SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Preliminary Draft Staff Report
Proposed Rule 3503 - Emissions Inventory and Health Risk Assessment for Railyards

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EXECUTIVE SUMMARY

BACKGROUND

PROPOSED RULE 3503 REQUIREMENTS

BACKGROUND

Rail operations, characterized primarily by activities associated with operation of diesel locomotives, are a significant source of diesel particulate matter (PM) emissions and other criteria pollutants such as oxides of nitrogen (NO_x), volatile organic compounds (VOC), carbon monoxide (CO), and oxides of sulfur (SO_x). The 2003 Air Quality Management Plan estimates train particulate matter less than 10 microns (PM_{10}) emissions of 1.01 tons per day and emissions of particulate matter less than 2.5 microns ($PM_{2.5}$) of 0.93 tons per day[1] Diesel exhaust is a complex mixture of gases and fine particles emitted by diesel-fueled internal combustion engines. Diesel exhaust contains many carcinogenic compounds, including, but not limited to, arsenic, benzene, formaldehyde, 1-3-butadiene, and ethylene dibromide.[2] In 1998, the California Air Resources Board (ARB) identified diesel exhaust as a Toxic Air Contaminant based on its cancer causing potential.

Proposed Regulation XXXV – Railroads and Railroad Operations includes four proposed rules focusing on monitoring and recording locomotive idling events, calculating railyard emissions, and conducting risk assessment. In addition, proposed rules seek to minimize emissions from locomotive idling and reduce cancer risk from Basin railyard. Proposed Rule (PR) 3503 would determine criteria pollutant and toxic emissions from railyard and to conduct risk assessments to estimate cancer risk from diesel operations at railyard.

PROPOSED RULE 3503 REQUIREMENTS

PR 3503 would be applicable to railyard operations operated by Class I freight railroads and switching and terminal railroads in the district. Passenger railyards operating in the District, such as Amtrak and Metrolink, would be excluded from the requirements of PR 3503. PR 3503 would establish the following requirements:

- Emissions Inventory and Health Risk Assessment for Diesel Particulate Matter
  - Submit on or before (12 months after date of adoption) for all Basin railyards;
  - Facility-wide emissions inventory to include all criteria pollutants and diesel particulate matter;
  - Health risk assessment to address facility-wide toxic air contaminants;
  - Update emissions inventories annually;
  - Health risk assessment updates required if there is an emissions increase relative to the previous year's facility-wide risk level, or if the previous Health Risk Assessment did not show levels requiring public notification and the new results would require public notification;

[1] South Coast Air Quality Management District, 2003. 2003 Air Quality Management Plan: Appendix III – Base and Future Year Emission Inventories.

[2] California Environmental Protection Agency, Air Resources Board and Office of Environmental Health Hazard Assessment, 1998. Executive Summary for the "Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant."

- Public Notification Requirements
  - Public notification is required if a facility-wide health risk assessment shows that risk exceeds the public notification level (cancer risk exceeds 10-in-one-million (1.0×10^{-6}), cancer burden of 0.5, or a total acute or chronic HI of one (1.0) for any target organ system at any receptor location).

CHAPTER 1: BACKGROUND

INTRODUCTION
DIESEL PARTICULATE MATTER
REGULATORY HISTORY
REGULATORY AUTHORITY
AFFECTED FACILITIES

INTRODUCTION

Rail operations, characterized primarily by activities associated with operation of diesel locomotives, are a significant source of diesel PM emissions and criteria pollutants (NO_x, VOC, CO, and SO_x). The 2003 Air Quality Management Plan estimates train particulate matter less than 10 microns (PM_{10}) emissions of 1.01 tons per day and emissions of particulate matter less than 2.5 microns ($PM_{2.5}$) of 0.93 tons per day.[1] Diesel exhaust is a complex mixture of gases and fine particles emitted by diesel-fueled internal combustion engines. Diesel exhaust contains many carcinogenic compounds, including, but not limited to, arsenic, benzene, formaldehyde, 1-3-butadiene, and ethylene dibromide.[2]

Proposed Regulation XXXV – Railroads and Railroad Operations proposes four rules focusing on monitoring and recording locomotive idling events and calculating railyard emissions and conducting risk assessment. In addition, the proposed rules seek to minimize emissions from locomotive idling and reduce cancer risk from Basin railyard. A summary of the proposed rules to address railroad operations in the District is as follows:

- PR 3501 – Recordkeeping for Locomotive Idling would require locomotive operators to record the time, date, and duration of any idling event that occurred for more than a 15 minute time period. Locomotives that equipped with anti-idling devices that would be operated to limit idling to below 15 minutes would be exempt recordkeeping requirements. Under PR 3501, the locomotive operator would be required to submit a weekly report, for all idling events that occurred over the past week and an explanation of the reason for idling. PR 3501 also requires locomotive operators to submit an annual report identifying all locomotives operated in the district and those locomotives that are equipped with anti-idling devices that are exempt from recordkeeping requirements.

- PR 3502 – Minimization of Emissions from Long Duration Idling would prohibit operators from idling for more than 30 minutes unless the locomotive is being used as an emergency vehicle, a mechanic is idling the locomotive for maintenance or diagnostic purposes, or the district could not require an action to be implemented to reduce idling below 30 minutes due to preemption by federal law. In addition, if a locomotive operator can demonstrate that equivalent emission reductions from using a control technology or alternative fuel can achieve emission reduction equivalent to limiting idling to less than 30 minutes, the operator may be allowed to idle more than 30 minutes.

- PR 3503 – Emissions Inventory and Health Risk Assessment for Railyards would require railyard operators to submit facility-wide emissions inventories of criteria and air toxic

[1] South Coast Air Quality Management District, 2003. 2003 Air Quality Management Plan: Appendix III – Base and Future Year Emission Inventories.

[2] California Environmental Protection Agency, Air Resources Board and Office of Environmental Health Hazard Assessment, 1998. Executive Summary for the "Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant."

pollutants for all stationary and mobile sources within the railyard. In addition, operators of railyards would be required to submit facility-wide health risk assessment plans, including diesel PM emission inventories and health risk assessments. Plans would include emissions inventories of all onsite pollutants, documentation of emission factors used and emission calculations. In addition, data would include information to calculate cancer risk and exposure isopleths identifying surrounding areas with cancer risks greater than 10-in-one-million. Under PR 3503, railyards with cancer risks exceeding 10-in-one-million would be required to conduct public notification.

- PR 3504 –Risk Reduction from Diesel Related Operations at Railyards would require operators of railyards with cancer risks exceeding 25-in-one-million, as determined pursuant to PR 3503, to submit for AQMD approval risk reduction plans describing strategies to be used to reduce emissions to achieve cancer risks of 25-in-one-million or less. Annual progress reports would be required summarizing progress made toward implementing risk reduction plans. In addition, railyard operators would be required to develop community air emissions action plans to facilitate coordination with the communities surrounding railyards. Fence line air emissions monitoring programs would also be required for facilities with approved health risk assessments showing risks greater than 100 in a million or hazard indices of 5.0. Rail operators would be exempt from implementing any risk reduction measures that AQMD could not require due to preemption by federal law, provided the factual basis for the claim of federal preemption is submitted to the AQMD.

DIESEL PARTICULATE MATTER

Diesel exhaust is listed by CARB as a Toxic Air Contaminant and has the potential to cause cancer in humans. Long-term exposure to diesel PM poses the highest cancer risk of any toxic air contaminant evaluated by OEHHA. The second Multiple Air Toxics Exposure Study (MATES-II), released in 2000, shows that approximately 70 percent of the cancer risk from air toxics in the South Coast Air Basin (Basin) is due to diesel PM. Exposure to diesel exhaust can irritate the eyes, nose, throat and lungs and can cause coughs, headaches, light-headedness, and nausea. In addition to cancer risks, exposure to diesel PM has been shown to increase susceptibility to allergens, such as dust and pollen and can aggravate chronic respiratory problems such as asthma. Diesel engines are major sources of fine particle pollution and can particularly affect sensitive people, such as the elderly and people with emphysema, asthma, and chronic heart and lung disease. Children, whose lungs and respiratory systems are still developing, are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with increased frequency of illness and reduced growth in lung function in children.

Studies on diesel exhaust have focused on non-cancer health effects from short-term and long-term exposure, reproductive and developmental effects, immunological effects, genotoxic effects, and cancer health effects.[3] Overall, there is insufficient data to show short- or long-term non-cancer health effects and the available literature did not determine whether exposure to diesel

[3] California Environmental Protection Agency, Air Resources Board and Office of Environmental Health Hazard Assessment, 1998. Executive Summary for the "Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant."

exhaust causes reproductive, developmental, or teratogenic effects in humans. In terms of immunological effects, studies show that diesel exhaust exposure increases antibody production and causes localized inflammation of lung and respiratory tract tissues, particularly when exposure accompanies other known respiratory allergens. Diesel exhaust particles and diesel exhaust extracts have been determined to be genotoxic and may be involved in initiation of human pulmonary carcinogenesis. In terms of cancer health effects, over 30 epidemiological studies have investigated the potential carcinogenicity of diesel exhaust. The National Institute of Occupational Health and Safety recommended in 1988 that diesel exhaust be regarded as a potential occupational carcinogen based on animal and human evidence. The Health Effects Institute (1995) and the World Health Organization (1996) also evaluated the carcinogenicity of diesel exhaust and found the epidemiological data to show associations between exposure to diesel exhaust and lung cancer.

In 1998, the California Air Resources Board (ARB) identified diesel exhaust as a Toxic Air Contaminant. In addition, in 2001, the Office of Environmental Health Hazard Assessment (OEHHA) identified diesel PM as one of the TACs that may cause children or infants to be more susceptible to illness pursuant to the requirements of Senate Bill 25 (Stats. 1999, ch. 731). Senate Bill 25 also requires the ARB to adopt control measures, as appropriate, to reduce the public's exposure to these special TACs (H&SC section 39669.5).

REGULATORY HISTORY

In April 1998, the U.S. EPA promulgated a rulemaking, entitled, "Emission Standards for Locomotives and Locomotive Engines." This rulemaking establishes emission standards and associated regulatory requirements for the control of emissions from locomotives and locomotive engines as required by the Clean Air Act section 213(a)(5). The primary focus of the emission standards, which became effective in 2000, is NOx. In addition, standards for hydrocarbons (HC), carbon monoxide (CO), particulate matter (PM) and smoke were also promulgated. The rulemaking also includes a variety of provisions, including certification test procedures and assembly line and in-use compliance testing requirements, to implement the emission standards and to ensure rule compliance. The rule also includes an emissions averaging, banking, and trading program to provide flexibility. Pursuant to Clean Air Act section 209(e), the U.S. EPA rulemaking specifically preempts state and local requirements relating to the control of emissions from new locomotives and new locomotive engines.[4] The AQMD rules presented here take account of this preemption.

In November 2004, the ARB approved amendments extending California standards for motor vehicle diesel fuel to diesel fuel used in intrastate locomotives. Under this rulemaking, effective January 1, 2007, intrastate diesel locomotives will be required to use low sulfur diesel fuel which meets the 15 parts per million by weight (ppmw) requirement currently in place for motor vehicles. Current U.S. EPA requirements, finalized in June 2004, specify that 15 ppmw fuel be

[4] United States Environmental Protection Agency, 1998. 40 CFR Parts 85, 89 and 92: Emission Standards for Locomotives and Locomotive Engines; Final Rule.

used in locomotives in 2012. The ARB rulemaking requires the use of low-sulfur diesel fuel six years earlier than required federally.[5]

California's 1994 State Implementation Plan (SIP) control measure M14 assumes that cleaner federally-complying locomotives will be operated in California and the South Coast Air Basin (SCAB). As a result of measure M14, ARB staff developed a MOU with The Burlington Northern and Santa Fe Railway Company (BNSF) and Union Pacific Railroad Company (UP) and the U.S. EPA that was signed in July 1998. The MOU includes provisions for early introduction of clean units, with requirements for a fleet average in the South Coast Air Basin equivalent to U.S. EPA's Tier 2 locomotive standard by 2010.

REGULATORY AUTHORITY

The District's Authority to Adopt Rules Applicable to Emissions from Railroads and Locomotives, and Railyards

The authority to regulate air pollution in California is divided between the California Air Resources Board and the local and regional air pollution control districts. Under state law "local and regional authorities[6] have the primary responsibility for control of air pollution from all sources, other than emissions from motor vehicles. The control of emissions from motor vehicles, except as otherwise provided in this division, shall be the responsibility of the State board." (Health & Safety Code §40000.) Locomotives are not motor vehicles. The law defines "motor vehicle" as "a vehicle that is self-propelled." (Veh. Code §415(a)). A "vehicle" is "a device by which any person or property may be propelled, moved, or drawn upon a highway, excepting a device moved exclusively by human power or used exclusively upon stationary rails or tracks." (Veh. Code §670). Because they do not operate on the highway and because they operate on stationary tracks, locomotives are not "vehicles." Since they are not motor vehicles, they are under the jurisdiction of the districts. (Health & Safety Code §40000.) The California Air Resources Board was also granted authority to regulate locomotives by Health & Safety Code §43013(b), as amended in 1988. However, even after the enactment of this statute, the districts retain concurrent authority to regulate nonvehicular sources, including locomotives. (Manaster & Selmi, *California Environmental Law and Land Use Practice*, §41.06 (2).)

District staff believes that much of the non-locomotive equipment operated by railroads at their yards is also non-vehicular in nature. Accordingly, it also would be subject to the jurisdiction of the air districts, including AQMD.

[5] California Environmental Protection Agency, Air Resources Board, 2004. Staff Report: Initial Statement of Reasons – Public Hearing to Consider Proposed Regulatory Amendments Extending the California Standards for Motor Vehicle Diesel Fuel to Diesel Fuel Used in Harborcraft and Intrastate Locomotives.

[6] The term "local or regional authority" means the governing body of any city, county or district. Health & Safety Code §39037. "District" means an air pollution control district or air quality management district created or continued in existence pursuant to provisions of Part 3 (commencing with Section 40000). Health & Safety Code §39025.

The districts also have general authority under state law to regulate "indirect sources," which are sources that attract mobile sources[7]. This includes the authority to regulate railyard where trucks are used to deliver or distribute freight, locomotives are used to carry freight, and non-road equipment is used to handle freight. Pursuant to Health & Safety Code §40716(a)(1), a district may adopt and implement regulations to "reduce or mitigate emissions from indirect and areawide sources of air pollution." Therefore, under state law the district may regulate railyard to reduce or mitigate emissions resulting from the mobile sources associated with or attracted to the railyard.

State law generally grants districts the authority to "adopt rules and regulations and do such acts as may be necessary or proper to execute the powers and duties granted to, and imposed upon, the district by this division and other statutory provisions." Health & Safety Code §40702.) This statute grants broad authority to districts to adopt rules and regulations for sources within their jurisdiction. This statute also includes a limited exemption with respect to locomotives. It provides:

> No order, rule, or regulation of any district shall, however, specify the design of equipment, type of construction, or particular method to be used in reducing the release of air contaminants from railroad locomotives. (Health & Safety Code §40702.)

The provision makes clear that the legislature believed that districts had the authority to regulate locomotives by means other than specifying equipment design, construction, or other particular methods. (*See* Manaster & Selmi, *supra*, §41.06(2) n. 11: this section impliedly recognizes district authority to regulate locomotive emissions.) The District's proposed rules do not specify any requirement respecting the design of equipment or type of construction of locomotives. Nor do they specify the particular method to be used. The reference to "particular method to be used" should be construed as referring to methods that are similar to those methods specifically enumerated in the statute, i.e. methods affecting the design or construction of locomotives. The Civil Code, §3534, states that "particular expressions qualify those which are general." The California Supreme Court has held that a general term is "restricted to those things that are similar to those which are enumerated specifically." (*Harris v. Capital Growth Investors XIV* (1991) 52 Cal. 3rd. 1142, 1160 n. 7, *see also Friends of Davis v. City of Davis* (2000) 83 Cal. App. 4th 1004, 1013 (same.)) The District's proposed rules do not specify construction, design, or control equipment and thus do not specify a particular "method" to be used. Thus, they are not precluded by Health & Safety Code §40702. Furthermore, even if the term "method" could be construed to refer to techniques that do not affect design or construction of locomotives, the rules do not specify a "particular method to be used" because both the idling minimization rule and the risk reduction rule provide the railroads with flexibility in determining how to comply.

Two of the rules proposed by the AQMD are basically information gathering rules: the rule requiring records to be kept of locomotive idling and the rule requiring preparation of an

[7] State law does not contain a definition for indirect source, but the federal Clean Air Act provides that the term "indirect source" means "a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution." 42 U.S.C. §7410(a)(5)(C).

emissions inventory and health risk assessment (HRA). In addition to being within the district's general authorities discussed above, these rules are specifically authorized by Health & Safety Code §41511, which provides:

> For the purpose of carrying out the duties imposed upon the state board or any district, the state board or the district, as the case may be, may adopt rules and regulations to require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source.

These rules require the gathering of information from which emissions and risk may be calculated. The districts may adopt such rules to collect information about emissions that may affect public health. One of the duties imposed upon the districts is the duty to enforce Health & Safety Code §41700. That section provides:

> Except as otherwise provided in section 41705,[8] no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Accordingly, the district may regulate locomotives and railyard to prevent public nuisance (potential health impacts from toxic air contaminants or annoyance to neighbors) as well as to reduce the emissions of criteria air pollutants in order to achieve and maintain state and federal ambient air quality standards. The California Supreme Court has upheld the districts' authority to regulate air toxic emissions from sources within their jurisdiction. *Western Oil & Gas Assoc. v. Monterey Bay Unified Air Pollution Control Dist*. (1989) 49 Cal. 3rd 408.

The district may also regulate to require railyard and railroads to gather information regarding their emissions of both criteria and toxic pollutants. (Health & Safety Code §§41511, 41700.) There is evidence that railyard may emit significant quantities of toxic air contaminants (especially diesel particulate) as well as evidence that locomotives engage in substantial amounts of idling. According to the California Air Resources Board's "Roseville Railyard Study" (October 14, 2004), locomotive idling accounted for 10.2-10.4 tons per year of diesel particulate at the Roseville yard (Table IV.3, p.34), amounting to about 45% of the total diesel PM emissions from the railroad operations. (p.14). Areas adjacent to the railyard experienced a maximum off-site cancer risk of 900 to 1,000 in a million from the yard alone, in addition to background concentrations. (p.54.) Risk levels between 100 and 500 in a million occurred over about 700 to 1600 acres in which 14,000 to 26,000 people live, and risk levels between 10 and 100 in a million occurred over a 46,000 to 56,000 acre area in which about 140,000 to 155,000 people live. (p. 63.) About 40 acres experience a cancer risk level between 500 and 1000 in a

[8] Section 41705, relating to agricultural operations and compost-handling operations, is not relevant to the present context.

million. (p. H-6.) Beside diesel particulate matter, locomotives are significant sources of NOx, a precursor of $PM_{2.5}$, PM_{10}, and ozone. Since the AQMD is in nonattainment status for these pollutants, AQMD has a strong interest in reducing particulate matter and NOx emissions, as well as toxic diesel particulate emissions from railyard and locomotives.

Preemption of District Authority to Adopt Rules Applicable to Emissions from Railroads, Locomotives and Railyards.

The railroads contend that the District's proposed rules may be prohibited by principles of federal preemption. The District has structured the proposed rules in such a manner as to avoid federal preemption. As an initial matter, each rule provides that it is inapplicable to the extent preempted by federal law. Thus, on their face, each of the rules is limited only to non-preempted applications.

There are several potential theories of federal preemption. One theory is based upon the federal Clean Air Act, which provides that no state or political subdivision may adopt or attempt to enforce "any standard or other requirement relating to the control of emissions" from new locomotives or new engines used in locomotives. (42 U.S.C. § 7543(e)(1)(B)). EPA has promulgated regulations setting forth what it believes is the scope of preemption under this section. EPA stated: "Any state control that would affect how a manufacturer designs or produces new (including remanufactured) locomotives or locomotive engines is preempted…." (63 Fed. Reg. 18978, 18994.) EPA's regulation states that among the types of state or local rules that are preempted are "emission standards, mandatory fleet average standards, certification requirements, aftermarket equipment requirements, and nonfederal in-use testing requirements." (40 CFR §85.1603(c)(2).) The EPA regulation provides that such rules are preempted whether they apply to new or other locomotives or engines. (*Id.*) The proposed rules are not preempted by the Clean Air Act because they do not regulate how the manufacturer designs or produces a locomotive or engine. Certainly the idling recordkeeping rule and the emissions inventory/HRA rule do not affect the design or production of locomotives. Moreover, the idling reduction rule and the health risk reduction rule are designed to avoid federal preemption by explicitly exempting activities which the District may not control due to federal preemption. In general, a railroad may reduce idling without affecting the design or production of the locomotive, and there are ways to reduce risks from railyard operations without affecting the design or production of locomotives, e.g. by reducing idling.

Another potential preemptive statute is the Interstate Commerce Commission Termination Act. Title 49 U.S.C. §10501(b), a part of the ICCTA, provides that the jurisdiction of the federal Surface Transportation Board (STB) is exclusive over "transportation by rail carriers, and the remedies provided in this part with respect to rates, classifications, rules (including car service, interchange, and other operating rules) practices, routes, services and facilities of such carriers…." Section 10501(b) further provides that the remedies provided under the ICCTA are exclusive and preempt the remedies provided under federal or state law. While it has been held that the scope of preemption under this statute is "broad" (*City of Auburn v. U.S. Government*, 154 F. 3rd 1025, 1030 (9th Cir. 1998)), the Surface Transportation Board itself has ruled that not all state and local regulation is preempted. Citing an earlier decision, the STB stated: "In

particular, we stated that state or local regulation is permissible where it does not interfere with interstate rail operations, and that localities retain certain police powers to protect public health and safety." *Borough of Riverdale Petition for Declaratory Order re The New York Susquehanna and Western Railway Corporation*, STB Finance Docket No. 33466 (September 9, 1999), 1999 STB Lexis 531, p.4. In that decision, the STB noted that an environmental permitting requirement that set up a prerequisite to the railroads' use, maintenance, or upgrading of their facilities would be preempted because such requirements would of necessity impinge upon the federal regulation of interstate commerce. (*Borough of Riverdale*, p.5.) Under this decision, other environmental and land use regulation, however, would be subject to a "fact-bound" analysis of whether a particular restriction interferes with interstate commerce. (Id.) The District's proposed rules do not impose any permitting or other "prerequisite" to rail operations. The District has designed its proposed rules to not interfere with railroad operations. As set forth by the decision of the Surface Transportation Board, these rules would therefore not be preempted. Case law also supports this view. In *Jones v. Union Pacific Railroad Company*, 79 Cal. App. 4th 1053 (2000), the Court of Appeal held that "state and local regulation of Union Pacific's trains is permissible if it does not interfere with Union Pacific's interstate rail operations." (*Jones*, *supra*, p. 1060.) In that case, the court stated that if idling was necessary to operate the railroads, attempts to control it would be preempted, but if the idling did not further rail operations, attempts to control it would not be preempted. (*Id*.) Thus, the District may require the railroads to reduce unnecessary idling and to reduce risks due to emissions from their railyard unless the activities causing such emissions further rail operations. Based on conversations with rail operators, District staff believes that methods exist to reduce unnecessary idling without interfering with rail operations. In addition, the railroads' Proposition 65 warning states that the railroads have initiated a number of measures to reduce the amount of diesel exhaust generated by their operations. Accordingly, feasible measures exist to reduce rail emissions. The District's proposed rules seek to require such feasible measures to be taken. The District has designed its rules so that they do not attempt to regulate activities that further rail operations since the rules exempt activities as to which District regulation would be preempted. By structuring the rules in this manner, the District has avoided preemption by the ICCTA or any other federal statute.

AFFECTED FACILITIES

There are currently four freight and switching and terminal railroads with operations in the District, The Burlington Northern and Santa Fe Railway Company (BNSF), Los Angeles Junction Railway (LAJ), Pacific Harbor Line, Inc. (PHL), and Union Pacific Railroad Company (UP). Locomotives and railyard owned or operated by these railroads in the District would be subject to Proposed Regulation XXXV requirements. Locomotives would be specifically addressed under Proposed Rules 3501 and 3502, while railyard operations would be addressed under Proposed Rules 3503 and 3504.

CHAPTER 2: SUMMARY OF PROPOSED RULE 3503

OVERVIEW

PROPOSED RULE 3503 REQUIREMENTS

OVERVIEW

The purpose of Proposed Rule (PR) 3503 is to determine criteria pollutant and toxic emissions from railyards and to conduct health risk assessments to estimate cancer risk, chronic and acute hazard indices, and cancer burden at railyards. PR 3503 would be applicable to railyard operations operated by Class I freight railroads and switching and terminal railroads in the district. Passenger railyards operating in the District, such as Amtrak and Metrolink, would be excluded from the requirements of PR 3503.

PROPOSED RULE 3503 REQUIREMENTS

Following is a summary of key elements of PR 3503.

Purpose

- Determine criteria pollutant and toxic emissions from railyards
- Conduct health risk assessments to estimate cancer risk, chronic and acute hazard indices, and cancer burden caused by emissions from railyards

Applicability

- Railyards operated by Class I freight railroads in the Basin
- Switching and terminal freight railroads in the Basin
- No passenger railroads

Emissions Inventory

- On or before (12 months after date of adoption) submit a facility-wide criteria pollutant and toxic air contaminant (TAC) emissions inventory for all emission sources within the railyard including:
  - Identification of all stationary and on- and off-road mobile sources
  - For dedicated railyard equipment, annual criteria pollutant and TAC emissions based on throughput data specific to the source
  - For transient railyard equipment, annual criteria pollutant and TAC based on average number of daily trips, idling time, duration of time the source is at the railyard, and emission factors representative of the fleet mix for each category
  - Documentation of emission factors used and emission control efficiency claimed
- Emissions inventory shall be prepared consistent with CARB's *Emissions Inventory Criteria and Guidelines (July 1997)* or the most recently approved CARB document addressing this emissions inventory and/or any subset of these Guidelines, as specified by the Executive Officer, or other guidelines approved by the Executive Officer.

Health Risk Assessment

- On or before (12 months after date of adoption) submit a Health Risk Assessment (HRA) based on the facility-wide emissions inventory including:
  - Facility name, address, and contact person
  - UTM coordinates for facility location and facility boundary vertices;

  - Plot plan identifying areas where emissions may occur
  - Air dispersion model(s) used and rationale for selection, model parameters, and adjustments, if applicable
  - Receptor grid information, including fenceline receptors, with grid spacing of 100 meters or less;
  - Meteorological data used and rationale for selection
  - Risk assessment, based on an exposure duration of 70 years for residents and students and 40 years for workers, including appropriate multipathway factors; and
  - Exposure isopleths identifying areas in surrounding communities with MICR greater than 10 in-a-million
- Follow policies and procedures of the California Office of Environmental Health Hazard Assessment (OEHHA), *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments* and/or any subset of this document, as specified by the Executive Officer, or alternative guidelines approved by the Executive Officer.
- If the policies and procedures of OEHHA direct the user to refer to their local air district for specific or additional requirements, AQMD's most recent *Supplemental Guidelines for Preparing Risk Assessments to Comply with the Air Toxics "Hot Spots" Information and Assessment ACT (AB 2588)* shall be followed

Approval of Health Risk Assessment

- Executive Officer shall approve or disapprove the HRA within 180 days of submittal
- If disapproved, all identified deficiencies shall be corrected and the revised HRA shall be re-submitted within 90 days after the decision
- Within 90 days of submittal of the revised HRA, AQMD will approve or disapprove the second submittal and, if disapproved, the AQMD will modify the HRA to correct any deficiencies and approve the corrected document within 180 days of the second submittal or failure to re-submit
- Failure to submit the required HRA or failure to correct deficiencies is a violation of this rule

Updating Emissions Inventory and Health Risk Assessment

- Beginning March 1, 2007 and every March 1 thereafter, update and submit the emissions inventory for the previous calendar year, and
- Update and submit the HRA if there is an emissions increase relative to the previous years facility-wide emissions.

Public Notification Requirements

- For an approved HRA showing the risk exceeds the Public Notification Level, notify the public within 180 days of the approval of the HRA and every 12 months thereafter until the facility-wide risk is below the Public Notification Level
- Notification shall be provided in accordance with the most recently District approved "Public Notification Procedures for Phase I and II Facilities under the Air Toxics Hot Spots Information and Assessment ACT". The location for the public notification meeting shall ensure that the people located within impact areas are not required to travel more than 5 miles.

- The operator of a railyard required to conduct a public notification meeting that is also required to submit a Risk Reduction Plan to the Executive Officer pursuant to Rule 3504, paragraph (c)(1), shall make available at the public notification meeting the most recent annual progress report submitted to the Executive Officer pursuant to Rule 3504, paragraph (g)(1).

Fees

- Emissions Inventory and Health Risk Assessment shall be subject to the fee schedule set forth in Rule 306 – Plan Fees.

Appealing Disapproval Health Risk Assessment

- Rail operator may appeal the disapproval by the Executive Officer to the Hearing Board under Rules 216 – Appeals and 221 - Plans. If the appeal is denied, the HRA shall be revised to correct all deficiencies identified by the Hearing Board and resubmitted within 90 days after the denial

CHAPTER 3: IMPACT ASSESSMENT

SUMMARY OF BASIN RAIL OPERATIONS

CALIFORNIA ENVIRONMENTAL QUALITY ACT

SOCIOECONOMIC ANALYSIS

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE 40727

COMPARATIVE ANALYSIS

SUMMARY OF BASIN RAIL OPERATIONS

Railroads and Locomotive Populations

Railroads are used to move more than 40 percent of the freight moved in the United States, on a ton-miles basis[1]. In 2002, there were 554 railroads in the United States, operating on approximately 142,000 miles of track.[2] During this same period, 30 freight railroads operated over approximately 5,900 miles of track in California.[3] Two railroads with operations in California, BNSF and UP, are categorized as Class I railroads by the U.S. Department of Transportation, Surface Transportation Board. Class I railroads are those with operating revenues of at least $250 million (49 CFR Part 1201 Subpart A). The remainder of the railroads operating in California are classified as regional railroads (non-Class I line-haul railroads operating 350 or more miles of road and/or with revenues of at least $40 million), local railroads (railroads which are neither Class I nor a regional railroads and engaged primarily in line-haul service), or switching and terminal railroads (non-Class I railroads engaged primarily in switching and /or terminal services for other railroads). There are currently four railroads with operations in the District, consisting of the two Class I railroads (BNSF and UP) and two switching and terminal railroads (LAJ and PHL). ARB estimates that BNSF and UP operate approximately 240 locomotives exclusively in the District, while LAJ and PHL operate approximately 25 locomotives exclusively in the District[4], all of which would be subject to Proposed Rules 3501 and 3502. Line haul locomotives operating in the District would also be subject to Proposed Rules 3501 and 3502 requirements; however, because the Class I railroad line haul operations are both interstate and intrastate, rather than operating exclusively in the District, an estimate of the specific affected locomotives cannot be calculated at this time.

Estimated Basin Emissions Contribution

The 2003 Air Quality Management Plan estimates NO_x emissions of 36.52 tons per day and particulate matter less than 10 microns (PM_{10}) emissions of 1.01 tons per day from locomotives. VOC, CO, SO_x, and particulate matter less than 2.5 microns ($PM_{2.5}$) emissions are estimated to

[1] Association of American Railroads, 2004, Overview of U.S. Freight Railroads.

[2] Association of American Railroads, 2004, Railroad Service in the United States – 2002

[3] Association of American Railroads, 2004, Railroad Service in California – 2002.

[4] California Environmental Protection Agency, Air Resources Board, 2004, Staff Report: Initial Statement of Reasons – Public Hearing to Consider Proposed Regulatory Amendments Extending the California Standards for Motor Vehicle Diesel Fuel to Diesel Fuel Used in Harborcraft and Intrastate Locomotives.

be 1.82, 6.42, 3.25, and 0.93 tons per day, respectively.[5] NO_x and VOC are the primary contributors to ozone formation. In addition, NO_x and PM affect visibility.

Potential Cancer Risk

In October 2004, the California Air Resources Board completed a health risk assessment of PM emissions from diesel-fueled locomotives at the Union Pacific J. R. Davis Yard, located in Roseville, California.[6] Diesel PM emissions from locomotive operations were estimated to be about 25 tons per year, or approximately 0.07 tons per day in 2000. Moving locomotives were estimated to account for about 50 percent, idling locomotives for about 45 percent, and locomotive testing for about 5 percent of total diesel PM emissions. Cancer risk levels between 100 and 500 in a million occurred over roughly 700 to 1,600 acres in which about 14,000 to 26,000 people live. Risk levels between 10 and 100 in a million occurred over a roughly 46,000 to 56,000 acre area in which about 140,000 to 155,000 people live.

The cancer risks from railyard in the Basin is not known. However, the railroads have issued Proposition 65 notices with respect to emissions from seven railyard within the Basin. In addition, based on ARB's health risk assessment for the railyard in Roseville, the AQMD has sufficient information to believe that the cancer risk from railyards in the Basin may pose a health risk to a considerable number of persons significantly greater than the action risk level (25 in a million) and public notification level (10 in a million), which is applicable to traditional stationary sources.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

In accordance with the California Environmental Quality Act (CEQA), the AQMD, as the Lead Agency, has reviewed the proposed locomotive and railyard rules, which includes proposed Rules 3501, 3502, 3503 and 3504. Consistent with CEQA Guidelines §15168(a), the AQMD has decided to prepare a Program Environmental Assessment (PEA) for the proposed locomotive and railyard rules since the proposed project is: (1) a series of actions that are related geographically; (2) logical parts in chain of contemplated actions; (3) connected with the issuance of rules/regulations, which is a continuing program; and/or (4) carried out with the same authorizing statutory or regulatory authority having generally similar environmental effects which can be mitigated in similar ways. Therefore, pursuant to state CEQA Guidelines §15252, AQMD staff will prepare a Draft PEA which will analyze the potential adverse environmental impacts from the proposed project.

[5] South Coast Air Quality Management District, 2003 Air Quality Management Plan: Appendix III – Base and Future Year Emission Inventories.

[6] California Environmental Protection Agency, Air Resources Board, 2004. Roseville Railyard Study.

SOCIOECONOMIC ANALYSIS

A socioeconomic analysis will be conducted and will be released for public review and comment at least 30 days prior to the AQMD Governing Board hearing on Proposed Regulation XXXV.

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 AQMD 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 Regulation XXXV to accomplish the following:

- monitor and record locomotive idling and determine whether opportunities exist for future reductions of idling emissions;
- conduct emissions inventory and health risk assessment at major railyard in the Basin;
- minimize emissions of toxic air contaminants due to train idling events over 30 minutes;
- minimize criteria pollutants;
- reduce public health exposure to toxic air contaminants; and
- reduce the cancer risk from diesel sources at major railyard in the Basin;

Authority

The AQMD Governing Board has authority to adopt Proposed Regulation XXXV pursuant to the California Health and Safety Code Sections 39002, 40000, 40001, 40702, 40716, 40725 through 40728, 41508, and 41700.

Clarity

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

Consistency

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

Non-Duplication

Proposed Regulation XXXV 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 Regulation XXXV, the AQMD Governing Board will be implementing, interpreting or making specific the provisions of the California Health and Safety Code Sections 41700 (nuisance) and 40001 (rules to attain state and federal ambient air quality standards).

Health and Safety Code Section 40727.2

Health and Safety code section 40727.2 requires a comparative analysis. This analysis is in a subsequent section of this staff report.

Rule Adoption Relative to Cost-effectiveness

Proposed Regulation XXXV 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.

AQMP and Legal Mandates

Proposed Regulation XXXV is not a measure in the Air Quality Management Plan (AQMP). However, the AQMP does include a large "black box" of NOx and VOC reductions for which specific measures have not been identified. Therefore, the AQMP requires all feasible measures to reduce these pollutants be implemented. The idling reduction rule will reduce NOx emissions, thus reducing somewhat the size of the "black box."

COMPARATIVE ANALYSIS

Proposed Regulation XXXV addresses railroad operations that are not regulated under existing federal or state rules. As part of the rule development process for Proposed Regulation XXXV, AQMD staff will seek consistency with federal and state requirements. The following comparative analysis has been completed pursuant to Health and Safety code section 40727.2.

Existing Federal Requirements

As described in Chapter 1, in April 1998, the U.S. EPA promulgated a rulemaking, entitled, "Emission Standards for Locomotives and Locomotive Engines". This rulemaking establishes emission standards and associated regulatory requirements for the control of emissions from locomotives and locomotive engines as required by the Clean Air Act section 213(a)(5). The primary focus of the emission standards, which became effective in 2000, is NO_x. In addition, standards for HC, CO, PM and smoke were also promulgated. The rulemaking also includes a variety of provisions, including certification test procedures and assembly line and in-use compliance testing requirements, to implement the emission standards and to ensure rule

compliance. The rule also includes an emissions averaging, banking, and trading program to provide flexibility. Pursuant to Clean Air Act section 209(e), the U.S. EPA rulemaking specifically preempts state and local requirements relating to the control of emissions from new locomotives and new locomotive engines.[7]

Existing State Requirements

In November 2004, ARB approved with 15-day changes "Proposed Regulatory Amendments Extending the California Standards for Motor Vehicle Diesel Fuel to Diesel Fuel Used in Harborcraft and Intrastrate Locomotives". This rulemaking requires that beginning January 1, 2007, diesel fuel sold, supplied, or offered for sale to California intrastate locomotive operators statewide be required to meet specifications for vehicular diesel fuel, as specified in title 13, California Code of Regulations, sections 2281, 2282, and 2284. These specifications include maximum sulfur levels of 15 parts per million by weight and aromatics level of ten percent by volume. Current U.S. EPA requirements, finalized in June 2004, specify that 15 ppmw fuel be used in locomotives in 2012. The ARB rulemaking requires the use of low-sulfur diesel fuel six years earlier than required federally.[8]

[7] United States Environmental Protection Agency, 1998, 40 CFR Parts 85, 89 and 92: Emission Standards for Locomotives and Locomotive Engines; Final Rule.

[8] California Environmental Protection Agency, Air Resources Board, 2004, Staff Report: Initial Statement of Reasons – Public Hearing to Consider Proposed Regulatory Amendments Extending the California Standards for Motor Vehicle Diesel Fuel to Diesel Fuel Used in Harborcraft and Intrastate Locomotives.