

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Staff Report

Proposed Amended Rule 1401 – New Source Review of Toxic Air Contaminants and Impact Assessment for Facilities Subject to Rule 1402 – Control of Toxic Air Contaminants from Existing Sources

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EXECUTIVE SUMMARY

BACKGROUND

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BACKGROUND

Rule 1401 – New Source Review for Toxic Air Contaminants (TACs) was adopted by the district's Governing Board in June 1990. The rule establishes cancer and non-cancer risk requirements for new, relocated, or modified sources of toxic air pollutants. It has been amended several times to add new compounds to the list of TACs as they have been identified and health risk values were finalized or amended. Rule 1402 – Control of Toxic Air Contaminants from Existing Sources was adopted April 8, 1994. It establishes risk requirements for existing facilities. Rule 1402 implements the AB 2588 Air Toxics Hot Spots Program. Rule 1402 may require toxic emissions inventories, health risk assessments (HRA), public notification, and/or risk reduction for facilities that are above the specified risk thresholds.

Particulate matter emissions from diesel-fueled internal combustion engines (diesel PM) were classified as a toxic air contaminant by the CARB in 1998. Diesel PM emissions are produced when internal combustion engines burn diesel fuel. Diesel exhaust is a complex mixture of gases and fine particles, including many known or suspected cancer-causing substances. Emissions from diesel-fueled engines are mainly composed of particulate matter and gases which contain potential cancer-causing substances such as arsenic, benzene, formaldehyde, nickel, and polycyclic aromatic hydrocarbons. Particulate matter from diesel-fueled engine emissions is small enough to be inhaled deep into the lungs. There is a link between these emissions and lung cancer as well as non-cancer health effects. Diesel fueled engines are widely used throughout the district for emergency power as well as some non-emergency applications where electricity is not available from the local utility.

PROPOSED AMENDMENTS TO RULE 1401

Rule 1401 – New Source Review of Toxic Air Contaminants establishes permitting requirements for new, relocated and modified sources that emit one or more of the toxic air contaminants listed in the rule. Amendments to Rule 1401 are proposed to add diesel particulate matter emissions from diesel-fueled internal combustion engines to the list of TACs. Diesel PM emissions have both cancer and chronic health effects. Diesel PM was identified by the state as a toxic air contaminant in 1998 and, at the same time, the Office of Health Hazard Assessment (OEHHA) approved cancer and chronic risk values. Diesel PM was not immediately added to the Rule 1401 list of TACs in coordination with CARB in order to allow time to develop a comprehensive statewide diesel PM policy, programs, permitting guidelines, and guidelines for the AB 2588 Air Toxics Hot Spots Program. The addition of diesel PM to the list of TACs in Rule 1401 will affect new, relocated, or modified non-emergency diesel-fueled stationary and portable internal combustion engines permitted by the district. Emergency engines are exempt from Rule 1401.

The list of TACs in Rule 1401 is also used for Rule 1402. Particulate matter emissions from diesel-fueled internal combustion engines may, in some cases, produce an exceedance of the risk thresholds in Rule 1402. For example, a single non-emergency diesel engine or several emergency engines at one facility may result in a cancer risk in excess of 25 in one million. Therefore, the addition of diesel PM to Rule 1401 will also affect existing facilities with diesel-

fueled internal combustion engines. Although diesel PM has both cancer and non-cancer effects, cancer risk far outweighs the non-cancer risk.

A large number of existing facilities have multiple emergency diesel engines. The diesel PM risk from these facilities will be addressed in a separate new rule, Proposed Rule 1472 – Requirements for Facilities with Multiple Stationary Emergency Standby Diesel-Fueled Internal Combustion Engines. Proposed Rule 1472 allows facilities with emergency diesel-fueled engines an option to comply with Rule 1402 requirements rather than the risk reduction requirements of Proposed Rule 1472.

In April 2004 the district's Governing Board adopted Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines. Rule 1470 implements the state Air Toxic Control Measure for stationary diesel-fueled internal combustion engines. Rule 1470 establishes requirements to reduce diesel PM from stationary diesel-fueled internal combustion engines and requires control of particulate matter emissions from stationary diesel-fueled engines with requirements for fuel quality, allowable annual testing and maintenance hours, and diesel particulate controls.

The state has also adopted an ATCM for Diesel Particulate Matter for Portable Engines Rated at 50 Horsepower and Greater which is being implemented by the district and its requirements are currently used as part of the criteria for district permitting of portable diesel-fueled internal combustion engines. Implementation of the ATCMs and Rule 1470 will, therefore, reduce risk from new and existing diesel-fueled engines even in the absence of the proposed addition of diesel PM from internal combustion engines to the Rule 1401 list of TACs. However, the risk levels attained by the ATCMs and Rule 1470 may not be as stringent as risk thresholds in Rule 1401 for non-emergency diesel-fueled engines or Rule 1402 facility risk analysis because Rule 1470 is a technology-based rule rather than a risk-based rule. Rule 1470 addresses diesel PM risk from individual engines and does not consider the cumulative effect of several such engines at a single facility. Emergency engines are exempt from the requirements of Rule 1401 which requires the use of best available control technology for toxics (T-BACT) when cancer risk exceeds one in one million. Emergency engines, however, are not exempt from Rule 1402 which uses the list of TACs in Rule 1401.

IMPACT ASSESSMENT FOR PROPOSED AMENDED RULE 1401

The proposed amendment to Rule 1401 to add diesel PM from internal combustion engines to the list of TACs is expected to impact a few new engines. Although diesel PM is not currently listed in Rule 1401, many of its components are. Thus, new sources currently are required to evaluate toxic impact using a speciated list of TACs in diesel exhaust. Rule 1401 exempts emergency engines from new source review for toxic air contaminants. Non-emergency (prime) engines are not exempt, so any new stationary or portable prime diesel engine will be required to comply with the risk levels in Rule 1401. This is expected to impact only a few engines since very few prime diesel engines per year have been permitted over the last few years due to stringent emission requirements for these engines. Only three stationary and 23 portable prime engines were permitted in 2006 and all complied with the applicable ATCM and Rule 1470 requirements. In addition, these engines complied with Rule 1401 risk thresholds based on

analysis using a speciated list of toxic air contaminants found in diesel exhaust. In 2007, only 13 district permits were issued for portable prime diesel-fueled engines and none were issued for stationary prime diesel-fueled engines. New stationary and portable diesel-fueled internal combustion engines permitted by the district must also meet stringent best available control technology (BACT) requirements and clean fuels requirements. Stationary prime engines must also comply with stringent NO_x, SO_x, CO, and VOC requirements in Rule 1110.2 – Emissions from Liquid- and Gaseous-Fueled Engines. Portable engines must meet federal and state ATCM requirements which are primarily the emission limits for non-road engines. Most portable diesel engines in the South Coast are currently registered through a state program, the Portable Equipment Registration Program (PERP), rather than permitted by the district and PERP engines are subject to the requirements of the state ATCM for portable engines. Impacts are expected to be minimal for new, modified, or relocated portable and stationary non-emergency diesel engines subject to Rule 1401 because they are currently subject to stringent emission requirements under federal, state, and district regulations as well as being analyzed under Rule 1401 based on a speciated list of components of diesel PM. New stationary prime diesel engines are also required, under Rule 1470, to attain a diesel PM emission level of less than or equal to 0.01 g/bhp-hr which will require the addition of a diesel particulate filter. The only change for portable and stationary non-emergency diesel engines will be analysis for Rule 1401 compliance using the new diesel PM risk factors rather than the speciated list of compounds in diesel exhaust.

IMPACT ASSESSMENT FOR FACILITIES SUBJECT TO RULE 1402

Paragraph (j)(5) of Rule 1402 requires a report to the Governing Board regarding preliminary estimates of Rule 1402 impacts that are associated with the addition of new compounds to the list of TACs in Rule 1401. Since the list of TACs in Rule 1401 is also used for Rule 1402, adding diesel PM from internal combustion engines is expected to impact many existing facilities under Rule 1402.

There are approximately 150 facilities with stationary prime engines, which includes all engines that remain at a single facility, even though they may be moved around the facility. Thirty-four of the 150 facilities are currently in the AB 2588 Toxics Hot Spots Program. All facilities with prime engines will be addressed under Rule 1402 and the AB 2588 Toxics Hot Spots Program. Facilities with prime diesel-fueled engines that are already in the AB 2588 program will be required to add the diesel PM emissions produced by their engines to their emissions inventories and update their HRAs at the time of their quadrennial AB 2588 updates. Non-AB 2588 facilities will be notified in the near future of the need to submit emission inventories and perform a health risk assessment for their prime diesel engines. Further impacts to these 150 facilities may include public notification, and/or risk reduction based on estimated facility cancer risk.

Diesel PM risk from emergency engines will be addressed under Rule 1402, the AB 2588 program, or under Proposed Rule 1472. There are approximately 5,900 facilities with

emergency diesel engines in the district and 225 of these are in the AB 2588 program.¹ The facilities in the AB 2588 program will be required to include all their diesel engines at the time of their quadrennial update for the program. Facilities with greater than 10 in one million cancer risk from their emergency diesel engines will be required to do public notice. This is expected to impact about 1,100 facilities. However, information already submitted as a requirement of Rule 1470 will be used by the district to estimate cancer risk from these facilities and public notification will be done by the district in a streamlined process using newspapers, information at local libraries and public agencies, and a web site. In addition, Proposed Rule 1472 will require reduction of diesel PM at facilities with high diesel PM exposure from multiple emergency diesel-fueled engines.

¹ AQMD permitting data from June 2007 was used for the analysis for this staff report and may differ somewhat from the data presented in “Public Notification Procedures for Emergency Diesel Internal Combustion Engines and Industry-wide Categories of Gas Stations and Dry Cleaners, Pursuant to Air Toxics Hot Spots Information and Assessment Act (AB 2588)” at the January 2007 Governing Board Meeting.

CHAPTER 1: BACKGROUND

INTRODUCTION

REGULATORY HISTORY

AFFECTED INDUSTRIES

INTRODUCTION

Rule 1401 – New Source Review for Toxic Air Contaminants (TACs) establishes cancer and non-cancer risk requirements for new, relocated, or modified sources emitting toxic air pollutants listed in the rule. The current proposal would add diesel particulate matter from internal combustion engines to the Rule 1401 list of TACs and adopt its OEHHA approved cancer potency (CP) value and chronic reference exposure level (REL). In addition, the district’s “Risk Assessment Procedures for Rules 1401 and 212” are updated whenever a new TAC is added to the list.

Rule 1402 – Control of Toxic Air Contaminants from Existing Sources establishes risk requirements for existing facilities that emit TACs and implements the AB 2588 Air Toxics Hot Spots Program. Rule 1402 is not being amended, however it uses the list of TACs in Rule 1401. Paragraph (j)(5) of Rule 1402 requires a report to the Governing Board regarding a preliminary estimate of Rule 1402 impacts that are associated with the addition of new compounds to the list of TACs in Rule 1401. Adding diesel PM from internal combustion engines is expected to impact many existing facilities under Rule 1402.

A new rule, Proposed Rule 1472 – Requirements for Facilities with Multiple Stationary Emergency Standby Diesel-Fueled Internal Combustion Engines will address diesel PM exposure from facilities with three or more diesel emergency engines. Proposed Rule 1472 will be addressed in a separate staff report and is being considered for adoption at the same time as proposed amendments to Rule 1401.

REGULATORY HISTORY

Diesel PM from internal combustion engines was classified as a toxic air contaminant by CARB on August 27, 1998 following a report from the Scientific Review Panel (SRP) to the Office of Environmental Health Hazard Assessment on April 22, 1998 proposing identification of diesel PM as a toxic air contaminant. As part of CARB’s overall plan to reduce diesel emissions from internal combustion engines, it adopted two ATCMs in 2004 for reduction of diesel PM from stationary and portable diesel-fueled internal combustion engines.

Rule 1401 – New Source Review for Toxic Air Contaminants (TACs) was adopted by the district Governing Board in June 1990. The rule establishes cancer and non-cancer risk requirements for new, relocated, or modified sources of toxic air pollutants. It is amended periodically to add new compounds to the list of TACs as they are identified and risk values are finalized or amended by the state. Although diesel PM is not currently listed in Rule 1401, many of its components are. Thus, new sources of diesel exhaust are currently required to evaluate toxic impact using a speciated list of TACs in diesel exhaust.

Rule 1402 – Control of Toxic Air Contaminants from Existing Sources establishes risk requirements for existing facilities that emit TACs. Rule 1402 is not being amended, however the list of TACs in Rule 1401 ~~are~~is also used for Rule 1402. Depending on the facility and its potential toxic risk from diesel PM, Rule 1402 may require toxic emissions inventories, health

risk assessments (HRA), public notification, and/or risk reduction as required under the AB 2588 Air Toxics Hot Spots Program.

Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines, which was adopted by the district’s Governing Board on April 2, 2004 was developed by the district to implement the ATCM for Stationary Compression Ignition (CI) Engines. Rule 1470 uses requirements for fuel quality, allowable annual testing and maintenance hours, and add-on controls to reduce diesel particulate matter. Portable diesel-fueled internal combustion engines in the district are subject to the state ATCM for Diesel Particulate Matter for Portable Engines Rated at 50 Horsepower and Greater.

AFFECTED INDUSTRIES

A wide variety of private and public entities owning and operating stationary and portable diesel-fueled internal combustion engines in the South Coast Air Basin may be affected by the addition of diesel PM from internal combustion engines to the list of TACs in Rule 1401. It should be noted that jet-fueled engines are also included since jet fuel is very similar to diesel. Industries and other entities affected by these rule amendments include, but are not limited to, manufacturing, food processing and production, power generation, building management, hospitals, refineries, water treatment facilities, telecommunications and broadcasting facilities, quarries, military installations, prisons, schools, construction, and portable equipment rental companies.

District staff estimates there are approximately 10,000 permitted diesel-fueled internal combustion engines owned or operated by approximately 6,000 facilities in the district. About 90 percent of the engines are stationary and 10 percent are portable engines. Stationary compression ignition engines are those that remain in one location for 12 months or longer. Engines that remain at a single facility and are moved around the facility are treated as stationary engines for district permitting. Portable engines are designed to be moved from place to place and do not remain at the same facility for more than 12 months. Diesel-fueled engines are also typically categorized as either prime (non-emergency) engines or emergency standby engines.

Approximately 10 percent of the 10,000 permitted diesel-fueled internal combustion engines are prime engines, and 90 percent are emergency back-up engines. Most prime diesel-fueled engines in the district are portable engines. Prime engines are used in a wide variety of applications to provide mechanical power to equipment such as generators, compressors, irrigation equipment, cranes, rock crushers, and agricultural irrigation pumps. Less than three percent of all permitted diesel-fueled engines are stationary prime engines (including those that move around but remain at a single facility) and many of those are in remote locations, such as offshore oil drilling platforms.

Emergency standby engines are used for emergency back-up electric power generation or pumping of water during emergencies such as power failures or rolling blackouts or flooding. They provide emergency power for a variety of situations, including those which are critical to human life (e.g., hospital and convalescent facility medical support systems and fire suppression) and those which are less critical to human life and safety (e.g., heating and air conditioning

systems, communication systems, ventilation and smoke removal systems, sewerage disposal, lighting, and industrial processes). Emergency generators and fire pumps are regularly operated for testing and maintenance to ensure that they will operate during an emergency. The allowable operating hours for testing and maintenance are limited by Rule 1470. The limits are based on the diesel PM emissions from the engine such that cleaner engines are allowed to operate more hours.

CHAPTER 2: SUMMARY OF PROPOSED AMENDED RULE 1401

OVERVIEW

PROPOSED CHANGES TO RULE 1401

OVERVIEW

The primary purpose of amending Rule 1401 is to add diesel PM from diesel-fueled internal combustion engines to the list of TACs in Table I of the rule. Rule 1402 is not being amended, however, the list of TACs in Rule 1401 is also used for Rule 1402 and a preliminary analysis of impacts on Rule 1402 facilities is required when a new compound is added.

PROPOSED CHANGES TO RULE 1401

District staff is proposing to add diesel PM from internal combustion engines to the list of TACs in Table I of Rule 1401. Table I lists toxic air contaminants for which OEHHA has approved cancer and/or non-cancer risk values. OEHHA approved a cancer potency value and a chronic reference exposure level for diesel PM from internal combustion engines on April 22, 1998. The effective date for the risk values will be the date of adoption of Proposed Amended Rule 1401. Table 1 below shows the risk values and the corresponding screening value that will be added to the district's "Risk Assessment Procedures for Rules 1401 and 212" upon adoption of the proposed rule. The screening value is a highly conservative estimate of the amount of diesel particulate emissions required to produce one in one million cancer risk. Although diesel PM also has a chronic risk, the cancer risk far outweighs the chronic risk. Also, please note that diesel PM does not have a Chemical Abstracts Service (CAS) number, but rather an emittant identification number (emittant ID) because it is a mixture of chemical compounds rather than an individual chemical compound.

Table 1 – Risk Values

Substance	CAS	Inhalation Potency Factor (mg/kg-day) ⁻¹	Chronic REL Mg/m ³	Screening Value (lb/yr per 1 x 10 ⁶ cancer risk) at 25 m
Diesel PM – diesel particulate matter from diesel-fueled internal combustion engine exhaust	9901 (emittant ID)	1.1E+00	5.00E+00	1.2E-01

Typically, compounds are added to the TAC list soon after OEHHA approves risk values. In this case, diesel PM from internal combustion engines was not added immediately in order to allow CARB time to develop a comprehensive statewide diesel PM policy, programs, permitting guidelines, and guidelines for the AB 2588 Air Toxics Hot Spots Program. The guidance document for analyzing risk from diesel engines under AB 2588 was recently completed which now makes it appropriate for air districts to add diesel PM to their TAC list.

Although diesel PM is not currently listed in Rule 1401, many of its components are included in the list of Rule 1401 TACs. Thus, new sources currently are required to evaluate toxic impact using a speciated list of TACs in diesel exhaust. Because of the higher potency of diesel PM,

risk calculated using the speciated list of compounds is lower than when the diesel PM cancer potency and chronic relative exposure level are used. The speciated list of compounds will continue to be used for calculating risk from non-internal combustion engine sources, such as boilers.

CHAPTER 3: IMPACT ASSESSMENT

INTRODUCTION

IMPACTS OF PROPOSED AMENDMENTS TO RULE 1401

IMPACT ASSESSMENT FOR FACILITIES SUBJECT TO RULE 1402

POTENTIAL COST IMPACTS

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ANALYSIS

**DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY
CODE SECTION 40727**

COMPARATIVE ANALYSIS

INTRODUCTION

Current Regulations

The proposed addition of diesel PM from internal combustion engines is expected to have impacts on new and existing diesel-fueled engines. These engines are currently required to meet several federal, state, and local regulations. Although diesel particulate matter is not currently listed under Rule 1401, many of its components, such as formaldehyde and polycyclic aromatic hydrocarbons (PAHs), are listed in Rule 1401. Current permitting practice is to analyze cancer risk for new prime stationary and portable engines using a speciated list of diesel exhaust components that appear on the Rule 1401 list of toxic air contaminants. New emergency engines are exempt from Rule 1401. In addition, both new emergency and non-emergency diesel-fueled internal combustion engines must also meet stringent district best available control technology (BACT) requirements and clean fuels requirements. Both new and existing diesel-fueled engines are subject to federal non-road and state ATCM emission requirements as well as stringent NO_x, SO_x, CO, and VOC requirements in Rule 1110.2 – Emissions from Liquid- and Gaseous-Fueled Engines. New and in-use stationary diesel engines must also meet the diesel PM standards in district Rule 1470 which implements the state ATCM for stationary diesel-fueled engines. Table 2 lists the local, state, and federal regulations for stationary diesel-fueled internal combustion engines and the pollutants regulated under each.

Table 2 – Current Stationary Diesel Engine Regulations

Regulation	New Engines		Existing Engines	
	<i>Emergency</i>	<i>Non-Emergency (Prime)</i>	<i>Emergency</i>	<i>Non-Emergency (Prime)</i>
<i>AQMD Rule 1401</i>	Exempt	Speciated TACs for diesel PM	N/A	N/A
<i>AQMD Rule 1402</i>	N/A	N/A	Speciated TACs for diesel PM	Speciated TACs for diesel PM
<i>AQMD Rule 1470</i>	Diesel PM HC, NO _x , NMHC + NO _x	Diesel PM HC, NO _x , NMHC + NO _x	Diesel PM HC, NO _x , NMHC + NO _x	Diesel PM HC, NO _x , NMHC + NO _x
<i>AQMD Rule 1110.2</i>	Exempt	NO _x , VOC, CO	Exempt	NO _x , VOC, CO
<i>AQMD Regulation XIII (BACT)</i>	NO _x + NMHC*, SO _x , CO, PM ₁₀	VOC, NO _x , SO _x , CO, PM ₁₀	N/A	N/A
<i>State ATCM for Stationary Diesel-Fueled Engines</i>	Diesel PM HC, NO _x , NMHC + NO _x	Diesel PM HC, NO _x , NMHC + NO _x	Diesel PM HC, NO _x , NMHC + NO _x	Diesel PM HC, NO _x , NMHC + NO _x
<i>Federal EPA Non-Road Standards</i>	NO _x , HC (or NO _x + NMHC), SO _x , CO, PM	NO _x , HC (or NO _x + NMHC), SO _x , CO, PM	NO _x , HC (or NO _x + NMHC), SO _x , CO, PM	NO _x , HC (or NO _x + NMHC), SO _x , CO, PM

*NO_x+ NMHC means the sum of non-methane hydrocarbons and oxides of nitrogen emissions.

Portable diesel-fueled engines, whether new or existing, are subject to federal non-road standards and the state ATCM for portable diesel engines. Most portable diesel engines in the district are registered through a state program, the Portable Equipment Registration Program (PERP), rather

than permitted by the district. Under the PERP program, these engines must meet the requirements of the state ATCM for portable diesel engines, which primarily requires them to meet non-road emission standards. New, modified, or relocated portable diesel engines permitted by the district currently are subject to the Rule 1401 cancer risk thresholds based on the speciated list of compounds. Under the proposal, the only change for these engines would be that the Rule 1401 analysis would depend on the new diesel PM risk values rather than the speciated list of compounds currently used. However, the diesel PM risk value is more stringent than the speciated list of TACs. All other requirements would remain the same.

IMPACTS OF PROPOSED AMENDMENTS TO RULE 1401

New, Modified, or Relocated Engines Subject to Rule 1401

Under Rule 1401, emergency engines are exempt. Thus, the addition of diesel PM from internal combustion engines to the list of TACs in Table I of Rule 1401 will impact anyone who installs, modifies, or relocates a non-emergency diesel-fueled internal combustion engine. Under the proposal, these engines will be required to meet the Rule 1401 cancer risk levels of 1 in one million or, with T-BACT, 10 in one million using the proposed diesel PM cancer potency value for analysis, rather than the current analysis based on a speciated list of TACs found in diesel exhaust. Risk requirements of Rule 1401 are typically met with add-on controls and/or limiting hours of operation by permit condition. Although diesel PM also has a chronic risk value, the cancer risk far outweighs the chronic risk, so the discussion focuses on cancer risk.

New Non-Emergency Stationary Diesel Engines

Over the past several years, very few stationary non-emergency diesel engines have been permitted per year in the district. Only three were permitted in 2006 and none were permitted in 2007. All three complied with the federal non-road standards, state stationary diesel engine ATCM requirements, district BACT, and Rule 1470 requirements. In addition, they complied with Rule 1401 risk thresholds based on the speciated list of TACs. Under the current proposal, any new stationary non-emergency diesel-fueled engine will have to meet the Rule 1401 risk thresholds based on the new risk values for diesel PM rather than the speciated list of TACs in diesel exhaust currently used. Owners/operators of this type of engine typically meet Rule 1401 risk thresholds by accepting a permit condition on annual operating hours. As an alternative, add-on controls, such as a diesel particulate filter can be used to reduce diesel PM emissions to meet the requirements. Since Rule 1470 requires new stationary diesel prime engines to meet a very stringent 0.01 g/bhp-hr level, the addition of add-on controls such as a diesel particulate filter would be associated with the Rule 1470 requirement rather than a Rule 1401 requirement. Therefore, the proposed addition of diesel PM to Rule 1401 is expected to have minimal impacts on new stationary non-emergency diesel-fueled internal combustion engines and, based on permitting history, only two to three applications per year for such engines are expected.

New Non-Emergency Portable Diesel Engines

Most of the non-emergency diesel engines permitted by the district are portable engines. In 2006, 23 portable prime diesel engines were permitted by the district and 13 were permitted in 2007. All complied with current federal and state PM standards as well as district Regulation XIII – New Source Review, BACT requirements and Rule 1401 cancer risk requirements based on the speciated list of TACs in diesel exhaust. Many portable diesel-fueled engines are now permitted through the state Portable Equipment Registration Program (PERP). The same diesel

PM emission standards, based on the ATCM for portable diesel engines, apply for district permitting and the PERP program. The PERP program, however, is a less costly alternative to permitting through the district and allows use of the engine anywhere in the state, so it is likely that most facilities will continue to choose state registration through PERP rather than district permitting for new portable engines.

Under the current proposal new portable diesel-fueled engines will have to comply with Rule 1401 risk thresholds based on the new risk values for diesel PM rather than the current practice of risk evaluation based on a speciated list of TACs in diesel exhaust. This is the only change for new, modified, or relocated portable diesel engines. Typically, owners/operators meet the risk requirements by accepting a condition for annual operating hours. An add-on diesel particulate control, such as a diesel particulate filter may also be used to reduce diesel PM emissions and meet the requirements. Since diesel particulate filters are required to meet the stringent diesel PM emission standard for new prime stationary engines under Rule 1470, the controls would be associated with Rule 1470 requirements rather than Rule 1401. The Rule 1401 impacts for such engines are expected to be minimal based on permitting history and the propensity to use the statewide PERP program. Approximately 20 applications are expected to be impacted in this category.

New Emergency Diesel Engines

Emergency engines are exempt from the provisions of Rule 1401. Therefore, the proposed amendments to Rule 1401 will not have any impacts on new emergency diesel-fueled engines.

IMPACT ASSESSMENT FOR FACILITIES SUBJECT TO RULE 1402

Paragraph (j)(5) of Rule 1402 requires a report to the Governing Board regarding preliminary estimates of Rule 1402 impacts that are associated with the addition of new compounds to the list of TACs in Rule 1401. Since the list of TACs in Rule 1401 is also used for Rule 1402, adding diesel PM from internal combustion engines is expected to impact many existing facilities under Rule 1402.

Existing Facilities Subject to Rule 1402

The addition of diesel PM from internal combustion engines to the list of TACs in Rule 1401 is expected to impact many facilities because of the high cancer risk levels from diesel-fueled engines. It will impact facilities with both emergency and prime diesel engines because Rule 1402, unlike Rule 1401, does not exempt emergency engines. Only facilities with an estimated cancer risk of greater than 10 in one million will be impacted by the proposed amendments to Rule 1402. The impacts for Rule 1402 will range from streamlined public notification performed by the district to the full AB 2588 process including emission inventories, HRAs, public meetings, and/or risk reduction.

Facilities with Stationary Prime Diesel Engines

There are approximately 150 facilities in the district with stationary prime diesel engines, 34 of which are currently in the AB 2588 program. This includes prime diesel engines that may move around a facility but remain on the same facility. Facilities with stationary prime diesel engines, regardless of whether they are currently in the AB 2588 program, will be subject to the requirements of Rule 1402 and the AB 2588 program. The first step will be reporting the

emissions from prime diesel engines in an inventory. For current AB 2588 facilities, this will require adding the prime diesel engines at the time of their scheduled quadrennial update. Then, depending upon the estimated facility risk after these engines are added, impacts to the facilities will vary and could include part or all of the AB 2588 process including risk assessment, public notification, and/or risk reduction.

Many of the district's stationary prime diesel engines are in remote locations with no nearby receptor, such as offshore oilfield engines. Case-by-case risk estimates will determine what the impacts will be to facilities with prime diesel engines. Impacts for the majority of these facilities, however, are expected to be minimal due to remote location, small size, and/or infrequent operation of the engines. Only facilities with risk above the Rule 1402 thresholds will be impacted.

Facilities with Emergency Diesel Engines – Rule 1402 Risk Reduction Requirements

Facilities with multiple emergency diesel engines may exceed the Rule 1402 action risk level of 25 in one million. Therefore, facilities with three or more emergency engines will be addressed in a separate new rule, Proposed Rule 1472 – Requirements for Facilities with Multiple Stationary Emergency Standby Diesel-Fueled Internal Combustion Engines. Amendments to Rule 1401 to add diesel PM from internal combustion engines will be considered at the same Hearing as Proposed Rule 1472. Approximately 545 facilities having 3 or more diesel emergency engines would be subject to Proposed Rule 1472. Additional impacts for these engines and facilities will be analyzed in the staff report for Proposed Rule 1472 since they will occur because of the new rule rather than the proposed amendment to Rule 1401.

Proposed Rule 1472 contains an exemption from diesel PM emission reduction requirements for facilities that opt to comply with Rule 1402. Therefore, it is anticipated that some facilities may follow the Rule 1402 and AB 2588 process. Their impacts may include inventory, risk assessment, public notice, and risk reduction, depending upon their risk level. In addition, the California Health and Safety Code section 44391 requires risk reduction for facilities where the district finds that there is a significant risk. Rule 1402 defines significant risk level to mean a cancer risk of 100 in one million or a total acute or chronic hazard index of 5.0 for an target organ system at any receptor location. Therefore, in order to comply with State law, the district will require facilities with multiple emergency diesel engines to go through the Rule 1402 process if their facility risk from all toxic air contaminants exceeds these thresholds. Analysis of a sample of the Rule 1470 survey data indicates that less than five facilities with multiple diesel engines could possibly be impacted by this and these facilities are already in the AB 2588 program.

Approximately 225 facilities in the AB 2588 program have emergency diesel-fueled engines. These facilities will be required to include diesel PM emissions from emergency diesel engines at the time of their scheduled quadrennial emissions inventory update. They may choose to follow the full Rule 1402 process as with prime diesel engines or elect to comply with Proposed Rule 1472. The emergency diesel engines would be added at the time of their quadrennial update and further impacts could include risk assessment, public notification, and risk reduction. If, however, the facility has a less than significant risk level and complies with the risk reduction requirements of Proposed Rule 1472, the facility would have to comply with the inventory and public notice requirements of Rule 1402, but it is not required to do anything further for the

emergency diesel engines under Rule 1402. Impacts for facilities opting to comply with Proposed Rule 1472 will be analyzed in the staff report for that rule.

Facilities with Emergency Diesel Engines - Rule 1402 Notification Requirements

On January 5, 2007 the Board adopted public notification procedures for emergency diesel internal combustion engines required under the AB 2588 Toxics Hot Spots program as implemented under Rule 1402. Facilities with an estimated cancer risk of greater than 10 in one million are required to do public notification.

The notification procedures for facilities with emergency diesel engines require district staff to use information from the reporting requirements under Rule 1470 to estimate diesel PM risk from the engines and then perform notification based on the risk estimates. Based on information submitted under Rule 1470, facilities with a single emergency diesel engine would not be subject to the notification requirement unless otherwise notified by the district. Facilities with two or more emergency diesel engines that exceed the public notice threshold of 10 in one million risk will be eligible for a streamlined notification process. Streamlined notification will be done by the district and will consist of newspaper notices which refer to specific facility information available on the district website. Hard copies of facility information and risks would be made available at local libraries, district headquarters, planning agencies, and school districts for inspection by the public. Facilities would be required to post a notice that would be visible for visitors. District Town Hall and other community meetings may also be used to disseminate the information. Community maps identifying facilities that trigger public notice will also be prepared by district staff.

The streamlined notification is expected to apply to approximately 1,100 existing facilities with diesel emergency engines. Impacts to these facilities will be minimal since the reporting requirements under Rule 1470 provide the information needed to estimate risk. The district staff will estimate the risk as well as prepare and disseminate noticing materials.

POTENTIAL COST IMPACTS

The cost impacts for facilities submitting applications for new stationary and portable prime diesel-fueled internal combustion engines subject to Rule 1401 are expected to be minimal since these engines are already evaluated for compliance with Rule 1401 based on a speciated list of TACs in diesel exhaust. The costs for controls are associated primarily with Rule 1470 and the state ATCMs for portable and stationary diesel-fueled engines. Applicants may choose to accept a permit condition limiting hours of operation for non-emergency engines or locate the equipment away from receptors in order to meet the risk thresholds of Rule 1401. ~~This~~ The cost for an add-on control for a new stationary diesel-fueled prime engine would be associated with the stringent diesel PM emission requirement of 0.01 g/bhp-hr in Rule 1470 rather than with Rule 1401.

The cost impacts for Rule 1402 existing facilities will vary. Facilities with a single emergency diesel engines will not likely be impacted. For others with multiple emergency engines, district staff will be performing the streamlined public notification process and the cost will be borne by the district. For AB 2588 facilities which have to add engine emissions to their quadrennial update, the cost is only for the additional work to add the engine emissions since the update is required anyway. For existing AB 2588 facilities with diesel-fueled engines, non-AB 2588

facilities with prime engines, and facilities with emergency diesel engines that go through the Rule 1402 process, costs may include, as required, addition of diesel-fueled engines to quadrennial inventory updates, updating their HRA, full Board approved public notification following the AB 2588 process, and the cost of reducing risk.

The socioeconomic report for Proposed Amended Rule 1401 and impact assessment for Rule 1402 ~~will be~~was available 30 days before the Public Hearing.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ANALYSIS

The SCAQMD, as lead agency, ~~has~~ prepared a Draft Program Environmental Assessment (PEA) pursuant to CEQA Guidelines §15168 and §15252 for the proposed amendments to Rule 1401, which affect facilities subject to Rule 1402 and proposed Rule 1472. The Draft PEA identified only air quality impacts during construction as a potentially significant adverse impact from implementing the proposed project, but determined after evaluation and analysis that the potential air quality impacts are not significant. No other significant adverse environmental impact was identified. The Draft PEA was circulated for a 30-day public review period on December 20, 2007 ending on January 18, 2008. ~~After the close of the public review period, responses to all comments will be prepared and included in the PEA, at which time the document will become a Final PEA. All comment letters received and responses to all comments are included in the final PEA. No modifications were made since the release of the Draft PEA that would change the conclusions made in the Draft PEA or worsen the environmental impact analyzed in the Draft PEA. Therefore, pursuant to CEQA guidelines §15088.5, recirculation is not necessary since the information provided does not result in new avoidable significant effects.~~

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings

California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the district's Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report.

Necessity

A need exists to adopt Proposed Amended Rule 1401 to accomplish the following:

- reduce emissions of air toxic contaminants;
- reduce public health exposure, including cumulative impacts, to toxic air contaminants;
- meet the goals and objectives of the Board's Environmental Justice Initiatives; and
- update the list of toxic air contaminants covered by the rule consistent with those for which the SRP and OEHHA have finalized risk values.

Authority

The district's Governing Board has authority to adopt amendments to Rule 1401 pursuant to the California Health and Safety Code Sections 39002, 39650 et. seq., 40000, 40001, 40440, 40441, 40702, 40725 through 40728, 41508, 41700, and 44390 through 44394.

Clarity

Proposed Amended Rule 1401 is written or displayed so that its meaning can be easily understood by the persons directly affected by the rule.

Consistency

Proposed Amended Rule 1401 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non-Duplication

Proposed Amended Rule 1401 will not impose the same requirements as any existing state or federal regulations. The proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, AQMD.

Reference

By adopting Proposed Amended Rule 1401, the AQMD Governing Board will be implementing, interpreting or making specific the provisions of the California Health and Safety Code Sections 39666 (District new source review rules for toxics), 41700 (nuisance), 44390 et seq. (Risk Reduction Audits and Plans), and Federal Clean Air Act Section 112 (Hazardous Air Pollutants).

Rule Adoption Relative to Cost-effectiveness

Proposed Amended Rule 1401 is not a control measure in the 2003 Air Quality Management Plan (AQMP) and, thus, was not ranked by cost-effectiveness relative to other AQMP control measures in the 2003 AQMP. Cost-effectiveness in terms of dollars per ton of pollutant reduced is not applicable to rules regulating toxic air contaminants. Once an industry (or facility) determines its current risk associated with the emission of TACs and determines what control approaches would reduce the facility-wide risk to below the significance level provided in Rules 1401 and 1402, the cost effectiveness could be determined for that facility only, and would not be applicable to another facility of industry.

Incremental Cost-effectiveness

Health and Safety Code Section 40920.6 requires an incremental cost effectiveness analysis for Best Available Retrofit Control Technology (BARCT) rules or emission reduction strategies when there is more than one control option which would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, SO_x, NO_x, and their precursors. Since the proposed amended rule applies to toxic air contaminants, the incremental cost effectiveness analysis requirement does not apply.

COMPARATIVE ANALYSIS

Health and Safety Code Section 40727.2

Health and Safety code section 40727.2 requires a comparative analysis of the proposed rule with federal and district rules and regulations applicable to the same source. There are many federal, state, and local rules that apply to diesel-fueled internal combustion engines.

Existing Federal Requirements

On February 26, 2004, the U.S. EPA issued final requirements to reduce toxic air emissions (formaldehyde, acrolein, methanol, and acetaldehyde), which are contained in a National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE NESHAP), Subpart ZZZZ of 40 CFR 63. The RICE NESHAP establishes requirements for large (> 500 horsepower) stationary compression ignition and spark ignition internal combustion engines located at major sources of hazardous air pollutants.

The RICE NESHAP affects some California facilities that are also subject to Rules 1401 and 1402. The RICE NESHAP requires installation of diesel oxidation catalysts (DOC) to reduce hazardous air pollutants (aldehydes) and CO and also specifies recordkeeping, monitoring, and testing requirements. It is not designed to reduce diesel PM emissions and does not allow for the installation of a diesel particulate filter (DPF) in lieu of a DOC. A DOC may be attached either upstream or downstream of a DPF to reduce diesel particulate matter and aldehyde emissions concurrently to meet requirements found in the state and federal mandates. The addition of diesel PM to the list of TACs in Rule 1401 does not duplicate any requirements of the RICE NESHAP because the purpose of the NESHAP is not to reduce diesel PM emissions whereas the proposed addition of diesel PM as a TAC specifically targets the reductions of diesel PM emissions from diesel internal combustion engines. On June 12, 2006, EPA proposed amendments to Subpart ZZZZ that will apply to new or reconstructed RICEs under 500 horsepower at major sources, and new or reconstructed RICEs at minor sources. In general, these RICEs will only have to comply with the proposed RICE Spark Ignition New Source Performance Standards (NSPS) or the adopted RICE CI NSPS. Though this regulation will affect the same source category, i.e., internal combustion engines, as PAR1401, the pollutants for control are different, therefore, the elements for the comparative analysis are not pertinent and moot.

State Regulations

For information purposes, CARB had adopted many measures and standards aimed at reducing diesel PM from mobile and stationary diesel-fueled internal combustion engines as part of their “Risk Reduction Plan to Reduce Particulate Matter Emission from Diesel-fueled Engines and Vehicles” (September 2000). The goal of the plan is to reduce diesel PM emissions by 75 percent by 2010 and by 85 percent by 2020.

AQMD Rules Applying to Stationary Diesel-Fueled Engines

AQMD Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines, which was last amended on June 3, 2005, addresses emissions of NO_x, VOCs, and CO from non-emergency stationary and portable engines over 50 horsepower. Rule 1110.2 does not address PM emissions. Though this rule will affect the same source category as PAR1401 the pollutants for

control are different, therefore, the elements for the comparative analysis are not pertinent and moot. The proposed addition of diesel PM as a TAC in PAR1401 would address diesel PM emissions from stationary and portable diesel engines.

District Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines adopts the ARB ATCM for stationary compression ignition engines, which is now operative in the state as of December 8, 2004. Rule 1470 also establishes more stringent requirements for stationary diesel-fueled emergency standby engines located on or near school grounds. Rule 1470 regulates diesel PM emissions from individual engines, that will require reduction in testing and maintenance hours based upon the engines diesel PM emission rate and use of low sulfur diesel fuel for new engine, but does not consider the cumulative effects of several closely-grouped diesel emergency engines on nearby receptors. Proposed Amended Rule 1401's affect on Rule 1402 will address these cumulative effects for the reduction of exposure to diesel PM and allows flexibility to the facility on how they wish to reduce this exposure. In some case, the facility would reduce their annual hours of operation for testing and maintenance to reduce the exposure.

Proposed Rule 1472 – Requirements for Facilities with Multiple Stationary Emergency Standby Diesel-Fueled Internal Combustion Engines will address diesel PM emissions produced by stationary emergency diesel-fueled internal combustion engines at existing facilities. This includes diesel emergency engines that remain at a single facility even though the engine may be moved within the facility. This proposed rule will be applicable to facilities that have three or more emergency diesel-fueled engines. The purpose of this rule is to reduce exposure of diesel PM to the surrounding area and provide flexibility in how they wish to reduce this exposure.

District Rule 1402 – Control of Toxic Air Contaminants from Existing Sources will use the list of Rule 1401 toxic air contaminants, to which the Proposed Amended Rule 1401 will add diesel PM from internal combustion engines. While Rule 1470 reduces health impacts from individual engines, it does not address the cumulative exposure of several engines. Proposed Rule 1472 provides a way to address the cumulative impacts of several engines grouped closely together, i.e., those facilities with three or more emergency engines, and provides a streamlined alternative to the Rule 1402 approach to facility risk reduction for emergency diesel-fueled engines, i.e., having the facility submit an emission inventory, health risk assessment, public notice, and possibly risk reduction. Rule 1402 process for facilities with two or less emergency engines or those with non-emergency (prime) diesel-fueled engines will follow the Public Notification Procedures for Emergency Diesel Internal Combustion Engines and Industry-wide Categories of Gas Stations and Dry Cleaners, Pursuant to Air Toxics Hot Spots Information and Assessment Act (AB 2588), AQMD, January 2007.

Table 3 is a summary of the comparative analysis required under California Health and Safety Code Section 40727.

Table 3 – Comparative Analysis

	PR1472	PAR1401	Rule 1402	Rule 1470
Applicability	Facilities that possess three or more emergency	New, relocated, modified equipment that	All existing facilities that emit TAC	All stationary compression ignition engines

	diesel-fueled engines	emit TAC		
Averaging Provisions	Allows diesel PM emissions weighted average for engine groups	None	None	None
Units	Engine Group Index or gram/bhp-hr for diesel PM	Equipment based cancer risk, cancer burden, non-cancer acute and chronic risk Hazard Index	Facility-wide cancer risk, cancer burden, non-cancer acute and chronic risk Hazard Index	Diesel particulate matter (diesel PM) (gram/bhp-hr)
Emission Reduction	If necessary, flexibility in reducing hours of operation, add-on controls, replacement of equipment	One in a million cancer risk or ten in a million if T-BACT used.	Risk Reduction if facility-wide cancer risk exceeds 25 in a million or Hazard Index of 5.	For emergency engines near schools or prime engines shall reduce diesel PM emissions
Pollutant	Diesel PM	All TACs as listed on Table 1, diesel PM is proposed to be added	All TACS as listed on Table 1 of Rule 1401	Diesel PM, HC, NOx, CO, and Non-methane HC
Operating parameters	Allows use of actual operating annual hours for testing and maintenance, if substantiated or use of permitted hours or Rule 1470 allowable times, which ever is less.	Equipment based potential to emit, i.e., maximum operating hours and maximum emission rate of all TACs or limited by permit conditions	Uses actual operating hours and emission rates of all equipment emitting toxic air contaminants (TAC) or limited by permit conditions	Limits annual hours of operation for testing and maintenance based upon diesel PM emission rate

	PR1472	PAR1401	Rule 1402	Rule 1470
Work Practice	None	None	None	If located within 100 meters of a school or on a school cannot operate for testing

				and maintenance during school hours
Monitoring, reporting, and recordkeeping	Requires submittal of compliance plan, and reporting when status of engines change	None	Initial and Quadrennial update of TAC emissions inventory	Initial Report submittal. Requires monthly recording of testing and maintenance hours, emergency operation hours. Requires non-resettable hour meter
Test Methods	CARB Method 5 or International Organization for Standardization (ISO) 8178 Test procedures: ISO 8178-1:1996(E) (“ISO 8178 Part 1”); ISO 8178-2: 1996(E) (“ISO 8178 Part 2”); and ISO 8178-4: 1996(E) (“ISO 8178 Part 4”) or Title 13, California Code of Regulations, section 2423 or an alternative test method approved by the Executive Officer	None specified	None specified	CARB 100 for HC, NO _x , CO, CARB Method 5 for diesel PM or International Organization for Standardization (ISO) 8178 Test procedures: ISO 8178-1:1996(E) (“ISO 8178 Part 1”); ISO 8178-2: 1996(E) (“ISO 8178 Part 2”); and ISO 8178-4: 1996(E) (“ISO 8178 Part 4”) or Title 13, California Code of Regulations, section 2423 or an alternative test method approved by the Executive Officer

	PR1472	PAR1401	Rule 1402	Rule 1470
Public Notice	None	None	Requires notice if action risk level is exceeded (10 in a million,	None

			cancer risk) or non-cancer Hazard Index of greater than 5.	
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REFERENCES

REFERENCES

Public Notification Procedures for Emergency Diesel Internal Combustion Engines and Industry-wide Categories of Gas Stations and Dry Cleaners, Pursuant to Air Toxics Hot Spots Information and Assessment Act (AB 2588), AQMD, January 2007.

APPENDIX A

COMMENTS AND RESPONSES

The following comments and responses have been added since the set hearing. For ease of reading, none of the new language has been underlined.

Comments from Public Workshop held December 5, 2007 and received in writing are addressed below.

- 1. Comment:** If a facility already has an HRA with facility risk less than 10 in one million and the diesel risk is 2.5, the total risk will be over 10 in one million. Does the facility go through the streamlined web notification process for public notification?

Response: Yes, they go through the streamlined notification process.
- 2. Comment:** The CARB Tables in the January 2007 guidelines for public notification for diesel internal combustion engines use West LA meteorological data. Would a facility be allowed to use meteorological data specific to the facility location for risk assessment under Rule 1402?

Response: A facility may use meteorological data that most represents its location when conducting a Health Risk Assessment for Rule 1402.
- 3. Comment:** An exemption is requested for prime diesel-fueled engines that provide power for electricity, residential/commercial gas and water supply. These units are currently equipped with SCR to control NOx emissions and adding diesel particulate filters would exceed the engines' back pressure specifications. Exceeding the specifications could result in destruction of the equipment and produce a dangerous situation for facility personnel. Any new engine installed to generate power would have to meet best available control technology (BACT) which would require SCR, so additional particulate control is not feasible. The ability to use other fuels is limited and there are safety concerns with less stable fuels. There is not practical alternative to using diesel fuel.

Response: This facility is an existing AB 2588 facility and is required to go through the Rule 1402/AB 2588 process. If the addition of diesel PM emissions from diesel internal combustion engines causes a significant risk at a facility, state law requires risk reduction. Staff is working with this facility to address their unique circumstances and will continue to work with them.
- 4. Comment:** The term "diesel particulate emissions from internal combustion engines (diesel PM)" which has been added to the TAC list in Proposed Rule 1401 is not consistent with the terms used by OEHHA, "particulate emissions from diesel-fueled engines" which could be confusing. Saying internal combustion engines could be confusing because compression ignition engines are a subset of internal combustion engines. District staff is meeting with representatives from this facility to address all issues.

Response: The terminology used by CARB and OEHHA is not consistent, with the pollutant being listed variously as, "diesel exhaust", "particulate emissions from diesel-fueled engine", "diesel particulate matter", etc. The terminology in Proposed

Rule 1401 was used to make it clear that the diesel exhaust is only from engines and not from other equipment that burns diesel fuel. Diesel engines are typically compression ignition engines and, for clarification, turbines are not included. Diesel particulate matter emissions were determined to be a TAC in 1998 and, regardless of the terminology, it is understood to be from compression ignition diesel engines. In addition, an emittant identification number will be included in the TAC listing to avoid confusion.