanics; they can become maintenance service manager. Those who are qualified as the first class or the second class mechanics; they can be service supervisor, who is a requirement for motor vehicle disassembly business. A person who wants to make it his business to perform disassembly repairs must obtain certification by Director-General of the District Transport Bureau.

By utilizing private inspection facilities, the Director General of the District Transport Bureau designated motor vehicle maintenance and repair business. Only documents are submitted to governmental inspection system.

3. Certification of service shop

The certified service shop is classified in three categories by type of device of disassembly repairs. There are 87,076 service shops in the year of 2000⁶. A certified service shop has to satisfy the following criteria.

1. Indoor work place, parts service work place with the special dimensions, motor vehicle pool and equipment for check and maintenance work. Two or more employees (including supervisor). 1/4 or more than 1/4 of the total employees are qualified motor vehicle mechanics.

⁶ <http://www.jaspa.or.jp>

4. Certification of designated motor vehicle maintenance and repair business

The Law confirms that a certificated designated shop can certificate validity of motor vehicle for renewal inspection. There are 26,927 service shops in the year of 2000A certified designated shop has to satisfied the following criteria

- (1) Possession of Inspection facilities in a certain level
- (2) Appointed manger and appointed chief engineer
- (3) Adequate motor vehicle inspection machines and equipment (8 items)
- (4) Qualification of inspector with practical experiences
- (5) At least 5 mechanics (more than 2 persons are qualified)

8. Future consideration of I/M system in Japan

1. Technical measure aspect

- (1) Simplicity, but ensure security and control emissions
- (2) No discrimination

Due to the globalization of car makers, registration system should not be discriminated imported vehicles neither keeps away from smooth distribution of imported car under the WTO scheme (TBT agreement).

- (3) Vehicle types are getting diverse because of consumer preference.

In the case of recall, operation is systemized.

Development of mutual registration system between export country and import country

2. Non-technical measure aspect (tax payment)

Motor vehicle tonnage tax, automobile tax and light car vehicle tax are levied periodically. Tonnage tax is levied by vehicle weight at the time of inspection. Three quarters of these revenues are allotted to the national government's general fund (80% of which goes to national funds earmarked for roads) and the remaining quarter goes to municipal governments' fund earmarked for road. With respect to motor vehicle tax and light vehicle tax, fixed amount of taxes are levied each year according to total engine displacement and type of vehicle. Revenues from motor vehicle tax goes to perpetual governments' general funds. Revenues from light vehicle tax goes to municipal governments' general fund. These non-technical measures were intended to promote environmental conservation in FY 1999⁷: However the revenues are not fully utilized as environmental conservation measure. The current tax system should be revised as following concept:

- (1) Vehicle taxes are designed by the degree of luxury and possible road damage, but the taxes should be levied in accordance with the amount of pollutant emitted. Through Polluter Pays Principal, the environmental cost can be internalized.
- (2) Air pollution and global warming are both important. Technology of emission reduction may trade off that of fuel efficiency in certain degree. However, vehicle tax rates need to address these two issues together. Global warming can be treated in the national tax scheme. Air pollution can be treated in the municipal tax scheme.
- (3) Not only emission reduction per vehicle but also aggregate emission reduction by traffic volume should be taken into consideration. Fuel taxes need to address fuel economy from a point of view of energy conservation.

3. International harmonization

The international harmonization issue has been advanced at the international forums UN/ECE/WP29. The regulation, which should be harmonized, are numerous but the international harmonization will bring so many merits.

- (1) Standardization of auto parts
- (2) Reduction of development and production costs
- (3) Lowered production cost may introduced lower sales price
- (4) Expansion of common test method
- (5) Simplicity of I/M policy design
- (6) Create job opportunity
- (7) Improved efficiency in acquisition of type approval
- (8) Expansion of imported vehicles and consumer preference
- (9) Promote inter/intra industries among Asian countries

⁷ <http://www.env.go.jp/en/org/aret/ch3.html>

Appendix
Current registration and Inspection system in Japan
Types of registration

There are four types of registration.

- Initial registration
All unregistered vehicles are subject to new registration, including those whose registration has been canceled but that are to be driven again.
- Alternation registration
This refers to registration of any change in the vehicle type, chassis number, engine type, owner's name, address or main location of its use.
- Transfer registration
This refers to registration of new ownership after other transaction .
- Deletion registration
This refers to Cancellation of vehicle registration following the loss or demolition of a motor vehicle, discontinuation of its use, or termination of its use entirely.

Valid term of Inspection:

The valid term of the motor vehicle inspection certificate is as follows:

Examples of Type of Motor Vehicles	Valid Term
New passenger cars for private use	3 years
Passenger cars for private use (excluding those listed in the preceding) Large-sized special motor vehicles and mini-sized trucks	2 years
Taxis, buses for business use, trucks, tank lorries, buses for private use, motor vehicles for kindergarten children	1 year

Maintenance Fee:

Motor vehicle users are obligated to undergo periodical checks and maintenance in order to keep their motor vehicles in proper condition.

APPLICATION FEES FOR REGISTRATION:

- New Registration 700 yen
- Transfer Registration 600 yen
- Alternation Registration 350 yen

APPLICATION FEES FOR INSPECTION:

- Initial Inspection

Upon presentation of Completion Inspection Certificate with Safety Regulation	1,100 yen
Limited Motor Vehicle Inspection Certificate and Limited Conformity Certificate with Safety Regulation	
Upon presentation of	1,200 yen
Limited Motor Vehicle Inspection Certificate (excluding 1 above)	
Other Motor Vehicles	1,400 yen
Small-sized Motor Vehicles or Large-sized Special Motor Vehicles	1,500yen

- Renewal Inspection

Upon presentation of	1,100 yen
Conformity Certificate with Safety Regulation Limited Motor Vehicle Inspection Certificate and Limited Conformity Certificate with Safety Regulation	
Upon presentation of	1,200yen
Limited Motor Vehicle Inspection Certificate (excluding 1 above)	
Other Motor Vehicles	1,400yen
Small-sized Motor Vehicles, Large-sized Special Motor Vehicles or Ordinary-sized Motor Vehicles	1,500yen


Additional roles of registration and I/M system

- Verification of the availability of motor vehicle parking space (Law concerning motor vehicle


- parking space, etc.)
- Verification of the payment of motor vehicle tax (Local Tax Law and Road Vehicles Act)
- Verification of the payment of vehicle weight tax (Vehicle weight Tax Law and Road Vehicle Act.)
- Verification of the conclusion of compulsory automobile liability insurance (from the mutual aid association) (automobile liability security law)

Confirmation of Identity

Confirmation of Identity




External Inspection




(A) Lighting, attachment conditions and storages of lenses
 (C) Attached conditions and storages of reflectors


Sound Level Inspection



Specification Measuring Inspection



Diesel Smoke Inspection



Inspection Center

Exhaust Emission Test (HC, CO)



4-stroke engines, 2800 gsm/h for vehicles with 2-stroke engines, and 2300 gsm/h for vehicles with rotary engines
 All for diesel-fueled, the smoke emission under the load and quickly accelerated conditions is to be measured. This standard is not more than 80%.
 *Hole - Nonresponsive (Mixed analysis)

Headlight Test



Luminous intensity
 4-lamp type : 12000 cd or more
 2-lamp type : 15000 cd or more

Control Inspection Line

Control Room for Inspection Equipment



Control of Inspection Line of Block E

Total Evaluation

