

State of California
Air Resources Board

BOARD ITEM SUMMARY

ITEM # 07-8-1: Health Update: Short-Term PM Exposure and Acute Heart Disease

STAFF RECOMMENDATION:

Informational Item.

DISCUSSION:

The ARB staff provides the Board with regular updates on recent research findings on the health impacts of air pollution. This month, staff will present a study that examines the short-term exposure effects from fine particulate air pollution on the incidence of cardiovascular events among patients with pre-existing heart disease.

SUMMARY OF AGENDA ITEM:

Particles, as a component of polluted air, are clearly and consistently associated with adverse health impacts such as mortality and increases in cardiovascular disease. Recent epidemiologic and experimental evidence support the contribution of short-term exposure to ambient particle pollution to cardiovascular disease and mortality. This month's update is on a study that investigated the effect of fine PM exposure on 12,865 patients with previously diagnosed cardiovascular disease. This group of individuals was from Utah and was followed from 1994 to 2004. Exposure to PM_{2.5} was determined by daily monitoring of particulate matter. The investigators found that short-term particulate exposure contributes to acute heart disease among patients with underlying coronary artery disease. The study found a 4.5% increase in the risk of cardiovascular events associated with a 10 $\mu\text{g}/\text{m}^3$ increase in PM_{2.5}. Greater risk was seen from PM_{2.5} exposure among patients with severe coronary disease. ARB is currently funding a short-term exposure study titled, "Cardiovascular Health Effects of Fine and Ultrafine Particles during Freeway Travel" to help elucidate further the link between PM_{2.5} and cardiovascular effects in healthy elderly individuals with in California.

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BOARD ITEM SUMMARY

ITEM # 07-5-6: Public Hearing to Consider Proposed Regulation for In-Use Off-Road Diesel Vehicles

STAFF RECOMMENDATION:

Adopt the proposed regulation with modifications to be proposed at the public hearing.

DISCUSSION:

Existing off-road diesel vehicles are responsible for nearly a quarter of the diesel particulate matter (PM) emissions and nearly a fifth of the oxides of nitrogen (NOx) emissions from mobile diesel sources statewide. These emissions have significant adverse health impacts, including causing an estimated 1,100 premature deaths per year in California. Diesel PM is also a toxic air contaminant that contributes to ambient concentrations of fine particulate matter (PM_{2.5}), while NOx emissions are of concern because they lead to the formation of ozone and PM_{2.5} which can lead to increased mortality.

Diesel PM emission reductions from the existing diesel off-road fleet are needed to fulfill the Air Resources Board's (ARB) October 2000 Diesel Risk Reduction Plan (Diesel RRP) goal of reducing, by 2020, California's diesel PM emissions and associated cancer risk by 85 percent from 2000 baseline levels. Significant reductions of PM and NOx emissions from existing off-road vehicles are also essential for attainment of the State and national ambient air quality standards for PM_{2.5} and ozone in those areas of the state that currently exceed those standards.

Although manufacturers of off-road vehicles will be required to meet strict aftertreatment-based emission standards for PM and NOx beginning in 2011, many off-road vehicles in use today were manufactured before the mid-1990s when the first emission standards took effect. Since some off-road diesel vehicles can last as long as 30 years or more, controlling emissions from existing vehicles is essential.

The proposed regulation would provide significant PM and NOx emissions reductions from nearly 180,000 existing off-road diesel vehicles by requiring fleet owners to accelerate turnover to cleaner engines and install exhaust retrofits. The regulation would apply to any person, business, or government agency that owns or operates diesel-powered off-road vehicles in California (except agriculture) with engines with maximum power of 25 horsepower (hp) or greater. Examples of vehicles subject to the regulation are crawler tractors, loaders, skid steers, backhoes, forklifts, cranes, and airport ground support equipment. Industries such as construction, mining, landscaping, airlines, retail, wholesale, equipment rental, ski, oil and gas drilling, recycling, and utilities would be subject to the regulation.

The regulation would establish declining fleet average emission rate targets for PM and NOx for all off-road diesel vehicles with engines at or greater than 25 hp operating in the state, regardless of whether or not they are California-based. The regulation would require each fleet to meet the fleet average emission rate targets for PM each year or retrofit up to 20 percent of its total fleet horsepower with the highest level verified diesel emission control system. The regulation would also require large and medium fleets to meet the fleet average emission rate targets for NOx each year or turn over up to a certain percent of their horsepower (8 percent in early years, and 10 percent in later years). The regulation's provisions are strictest for the largest fleets and least strict for the smallest fleets owned by small businesses or municipalities.

Special provisions are proposed for specific circumstances. The regulation would exempt low-use vehicles, emergency equipment, and combat and tactical support equipment. Also, vehicles in small fleets, certain specialty vehicles, and vehicles less than 10 years old would be exempt from the mandatory turnover requirements. The regulation would not require exhaust retrofits for engines in vehicles less than five years old, nor require retrofits if they impair the safe operation of the vehicle. In addition, compliance extensions would be available in the event of manufacturers' delays.

The regulation was developed through numerous public workshops, workgroup meetings, and other outreach activities. ARB staff held 13 public workshops at various locations in the State between November 2004, and March 2007. Staff also conducted six informal public workgroup meetings from December 2004 to July 2006. In addition, as part of the regulatory development process, staff held numerous meetings with representatives from various companies, industry associations, environmental organizations, regional and local agencies, and other interested parties, and sent out over 376,000 mailings.

On May 25, 2007, the Board began consideration of the proposed regulation. Staff proposed the regulation as included in the April 5, 2007, staff report, with minor changes to make it more flexible. To accommodate all potential witnesses and to give the Board sufficient time to weigh and consider all oral and written testimony, the item was continued until the July 26, 2007, board meeting. Since the May 25, 2007, board meeting, ARB staff met with a number of affected fleets and held two public workgroup meetings – one to discuss the overall cost of the proposed regulation and one to discuss costs the proposed regulation imposes on individual fleets. Staff also sent a post card to the approximately 312,000 licensed contractors in California to inform them that the regulation would be considered at the July board meeting.

SUMMARY AND IMPACTS:

By 2020, the regulation is projected to reduce diesel PM emissions from existing off-road diesel vehicles by 92 percent from the 2000 baseline, meeting the goal of the Diesel RRP. Also, the regulation is expected to reduce statewide diesel PM emissions by 5.2 tons per day (tpd) and NOx emissions by 48 tpd in 2020. The regulation's reductions are a key element of the strategy to meet the PM2.5 and NOx attainment deadlines for the South Coast and San Joaquin Valley air basins.

The cumulative PM and NOx emissions reductions from 2010 to 2030 are expected to prevent approximately 4,000 premature deaths and tens of thousands of cases of asthma-related and other lower respiratory symptoms. Over this same time, there will also be significant health cost savings of \$18 to \$26 billion, primarily from avoided premature deaths.

The total cost of the regulation is expected to be between \$3.0 and \$3.4 billion, in 2006 dollars. The actual costs to individual fleets would vary depending on the size of each fleet, its initial vehicle composition and vehicle age, and its normal purchasing practices. Costs also would vary depending on the compliance strategy chosen by each fleet (whether to retrofit, repower, or replace the vehicle).

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BOARD ITEM SUMMARY

**ITEM # 07-8-2: Public Meeting to Receive Climate Change Mitigation
Recommendations from the Market Advisory Committee**

DISCUSSION: The Market Advisory Committee (MAC) was created by Cal/EPA Secretary Linda Adams pursuant to Governor Arnold Schwarzenegger's Executive Order S-20-06. The Executive Order charged the Committee with developing recommendations by June 30, 2007 for ARB's consideration on the design of a market-based compliance program to reduce greenhouse gas emissions. At this meeting, the MAC will present its recommendations to the Board.

The MAC's recommendations are designed to achieve the maximum feasible cost-effective reductions that are real, permanent, measurable, verifiable, and enforceable, consistent with the mandate of the Global Warming Solutions Act. These recommendations also reflect both areas of consensus and divergence among Committee members. Where consensus was not reached, the MAC describes available options and considerations for choosing among various approaches.

The recommendations of the MAC are not being presented to the Board for approval or disapproval at this time. Any cap and trade program would be just one part of ARB's larger effort to reduce the risk of human-induced climate change. The complete strategy will be described in the Scoping Plan which the Board must adopt before January 2009, and the MAC's report provides information for development of that strategy. At the July Board meeting, ARB staff will also present a schedule for the development of the Scoping Plan.

State of California
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BOARD ITEM SUMMARY

**ITEM # 07-8-3: Update on the Implementation of the 2005 ARB/Railroad
Statewide Agreement**

STAFF RECOMMENDATION:

No action required; this item is informational only.

DISCUSSION:

On June 24, 2005, the ARB's Executive Officer entered into a statewide railroad pollution reduction agreement with Union Pacific Railroad and BNSF Railway.

As part of this effort, staff presents routine updates to the Board on the implementation of the Agreement. At the July meeting, staff will update the Board on activities completed since January 2007. Staff has prepared a status report in support of this item.

Both railroads have met and exceeded the requirement to install idle reduction devices on 70 percent of the unequipped intrastate locomotives by June 30, 2007. In addition, the railroads are ahead of schedule to meet the requirement to install idle reduction devices on 99 percent of the unequipped intrastate locomotives by June 30, 2008. Both railroads have continued to comply with the CARB diesel fuel regulation for intrastate locomotives which became effective January 1, 2007. In addition, both railroads have continued fueling interstate locomotives with low sulfur diesel fuel (15 ppmw) volumes greater than the minimum 80 percent requirement specified in the Agreement.

In the first half of 2007, staff completed a third round of enforcement inspections at the designated and covered rail yards in California. Staff observed about 960 locomotives to determine their compliance with the anti-idling provisions of the agreement with 40 locomotives cited for excessive idling and none for excessive smoke. This means about 96 percent of the locomotives observed were in compliance for the first half of 2007.

The Agreement requires that health risk assessments (HRAs or assessments) be completed for 16 major rail yards in the State. The draft assessments included a detailed evaluation of all of the emissions sources at the rail yard, including locomotives, trucks, and cargo handling equipment.

In May, the staff completed draft assessments for nine designated rail yards and one additional non-designated rail yard. These assessments were released in May and June at public meetings that the staff and railroads conducted in the affected communities. Each initial meeting was followed about one month later

by a second meeting to allow for questions and public comments and to discuss possible mitigation.

The draft health risk assessments show that the diesel PM emissions from the rail yards result in significantly higher pollution risks in nearby communities. The largest impacts are associated with the four rail yards in the City of Commerce. The draft assessments for the other yards have lower potential cancer risk and expose fewer people, but are still significant and need to be reduced.

After considering the public comments, staff will complete the assessments. In addition, the staff will begin a public process to more fully address the noncancer impacts around the rail yards and to identify and evaluate potential mitigation options needed to reduce the risk.

The U.S. EPA released its proposed draft Tier 4 locomotive and marine rulemaking in April 2007 with a public comment period until July 2, 2007. Staff provided comments on the proposed rulemaking. Staff is supportive of most elements included in the April 3, 2007 proposal. However, staff believes that several portions of the proposal should be strengthened, expanded, or accelerated.

SUMMARY AND IMPACTS:

To date, staff estimates that compliance with the Agreement has resulted in about a 20 percent reduction in diesel particulate matter emissions near rail yards.