

ILLINOIS POLLUTION CONTROL BOARD

July 25, 1991

IN THE MATTER OF: )  
 )  
DIESEL VEHICLE EXHAUST ) R90-20  
OPACITY LIMITS ) (Rulemaking)  
 )

PROPOSED RULE. FIRST NOTICE.

OPINION AND ORDER OF THE BOARD (by J.D. Dumelle):

On July 19, 1990, this Board adopted an Order which established inquiry hearings regarding diesel smoke. These hearings were held on September 21 and September 28, 1990. Participants included Senator Judy Barr Topinka, the Chicago Transit Authority, the Engine Manufacturers Association, the Navistar Corporation, various representatives of communities in the Chicago area and numerous citizens. All of these groups supported the concept of a rulemaking to reduce the pollution emitted by diesel-powered engines. Based on these hearings and the testimony therein, the Board today proposes a rule for First Notice.

HEALTH EFFECTS<sup>1</sup>

Diesel exhaust is complex mixture of thousands of inorganic and organic substances. The primary components of diesel exhaust include oxides of nitrogen (NOx), oxides of sulfur, particulate matter (PM), carbon monoxide (CO), various organic compounds, carbon dioxide, nitrogen, and water vapor.

Due to the combustion properties of the diesel engine, CO and hydrocarbon emission levels are considerably lower than those from a comparable gasoline engine. Diesel engines do, however, emit relatively high levels of NOx, and sulfurous emissions from diesel engines are currently about 10 times that of comparable gasoline engines due to the higher sulfur content of diesel fuel.

When released into the atmosphere, sulfur dioxide emissions undergo chemical reactions to form sulfates, including sulfuric acid and acid sulfate mists. On August 21, 1990 USEPA promulgated a final rule for diesel fuel quality standards which takes effect on October 1, 1993. This regulation limits the sulfur content of diesel fuel to 0.05 percent and also limits the aromatic content of diesel fuel.

The most characteristic feature of diesel exhaust, however, is the very visible releases of PM. Diesel particulates consist

<sup>1</sup>For a detailed discussion of health effects, see the testimony of Dr. Lee Gorsky (Tr. at 18-36). Also see exhibits 5 and 6.

of a solid carbonaceous core upon which is absorbed a complex mixture of oxygenated hydrocarbons, sulfates, and trace elements. Studies have estimated that diesel-powered vehicles emit 30 to 100 times more PM than comparable catalyst equipped gasoline vehicles.

Health effects due to PM in diesel exhaust are of particular concern due to their small size. Virtually all the PM emitted by diesel vehicles is less than 10 microns in diameter and is referred to as PM-10. In fact, over 90 percent of diesel PM is less than 1 micron in size and is therefore easily ingestible via the lungs and can penetrate deep into the respiratory system. Due to the potential health effects of particles of this size, on July 1, 1987, USEPA promulgated primary and secondary national ambient air quality standards for PM-10.

A variety of health impacts of exposure to diesel exhaust have been identified. Symptoms of acute exposure to diesel exhaust include mucous membrane and eye irritation, light-headedness, nausea, numbness, chest tightness, and wheezing. Exhaust odors can cause nausea, headaches, loss of appetite, and physiological stress. Further, animal studies on the toxic effects of high concentrations of diesel exhaust, relevant to ambient levels, have demonstrated that chronic exposures result in diminished lung function and in structural changes in lung tissue. Chronic exposure to high levels of diesel exhaust has also been associated with increased susceptibility to respiratory tract infections, neurological and behavioral changes, and morphological changes in the liver.

With regard to health effects, however, the carcinogenicity of diesel exhaust is of most concern. Although the evidence is considered limited, collectively, human epidemiologic studies show a positive correlation between diesel exhaust exposure and lung cancer. Further, as early as 1955, animal studies have provided evidence that diesel exhaust is carcinogenic in animals. This contention is supported by positive results in numerous independent studies in male and female animals of at least two species and by several routes of administration, including inhalation, intratracheal administration, skin painting, and subcutaneous injection. A recent study by USEPA concluded that more than 60,000 people die annually from soot and PM-10. (Ex. 10). Based on the evidence for carcinogenicity in humans and the sufficient evidence for cancer induction in animals, diesel engine emissions are considered to be probable human carcinogens.

#### RULEMAKINGS BY USEPA AND OTHER STATES

In response to these health concerns, as well as efforts to address PM-10 nonattainment, USEPA, State, and local agencies have taken action to reduce diesel emissions. In March 1985, USEPA promulgated new heavy-duty diesel engine standards for NOx

and PM. (50 Fed. Reg. 10606 (March 15, 1985).) By 1994, these new standards will result in a 53 percent reduction in NOx emissions per vehicle and an 83 percent reduction in PM per vehicle. As mentioned previously, USEPA recently promulgated a rule to limit the sulfur and aromatic content of diesel fuel. The reduction in sulfur content in the diesel fuels will make it easier for engine manufacturers to meet the stringent diesel engine standards using known technology. Many States are also exploring the use of alternative fuels to reduce bus and truck emissions.

The rules that focus on new vehicles, however, will not be fully beneficial until the existing fleet is replaced. (Tr. at 58, 73). More importantly, once these vehicles are on the road, there is no guarantee that they will be properly maintained to ensure continued low emission levels. (Tr. at 58, 71). Tampering and malmaintenance are the primary causes of excessive diesel emissions. (Tr. at 58, 81). The most common problems include improper air fuel ratio control, problems with the fuel injection system or fuel injection timing, and adequate air intake.

In response to these problems, some states have already implemented, or like Illinois are considering programs to control diesel emissions. Many states have laws which allow citations to be issued to vehicles emitting excessive smoke. Four states - Kentucky, Oregon, Arizona, and Colorado - currently test diesels in their inspection and maintenance programs, and Tennessee and Florida plan to test diesels in various I/M programs in the near future. In addition, New Jersey and Nevada have some form of on-road testing of heavy-duty diesel trucks.

A review of each of these programs indicates that some states are currently experiencing operating problems. For example, the use of idle tests, improper test methods, and cut points based on continuous rather than peak smoke levels, have resulted in failure rates of less than 2 percent for a number of the I/M programs. The program instituted in Colorado utilizes self-testing by the regulated entities. However, adequate planning, design, and enforcement can make each of these types of programs effective in keeping excessively smoking vehicles off the road.

The California Air Resources Board (CARB) conducted an extensive research effort in their development of a smoke inspection program. The inspection program uses a snap idle inspection test with peak smoke levels measured using an opacity meter. The tests are conducted at weigh stations and safety inspection stations located on interstate highways, as well as random roadside sites. The proposed opacity cut-point limit is 40 percent. Using pilot program data and regression analysis, CARB determined that the 40 percent cutpoint for the snap idle

test provides a good correlation to the federal test procedures smoke certification standard of 50 percent and would yield an error of commission rate, defined as the fraction of false failures, of less than 5 percent. (Tr. at 13).

Repair data from the pilot program showed that, on average, post-repair smoke levels were nearly constant at levels of 25-30 percent. Vehicles whose pre-repair smoke opacity was 100 percent were, on average, reduced 70 percent, indicating that effective repairs are possible. The proposed penalty structure for the program sets civil penalties of \$500 for the first violation and \$1,500 for subsequent violations. If the vehicle is repaired within 30 days, the \$500 first violation penalty may be waived; however, for all violations, there is a separate and mandatory \$300 penalty which is deposited into the Diesel Emission Reduction Fund and is used to promote research into cleaner fuels.

Due to its black color, the elemental carbon fraction of the diesel particulate exerts a relatively strong influence on opacity. In fact, 95 percent of an opacity reading has been found to be due to the elemental carbon in the exhaust. Reductions in opacity, then, imply reductions in the amount of carbon soot, as well as other exhaust components, due to more complete combustion; however, a direct correlation between opacity and total particulate mass has not been determined.

Support for a diesel opacity program, then, falls into three categories. First, from an aesthetic point of view, diesel exhaust and diesel exhaust odors are a nuisance. USEPA and the Illinois Environmental Protection Agency have indicated that the number one public complaint these agencies receive is in regard to diesel pollution.

Second, there are a total of 4 Group I and Group II PM-10 areas in Illinois for which State Implementation Plans (SIPs) must be developed. Control of PM-10 in these areas will be resolved through stationary and area, including mobile, source control strategies. The reduction in mobile source PM-10 resulting from a diesel opacity program will contribute to the State's effort to control PM-10.

Finally, control of diesel exhaust opacity offers potential health benefits in terms of reduced acute reactions and long term illnesses. Although not yet conclusive, some studies have indicated that the gaseous fraction of diesel exhaust, without the carbon core particle, does not induce tumors. Furthermore, the carcinogenic potential of the carbon core alone has yet to be determined. The carbon core may itself have some carcinogenic potential or its presence may be required in some interactive fashion to induce a response. Nonetheless, any reduction in carbon soot, and diesel exhaust emission as a whole, would have a

positive health effect.

Based upon the testimony regarding the detrimental health effects and the direction other states have taken combating this problem, the Board today seeks to propose a measure similar to that used in California. We choose this route even though we realize that many differences exist between CARB and the Board. The primary distinction remains that CARB has the ability, in conjunction with the California Highway Patrol, to directly enforce its rule. The Board does not possess these direct enforcement capacities. Nevertheless, there remain an assortment of reasons for proposing a rule today.

First, in its spring session, the Illinois Legislature sent to conference committee a bill called the Diesel Powered Motor Vehicles Emission Testing Act (S.B. 1231). Although it contains no substantive language, it may represent an intent on the part of the legislature to do something in relation to diesel smoke pollution. Those entities who participated in our hearings and those otherwise affected may wish to track this bill in conjunction with the regulation proposed today.

Of equal import, and less hypothetical, the Board wishes to pass a viable diesel regulation which can be adopted by any local governing body. Senator Judy Barr Topinka, in addition to numerous representatives of the western suburbs, testified in regards to the pollution problems stemming from trucks travelling through their neighborhoods. These representatives have been inundated with citizens' complaints in relation to diesel smoke. Their cumulative testimony revealed that many western suburbs occasionally band together and set up roadblocks for various reasons. (Ex. 8). Their testimony further indicated that assuming reasonable costs, they would be willing to implement a program whereby diesel testing could be facilitated on a random basis.

In short, these representatives from the western suburbs, an area which contends with a great deal of truck traffic, recognize the need to do something about this problem. Moreover, they are without the means to undertake such a task independently. Accordingly, they have looked to the Board for direction. We note that this problem is not restricted to the western suburbs of Chicago, but exists throughout the state. Thus any political subdivision of the state may pass an identical or similar ordinance based on site-specific goals and solutions.

In addition, the Board today will propose a visual twenty percent (20%) opacity rule for diesel-powered vehicles travelling continuously for over ten seconds. While proposed for the same purpose, this 20% opacity rule differs from the snap-idle test. Snap-idle tests are performed while a vehicle is not moving. The engine is cleared and particulate emissions in the form of

opacity are measured by a properly calibrated device meeting the scientific test of reproducibility. Due to these factors, the issuance of a citation creates a rebuttable presumption of guilt.

Visual opacity readings, on the other hand, are less empirical. Yet other states such as Arizona, New Jersey, and New York, as well as California have all implemented visual tests of assorted opacities. The effectiveness of the programs are inconclusive because they are in their infant stages. Even so, the Board believes that a visual opacity test would be an effective supplement to the snap-idle test.

To begin with, the snap-idle test would most likely be performed at weigh stations, roadblocks and other areas where detaining large vehicles would be feasible and consume the least possible amount of time. The testimony at hearing demonstrated that many of the pollution-emitting diesel sources rarely even enter the highway. (Tr. at 184). There are many existing pollution sources that operate locally and do not engage in intrastate travel. (Tr. at 184-185). Moreover, many fleets which are local in nature have switched from gasoline to diesel engines; and further, these conversions were motivated in large part by the fact the diesel engines are unregulated. (Tr. at 185). Thus the snap-idle test, standing alone, would miss a significant portion of diesel polluters.

Secondly, the 20% opacity test for vehicles operating over ten seconds is not a rigid or arbitrary standard; rather, it is intended to serve as a catalyst for ascertaining and punishing the obvious polluters. This allows the enforcing entity to act quickly and insures the threat of immediate enforcement. A rule which has the capability of random enforcement which is not restricted to a certain area is more inclined to draw attention from the regulated community.

Finally, all those regulated entities testified that the 20% opacity standard for diesel-powered vehicles operating over ten seconds would be reasonable. The Chicago Transportation Authority, the Engine Manufacturers Association, the Navistar Corporation and Caterpillar all concurred that meeting this standard is technologically feasible and economically reasonable. Mr. Charles Hudson, of Navistar Corporation, did request that any violator issued a citation under the visual opacity standard have appeal rights through confirmation or repudiation by the more scientific snap-idle test. The Board finds this request to be reasonable. The regulation is therefore proposed so that any person cited under the visual test may, within five (5) days, request a snap-idle test. In this way, the rule will not be arbitrary and the most blatant polluters will hopefully be motivated to maintain their mobile sources in accordance with the law.

In terms of enforcement, the Board realizes that at this stage, the rule as drafted is somewhat tenuous. In promulgating this regulation, we inserted the State Police as an enforcement mechanism because other programs of other states have done so. The Board envisions that for any rule to be effective, the State Police would be involved at some level. The Illinois Environmental Protection Agency is also made part of the process. This does not presume to tell these critical agencies what to do or how to allocate their respective budgets; rather, it serves only to introduce a viable structure to combat a serious health problem. In this vein, the Board welcomes comment and, hopefully, participation from these agencies in formulating a feasible plan.

At the same time, we recognize that the legislature may choose to act in regard to diesel regulations. Should that be the case, the Board is prepared to alter its regulations accordingly. Until that time however, the diesel smoke problem and its ramifications need to be addressed. It is with that in mind that we propose this regulation for First Notice and note that these rules are not set in stone, but rather represent an attempt to begin the process whereby dangerous pollutants are reduced for the benefit of the people of Illinois.

#### ORDER

The Board directs the Clerk to file these amendments and additions with the Secretary of State for First Notice publication in the Illinois Register.

TITLE 35: ENVIRONMENTAL PROTECTION  
 SUBTITLE B: AIR POLLUTION  
 CHAPTER I: POLLUTION CONTROL BOARD  
 SUBCHAPTER k: EMISSION STANDARDS AND LIMITATIONS  
 FOR MOBILE SOURCES

PART 240  
 MOBILE SOURCES

SUBPART A: DEFINITIONS AND GENERAL PROVISIONS

Section	
240.101	Preamble
240.102	Definitions
240.103	Prohibitions
240.104	Inspection
240.105	Penalties
240.106	Determination of Violation

SUBPART B: EMISSIONS

Section

240.121	Smoke Emissions
240.122	Diesel Engine Emission Standards <u>for Locomotives</u>
240.123	Liquid Petroleum Gas Fuel Systems
240.124	Vehicle Exhaust Emission Standards
240.125	Compliance Determination

SUBPART C: HEAVY-DUTY DIESEL SMOKE EMISSION TEST  
PROCEDURE, AND HEAVY-DUTY VEHICLE EMISSION CONTROL SYSTEM INSPECTIONS

<u>Section</u>	
<u>240.140</u>	<u>Applicability</u>
<u>240.141</u>	<u>Responsibilities During Inspection Procedure</u>
<u>240.142</u>	<u>Heavy-Duty Diesel Vehicle Smoke Opacity Test Procedure</u>
<u>240.143</u>	<u>Heavy-Duty Vehicle Emission Control System Inspection</u>
<u>240.144</u>	<u>Refusal to Submit to Inspection Procedure</u>
<u>240.145</u>	<u>Civil Penalty Schedule</u>
<u>240.146</u>	<u>Demonstration of Correction and Post-Repair Test or Inspection</u>
<u>240.147</u>	<u>Vehicles Removed from Service</u>
<u>240.148</u>	<u>Twenty Percent Visual Opacity Test</u>

Appendix A	Rule into Section Table
Appendix B	Section into Rule Table

AUTHORITY: Implementing Section 9, 101 and 13 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111-1/2, pars. 1009, 1010, 1013 and 1027).

SOURCE: Adopted as Chapter 2: Air Pollution, Part VII: Mobile Sources, filed and effective April 14, 1972; codified at 7 Ill. Reg. 13628; amended in R85-25, at 10 Ill. Reg. 11277, effective June 16, 1986; amended in R90-20 at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_.

SUBPART A: DEFINITIONS AND GENERAL PROVISIONS

Section 240.102

All terms which appear in this Part have the definitions specified in this Part and 35 Ill. Adm. Code 201 and 211.

"Basic Penalty": The reduced civil penalty of five hundred dollars (\$500) for a test procedure or emission control system inspection violation that is deposited in the Environmental Trust Fund.

"Certification Level": The same as defined in Title 40. Code of Federal Regulations (CFR). Part 86, Subpart A for 1974 and subsequent model-year heavy-duty diesel-powered vehicles when tested in accordance to 40 CFR Part 86, Subpart I, for peak smoke emissions.



"Citation": A legal notice issued to a heavy-duty vehicle's owner, or owner and operator, by the Illinois State Police, the Illinois Environmental Protection Agency or any other authorized state agency or political subdivision thereof requiring the owner to repair the vehicle and to pay a civil penalty.

"Defective": An emission control system or an emission control system component that is malfunctioning due to age, wear, malmaintenance, or design defects.

"Demonstration of Correction": A repair receipt from a repair facility, a complete work order from a fleet repair or fleet maintenance facility, or successful completion of a post-repair test or inspection.

"Diesel Engine": All types of internal-combustion engines in which air is compressed to a temperature sufficiently high to ignite fuel injected directly into the cylinder area.

"Diesel Locomotive": A diesel engined vehicle designed to move cars on a railway.

"Driver": The same meaning as defined in the Illinois Vehicle Code, Ill. Rev. Stat. 1989, ch. 95-1/2, par. 116.1.

"Emission Control Label": The label required in 13 CCR, Section 1965, or Title 40 Code of Federal Regulations (40 CFR), Section 85.874-35 or 40 CFR Part 86, Subpart A.

"Emission Control System": The pollution control components on an engine at the time of its engine family certification, including, but not limited to, the emission control label.

"Fleet": Five or more vehicles.

"Full Power Position": The throttle position at which the engine fuel delivery is at maximum flow.

"Heavy Duty Vehicle": ~~A motor vehicle rated at more than 8000 pounds gross vehicle weight~~ a vehicle with 8,000 pounds or greater manufacturer's maximum gross vehicle weight rating (GVWR) and greater.

"High Idle": That portion of a two-speed idle test conducted with the engine operating at a speed of approximately 2500 PRM.

"Idle Mode": That portion of a vehicle emission test procedure conducted with the engine disconnected from an

external load and operating at minimum throttle.

"Inspection Procedure": The test procedure specified in Section 240.142 and the emission control system inspection specified in section 240.143.

"Inspection Site": An area including a random roadside location, a weigh station, or a fleet facility selected for the purpose of conducting the heavy-duty vehicle test procedure and/or emission control system inspection.

"Issuance": The date the citation is mailed to, or personally handed by an inspector to the owner.

"Light Duty Truck": A motor vehicle rated at 8000 pounds gross vehicle weight or less, which is designed for carrying more than 10 persons or designed for the transportation of property, freight or cargo, or is a derivative of such a vehicle.

"Light Duty Vehicle": A passenger car designed to carry not more than 10 persons.

"Minimum Penalty": The three hundred dollar (\$300) penalty that is to be deposited in the Environmental Trust Fund.

"Model Year": The year of manufacture of a motor vehicle based upon the annual production period as designated by the manufacturer and indicated on the title and registration of the vehicle. If the manufacturer does not designate a production period for the vehicle, then "model year" means the calendar year of manufacture.

"Motor Vehicle": As used in this section "motor vehicle" shall have the same meaning as in the Illinois Vehicle Code (Ill. Rev. Stat. 1985<sup>9</sup>, ch. 95 1/2, par. 1-146).

"Officer": A uniformed member of the Department of the Illinois State Police.

~~"Opacity": A condition which renders material partially of wholly impervious to the transmittance of light, and causes the obstruction of an observer's view~~ the percentage of light obstructed from passage through an exhaust smoke plume.

"Owner": The person registered by the Illinois Secretary of State or its equivalent in another state, as the owner of the vehicle.

"Persons Liable": All persons owning, operating or in charge or control of any equipment who shall cause or permit

or participate in any violation of these rules and regulations either as owner, operator, lessee or lessor.

"Post-repair Inspection": A repeat emission control system inspection procedure for the purpose of determining compliance of a cited vehicle.

"Post-repair Test": A repeat test procedure for the purpose of determining compliance of a cited vehicle.

"Remove from Service": The towing and storage of a vehicle under the auspices of the Illinois State Police.

"Repair Facility": Any place where heavy-duty vehicles are repaired, rebuilt, reconditioned, or in any way maintained for the public at a charge, and fleet maintenance facilities.

"Smokemeter": A detection device used to measure the opacity of smoke in percent opacity.

"Snap-idle Cycle": Rapidly depressing the accelerator pedal from normal idle to the full power position, holding the pedal in the position for no longer than ten seconds or until the engine reaches maximum speed, and fully releasing the pedal so that the engine decelerates to normal idle.

"Tampered": Conditions or components of a vehicle related to emissions control that are missing, modified, or disconnected.

"Test Opacity": The smokemeter measurement of opacity for the purpose of determining compliance with section 240.142(a) and (b).

"Test Procedure": Means the preconditioning sequence and smoke opacity measurement processes for determining compliance with section 240.142.

"Two-Speed Idle Test": A vehicle emission test procedure consisting of the measurements of exhaust emission in high idle and idle modes.

(SOURCE: Amended at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_).

#### SUBPART B: EMISSIONS

Section 240.122 Diesel Engine Emission Standards for Locomotives

- a) ~~The visible emission standard in Section 240.121 shall not apply to diesel engines.~~
- b) ~~With the exception of subsection (e), diesel engines manufactured before January 1, 1970, shall not be operated in such a manner as to emit smoke which is equal to or greater than 30% opacity except for individual smoke puffs. Individual puffs of smoke shall not exceed 15 seconds in duration.~~
- e)
- 1) ~~Diesel engines shall be operated only on the specific fuels as specified in the engine manufactureres' specifications fo that specific engine, or on fuels exceeding engine manufactureres' specifications.~~
  - 2) ~~Persons liable for operating diesel engined fleets wholly within standard metropolitan statistical areas shall furnish to the Environmental Protection Agency, once each year, proof that the fuel purchased and used in their operations conform to subsection (e)(1).~~
- d) ~~All diesel engines operated on public highways in Illinois coming from out of the State shall conform to subsection (b).~~

e)a)

- 1) No person shall cause or allow the emission of smoke from any diesel locomotive in the State of Illinois to exceed thirty percent (30%) opacity.
- 2) Subsection ~~(e)~~(a)(1) shall not apply to:
  - A) Smoke resulting from starting a cold locomotive: for a period of time not to exceed 30 minutes.
  - B) Smoke emitted while accelerating under load from a throttle setting other than idle to a higher throttle setting: for a period of time not to exceed 40 seconds.
  - C) Smoke emitted upon locomotive loading following idle: for a period of time not to exceed 2 minutes.
  - D) Smoke emitted during locomotive testing, maintenance, adjustment, rebuilding, repairing or breaking in: for a period of time not to exceed 3 consecutive minutes and an aggregate of 10 minutes in any 60 minute period.

- E) Smoke emitted by a locomotive which because of its age of design makes replacement or retrofit parts necessary to achieve smoke reduction unavailable. These locomotives shall be retired at the earliest possible time.

(SOURCE: Amended at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_).

SUBPART C: HEAVY-DUTY DIESEL SMOKE EMISSION TEST PROCEDURE, AND HEAVY-DUTY VEHICLE EMISSION CONTROL SYSTEM INSPECTIONS

Section 240.140 Applicability

This subpart applies to all diesel-powered vehicles with a 8,000 pounds or greater manufacturer's maximum gross vehicle weight rating (GVWR) operating in the State of Illinois.

(SOURCE: Added at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_).

Section 240.141 Responsibilities During Inspection Procedure

- a) The driver of a heavy duty diesel vehicle selected to undergo the inspection procedure shall do all of the following:
- 1) Drive the vehicle to the inspection site upon direction of an officer;
  - 2) Perform the test procedure upon request by an inspector;
  - 3) Open the vehicle door so that the inspector can observe the driver depress the accelerator pedal;
  - 4) Permit an emission control system inspection upon the request of the inspector; and
  - 5) Sign the citation to acknowledge its receipt and the smoke test strip chart to acknowledge performance of the test procedure.
- b) The driver of a heavy-duty gasoline or diesel vehicle selected to undergo the inspection procedure shall:
- 1) Drive the vehicle to the inspection site upon direction of an officer;
  - 2) Permit an emission control system inspection upon request of the inspector; and

- 3) Sign the citation to acknowledge its receipt.
- c) The inspector in performing the inspection procedure shall do all of the following:
- 1) Advise the driver that refusal to submit to the inspection procedure is a violation of these regulations;
  - 2) Obtain engine identification information from a vehicle that has a smoke opacity level between forty (40) percent and fifty-five (55) percent, when tested pursuant to section 240.142(f), to determine whether the opacity standard in section 240.142(a) or 240.142(b) would apply;
  - 3) Issue a copy of the citation to the driver of a vehicle that fails the test procedure or the emission control system inspection; and
  - 4) Issue a warning to the owner of a heavy-duty diesel-powered vehicle with a missing emission control label that the engine serial or identification number must be provided to the State Police within thirty (3) calendar days or it will be conclusively presumed that the vehicle has a certification level equal to or less than thirty-five (35) percent peak smoke.

(SOURCE: Added at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_).

Section 240.142            Heavy-Duty Diesel Vehicle Smoke Opacity Test Procedure

- a) No heavy-duty diesel-powered vehicle with a federal peak smoke engine certification level of thirty-five (35) percent peak opacity or less operating on the roadways within the state of Illinois shall exceed forty (40) percent peak smoke opacity when tested in accordance with this section.
- b) No other heavy-duty diesel-powered vehicle operating on the roadways within the state of Illinois shall exceed fifty-five (55) percent peak smoke opacity when tested in accordance with this section.
- c) In the event that a 1974 or later model-year heavy-duty diesel-powered vehicle's engine identification cannot be determined by the inspector in order to determine the federal smoke certification level, the owner, within thirty (30) calendar days of the inspection, shall provide the State Police with the engine identification information. If the owner fails to comply with this requirement, it is

conclusively presumed for the purpose of subsequent smoke emission inspections that the vehicle has a federal peak smoke certification level equal to or less than thirty-five (35) percent peak smoke opacity, and the test standard in 240.142(a) shall apply.

- d) Manufacturers of heavy-duty diesel-powered engines shall, within sixty (60) calendar days of the effective date of this section provide to the State Police the certification levels by model-year for each engine family that it has certified to levels above thirty-five (35) percent peak opacity and a complete list of engine identification numbers for each of these engine families.
- e) The smoke opacity measurement equipment shall consist of a light extinction type smokemeter which includes an optical detection unit, a control/indicator unit, and a strip chart recorder.
- 1) The smokemeter shall provide for full flow, end of line, and continuous measurement of exhaust opacity, and be calibrated according to manufacturers's specifications; and
  - 2) The smokemeter and strip chart recorder shall comply to specifications in Society of Automotive Engineers (SAE) report number J1243, section 7 entitled "Smoke Measuring Equipment and Instrumentation".
- f) The test procedure shall consist of preparation, preconditioning, and test phases.
- 1) In the preparation phase, the vehicle shall be placed at rest, the transmission shall be placed in neutral, and the vehicle wheels shall be properly restrained to prevent any rolling motion.
  - 2) In the preconditioning phase, the vehicle shall be put through a snap-idle cycle two or more times until successive measured smoke levels are within ten (10) opacity percent of each other. The smoke meter shall be rechecked prior to the preconditioning sequence to determine that its zero and span setting are adjusted to manufacturer's specifications.
  - 3) In the test phase, the vehicle shall be put through the snap-idle cycle three times.
    - A) The smoke opacity shall be measured during the preconditioning and test phases with a smokemeter and shall be recorded continuously on the chart recorder during each snap-idle cycle. The maximum

instantaneous value recorded by the chart recorder shall be the smoke opacity reading.

- B) The test opacity to determine compliance with (a) and (b) above shall be the average of the two meter readings with the least difference in opacity values. If all three readings have successive equivalent differences between them, the test opacity shall be the average of the three readings.

(SOURCE: Added at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_).

Section 240.143 Heavy-Duty Vehicle Emission Control System Inspection

- a) The heavy-duty diesel-powered vehicle emission control components subject to inspection for tampered or defective conditions include, but are not limited to, the following:
- 1) The engine governor;
  - 2) Any seals and/or covers protecting the air-fuel ratio adjustments;
  - 3) Any fuel injection pump seals and covers;
  - 4) The air cleaner and flow restriction indicator;
  - 5) The exhaust gas recirculation valve;
  - 6) The particulate matter trap system or catalytic converter system, including pipes and valves;
  - 7) Related hoses, connectors, brackets, and hardware for these components;
  - 8) Engine computer controls, related sensors, and actuators;
  - 9) Emission control label; and
  - 10) Any other emissions-related components for a particular vehicle/engine as determined from the manufacturer's specifications, emission control label, certification data, or published vehicle parts manuals.
- b) The heavy-duty gasoline-powered vehicle emission control components subject to inspection for tampered or defective conditions, include, but are not limited to the following:



- 1) The air injection system;
- 2) The positive crankcase ventilation system;
- 3) The exhaust gas recirculation system;
- 4) The catalytic converter, including pipes and valves;
- 5) The evaporative emission control system;
- 6) Related hoses, connectors, brackets, and hardware for these components;
- 7) Engine computer controls, related sensors, and actuators;
- 8) On-Board Diagnostic (OBD) systems for 1994 and subsequent model year vehicles, if so equipped;
- 9) Emission control label; and
- 10) Any other emissions-related component for a particular vehicle/engine as determined from the manufacturer's specifications, emission control label, certification data, or published vehicle parts manuals.

(SOURCE: Added at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_).

Section 240.144 Refusal to Submit to Inspection Procedure

The refusal by an owner or driver of a vehicle to submit to the test procedure in Section 240.142 or the emission control system inspection in Section 240.143 constitutes a failure of the test procedure or inspection.

(SOURCE: Added at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_).

Section 240.145 Civil Penalty Schedule

a) The owner of a heavy-duty vehicle that fails the test procedure, or visual opacity test or the emission controls system inspection, including by refusal to submit, is subject to the following penalty schedule:

- 1) The owner of a vehicle that is cited for the first time and for which demonstration of correction is provided and payment is made within forty-five (45) calendar days from personal or certified mail receipt of the citation shall pay the minimum penalty of three hundred dollars (\$300).

- 2) The owner of a vehicle that is cited for the first time and for which demonstration of correction is not provided within forty-five (45) days from personal mail or certified mail receipt of the citation shall provide demonstration of correction and pay the minimum penalty of three hundred dollars (\$300) and the basic penalty of five hundred dollars (\$500) for a total of eight hundred dollars (\$800).
- 3) The owner of a vehicle that is cited within one year from the issuance of a previous citation for that vehicle shall within forty-five (45) calendar days from personal or certified mail receipt of the current citation provide demonstration of correction and pay the penalty of one thousand five hundred dollars (\$1,500) and the minimum penalty of three hundred dollars (\$300) for a total of one thousand eight hundred dollars (\$1,800).
- 4) All penalties under this subsection (a) shall be deposited in the Environmental Trust Fund.
- b) If a vehicle fails the test procedure, the visual opacity test or an emission control system inspection one year or more after the date of its previous failure, the owner shall be subject to the penalty schedule in (a) (1) and (2) above.
- c) If a bona fide change of vehicle ownership occurs between non-related persons or entities and the vehicle is subsequently cited within one year of the previous citation, the new owner shall be subject to the penalty schedule in (a) (1) and (2) above.
- d) An owner who has been cited twice or more for tampered emission controls on the same vehicle shall be subject to the penalty in (a)(3) above.

(SOURCE: Added at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_).

Section 240.146                      Demonstration of Correction and Post-Repair Test or Inspection

- a) The owner may demonstrate correction of the vehicle by submitting to the Illinois State Police a repair receipt from a repair facility or a completed work order from a fleet repair or maintenance facility which contains the following information:
- 1) Name, address, and phone number of the facility;

- 2) Name of mechanic;
  - 3) Date of the repair;
  - 4) Description of component replacements, repairs, and/or adjustments; and
  - 5) Itemized list of replaced components, including description or part, part number, and cost.
- b) In lieu of submitting a repair receipt or a completed work order, the owner may demonstrate correction of the vehicle by submitting it to a post-repair inspection.
- c) A post-repair inspection shall be required whenever a submitted repair receipt or work order does not comply with (a) above, or appears to be falsified. A post-repair test or inspection shall be required for second and subsequent failures of the test procedure or an emission control system inspection by a vehicle within a one year period.

(SOURCE: Added at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_).

Section 240.147      Vehicles Removed from Service

- a) Vehicles are subject to removal from service by the Illinois State Police should there be a determination that one or more uncleared violations exist at the time of inspection.
- b) Upon payment by cashier's check or money order of all unpaid penalties for a vehicle that has been removed from service, the Illinois Environmental Protection Agency shall provide the owner, or designee, a release form for presentation to the Illinois State Police.
- c) The release of the vehicle shall be subject to the condition that it be repaired and post-repair tested or inspected within fifteen (15) calendar days.

(SOURCE: Added at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_).

Section 240.148      Twenty Percent Visual Opacity Test

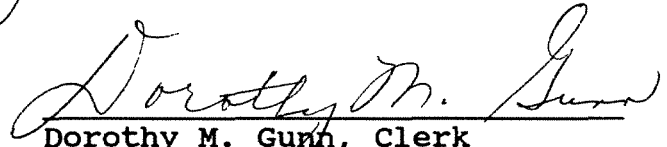
- a) No diesel-powered vehicle shall emit any visisble emissions in excess of twenty percent (20%) visual opacity for more than 10 consecutive seconds. Exceeding this standard shall be a basis for issuing a citation for which the civil penalty shedule of Section 240.145 applies.
- b) Any person issued a citation under paragraph (a) of this

section may, within five (5) days, request confirmation of violation of the standard in Section 240.142(a) and (b) by requesting a snap-idle test by the Illinois State Police.

(SOURCE: Added at 15 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_).

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby testify that the above Opinion and Order was adopted on the 25<sup>th</sup> day of July, 1991 by a vote of 5-0.

  
Dorothy M. Gunn, Clerk  
Illinois Pollution Control

Board