

# POLICY UPDATE

DECEMBER 2020

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## China's vehicle emissions inspection and maintenance program

On June 23, 2020, the Ministry of Transportation (MOT), the Ministry of Ecology and Environment (MEE), and the State Administration of Market Regulation (SAMR) of the People's Republic of China jointly released a final notice of the establishment and implementation of a vehicle emissions inspection and maintenance (I/M) program.<sup>1</sup> The policy document requires local authorities to establish and implement the system, describes the process for I/M, specifies the responsibilities of various agencies, and calls for strengthening the supervision and management of I/M stations.

### BACKGROUND

The purpose of an I/M program is to identify high-emitting vehicles and reduce their emissions. Periodic emissions inspections have been carried out in China for decades, but sometimes vehicles that fail these tests are not effectively repaired. In some cases, non-compliant vehicles have passed the emissions test by replacing emission control devices temporarily or by falsifying test results. To solve this problem, MEE, MOT, and SAMR worked together to establish this new program. The major improvement of the new I/M program is that it establishes a closed-loop management mechanism whereby non-compliant vehicles must be repaired at an accredited maintenance station before they can operate on the road.

### CLOSED-LOOP MANAGEMENT

Figure 1 is a flow chart of the closed-loop management mechanism. When a vehicle fails the periodic emissions test, the inspection station (I station) will inform the owner in writing that they must repair the vehicle at an accredited maintenance station (M station). Test results and vehicle information must also be uploaded by the I station to the vehicle emissions test information system managed by the Department of Ecology and Environment at the province level. After a non-compliant vehicle is repaired at an M station, the M station will share relevant repair information with a vehicle maintenance information system managed by the Department of Transportation (DOT), also at the province level. The emissions test information system and maintenance information system are

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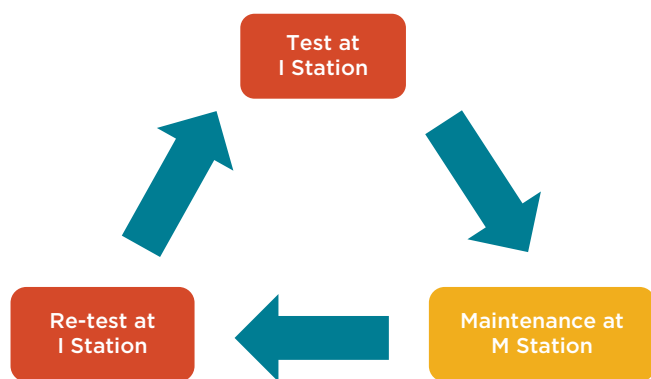
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<sup>1</sup> Ministry of Transportation, Ministry of Ecology and Environment, and State Administration of Market Regulation (2020). 关于建立实施汽车排放检验与维护制度的通知. ["Notice on the establishment and implementation of vehicle emission inspection and maintenance (I/M) system"]. [http://xxgk.mot.gov.cn/jigou/ysfws/202006/t20200623\\_3398675.html](http://xxgk.mot.gov.cn/jigou/ysfws/202006/t20200623_3398675.html)

managed by regional departments in various databases. The M station is required to check the testing results records from the emissions test information system before maintenance, and the I station is required to check the M station records when re-testing a vehicle.

After maintenance, the vehicle must be re-tested at any accredited I station. Only vehicles that pass the emissions test are allowed to be operated on the road. If a non-compliant vehicle operates on road without an emission certification, the vehicle owner will be subject to a penalty according to China's New Clean Air Law.



**Figure 1.** Closed-loop management of I/M program

## RELEVANT AUTHORITIES AND RESPONSIBILITIES

The I/M program is a cross-departmental system and successful implementation depends on full cooperation among the departments. The DEE is in charge of supervising emissions testing and obtaining evidence; the DOT is in charge of supervising maintenance; the Department of Public Security is in charge of imposing penalties on non-compliant vehicles; and the Administration of Market Regulation (AMR) is in charge of management and accreditation of I stations.

I stations need to be qualified and accredited in accordance with the regulation, use certified and calibrated emissions test equipment, conduct emissions tests in accordance with in-use vehicle testing standards GB 18285-2018 and GB3847-2018, and share real-time test data with the DEE. At I stations, the contact information and addresses of M stations need be posted in the hallway, so that vehicle owners can conveniently send the vehicles for repair. I stations are responsible for the authenticity and accuracy of the emissions test data. If an I station is found to have conducted fraudulent testing or issued a false report, its connection with DEE's system and test report printing function will be suspended, and it will be subject to a penalty issued by DEE and AMR.

M stations shall conduct reasonable diagnosis and repair of vehicles with excessive emissions. After the work is completed, M stations shall issue a vehicle maintenance completion certificate to the vehicle owner and upload the information to the vehicle maintenance information system. If an M station is found to be using counterfeit components, or to have temporarily replaced emission control systems or tampered with the on-board diagnostic system, it will be subject to a penalty by DOT according to the Clean Air Law. In case of a serious violation, the certificate for conducting maintenance will be revoked.

## PERIODIC EMISSIONS INSPECTION PROGRAM

Over the years, the in-use testing for vehicle emission standards used in periodic inspection programs has gone through several iterations. The most important upgrade was the change from an idle and simple test to a more sophisticated cycle-based and loaded test, as the latter gets closer to real-world driving conditions.

The current standards were published in 2018 and they call for testing diesel vehicles under a free-acceleration and lug-down test and gasoline vehicles under two-speed idle conditions and short driving mode conditions.<sup>2</sup> The lug-down test and short driving mode conditions are the preferred testing approaches for in-use vehicle inspection program for diesel and gasoline vehicles, respectively. If these are not available, a free acceleration test and a test under two-speed idle conditions can be used. The updated in-use emission limits detailed in Table 1 took effect on May 1, 2019. “Limit a” applies to all vehicles, and the more stringent “Limit b” applies to vehicles registered in cities with a vehicle population of more than 5 million or in cities where mobile sources are the primary contributor of air pollution.

**Table 1.** In-use vehicle inspection test items and limits.

Vehicle type	Diesel vehicles		Gasoline vehicles		
Test	Lug-down		Short driving mode		
Test items	Coefficient of optical absorption (m <sup>-1</sup> ) or opacity (%)	NO <sub>x</sub> (ppm)	CO (g/km)	HC (g/km)	NO <sub>x</sub> (g/km)
<b>Limit a</b>	1.2 (40)	1,500	8	1.6	1.3
<b>Limit b</b>	0.7 (26)	900	5	1	0.7

Note: NO<sub>x</sub> limits took effect on November 1, 2019. For regions that adopt Limit b, a transition NO<sub>x</sub> limit of 1,200 ppm was applied before July 1, 2020.

All 31 provinces in China have established periodic inspection programs. By the end of 2019, there were 8,847 I stations throughout the country. Most of them are connected to a three level (national-provincial-local) monitoring platform. By the end of 2019, 247.8 million vehicles had been tested in periodic inspection programs, and this is 98.1% of the total vehicle population in China. In addition, the MEE and local DEEs conducted 14,993 inspections on I stations in 2018. 859 stations were found to be in violation and were fined.<sup>3</sup>

## PILOT PROGRAMS

Guangdong, Jiangsu, and Guangxi have carried out pilot I/M programs and are making great progress. In 2007, Guangzhou, the capital city of Guangdong, introduced a local regulation on vehicle emission control and took the lead nationally in proposing to implement an I/M program. In 2010, four agencies of Guangzhou—the Ecology and Environment Bureau, the Transportation Bureau, the AMR, and the Public Security Bureau—jointly released an implementation plan for an I/M program. The local regulation was updated in 2015, with detailed requirements on the data-sharing

2 Ministry of Ecology and Environment (2018). 柴油车污染物排放限值及测量方法（自由加速法及加载减速法）。[“Limits and measurement methods for emissions from diesel vehicles under free acceleration and lug-down cycle”]. [http://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/dqhjbh/dqdywrrwfbz/201811/t20181113\\_673588.shtml](http://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/dqhjbh/dqdywrrwfbz/201811/t20181113_673588.shtml).

Ministry of Ecology and Environment (2018). 汽油车污染物排放限值及测量方法（双怠速法及简易工况法）。[“Limits and measurement methods for emissions from gasoline vehicles under two-speed idle conditions and short driving mode conditions”]. [http://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/dqhjbh/dqdywrrwfbz/201811/t20181113\\_673593.shtml](http://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/dqhjbh/dqdywrrwfbz/201811/t20181113_673593.shtml)

3 Ministry of Ecology and Environment (2020). 中国移动源环境管理年报。[“China mobile source environment management annual report”]. <http://www.mee.gov.cn/hjzl/sthjzk/ydyhjgl/202008/P020200811521365906550.pdf>

mechanism, maintenance and re-testing procedures, and the responsibilities of various local agencies. In 2014, Jiangsu province also published a local regulation and started to establish an I/M program. Since 2015, three cities in Guangxi have released local regulations on I/M and are continuing to establish a data-sharing platform.<sup>4</sup>

By the end of 2019, Guangzhou and Zhangjiagang had successfully established a closed-loop management system for non-compliant vehicles through a data-sharing platform. In Guangdong, more than 800 M stations have been built, and more than 400 vehicles are repaired every day. In Nanjing, 192 M stations have been accredited and more than 60 vehicles are repaired every day.<sup>4</sup>

## OUTLOOK

By developing a robust I/M program, the policy document published in June 2020 is a significant step forward in further reducing in-use vehicle emissions in China. The successful implementation of the new program will depend on a few crucial factors, including the data-sharing mechanism and requirements, maintenance capabilities of M stations, effectiveness of cross-departmental joint supervision at the local level, and the quality of compliance and enforcement in cases of violations such as replacing emission control devices temporarily or falsifying emissions test results. Authorities at all levels are working together on a series of policies and measures to support the new I/M program, including data-sharing technical specifications, training and capacity building for M stations, and carrying out pilot programs in more cities.

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<sup>4</sup> Gang Li, Lei Cao, Weiwei Gong, and Hua Qu, 汽车排放污染治理概论. *Conspectus of automobile emission pollution control* (Beijing: China Communications Press CO., Ltd., 2019)