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August 11, 2011

Ms. Mary Nichols – Chair, California Air Resources Board
1001 I Street
PO Box 2815
Sacramento, CA 95812

RE: Comments Regarding Proposed 15-Day Modifications to the Cap and Trade Program

Dear Ms. Nichols:

Air Products is a global, Fortune 250 company that supplies atmospheric, process, medical and specialty gases, specialty chemicals and process equipment serving a diverse range of industries, including primary metals, refining, electronics, food and glass sectors, as well as healthcare and many other general manufacturing industries. Air Products has over 400 employees and 30 locations in California, including numerous atmospheric gases (oxygen/nitrogen/argon) and hydrogen production facilities, electronic specialty gases and materials production and electricity generating facilities. In addition, Air Products serves a fleet of hydrogen fueling stations across the state, facilitating the transition to carbon-free transportation.

Air Products welcomes the opportunity to submit comments regarding the Proposed 15-Day Modifications to the Cap and Trade Program issued July 25, 2011. Air Products supports the state's efforts to develop a fair, effective and economically efficient means by which to meet the requirements of AB32. Air Products submitted comments in January and December of 2010 to the previous draft and proposed versions of the regulation and we have worked closely with CARB staff over the past eight months to further inform their regulatory development efforts. While these discussions have produced several areas of alignment on certain aspects of the program, there are still some specific aspects under development which significantly impact our existing operations and our business growth opportunities in the state. The following comments will reinforce those areas of alignment and express our concerns and potential solutions to those areas we believe are uniquely impactful to our business.

The critical, overarching aspect of the majority of our concerns is the need to ensure equitable treatment of independent hydrogen producers serving the refinery sector. Development of an equitable benchmark is important for both CARB and Air Products in that:

- It is imperative to our business that a level competitive playing field be maintained between outsourced and in-house refinery hydrogen supply;

- The outsourced refinery hydrogen supply option can provide a material increment of CO_2 reduction beyond what is feasible from refiners producing their own hydrogen; and

- The outsourced hydrogen supply model is a key enabler for the hydrogen economy vision crafted by California.

The challenges of insuring an equitable allocation method and the potential benefits available through maintaining a viable outsourced hydrogen supply model are not new or unique to California. For example, the European Union has been working on the same policy challenge for the past few years and has developed an approach acceptable to all stakeholders that Air Products believes should be used as the model for California.

Air Products is also submitting comments on the proposed amendments to the Regulation for Mandatory Reporting of Greenhouse Gas Emissions (MRR) – but is doing so separately since the MRR is a separate rulemaking. However, there are relevant "cross-over" issues affecting both the MRR and the Cap and Trade Regulation which are also addressed here. We trust you will consider all our comments regarding both rulemakings and would be pleased to further expand upon any issues where additional information would better inform the rulemaking process.

EXECUTIVE SUMMARY:

1. ***The Benchmark for Hydrogen Produced by Industrial Gas Manufacturers Must be Equitable*** – Ideally, allowance allocations for hydrogen, steam and electrical production to serve the refining sector should be the same, regardless of whether the production is undertaken by a refinery or an associated independent industrial gas facility. While we recognize that this goal cannot be achieved at this time, we urge CARB staff to strive to achieve it in the future. However, it is imperative that the benchmark for hydrogen production by industrial gas facilities be equitable in that it treats hydrogen produced at industrial gas facilities the same as hydrogen produced by plants operated at refineries. In order to achieve equity, the hydrogen benchmark should be based on data from all hydrogen production facilities in the state that serve the refining sector regardless of whether they are part of a refinery or an independent industrial gas facility. The currently proposed hydrogen benchmark is not equitable because it is based only on data from only 6 of the 26 hydrogen production facilities that currently operate in the state. Further, the current benchmark for gaseous hydrogen appears to incorrectly reflect data from two industrial gas facilities that produce only liquid hydrogen. Air Products insists that the hydrogen benchmark for "Industrial Gas Manufacturing" must include emission intensity data for all, as opposed to the current benchmark proposal that reflects data from only 6 of these 26 production facilities.

2. ***The Leakage Risk for Refined Petroleum Products Needs to be Properly Recognized*** – Industry experts anticipate that import pressure will materially increase over the next several years, thereby increasing this industry sector's leakage risk to "High". Given this, CARB should change the leakage risk classification for refined petroleum products (and the related hydrogen production that supports it) to "High."

3. ***A Separate Product-Based Benchmark Must be Developed for Liquid Hydrogen*** – Liquid hydrogen is a different product from gaseous hydrogen used in refining applications, with different production attributes and leakage risk such that a separate and distinct product-based benchmark should be determined and applied to liquid hydrogen production.

4. ***Hydrogen Produced for Use as a Transportation Fuel Must be Exempted from a Compliance Obligation until the Second Compliance Period –*** Hydrogen produced and used as a transportation fuel should not incur a compliance obligation until other transportation fuels are subject to the cap and trade program in the second compliance period. Alternately, CARB could provide an allowance allocation equal to the GHG emissions associated with the amount of such hydrogen produced and sold as a transportation fuel.

5. ***CHP Electricity Production Not Distributed Through an Electric Distribution Utility (EDU) Should be Treated the Same as Electricity Distributed by EDUs –*** Either industrial cogeneration facilities that distribute electricity directly to industrial sources (not through an EDU) should be allocated allowances consistent with the allocations provided to EDUs, or their industrial power customers should be provided rebates/benefits to the same extent as retail ratepayers of EDUs.

6. ***Proposed Changes in the Mandatory Reporting Program Create Uncertainty in Reporting Responsibility and GHG Emission Compliance Obligation for Co-located Hydrogen Plants –*** Proposed changes in the state MRR create uncertainty as to which entity is responsible for submitting annual emissions reports and hence bears the compliance obligation under the cap and trade program.

DETAILED COMMENTS:

1. ***Ensuring an Equitable Benchmark for Hydrogen Production by Industrial Gas Manufacturers*** – CARB appropriately recognizes the need to allocate allowances to significantly impacted and leakage-prone entities under the cap and trade program. Building upon the program design principles set out in Appendices J and K of the October 2010 Proposed Regulation, §95870(e) describes the eligibility for industry assistance, while §95891 develops the mechanics of the allocation determination for eligible industrial sources. In §95891(b), the emissions efficiency benchmarks per unit of output for each eligible activity are defined in Table 9-1.

   The benchmark proposed for hydrogen production by "Industrial Gas Manufacturing" employs the standard product-benchmark method described conceptually in Appendix B of the 15-Day Modification Package. The gaseous hydrogen benchmark is derived from emissions and production data from only six independent hydrogen production plants (including two that produce liquid hydrogen and are inappropriate for inclusion in the gaseous hydrogen benchmark basis) and ignores the 20 other refinery-owned hydrogen plants operating in California. Discussions with CARB staff confirmed the emissions intended to be considered in the hydrogen benchmark include:

- Combustion emissions from producing process heat and steam within the hydrogen plant,
- Process and combustion emissions resulting from hydrogen production itself, and
- Combustion emissions from production of electricity within the hydrogen plant.

Staff indicated that the benchmark derivation is to take into account (deduct) any export of thermal energy and electricity, where appropriate.

CARB staff acknowledges that it does not yet have the complete hydrogen production and emission data from even the six plants considered that are needed to define the hydrogen benchmark and thus the benchmark value of 8.51 allowances per ton of hydrogen is incorrect.

In addition to excluding industrial gas manufacturing plants that produced only liquid hydrogen from the database used to develop the gaseous hydrogen benchmark, CARB must include the 20 gaseous hydrogen plants in the state owned and operated by refiners. Because the current benchmark is based on a highly biased data set excluding the majority (20 of 24) of gaseous hydrogen plants in the state, it fails to accurately reflect the true emissions associated with gaseous hydrogen production in California and cannot be considered to be an equitable benchmark.

Instead, the current benchmark relies predominantly on the emission intensity performance of the four most modern and efficient plants (industrial gas manufacturing facilities) and then imposes a "performance challenge" upon that "top quartile" of facilities. This effectively penalizes these facilities and their owners for having made material investments in more efficient production technologies – a fundamental premise of the cap and trade allocation program as outlined in Appendix J (§D.1.b - Page J-29). Again, a correct and equitable benchmark must include all hydrogen production units in California.

We would further note that, while CARB staff has issued a data collection request to industrial gas producers to augment existing data, it has not yet initiated a comparable request to the refinery-owned/operated hydrogen production facilities in order to develop a representative benchmark value. This request must be issued immediately so that an accurate and equitable benchmark can be incorporated into the Cap and Trade Regulation.

Air Products recommends that CARB expand the database used to calculate of the hydrogen benchmark to include all hydrogen production in the state – both refinery-owned and "independent" producers. If this requires additional data from the refinery hydrogen producers, CARB must make a timely information request to the impacted facilities.

Air Products also recommends that CARB clarify its intent regarding how new entrants subject to product-based benchmarks are treated by adding text comparable to §95891(c)(3) under §95891(b). CARB could also provide clarity regarding the potential adjustment to all industrial assistance allocations described

in §95870(e)(3) by referencing this potential adjustment in §95899(a) and §95891(a). Classification of Leakage Risk for Petroleum Refineries and Industrial Gas Manufacturing should be designated as "High" as defined in §95870(e) of the 15-Day Modification Package and consistent with the criteria employed in Appendix K of October 2010 Proposed Rule. At a minimum, CARB should re-evaluate the leakage risk preceding each subsequent compliance period and determine if the proposed reduction in the Assistance Factor is warranted.

2. ***Assistance Factor Reductions for Petroleum Product Manufacturing Sector are Too Rapid –*** The refining industry is clearly under trade pressure from fuel imports. The proposed reduction of the Assistance Factor from 100% in the first compliance period to 75% and then 50% in the subsequent second and third compliance periods, respectively, leaves in-state production capacity vulnerable to increased dependence on imports (and hence supply disruptions and the loss of jobs within the state). Industry experts anticipate this import pressure to materially increase over the next several years, thereby increasing the industry sectors leakage risk to "High", where no reduction in the Assistance Factor would be imposed.

3. ***A Separate Product-Benchmark Should be Developed for Liquid Hydrogen*** – Liquid hydrogen is a different product from gaseous hydrogen used in refining applications. Liquid hydrogen serves different downstream manufacturing operations, is readily transportable across California borders and requires additional production methodology and equipment. Further, liquid hydrogen production has a material indirect GHG emission footprint due to the significant electricity consumed in the liquefaction process. For this reason, liquid hydrogen should be treated as a distinct product with its own unique product benchmark. Since liquid hydrogen is very energy intensive and highly trade exposed, we believe liquid hydrogen should be categorized as a "High" leakage risk.

4. ***Hydrogen Produced for Use as a Transportation Fuel Should be Exempted from a Compliance Obligation until the Second Compliance Period –*** Air Products has been an active partner with CARB in development of hydrogen fueling stations across the state and fulfillment of the vision of the "Hydrogen Highway" from Sacramento to Los Angeles. The build-out of the hydrogen transportation infrastructure should not be burdened by an early penalty imposed on the hydrogen produced for use as a transportation fuel.

   Transportation fuels are not covered under the cap and trade program until the second compliance period. Since hydrogen is a low-carbon fuel, the carbon footprint of its production is equivalent to a conventional fossil fuel's carbon footprint during use. As such, hydrogen used as a transportation fuel during the first compliance period should be exempt from a compliance obligation, consistent with the absence of a compliance obligation imposed on fossil fuel based transportation fuels during the first compliance period. The hydrogen fuel exemption would also be consistent with the lack of a compliance obligation for natural gas used as a transportation fuel during the first compliance period. This temporary exemption can be realized by CARB allowing a reduction in a

hydrogen producer's overall compliance obligation proportional to the fraction of total production which is sold as a transportation fuel.

Alternatively, CARB could make an allowance allocation equal to the emissions associated with the amount of such hydrogen produced and sold as transportation fuel.

5. ***CHP Electricity Production Not Distributed Through an EDU Should be Treated the Same as Electricity Distributed by EDUs –*** Most electricity consumed in the state is distributed through EDUs. A small portion of the state's electricity consumption occurs by ratepayers who obtain their electricity directly from a producer without going through an EDU – this is often an industrial electricity consumer obtaining power from a co-located but independent industrial cogeneration facility.

   CARB proposes to allocate allowances to EDUs based on the electricity consumption through their respective service franchises and then require these allowances to be auctioned with the proceeds being used for the benefit of their ratepayers. Since no allocations will be made to the "industrial cogeneration/distribution" entities delivering electricity directly to their rate-paying customers, there is an unequal (one-sided) opportunity to offer benefits to the ratepayer which favors the EDU. This will provide an incentive for current (and future) consumers of industrial cogenerated power to switch to grid-delivered power – a result contrary to CARB's policy objective of incentivizing cogeneration power. To prevent this unequal treatment, CARB must either allocate allowances to industrial cogeneration/distribution entities in a manner consistent with the proposed allocation to EDUs under §95892, or revise the proposed regulations to require that cogeneration power customers receive the same benefits under §95892(d)(3) as other EDU retail ratepayers.

   Providing allowance allocations where industrial cogeneration facilities directly deliver power to their customers is consistent with the "Criteria for Receiving Allowances as Part of the Electricity Sector Allocation" described in Appendix A of the 15-Day Modification package. Such industrial cogeneration power suppliers serve end-use customer's electricity load and receive payment for that load representing the same transactional relationship existing between EDUs and retail ratepayers.

   Allocation of allowances to qualifying industrial cogeneration facilities could be accomplished by classifying such electricity providers as a separate type of "distribution utility" and make allowance allocations to them consistent with the methodology described in Appendix A of the 15-Day Modification package. This includes employing the appropriate factors for the cost burden imposed upon ratepayers (footnote 10 of Appendix A). Allowances allocated in this manner would require comparable treatment to those allocated to EDUs – placement into a Limited Use Holding Account, sold at auction and benefit returned to the cogenerator's retail ratepayers consistent with §95892(d)(3).

   Alternatively, the language of §95892(d)(3) should be revised to clarify the industrial power customers of cogeneration facilities must receive "equal

treatment" to EDU's own customers, just as "electricity service providers" and "community choice aggregators" are required to be treated equally to EDU customers.

6. ***Proposed Changes in the Mandatory Reporting Program Create Uncertainty in Reporting Responsibility and GHG Emission Compliance Obligation for Co-Located Hydrogen Plants –*** CARB has endeavored to mimic the mandatory reporting applicability and calculation methodology of the U.S. EPA Mandatory Reporting Rule in many ways. However, in one aspect of the reporting rule relevant to our operations in the state there appears to be a critical difference – when operational control is shared between entities, CARB's assignment of reporting (and hence compliance allowance retirement) obligation shifts to the entity holding the permit to operate from the relevant air pollution control authority. The EPA MRR does not have such a provision, making the obligation to report rest solely on the owner/operator of a facility. With the modifications proposed to the state MRR, particularly under §95114(a) which now is identical to the EPA MRR language [Subpart P of 40 CFR Part 98 §98.160(c)], some uncertainty as to the states' intent has been created.

   We seek confirmation that, notwithstanding the different interpretation by U.S. EPA, the responsibility for developing, submitting and certifying the GHG emissions data report under Article 2, §95104 of Title 17 and, subsequently, the obligation to satisfy an emission compliance obligation under Article 5, §95811(a), rests with the entity holding the permit to operate under the conditions described within the specific definitions of "Operational Control" under §95102 and "Operator" under §95802; and the regulatory primacy stated under §95000.5(d)(4).

Air Products hopes this detailed analysis of the proposed cap and trade 15-Day Modification package illustrates our critical interest and technical familiarity with the proper derivation of a hydrogen benchmark. We stand ready to provide further support to CARB staff in resolving the discussed concerns and working to resolve the inherent inequity created by allocating different amounts of allowances for the same product based on the property line where the product is produced. If you have any questions or need additional information to support Air Products position on these matters, please contact me by phone (610-909-7313) or email (adamskb@airproducts.com).

Respectfully,

Keith Adams, P.E.

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Environmental Manager – Climate Change Programs

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