

1100 Air Quality Management Section

1126 Motor Vehicle Emissions Inspection Program

02/12/2001

1.0 Applicability and General Provisions

Except as provided in 4.0 of this regulation, the standards, requirements and procedures set forth in this regulation are applicable to all motor vehicles, model years 1968 and newer with the exception of the five newest model years, titled and registered within Sussex County and as specified by the Department, including any motor vehicles owned or operated by the federal, state and local governments and their agencies.

02/12/2001

2.0 Definitions

"Division" means the Division of Motor Vehicles in the Department of Public Safety of the State of Delaware.

"Department" means the Department of Natural Resources and Environmental Control of the State of Delaware.

"Emissions" mean products of combustion discharged into the atmosphere from the tailpipe of a motor vehicle engine.

"Emission inspection area" means the emissions inspection area will constitute the entire State effective April 1, 1990.

"Emission standard or standards" mean the maximum concentration of either hydrocarbon (HC) or carbon monoxide (CO), or both, allowed in the emissions from the tailpipe of a motor vehicle as established by the Secretary of the Department of Natural Resources and Environmental Control or his designee in Technical Memorandum #2 entitled "Motor Vehicle Inspection and Maintenance Program - Emission Limit Determination" dated 12/29/87.

"Failed motor vehicle" means any motor vehicle which does not comply with applicable emission standards during the initial test or any retest.

"Model year" means the year of manufacture of a vehicle as designated by the manufacturer, or the model year designation assigned by the Division to a vehicle constructed by other than the original manufacturer.

"Motor vehicle" means every vehicle, as defined in 21 Del.C. §101, which is self-propelled, except farm tractors and off-highway vehicles.

"Motor vehicle officer" means a person who has completed an approved emissions inspection equipment training program and is employed by an official inspection station.

"New motor vehicle" means a motor vehicle of the current or preceding model year that has never been previously titled or registered in this or any other jurisdiction and whose ownership document remains as a manufacturer's certificate of origin.

"Official inspection station" means the Motor Vehicle Safety Inspection Stations in Wilmington, New Castle, Dover and Georgetown, Delaware, operated by the Division.

"Reasonable cost" means the actual cost of parts and labor which is necessary to cause the failed motor vehicle to comply with applicable emissions standards or which contributes toward compliance. It shall not include the cost of those repairs determined by the Division to be necessary due to alteration or removal of any part of the emission control system of the motor vehicle, or due to any damage resulting from the use of improper fuel in the failed motor vehicle.

"Registered gross vehicle weight (G.V.W.)" means the vehicle gross weight designated by the Division on the vehicle registration card which is the total weight of the vehicle and its maximum allowable load.

"Vehicle" means every device in, upon or by which any person or property is or may be transported or drawn upon a public highway, excepting devices moved by human power or used exclusively upon stationary rails or tracks and excepting off-highway vehicles.

"Waiver" means an exemption issued to a motor vehicle that cannot comply with the applicable emissions standard and cannot be repaired for reasonable cost.

05/09/1985

3.0 Registration Requirement

Effective January 1, 1983, no motor vehicle that is subject to this regulation may be granted registration in the State of Delaware unless the motor vehicle is in compliance with the applicable emissions standards, regardless of its pass/fail status of other tests normally performed at the official inspection station.

02/12/2001

4.0 Exemptions

4.1 The following motor vehicles are exempt from the provisions of this regulation:

4.1.1 All farm vehicles not required by law to be registered.

4.1.2 All historic vehicles, kit cars or antique vehicles displaying antique vehicle registration plates.

4.1.3 All motor vehicles with a registered G.V.W. over 8,500 pounds.

4.1.4 All motorcycles.

4.1.5 All vehicles that are registered in Delaware, but are not operated in Delaware consistent with established procedures of the Division.

4.1.6 All vehicles powered solely by diesel or solely by electricity generated from solar cells or stored in batteries.

4.2 Any exemption issued to a vehicle under 4.0 of this regulation will not have an expiration date and will expire only upon a change in the vehicle status for which exemption was initially granted.

07/06/1982

5.0 Enforcement

Enforcement shall be in accordance with the provisions of 7 **Del.C.** Ch. 67.

02/12/2001

6.0 Compliance, Waivers and Extensions of Time

6.1 Compliance with applicable emissions standards shall be determined at an official inspection station. The idle test procedure prescribed by the Department in Technical Memorandum #1 entitled "Motor Vehicle Inspection and Maintenance Program – Vehicle Test Procedure and Machine Calibration", dated 6/9/82, shall be the official test procedure. A pass/fail printout from the emission testing equipment given to the driver will serve as the driver's record of the test results. Vehicles shall be pre-inspected prior to the emission inspection, and shall be prohibited from testing should any unsafe conditions be found. These unsafe conditions include, but are not limited to significant exhaust leaks, and significant fluid leaks. The Division and the Department shall not be responsible for major vehicle component failures during the test, of parts which were deficient or excessively worn prior to the start of the test.

6.1.1 Any motor vehicle shall be deemed to be in compliance with 3.1 of this regulation if the test results are equal to or less than the emissions standards applicable to the motor vehicle.

6.1.2 Except as provided in 6.1.3 of this regulation, any motor vehicle shall be deemed to be in noncompliance with 3.0 of this regulation if the test results are greater than the emissions standards applicable to the motor vehicle.

6.1.3 Any motor vehicle which fails its initial emissions test shall be deemed to be in compliance with 3.0 of this regulation if not later than the registration expiration date, the motor vehicle either (1) is repaired at reasonable cost and is in compliance with applicable emissions standards as determined by an emissions retest at an Official Inspection Station, or (2) is granted a waiver pursuant to 6.2 of this regulation, or (3) is granted an extension of time not to exceed one month.

6.1.4 Whenever the owner of a failed motor vehicle determines to the satisfaction of the Division that it cannot be repaired at reasonable cost, the owner may be granted a waiver provided the owner makes application to the Division prior to the registration expiration date or by such other time as may be specified by the Division.

6.1.5 Vehicles powered solely by a "clean fuel" such as compressed natural gas, propane, alcohol and similar non-gasoline fuels shall be required to report for inspection to the same emission levels as gasoline powered cars until standards for clean fuel vehicles become available and are adopted by the State.

6.1.6 Vehicles able to be powered by more than one fuel, such as compressed natural gas or gasoline, must be tested and pass emissions standards for all fuels when such standards have become adopted by the Department.

6.2 Waiver issuance criteria

6.2.1 Waivers shall be issued only after a vehicle has failed a retest performed after all qualifying repairs have been completed,

6.2.2 Any available warranty coverage shall be used to obtain needed repairs before expenditures can be counted towards the cost limits in 6.2.4 of this regulation. The operator of a vehicle within the statutory age and mileage coverage under Section 207(b) of the Clean Air Act shall present a written denial of warranty coverage from the manufacturer or authorized dealer for this provision to be waived for approved tests applicable to the vehicle.

6.2.3 Waivers shall not be issued to vehicles for tampering-related repairs. The cost of tampering-related repairs shall not be applicable to the minimum expenditure in 6.2.4 of

this regulation. An exemption for tampering-related repairs may be issued if it can be verified that the part in question or one similar to it is no longer available for sale.

Repairs shall be appropriate to the cause of the test failure, and a visual check shall be made to determine if repairs were actually made if, given the nature of the repair, it can be visually confirmed. Receipts shall be submitted for review to further verify that qualifying repairs were performed.

- 6.2.4 A minimum of \$75 for pre-81 vehicles and \$200 for 1981 and later vehicles shall be spent on related repairs in order to qualify for a waiver. This minimum cost should not be construed as an amount which must be spent as a condition of compliance after an initial failure. This cost relates only to the minimum cost which must be incurred when determining the eligibility of granting a waiver. In addition, this regulation does not prevent the vehicle owner from performing self repairs.
- 6.3 The Division shall be responsible for specifying any forms or procedures to be followed in making applications pursuant to 6.2 of this regulation.
- 6.4 Waivers issued pursuant to this regulation are valid until the date of current registration expiration.
- 6.5 Quality control of waiver issuance.
- 6.5.1 The program shall include methods of informing vehicle owners or lessors of potential warranty coverage, and ways to obtain warranty repairs.
- 6.5.2 The program shall insure that repair receipts are authentic and cannot be revised or reused.
- 6.5.3 The program shall insure that waivers are only valid for one test cycle.

07/06/1982

7.0 Inspection Facility Requirements

- 7.1 Motor Vehicle Officers employed by the Division shall meet the requirements specified in this regulation.
- 7.2 Test equipment used by the Division shall be a type approved by the Department and testing procedures shall be conducted in accordance with the provisions of this regulation.
- 7.3 No person employed by the Division to test motor vehicle emissions shall engage in or have an interest in the operation of repair facilities located in this State; perform emission related repairs for compensation; or recommend repair facilities to owners or operators of vehicles being tested.

07/06/1982

8.0 Certification of Motor Vehicle Officers

- 8.1 A person may not perform the duties of a motor vehicle officer for testing motor vehicle emissions or operating emission testing equipment to determine the compliance or noncompliance of a motor vehicle as required by this regulation at an official inspection station unless that person has applied for and has received certification in accordance with the provisions of 8.0 of this regulation.
- 8.2 To become certified, a person shall successfully complete a training course for this purpose approved by the Division.

02/12/2001

9.0 Calibration and Test Procedures and Approved Equipment

- 9.1 All emissions testing for the purpose of determining compliance with emissions standards shall be performed using equipment approved by the Department and calibration and test procedures as provided in this regulation.
- 9.2 Calibration : Reserved.
- 9.3 Test Procedures: See Technical Memorandum #1

4 DE Reg. 1261 (02/01/01)

12 DE Reg. 347 (09/01/08)

TECHNICAL MEMORANDUM #1

DELAWARE DIVISION OF MOTOR VEHICLES VEHICLE EXHAUST EMISSIONS TEST

1.0 Purpose:

To describe the details of the DMV exhaust emissions test for HC and CO using DE '95 Inspection system composed of exhaust emissions and pressure test analyzers manufactured by Environmental Systems Products, Inc., E. Granby, CT (ESP)

2.0 Applicability:

Applicable to all gasoline (or alternate fueled) vehicles presented for inspection (regular renewal) in Delaware.

3.0 Associated Materials:

- 3.1 ESP Lane Operator's Manual, Version #2 (1997)
- 3.2 DMV 9701 Gas Calibration
- 3.3 ESP DW6 HT202561 (Rev. L 06/27/95)
- 3.4 Delaware exhaust emissions specification limits
- 3.5 ESP BAR 90 Certification for analyzer bench
- 3.6 ESP exhaust emissions measurement system P/N ESP 10364-2

4.0 Procedure: (The referenced equipment is located at Step #1 of the DMV Inspection process)

- 4.1 The lane analyzer has successfully passed the calibration procedure or procedures noted in Sections 2.1-2.2 of the ESP Lane Operator's Manual and DMV9701.
- 4.2 The Certified DMV Technician has verified that the vehicle presented is a viable candidate for an exhaust emissions analysis using DE '95 equipment.
- 4.3 The DMV Technician verifies that the following criteria are satisfied prior to emissions analysis.
 - 4.3.1 Analyzer is "clean"; a HC hang-up condition exists when HC reading is greater than 40 PPM and the analyzer "locks-out" until the purge indicates "clean".

- 4.3.2 After the Technician inserts the exhaust pipe probe insertion (see note (a)), to a minimum of 10 inches, the resultant sample dilution ($\text{CO}+\text{CO}_2$) must exceed 6.0%. The analyzer indicates the presence of a failure condition ($\text{CO}+\text{CO}_2 < 6.0\%$) and indicates "test voided". If the ($\text{CO}+\text{CO}_2$) condition is not satisfied, the subject vehicle FAILS the Delaware Emissions Test.
- (a) Normally, the vehicle driver has been requested to "fast idle" the vehicle for 30 seconds prior to entering the inspection lane, however, the Technician does not verify this condition.
- 4.4 When those conditions indicated in 4.3 of this memorandum are satisfied, the analyzer begins a timed emissions test. The following sequence prevails:
- 4.4.1 The test sequence is:
- 4.4.1.1 The internal timer starts; the analyzer "collects" samples for 15 seconds at a rate of two samples per second;
- 4.4.1.2 At the 15 second interval, the analyzer compares the accumulated data to the applicable DE emissions specification for Hydrocarbons HC and Carbon Monoxide CO;
- 4.4.1.3 Should the analyzer determine that the accumulated data does not exceed specifications for both components, it stops testing and indicates that the vehicle has passed emissions testing;
- 4.4.1.4 If the above analysis indicates that the applicable specifications limits are exceeded, sampling continues at the prescribed rate for an additional 15 seconds;
- 4.4.1.5 During this additional 15 second interval the analyzer continually compares the resultant data to the applicable DE specification. If, during this time, the HC & CO data are within specification, sampling ceases and a PASS indication is indicated; If, at the end of a 30 second sampling, either or both the HC and CO data exceed specification, testing is terminated and a FAILURE is noted. An immediate exhaust emissions retest is provided to all vehicles failing their initial emissions test. Subsequent "retests" shall only be performed after a properly completed "DMV VEHICLE EMISSIONS REPAIR FORM" is presented.

Revised 12/29/1987

TECHNICAL MEMORANDUM #2

MOTOR VEHICLE INSPECTION AND MAINTENANCE PROGRAM EMISSION LIMIT DETERMINATION

The five vehicle age groups have different allowable emission rates in the idle mode due to the sophistication of the emission control equipment installed by the manufacturer. The only exception being the pre-1968 age group which had no pollution control apparatus, saved for a few vehicles with positive crankcase ventilation (PCV) valves. Installation of PCV valves was virtually a voluntary measure by auto manufacturers.

During the time period March 1 through June 30, 1982, data was being gathered by a mandatory emission inspection with voluntary repair, at the two vehicle safety inspection lanes in New Castle County. The Sun Model CEA-3023 Computer Emission Analyzer (hereafter called the analyzer) has the ability to store, on conventional data cassettes, all of the input required and the results of a test on every vehicle tested. This is to include date, time, vehicle age group, vehicle registration number, hydrocarbon (HC) and carbon monoxide (CO) emission limits for the particular vehicle age group and the actual HC and CO emissions from the tested vehicle. A paper printout of this information is given to the driver upon being tested.

Test procedures were consistent with those described in Appendix B to Technical Memorandum #1.

During the voluntary emission program, the HC and CO emission limits programmed into the analyzer were, with one exception, the same as those used by the State of New Jersey in its I & M program. Using these limits or "cut points" for each vehicle type gave a very good frame of reference to analyze the limits applicable to Delaware.

In general, about 25% of the vehicles tested during that voluntary program failed to pass the New Jersey standards.

Emission limits for each age group and the failure rate as a percent are shown in Table 1 of this memorandum.

Table 1

Age Group	HC ⁽¹⁾
pre 1968	1400 18%
1968-1970	700 22
1971-1974	500 20%
1975-1979	300 29%
1980 +	100 15%

Notes:⁽¹⁾ Hydrocarbon (HC) emissions expressed as parts per million (ppm) of non-methane HC.

⁽²⁾ The New Jersey standards for 1980 and later models are 300 ppm of HC.

The rate of emission reduction required by the I & M program adoption must be at least 35% reduction of total HC emissions from tailpipe at the end of 1987. The 35% is defined as the difference in emissions of HC between the vehicle fleet not having I & M and that having I & M, in the urbanized portion of the ozone non-attainment area. Since the mechanics of testing only those vehicles registered to an address within the "urbanized"⁽¹⁾ area would be difficult at best, the entire county was included in the calculations for reductions.⁽²⁾ The types of vehicles to be tested for emissions were broadened to include the two classes of light duty trucks, those under 6,000 pounds G. V. W. and those in the 6,000 to 8,500 pound G.V.W. class. These two measures reduced the estimated failure rate from the 20% of the urbanized auto and station wagon fleet, which is the target rate to accomplish the 35% reduction in the emissions, down to 15%.

Attached as Appendix A to this Technical Memorandum is an April 16, 1982, letter from the I & M staff at EPA's Ann Arbor office. This letter details their evaluation of a 10% stringency factor on the three LD classes of vehicles in NCC to provide at least 35% reduction in tailpipe emissions. Following up the EPA analysis is a similar analysis for the Delaware-specific data. With a 15% stringency factor the results show that a 39.7% reduction in HC will be realized when the same 1,083 factor for "entire county inspection" is applied. This is obviously a reduction in tailpipe HC emissions adequate to meet the EPA requirements.

The selection of cut points for each vehicle class was accomplished by computer storage and retrieval of the data. For each vehicle age group, the frequency of each emission reading was determined and the appropriate percentile selected as the cut point for that particular age group. For simplicity and reduced computer storage requirements each individual reading was grouped in sets of 5 ppm, in the case of HC, and in sets of 0.05%, in the case of CO.

**TITLE 7 NATURAL RESOURCES & ENVIRONMENTAL CONTROL
DELAWARE ADMINISTRATIVE CODE**

Light duty trucks (pickups and vans) have different levels of emission controls than those of autos. Age groups of the two light duty gasoline truck classes LDGT1⁽³⁾ and LDGT2⁽⁴⁾ had to be fit into one of the auto age group levels of emission control. This determination was made by utilizing Table 7 of the January, 1981, EPA document entitled "Recommendations Regarding the Selection of Idle Emission Inspection Cutpoints for Inspection and Maintenance Programs". The final result of this exercise is shown in Table 2 of this memorandum, and this table represents the cutpoints adopted in the 1982 S.I.P. revision. Since the County of New Castle is non-attainment for ozone which is affected by HC, the rates shown for CO will be recorded, but failure of CO limits will not affect registration of the vehicle.

- (1) The urbanized area as defined by the U.S. Bureau of the Census.
- (2) This expanded the potential vehicle fleet by a factor of 1.083 which is the ratio of total NCC population to the urbanized area population.
- (3) Truck with GVW less than 6,000 pounds
- (4) Truck with GVW greater than 6,000 but less than 8,500 pounds

Table 2

LDGV	LDGT1	LDGT2	HC
pre 1968	pre 1968	pre 1970	1600 ppm
1968-1971	1968-1970	1970-1972	1100 ppm
1972-1974	1971-1974	1973-1978	800 ppm
1975-1979	1975 & later	1979 & later	600 ppm
1980 & later			235 ppm

*The emission limit of 235 ppm for 1980+ vehicles is the "warranty" emission limit of 220 ppm plus the accuracy of the testing equipment (+/- 15 ppm)

REVISION NUMBER 1 - 5/9/85

The following changes are made effective July 1, 1985, and consist of revisions to existing Table 2 of the approved 1982 Ozone SIP Revision

Table 2 (As Revised)

LDGV	LDGT	HC
1968-1970	1970-1972	1100 ppm
1971-1974	1973-1978	800 ppm
1975-1979	1979-1983	550 ppm
1980		275 ppm
1981 & later	1984 & later	220 ppm

Whenever the Department determines that the cutpoints used during 1985 or any subsequent year do not provide the minimal required hydrocarbon reduction, the following cutpoints will become effective on the first day of a new calendar year.

Table 2

LDGV	LDGT	HC
1968-1970	1970-1972	1000 ppm
1971-1974	1973-1978	700 ppm
1975-1979	1979-1983	450 ppm
1980		275 ppm
1981 & later	1984 & later	220 ppm

This determination shall be based on vehicle test data from the first 10 months of the past year. Public notice prominently placed in the Wilmington newspapers will announce details of the changes and the circumstances which caused the adjustments to be made.

REVISION NUMBER 2 - 12/29/87

The following changes are made effective January 1, 1988, and consist of revisions to existing Table 2 of the approved 1982 Ozone SIP Revision.

Table 2 (As Revised)

LDGV	LDGT	HC
1968-1970	1970-1972	900 ppm
1971-1974	1973-1978	600 ppm
1975-1979	1979-1983	400 ppm
1980		220 ppm
1981 & later	1984 & later	220 ppm

Whenever the Department determines that the cutpoints used during 1988 or any subsequent year do not provide the minimal required hydrocarbon reduction, the following cutpoints will become effective on the first day of a new calendar year.

Table 2 (As Revised)

LDGV	LDGT	HC
1968-1970	1970-1972	800 ppm
1971-1974	1973-1978	500 ppm
1975-1979	1979-1983	350 ppm
1980		220 ppm
1981 & later	1981 & later	220 ppm

This determination shall be based on vehicle test data from the first 10 months of the past year. Public notice prominently placed in the Wilmington newspapers will announce details of the changes and the circumstances which caused the adjustments to be made.

- A. The following changes are made effective January 31, 1990, and will be retained indefinitely unless circumstances occur which will be described in Part B.

TABLE 2

GROUP	AUTO/ STA. WAG.	PICKUP/VAN UNDER 8501#	HYDROCARBON LIMIT	CARBON DIOXIDE LIMIT
1)	68 - 70	70 - 72	900 ppm	9.00
2)	71 - 74	73 - 78	600 ppm	6.00
3)	75 - 79	79 - 83	400 ppm	4.00
4)	80	(NONE)	220 ppm	2.00
5)	81 +	84 +	220 ppm	1.20

- B. Whenever the Department determines that the cutpoints proposed in Part A do not provide the minimal required hydrocarbon reduction, the following cutpoints will become effective on the first day of calendar quarter (i.e. January, April, July or October).

TABLE 2

GROUP	AUTO/ STA. WAG.	PICKUP/VAN UNDER 8501#	HYDROCARBON LIMIT	CARBON MONOXIDE LIMIT(%)
1)	68 - 70	70 - 72	800 ppm	8.00
2)	71 - 74	73 - 78	500 ppm	5.00
3)	75 - 79	79 - 83	350 ppm	3.50
4)	80	(NONE)	220 ppm	2.00
5)	81 +	84 +	220 ppm	1.20