

State of California
Air Resources Board

BOARD ITEM SUMMARY

ITEM # 07-12-1: Health Update: Chronic Air Pollution Exposure and Adverse Effects on the Brain – A Review

STAFF RECOMMENDATION:

Informational Item.

DISCUSSION:

The ARB staff provides the Board with regular updates on recent research findings on the health effects of air pollution. This month, staff will present a brief summary of a recently published review article that describes preliminary findings of associations between long-term air pollution exposure and adverse effects on the brain.

SUMMARY AND IMPACTS:

The adverse health impacts on the cardiovascular and respiratory systems associated with chronic air pollution exposures have been well documented; however, much less is known about the effects of air pollution on other physiological systems and organs. This presentation will review selected recent findings of associations between chronic air pollution exposures and possible adverse effects on the brain.

Several studies conducted in Mexico showed higher levels of biomarkers that may precede inflammation and the appearance of abnormal protein deposits in the brain, when comparing highly-polluted vs. less-polluted cities. These observations were made in both humans (adults and children) and animals. The effects of air pollutants may be due to transport of the pollutant into the brain. Alternatively, it may be an indirect effect through the release of inflammatory molecules elsewhere in the body. The findings from these studies indicate that the harmful effects from air pollution are more far-reaching than previously recognized, and emphasize the continued importance of reducing pollutant levels to protect human health.

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ITEM #07-12-8: **Public Meeting to Consider Appointment to the AB 32 Economic and Technology Advancement Advisory Committee.**

STAFF RECOMMENDATION:

The Air Resources Board staff recommends that the Board appoint Ms. Amisha Patel of the California Chamber of Commerce to fill a vacancy on the Economic and Technology Advancement Advisory Committee.

DISCUSSION:

The Global Warming Solutions Act of 2006 (AB 32) directed ARB to form two advisory committees, one of them being the Economic and Technology Advancement Advisory Committee or ETAAC. The Board formed this committee and appointed its members in January of this year.

Since then, ETAAC has been busy meeting, gathering information and drafting a report containing its advice to the Board regarding the best technologies for controlling greenhouse gas emissions in California, and the best ways to promote those technologies. They are scheduled to bring their final report to the Board in January 2008.

The ETAAC member appointed to represent the California Chamber of Commerce recently resigned from his position with the Chamber. Accordingly, staff believe his continued membership on the committee would not be in keeping with the Board's original purpose for his appointment. Therefore staff requests that the Board approve a replacement, and recommends Ms. Amisha Patel, also of the California Chamber of Commerce, to fill the vacancy.

SUMMARY AND IMPACTS:

Board approval of the recommended candidate will allow the Committee to complete its work with its full complement of members.

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ITEM # 07-12-2: Climate Change: Action at a Local Level

STAFF RECOMMENDATION:

Informational only. No action.

DISCUSSION:

This is the third in a series of semi-annual updates to the Board on recent significant findings in climate change research. This update summarizes collaboration efforts at a local level to implement greenhouse gas reduction strategies.

SUMMARY AND IMPACTS:

Staff will provide an assessment of what local governments and organizations are doing to combat climate change and ensure the future livelihood of their communities. Topics covered in the staff presentation will include leadership examples being demonstrated in various California cities and counties, Climate Action Plans, commendable actions at a local level, the pathway to achieving reduction targets, and the partnerships being established between the State and local government.

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ITEM # 07-12-3: Public Hearing to Consider Adoption of a Regulation for the Mandatory Reporting of Greenhouse Gas Emissions

STAFF RECOMMENDATION:

ARB staff recommends that the Board approve the proposed regulation with suggested changes to the original proposal. The regulation would require mandatory reporting of greenhouse gas emissions for specified types of California businesses and require the submitted data to be verified by an independent third party.

DISCUSSION:

In 2006, the legislature passed and Governor Schwarzenegger signed the California Global Warming Solutions Act of 2006 (the Act). The Act, also known as AB 32, mandates that the Air Resources Board (ARB) adopt mandatory greenhouse gas (GHG) reporting regulations on or before January 1, 2008. Staff worked with a broad range of stakeholders through numerous public workshops and meetings to develop the proposed GHG reporting regulation. The proposal focuses on the most significant GHG emission sources, uses rigorous and consistent emission accounting methods, accounts for all electricity consumed California including imports, includes verification of emissions data, and to the extent feasible, maintains consistency with other GHG reporting programs.

The proposed GHG reporting regulation would require annual emissions reporting from facilities that together account for approximately 94% of the total carbon dioxide (CO₂) produced in California from industrial and commercial stationary sources of emissions. The first reporting would be required in 2009 on 2008 emission levels. Verification by ARB-approved third parties, either air districts or private firms, would begin in 2010. Additional sources of GHG emissions will be estimated through other mechanisms besides mandatory reporting, and are not included in this regulation.

Under the proposed regulation, the facilities required to annually report GHG emissions and supporting information would include electricity generating facilities, electricity retail providers, electricity marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and industrial sources that emit over 25,000 metric tonnes per year of CO₂ from stationary source fuel combustion, including facilities such as food processors, glass container manufacturers, oil and gas producers, and mineral processors. The staff proposal requires facilities to report facility GHG emissions using the methods, equations, and emission factors specified in the regulation. Staff worked to

maintain consistency with existing California Climate Action Registry (CCAR) protocols, except where differences were required to ensure complete and verifiable mandatory reporting.

SUMMARY AND IMPACTS:

The proposed regulation provides a critical tool needed by ARB's Climate Change Program to reduce California's 2020 GHG emissions to 1990 emission levels. We anticipate that approximately 850 facilities will be subject to reporting, with the complexity of the reporting generally proportional to the complexity of the GHG emissions source. Those industry sectors required to report were carefully selected to minimize impacts on California businesses while ensuring that we account for a major portion of the industrial GHG emissions produced within the State, as well as imported electricity.

The proposed regulation would impose costs on reporting facilities to develop their GHG emission estimates and have them verified. Statewide costs for facilities to comply with the proposed regulation are anticipated to be approximately \$20 to \$30 million annually, with costs anticipated to decrease as GHG reporting systems and equipment become part of normal business practices. The regulation is also anticipated to create 40-75 new jobs and 10-15 new businesses to assist with GHG reporting and verification.

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ITEM # 7-12-4: Public Hearing to Consider the 1990 Statewide Greenhouse Gas Emissions Level and 2020 Emissions Limit

STAFF RECOMMENDATION:

ARB staff recommends the Board approve 427 million metric tonnes of carbon dioxide equivalents (MMTCO₂e) as the 2020 statewide greenhouse gas emissions limit.

DISCUSSION:

The California Global Warming Solutions Act of 2006 (AB 32, Nunez; Statutes of 2006, chapter 488) requires the Air Resources Board (ARB or Board) to determine what the statewide greenhouse gas emissions level was in 1990 and to approve a statewide greenhouse gas emissions limit that is equivalent to that level, to be achieved by 2020.

ARB staff conducted a comprehensive review of all greenhouse gas emitting sectors using previous estimates developed by the California Energy Commission as a starting point. ARB staff gathered data from State and federal agencies, international organizations, and California industries. California facility-specific information for 1990 emissions was used where available.

ARB staff has estimated that the 1990 greenhouse gas emissions level was 427 MMTCO₂e and will propose that the Board approve 427 MMTCO₂e as the total statewide greenhouse gas emissions limit in 2020.

SUMMARY AND IMPACTS:

Upon approval by the Board, the 2020 emissions limit of 427 MMTCO₂e remains in effect unless amended by the Board. If additional information becomes available that would significantly alter the total emissions for 1990, staff will bring a revised 1990 emissions level back to the Board for consideration.

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ITEM # 07-12-5: Notice of Public Hearing to Consider Adoption of Gaseous Pollutant Measurement Allowances for California's Heavy-Duty Diesel In-Use Compliance Regulation.

STAFF RECOMMENDATION:

Staff recommends that the Board amend title 13, California Code of Regulations, section 1956.8, and "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines (HDDE) and Vehicles."

DISCUSSION:

In 2006, the Air Resources Board (ARB) adopted a new in-use compliance regulation and test procedures that allow for a more efficient and cost-effective test method to conduct in-use compliance testing of heavy-duty diesel engines. This new testing method, called the manufacturer-run heavy-duty diesel in-use testing (HDIUT) program, requires manufacturers to emissions test a set number of their certified engine families each year using a portable emission measurement system (PEMS) installed on selected test vehicles. These test vehicles would be tested with PEMS when placed in normal revenue service. Because testing will be conducted in the field instead of an environmentally-controlled laboratory, ARB, the United States Environmental Protection Agency (U.S. EPA), and the engine manufacturers had agreed to determine a "measurement allowance" for each pollutant to account for any potential difference in measurement accuracy. Southwest Research Institute, in San Antonio, Texas, recently completed the development of PEMS measurement allowances for gaseous emissions, under the direction of a measurement allowance steering committee (MASC) comprised of members from ARB, U.S. EPA and the engine manufacturers. The measurement allowances will be used when conducting HDIUT using PEMS. Staff is proposing that the Board adopt the gaseous emission measurement allowances recommended by MASC. U.S. EPA is expected to adopt the same measurement allowances for its essentially identical HDIUT program within the next six months.

SUMMARY AND IMPACTS:

Since the proposed allowances are more stringent than the temporary allowances previously adopted for the pilot program, it is possible that engine manufacturers could be subjected to additional remedial action. However, the impact on manufacturers is expected to be minimal. No impact on private businesses or persons is expected. Also, there is no impact expected on PEMS manufacturers.

The proposed amendments would achieve environmental benefits by ensuring that emission control systems on HDDEs are properly designed and sufficiently

durable to comply with the emission requirements during their useful life. However, the benefits cannot be accurately quantified at this time because several factors necessary for the calculation are unknown and cannot be properly estimated (e.g., what percentage of vehicles would fail the proposed program and quantifying the failed emission rate compared to a properly operating vehicle).

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ITEM # 07-12-6: Public Hearing To Consider Adoption of the Proposed Regulation to Reduce Emissions from Diesel Auxiliary Engines on Ocean-Going Vessels While At-Berth at a California Port

STAFF RECOMMENDATION:

Approve the proposed regulation.

DISCUSSION:

In September 2000, the California Air Resources Board (ARB) adopted a comprehensive Diesel Risk Reduction Plan (Plan), establishing a goal of reducing diesel particulate matter (PM) emissions and the associated health risk by 75 percent in 2010 and 85 percent in 2020. This proposed regulation for diesel auxiliary engines on ocean-going vessels while at-berth at a California port is a step toward achieving the goals of the Plan. In addition to the diesel PM reductions, the proposed regulation would reduce ozone and PM 2.5 precursor emissions, improve the air quality in communities near California ports, and reduce emissions of carbon dioxide (CO₂), a greenhouse gas.

Diesel PM and oxides of nitrogen (NOx) emissions from the operation of diesel auxiliary engines on ocean-going vessels while at berth at a California ports are approximately 1.8 tons per day (TPD) and 21 TPD, respectively. A recent ARB exposure study at the ports of Los Angeles and Long Beach shows that over two million people live in areas around the ports with predicted cancer risks of greater than 10 in a million due to hotelling emissions from ocean-going vessels.

The proposed regulation was developed through public workgroup meetings and workshops involving ship companies, utility companies, ports, terminal operators, industry associations, environmental organizations, and other parties interested in hotelling emissions reduction efforts.

The proposed regulation allows for two main options to reduce hotelling emissions. First, owners or operators of container ships, passenger ships, and refrigerated cargo ships that visit the ports of Los Angeles, Long Beach, Oakland, San Diego, San Francisco, and Hueneme, can shut down their auxiliary engines during most of their stay in port. While auxiliary engines are shut down, the ship's onboard electrical needs must be satisfied by some other source of power, presumably the region's electrical grid.

Alternatively, operators can implement a fleet-based option to reduce the emissions from the auxiliary engines in the fleet by specified percentages while docked. The

emission reduction techniques that could be applied to a fleet include: 1) using selected vessels for grid-supplied power based on potential auxiliary engine emission reductions rather than fleet visit percentages; 2) using distributed generation equipment to provide power to a vessel; 3) using alternative emission controls onboard a vessel or located adjacent to the vessel; and 4) using a combination of these techniques.

Vessel owners or operators, terminals, and ports would also be subject to recordkeeping and reporting requirements.

SUMMARY AND IMPACTS:

ARB staff estimates that, with the implementation of the rule, hotelling diesel PM and NOx emissions from container ships, passenger ships, and refrigerated cargo ships will be reduced by 50 percent relative to levels otherwise expected to be emitted by 2014, and 75 percent relative to levels otherwise expected to be emitted by 2020. These reductions will assist the South Coast Air Basin in meeting its 2014 PM_{2.5} State Implementation Plan deadline as well as its future ozone deadlines, and assist the Board with meeting its Goods Movement Emission Reduction Plan goals.

In addition, hotelling CO₂ emissions are expected to be reduced by 122,000 to 242,000 metric tons in 2020, assisting the State in meeting Assembly Bill 32 mandates for greenhouse gas emission reductions.

The cost-effectiveness of the proposed regulation, in terms of dollars per ton of NOx reduced, is estimated to be about \$12,800 per ton. Because the proposed regulation will also reduce PM emissions, half the total annualized cost of compliance could be attributed to the NOx emission reductions and half to the PM emission reductions. The resulting cost-effectiveness values using that method are \$6,400 per ton of NOx reduced and \$345,000 per ton of PM reduced.

The proposed regulation will result in significant reductions in exposure and potential cancer risks to residents who live near ports. Based on an analysis of reduced potential cancer risk from implementation of the proposed regulation, the number of people exposed to a greater than 10 in a million risk from hotelling emissions would be reduced by 70 percent by 2020.

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ITEM # 07-12-9: Nonattainment Area Recommendations for the Revised Federal PM_{2.5} 24-Hour Standard

STAFF RECOMMENDATION:

For information only.

DISCUSSION:

On December 18, 2006, the United States Environmental Protection Agency (U.S. EPA) lowered the 24-hour PM_{2.5} standard from 65 ug/m³ to 35 ug/m³. The Air Resources Board (ARB) is required to submit nonattainment area recommendations and appropriate boundaries to U.S. EPA for this standard by December 18, 2007. The nonattainment area recommendations are based on 2004-2006 PM_{2.5} air quality monitoring data.

ARB staff will recommend that the South Coast Air Quality Management District, the San Joaquin Valley Air Pollution Control District, the Bay Area Air Quality Management District, the Sacramento Air Quality Management District, the combined cities of Yuba City/Marysville, the city of Chico, and the city of Calexico be designated as nonattainment for the new 35 ug/m³ 24-hour PM_{2.5} standard. U.S. EPA plans to finalize nonattainment area designations effective April 2009 based on 2005-2007 PM_{2.5} data. State implementation plans will be due three years later. Attainment for this new standard will be required by April 2019.

The South Coast Air Quality Management District and the San Joaquin Valley Air Pollution Control District are already designated nonattainment for the current PM_{2.5} standards and are working on strategies to attain the annual PM_{2.5} standard by 2014.

SUMMARY AND IMPACTS:

Not applicable.

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ITEM # 7-12-07: Public Hearing to Consider the Adoption of a Proposed Regulation to Control Emissions from In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks at Ports and Intermodal Rail Yard Facilities

STAFF RECOMMENDATION:

Approve the proposed regulation for drayage trucks.

DISCUSSION:

In September 2000, the California Air Resources Board (ARB) adopted a comprehensive Diesel Risk Reduction Plan (DRRP), establishing a goal of reducing diesel particulate matter (PM) emissions and the associated health risk by 75 percent in 2010 and 85 percent in 2020. Additionally, in April 2006, ARB approved the Emission Reduction Plan for Ports and Goods Movement (ERP). The ERP identifies strategies to reduce emissions from all significant emission sources involved in goods movement, including trucks. The drayage truck regulation, which will achieve significant reductions in diesel PM, is a critical element in meeting the goals of both the DRRP and the ERP. The reductions are also critical in helping the South Coast and San Joaquin air basins achieve their state implementation plan (SIP) commitments to bring the two air basins into attainment for PM 2.5. In addition to the diesel PM reductions, the proposed regulation would reduce ozone precursor emissions (NOx) that are necessary to meet SIP commitments in the South Coast and other areas of the State.

Diesel PM and NOx emissions from drayage trucks are approximately 3 tons per day (tpd) and 61 tpd, respectively. A recent ARB exposure study for a segment of the I-710 freeway (the main roadway to the ports of Los Angeles and Long Beach) showed drayage truck emissions impact surrounding communities and contribute to adverse health impacts.

The proposal was developed through workshops and focus meetings involving all stakeholders, including truck owners and operators, motor carriers, Class 1 rail roads, ports, shipping companies, industry associations, environmental organizations, and other interested parties.

The proposed regulation requires drayage trucks operating 1993 and older engines to be replaced with trucks operating 1994 and newer model-year engines. PM emissions from trucks, model-year 1994 to 2003, must also be reduced by 85 percent by 2010 (Phase 1) through the installation of a level 3 PM retrofit device. The regulation further requires all affected drayage trucks to meet

2007 federal and California emission standards by 2014 (Phase 2). All regulated entities would be subject to recordkeeping requirements, or reporting provisions, or both.

SUMMARY AND IMPACTS:

ARB staff estimates that, with the implementation of the rule, diesel PM emissions and associated health impacts will be reduced by 86 percent by 2010 compared to a 2007 baseline. ARB staff further estimates that NOx emissions will be reduced by 56 percent by 2014 compared to a 2007 baseline.

ARB staff estimates the PM cost-effectiveness of the proposed regulation to be about \$57 to \$77 per pound of diesel PM reduced for Phase 1 and the NOx cost-effectiveness to be about \$6 to \$8 per pound reduced for Phase 2.

The proposed regulation will result in significant reductions in exposure and potential cancer risks to residents that live near ports, rail yards, and the major nearby road ways. Based on an analysis of the population impacted by the proposed regulation, ARB staff estimates there would be 580 fewer premature deaths as well as a decrease in cancer risk and other adverse health effects after full implementation of the proposed regulation.

A key issue affecting the implementation of the proposed regulation is the ability of truck owners to afford compliance. ARB estimates truck owners could incur costs of up to \$70,000 per truck. To potentially reduce the economic burden, ARB staff is developing guidelines for disbursing Bond 1B funds (due before the Board in 2008).

