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Re: Stage II Vapor Recovery Systems Issues Paper developed by
U. S. EPA Office of Air Quality Planning and Standards, Emissions
Monitoring and Analysis Division, Emissions Factors and Policy
Applications Group (D243-02), August 12, 2004

Dear Mr. Driscoll and Ms. Langdon:

Thank you for the opportunity to provide comments on the issue of Stage II vapor recovery systems and ORVR widespread use. API, NACS, SIGMA, and PMAA when combined represent the large majority of retail gasoline owners and operators in the US.

The American Petroleum Institute (API) represents more than 400 member companies involved in all aspects of the oil and natural gas industry. The Petroleum Marketers Association of America (PMAA) is a federation of 44 state and regional trade associations representing approximately 8,000 independent petroleum marketers nationwide. The National Association of Convenience Stores (NACS) is an international trade association comprised of more than 1,700 retail member companies operating more than 100,000 stores employing 1.4 million workers across the nation. The Society of Independent Gasoline Marketers of America (SIGMA) is an association of more than 250 independent motor fuel marketers operating in all 50 states. SIGMA members supply more than 28,000 retail outlets across the nation and employ more than 270,000 workers nationwide. These organizations' members own and operate retail gasoline facilities throughout the country and have a direct and material interest in these issues.

EPA's requirements for Onboard Refueling Vapor Recovery (ORVR) on all vehicles nationwide are a significant improvement over Stage II vapor recovery systems (VRS). The effectiveness of ORVR is required to be demonstrated using solid testing methodologies (Sealed Housing for Evaporative Determinations) in new vehicles and has also been confirmed in tests conducted using California testing methodologies on in-use vehicles at actual gasoline dispensing facilities (GDFs), without any need for regulatory agencies to have to hire personnel to inspect the systems on a regular basis. In contrast, testing procedures for determining the effectiveness of Stage II VRSs have changed several times, and EPA guidance shows that the in-use effectiveness is a function of the frequency of agency inspections. The Associations therefore appreciate and support the EPA's efforts to determine the definition of widespread use of onboard refueling vapor

recovery (ORVR). The determination will allow industry to plan its approach to installing, maintaining, and removing Stage II VRS from facilities where it is acknowledged that they are redundant with ORVR equipment on vehicles and therefore no longer needed.

Additionally, the determination of ORVR widespread use will benefit the consumer and individual jurisdictions that are maintaining or administering VRS or are considering VRS as a control strategy. The consumer is already paying for ORVR systems on their vehicles and should not have to pay again for the maintenance of redundant vapor controls at the gasoline dispensing facility (GDF). State environmental agencies should not be asked to implement Stage II VRS programs after widespread use is determined since ORVR and Stage II are duplicative technologies. Further, the implementation of both systems after widespread use will result in very few additional emissions being captured at a very high cost. To administer an effective Stage II vapor recovery program, a state must employ staff to establish an ongoing construction and operating permit program, perform field inspections of equipment, administer an effective enforcement effort and implement educational programs for operators and the general public. Because ORVR and Stage II are redundant systems, it makes more sense to allow states to focus their air quality improvement efforts on programs other than Stage II VRS that will provide more direct and significant benefit to air quality.

The EPA requested input and comment on the definition of widespread use, the application of that definition, how the combination of Stage II and ORVR can be used together for SIP credits and how certain California enhanced vapor recovery (EVR) equipment might be used for SIP credits and for new data. It is the intention of this paper to provide the studied and experienced perspective of owners and operators on these issues. To that end we have also retained the consulting firm Sonoma Technologies (STI) to provide a detailed technical review of the assumptions dealing with fugitive emissions and ORVR compatibility. Attached find their analysis.

Definition of Widespread Use

Of the four options presented in EPA's white paper, the Associations support a definition of widespread use that is based on the concepts included in either option (d) (the amount of gasoline dispensed to ORVR-equipped vehicles) or option (b) (the percentage of vehicle miles traveled by ORVR-equipped vehicles). Both options (b) and (d) merit further examination and reflect a common sense interpretation of the term "widespread use." In comparison, EPA's "preferred" option (c) (the point at which VOC emissions from ORVR-equipped vehicles equal emissions with Stage II VRS only) is overly complex, requiring data that may not be available and is difficult to assemble. Additionally, option c) is inconsistent with a common sense view of what widespread use means (and what Congress intended). Options (b) or (d) would provide a definition that

is based on data that is more assessable, consistent and verifiable, and thus more reliable than the emission factors required by option (c).

With respect to option (d), although EPA notes that the quantities of gasoline dispensed on a countywide basis are typically not available (p. 19 of EPA's Issues Paper), those quantities can be calculated from county-specific VMT data by using fuel economy data incorporated into the MOBILE6 model.

As EPA is aware, API has developed a spreadsheet that incorporates these MOBILE6 data and calculates the percent of gasoline sold that is dispensed to ORVR-equipped vehicles based on VMT data and other MOBILE6 input data (i.e., vehicle age distributions). Better still, this spreadsheet could be updated with information from the automobile manufacturers regarding when ORVR was actually implemented on the vehicles. That information was required to be submitted to EPA's Office of Transportation and Air Quality (OTAQ). If the manufacturer's information were available, it would be the best source of ORVR implementation data and more reliable than the minimum regulatory requirements identified in the EPA regulations.

Though option (d) is possibly not as clear-cut as others, we believe that it offers an accurate and consistent approach, and is appropriate since it uses existing data to determine when ORVR will be available on a widespread basis. Option (d) eliminates any changes that may occur due to differences of approach and does not require an absolute counting of the different types of Stage II systems.

Conversely, if option (c) were used the data necessary to determine widespread use could be very difficult to ascertain. For example, if a state knew that 30% of the systems were balance and 70% were vacuum assist, they would still need to identify the type of vacuum assist system installed in the field. As described in the API ORVR compatibility study¹ and the attached STI technical comments, some vacuum-assist systems are less compatible with ORVR than others. Accounting for these different systems and their relative vapor-emission control capabilities would be difficult at best.

Under options (b) and (d), to identify the appropriate percentage that equates to ORVR widespread use, EPA should examine when the percentage of ORVR systems installed is equivalent to the Stage II in-use efficiency that is in a given SIP. For example, if a state has an 85% in-use efficiency for the Stage II systems, once 87% of the vehicles have ORVR, the state would have widespread use. The 87% value is calculated by using MOBILE6 value of 98% efficiency for ORVR technology and then dividing the in-use efficiency (in this example 85%) by 98%. This approach is a direct and straightforward approach to identifying when Stage II systems and ORVR systems are redundant

¹ Reference the ORVR compatibility study for the Gilbarco Vapor Vac VRS, Feb 2004

technology. After the percentage is defined for each area, it would be appropriate to provide SIP credits for emission reductions due solely to ORVR.

Application of the ORVR Widespread Use Definition

The Associations support the use of an ORVR widespread use definition that is applied on an area-by-area and/or regional basis. This will provide the most direct and definitive approach for determining when ORVR is in widespread use in a particular area. There will likely be times where a regional approach is most appropriate. For example, because New Hampshire's air quality may have a direct impact on Massachusetts's nonattainment areas those two states would arguably have some relationship. Conversely, Pennsylvania only has one nonattainment area, Philadelphia that is required to have Stage II VRS. Therefore, Pennsylvania would be able to make its own determination of widespread use and would not necessarily be concerned about what was going on in New England.

Specifically for the Ozone Transport Region (OTR), the Associations agree with the EPA's assessment that an alternative baseline is needed that would provide the OTR with the opportunity to take credit for ORVR. The Associations stand ready to work with the EPA to determine how this can be best accomplished.

SIP Credits – the combination of Stage II and ORVR

The Associations do not support SIP credits for the combined use of Stage II after ORVR has been determined to be in widespread use. Neither do we support SIP credits for the implementation of Stage II in new areas. In areas where Stage II is already implemented, there may be a short timeframe in which it may be most effective to have both Stage II and ORVR. However, as discussed above, this time will be relatively short and the cost of maintaining Stage II is significant.

The Associations believe Congress recognized that Stage II and ORVR technologies were redundant and that is the reason they gave EPA the power to determine "widespread use." To that end, The Associations believe that the EPA should determine a definition for widespread use that follows Congressional intent.

The Associations cannot support the adoption of Stage II in new areas. The cost per ton VOC reduced by Stage II is rapidly growing as the ORVR is implemented in the vehicle fleet. As discussed in a paper developed for API by Tech Environmental for Tennessee², it was determined that the cost per ton of VOC reduced increases from \$10,000/ton in 2007 to \$26,000/ton in 2015. When adding in the cost for the state to administer the program the costs rise to \$11,000/ton and \$29,000/ton. These values include the

² Cost Benefit Analysis for Stage II VRS Control in the Knoxville EAC Area. Prepared for API by Tech Environmental, April 2004.

installation costs of at least \$22,000 per GDF for a balance system and \$37,000 per GDF for a vacuum assist system.³

Several moderate nonattainment areas have had the option to remove Stage II systems and have chosen to so. Michigan rescinded requirements for Stage II equipment and based on conversations with EPA staff, New Hampshire has asked for EPA approval to remove Stage II from automobile car rental agencies. Other jurisdictions are considering the removal of Stage II equipment and are avoiding the implementation of Stage II as a new air quality strategy. In fact, very few of the Early Action Compacts include Stage II as a local control.

As a prime example, Tennessee proposed rules to implement Stage II requirements in new counties but ultimately decided against doing so. In a personal communication from Dr. Wayne Davis, University of Tennessee, he indicated to API that, "...Stage II was not a significant strategy and would become even less significant as more and more vehicles are purchased that have the on-board evaporative control and larger activated carbon canisters--so we did not continue to pursue more refined calculations on Stage II. Also, we are not aware of any EAC [Early Action Compact] that actually used Stage II as a proposed strategy in the final analysis."⁴

CARB Certification of Stage II Systems

Beginning in 2000, the California Air Resources Board (CARB) started implementation of the enhanced vapor recovery (EVR) program for Stage I and Stage II systems. As part of the CARB EVR implementation, most of the pre-EVR certifications will eventually and officially be revoked by CARB. Meanwhile, most jurisdictions outside of California have specifically referenced and require CARB certified systems, equipment and testing procedures for their Stage I and/or Stage II regulations without qualification. If these individual jurisdictions fail to archive the pre-EVR references to the CARB certification program, these jurisdictions could, by default, adopt the CARB EVR program. Several states have recognized this dilemma and have archived the pre-EVR certifications and test procedures while allowing the voluntary installation of EVR systems. Another possible alternative to this dilemma is for the EPA to archive the pre-EVR certifications and test procedures.

Given the importance of maintaining an archive of pre-EVR certifications to both the affected agencies and the regulated community, the EPA should address this dilemma in the subject Issues Paper and should consider adopting CARB pre-EVR certifications and test procedures.

³ API Publication 1645, Stage II Vapor Recovery System Operations & System Installation Costs, August 2002

⁴ Email communication between Dr. Wayne Davis, University of Tennessee and Prentiss Searles, American Petroleum Institute, March 31, 2004.

SIP Credits – the use of California EVR equipment

The Associations do not believe that the CARB requirement to retrofit existing equipment or their requirement to implement other changes to existing systems to accommodate the new EVR program are necessary. As part of the EVR program, CARB requires that all existing, pre-EVR, Stage II (and Stage I) equipment meet the new EVR certifications on a fixed schedule. In many cases, this involves the removal and replacement of the existing equipment and/or the complete system. Since both pre-EVR and EVR systems when maintained as required are certified to recover 95% of the refueling emissions, we do not believe that replacement of existing systems is a reasonable approach.

Outside of California, of the 28 states and the District of Columbia, that have Stage II requirements, only the Puget Sound Clean Air Agency (PSCAA) in the State of Washington has chosen to require certain aspects of enhanced vapor recovery (EVR) for new GDFs and does not require retrofitting existing systems and equipment. Only Texas has chosen to require ORVR compatible equipment as part of their requirements. However, that requirement has a built-in requisite to review this new requirement.

The EPA must consider that if Stage II equipment is proposed to be installed in areas that are recently designated nonattainment for ozone it will be completely redundant with federally mandated equipment for vehicles very shortly thereafter. The proposal to offer SIP credits for installing new Stage II equipment will result in inappropriate and wasteful use of industry resources to install and maintain the equipment and, poor use of already stressed government time and resources to permit, inspect and provide outreach and oversight for installation and maintenance of the equipment. In addition, it will have negative implications for the consumer. The Associations recommend against any further consideration of issuing such SIP credits for new or expanded VRS programs.

Both EVR and pre-EVR systems must be maintained in order to operate properly. To that end, API developed Recommended Practice 1639, "Owner/Operator's Guide to Operation and Maintenance of Vapor Recovery Systems at Gasoline Dispensing Facilities." This document identifies recommendations for daily, weekly, monthly and annual inspection of existing Stage I and Stage II vapor recovery systems. Ultimately, it is industry's position that the regulated community should have the choice of which system, EVR or pre-EVR to install at new sites. Most states agree with this approach and have chosen to give industry the option of which system to use or have decided against the technology forcing requirements in the EVR program and have chosen to only allow pre-EVR systems.

The EPA states that they are considering providing SIP credits for the implementation of an in-station diagnostics (ISD) equipment, ORVR compatible equipment, and a mandate

for unihose dispensers. Below the Associations provide information for why we do not support the EPA's approach to using this equipment for SIP credits.

ISD – The Associations do not believe that ISD plays a measurable role in reducing emissions. Although CARB has attempted to quantify such emission benefits, they are directly related to a history of poor maintenance and inadequate enforcement. To address this issue, API developed the aforementioned RP 1639 to provide a guideline for operating and maintaining Stage I and Stage II vapor recovery systems. Each ISD system is tested and certified with an individual Stage II system. Therefore to require ISD systems would require that existing systems be replaced with EVR compliant systems. The Associations are also concerned about the ISD going from its intended purpose of alerting the operator of a problem to being used as an enforcement tool without regard for actual station performance or operations.

ORVR Compatibility – While it is appropriate for the EPA to examine Stage II ORVR-compatible technology for its potential to reduce emissions, the EPA must consider that the CARB definition for ORVR compatibility may need to be revisited. The Associations believe that it is necessary when reviewing this definition that the EPA consider existing performance (see comments from Sonoma Technology) and cost, then create its own definition of ORVR compatibility.

To understand this reasoning it is important to understand the history of the issue. CARB originally stated, "ORVR...compatible nozzles would add a 75% premium over the cost of conventional Phase II nozzles ... [with the approach that ORVR compatibility] design changes will be incorporated into the nozzle."⁵ The anticipated nozzle fix has not yet materialized and CARB now requires a whole new system replacement to address the ORVR issue. Retrofitting an existing station costs between \$22,000 and \$37,000 per station.⁶ CARB now requires a specific vacuum-assist system to be replaced with an "ORVR compatible system" when that system only has 0.02 lbs/1000 gallons of "incompatibility excess emissions."⁷ As pointed out in the attached comments from STI, when one considers the reduced fill pipe emissions due to ORVR, refueling ORVR vehicles with this system actually has a net positive emission reduction benefit.⁸

Further, API's research indicates that another system has at least 64% less emissions than CARB predicted. When the puff emissions associated with the removal of the gas cap prior to refueling (mentioned in STI's attached letter) are considered, the "incompatibility" emissions become negligible. Therefore, it is appropriate for the EPA

⁵ CARB EVR ISOR Feb 2000

⁶ API Pub 1645

⁷ August 5, 2002, CARB letter to API

⁸ August 24 letter Sonoma Technology Incorporated letter to API

to develop a new definition of ORVR compatibility that addresses the true costs of replacing equipment.

As discussed in the EPA issue paper, there are some systems that have an average A/L >1 and those systems may cause excess pressure in the UST system. Those systems, as identified in the issue paper, may require a vapor processor. However, it should be understood that positive pressure in the tank ullage, does not necessarily equate to vapor emissions.

Vapor processors are expensive. In API comments to CARB⁹, API criticized the EVR cost data for being unrealistically low as they show costs between \$7,500 and \$9,000. The comment points out that the OPW Vapor Saver is between \$19,000 and \$22,000.¹⁰ The CARB analysis bases their cost/benefit analysis on their low numbers and then assumes the uncontrolled emission factor is 8.4 lb/1000 gal versus the 7.6 lb/1000 gal factor that is given in the EPA TANKS model. The net result is that the cost per ton reduced is unrealistically low.

As discussed in the STI letter, the CARB approach to calculating fugitive emissions has changed significantly over the last few years and CARB's approach now penalizes a system for being vapor tight. The Associations do not support providing SIP credits for the implementation of any aspect of California's EVR program.

Unihose Mandate – The EPA suggests that SIP credits should be given for a unihose multi-product dispenser mandate. The Associations would like to understand the basis for this approach. In reviewing the CARB ISOR from 2000, it is not clear what basis the EPA would use to provide any SIP credits. CARB found that no EVR emission reductions would be lost under a proposal to remove a requirement for unihose dispensers¹¹ and therefore no credit should be taken for requiring unihose. It appears that CARB did make separate estimates of liquid retention (e.g., in nozzles) and associated emissions in Appendix D of the February 2000 ISOR.¹² However, the quantity of emissions due to liquid retention in California was very low and not adequately quantified. The Associations recommend against the issuance of SIP credits for any program that may mandate unihose dispensers over multihose dispensers.

⁹ API comments to CARB *December 2002*

¹⁰ See www.opw-fc.com, May 01, 2004, OPW list pricing

¹¹ <http://www.arb.ca.gov/regact/unihose/isor.pdf>, p. 19

¹² <http://www.arb.ca.gov/regact/march2000evr/appd.xls>, see worksheet labeled "Liq retain"

New Issues raised during the EPA September 20 Meeting

Vapor Recovery and Subsurface Gasoline Vapors – At the September 20, 2004 public hearing, the EPA introduced the issue of UST vapor leaks from UST systems. There have been some isolated incidents of groundwater contamination allegedly from UST system vapor leaks. A few recent papers have used some preliminary data to bolster these allegations but they have also acknowledged the need for further research and

information on this matter. API currently has a group of experts working on this issue and believe more needs to be done relative to identifying the significance and the circumstances that are related to such potential threats to ground water before any widespread regulatory actions are considered. Relative to this particular issue regarding ORVR widespread use, it is appropriate to say that the eventual closure of Stage II in favor of ORVR will eliminate multiple issues related to the maintenance and operation of Stage II systems.

ORVR on Large Sport Utility Vehicles – At the public meeting several hearing participants indicated SUV's larger than 8500 lbs would not receive ORVR systems. In reviewing the Tier 2 Standards, that is not the case. Specifically the rule states that, "(the) Tier 2 evaporative emissions standards and existing HLDT ORVR requirements [are applied to] MDPV's... (And, the) ORVR requirements currently exist for HLDTs and are to be phased-in through model years 2004-2006."¹³ Medium-Duty Passenger Vehicles (MDPVs) include large SUVs.

Conclusion

The Associations support the EPA in its effort to determine an appropriate and defensible definition for ORVR widespread use and a reasonable and rational way to implement that definition. EPA's efforts are the first step to understanding and helping various states jurisdictions and the industry to plan for when existing Stage II vapor recovery systems can be removed. However, we believe that any proposal for supporting the expansion of Stage II vapor recovery systems is bad for industry, bad for the government and bad for the consumer and should not be pursued.

As older vehicles are replaced with newer ones, the percentage of ORVR vehicles on the road will continue to increase. Thus, maintaining Stage II controls at gasoline stations will produce less and less benefit (VOC reductions) at a higher and higher cost. ORVR is the technology that makes the most sense to reduce VOC emissions during refueling and we stand ready to work with the EPA to determine a definition that meets the original intent of widespread use.

¹³ February 10, 2000 Federal Register, page 6751

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We appreciate the opportunity to provide you with our comments and look forward to working with you. If you have any questions you can contact Prentiss Searles, API at 202/682-8227 or searlesp@api.org, Joeseeph Green, Collier Shannon Scott for NACS/SIGMA at 202/362-8849 or JGreen@colliershannon.com or Laura Stewart, PMAA at 703/351-8000 or lstewart@pmaa.org.

Respectfully submitted by,

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