CONTROL MEASURE SUMMARY FOR
Portable Fuel Containers

Control Measure Summary: Portable Fuel Containers Commonly referred to as "gas cans," PFCs come in a variety of shapes and sizes with nominal capacities ranging in size from less than one gallon to over six gallons. Available in metal or plastic, these products are widely used to refuel residential and commercial equipment and vehicles when the situation or circumstances prohibits direct refueling at a service station. PFCs are used to refuel a broad range of small off-road engines and other equipment (e.g., lawnmowers, chainsaws, personal watercraft, motorcycles, etc.). This control measure updates the OTC model rule to better reduce evaporation of fuel vapors through Portable Fuel Container (PFC) openings and permeable surfaces.	**VOC Emissions (tons/year) in Ozone Transport Region**	
2002 existing measure: None	**VOC** 2002:	75,929
On-the-Books measure: Adopt OTC Model Rule for PFCs *Emission Reductions*: Assume OTC Model Rule in all OTR states (Total control = 28.6%, based on CE=65%, RE=80%, RP=55% {10-yr turnover beginning 2004}), and 52% when fully implemented *Control Cost*: $581 per ton *Timing of Implementation*: Assuming 2004 effective date of rule and 10% per year turnover, full reductions are achieved in 2014 *Implementation Area*: OTR	**VOC:** 2009 Reduction: 2009 Remaining:	 <u>-21,716</u> 54,213
On-the-Way measure: Proposed federal HAP mobile source Reg (Feb 28, 2006) rule – similar to CARB 2005 amendments and will regulate fuel can permeability to 0.3 grams of hydrocarbons per gallon per day (OTC Model Rule has 0.4 grams per gallon per day) *Emission Reductions*: EPA estimates about a 9% reduction nationwide in 2009. However, OTC Model Rule already has many features of the national rule, and since the EPA rule would not become effective until 2009, very little reductions would be expected in the OTR in 2009. *Control Cost*: $180 per ton without fuel savings; over the long term, fuel savings outweigh costs. *Timing of Implementation*: Assuming Jan.1, 2009 effective date of rule and 5% per year turnover, full reductions are achieved in 2014. *Implementation Area*: OTR	**VOC:** 2009 Reduction: 2009 Remaining:	 <u>negligible</u> 54,213
Candidate measure: Adopt the CARB 2005 amendments broadening PFC definition to include kerosene containers and utility jugs, and other changes needed to make OTC Model Rule consistent with CARB requirements *Emission Reductions*: CARB estimates these amendments are expected to reduce ROG emissions by 16.5 tpd by the year 2015 (after full penetration into the marketplace), roughly equivalent to a 29.7 tpd reduction in the OTR after full 10-year turnover to compliant cans; since reg won't be adopted in OTR until 2007, there will be only a 2-year penetration of new cans by 2009, so 20% of the full 29.7 tpd emission reductions will occur in 2009. *Control Cost*: CARB estimate is $800 to $1,400 per ton reduced *Timing of Implementation*: Assumes rules become effective 1/1/07 *Implementation Area:* Entire OTR	**VOC:** 2009 Base: 2009 Reduction: 2009 Remaining:	 54,213 <u>-2,168</u> 52,045

Policy Recommendation of State/Workgroup Lead: Adopt the CARB 2005 amendments by 12/1/06 and implement these standards in 2007. However, the OTC control measure should reflect the federal proposed 0.3 grams of Hydrocarbon emissions per gallon per day, rather than the CARB rule that limits at 0.4 grams of ROG per gallon per day in 2007 (moving to 0.3 grams per gallon per day in 2009). This regulation should be modeled at 20% penetration in 2009.

Brief Rationale for Recommended Strategy: The CARB control measures contains spill proofing controls that are not provided in the Feb. 28 proposed federal rule, therefore the OTC states should work toward a Model rule with CARB spill proofing standards, and proposed federal permeability standards.

Changes to California Air Resources Board's Gas Can Regulations

The California Air Resources Board (CARB) 1999 clean gas can regulation sets specifications for how gas cans are manufactured. The regulation reduces emissions from three main processes: evaporation of fuel vapors through Portable Fuel Container (PFC) openings, permeation of fuel through PFC container walls, and spillage during fueling events. This regulation was fully implemented in 2001 and was projected to result in a reduction of about 70 tpd of reactive organic gases (ROG) emissions statewide by 2007. However, after four years of implementation and a comprehensive assessment of the program, ARB staff has identified problems that are reducing the effectiveness of the regulations.

On September 15, 2005, the California Air Resources Board amended the 1999 clean gas can regulation to address all the problems it had previously identified. Specifically, the amendments were necessary to address: 1) the fact that the original rule did not address the use of utility jugs and kerosene containers that are sometimes offered for sale in place of gasoline cans, and 2) consumers complaints regarding spillage from the new PFCs. In researching the consumer complaints, ARB staff discovered that while the original regulation has been successful in reducing emissions from evaporation and permeation, emissions from spillage continued to occur. This is a direct result of the spout design.

The amendments are:

1. Modify the existing spout regulations to improve spillage control.
2. Include a voluntary Consumer Acceptance Program to support and encourage user-friendly PFC designs (i.e., allowing the use of the ARB Star Rating system to clearly identify superior designs as determined by users).
3. Establish a certification program for PFCs to improve product quality.
4. Expand the definition of a PFC to include presently non-compliant containers by requiring the redesign of utility jugs and kerosene containers, which to date are not designed for fuel use but are often sold alongside low emission fuel containers. ARB staff estimates that 13 tpd of hydrocarbons can be reduced by restricting the sales and use of utility jugs as gasoline containers. In addition, this covers kerosene cans, which are also being used in place of certified gasoline cans because they are often less expensive. ARB estimates saving 3 tpd as a result of controlling kerosene cans.
5. Combine the evaporation and permeation standards into a new diurnal standard to simplify certification and compliance testing; on initial standard of 0.4 grams ROG /gallon-day become effective July 1, 2007 with the final standard of 0.3 grams/gallon-day effective January 1, 2009.
6. Adopt new PFC test procedures to streamline testing.

While ARB staff does not expect these changes to affect the cost of gasoline cans, the price of kerosene cans could rise to as much as $8.50 per container once the regulations are implemented. CARB also estimates the cost-effectiveness to be between $0.40 to $0.70 per pound.

These amendments are expected to reduce ROG emissions by more than 18 tpd (this is in addition to the 70

tpd from the original rule) by the year 2015, it will also assume that the anticipated reduction from the original regulation will be realized by this action. These changes to the existing regulation will not only further reduce emissions but also result in containers that are easier and better accepted by the public.

Summary of Proposed federal HAP mobile source Regulation (Feb 28, 2006) rule:

EPA's proposed program is very similar to the California program with the 2005 amendments. Although a few aspects, EPA believes that manufacturers would be able to meet both EPA and California requirements with the same gas can designs.

To estimate the VOC emissions from gas cans assuming the proposed rules are implemented, EPA made the following three changes to the base year inventory estimates:

1. Since the proposed rule makes it unlikely for a newly designed gas can to be left in the "open" position, EPA altered the distribution of the cans (from the California survey) to 100 percent "closed." This change reduced the VOC emissions from both evaporation as well as spillage during transport. (Note, the 13 states plus the District of Columbia that are adopting the California gas can rules already had this change applied. So, this affected the VOC emissions from only gas cans in the other 37 states.)
2. This proposed rule also produces changes (to the design of the individual gas cans) that are expected to reduce the spillage by 50 percent (when these gas cans are used to refuel individual pieces of equipment). Again, this emission reduction was already included in the base case for those states that are adopting the California rules. Therefore, only the gas cans in the remaining 37 states contributed to our estimated reductions of spillage.
3. Finally, the proposed rule includes a maximum emission rate of 0.3 grams per gallon per day for the new gas cans. EPA used this emission standard to estimate the total permeation plus evaporative emissions from each newly designed gas can. Only California has adopted (or plans to adopt) this requirement. Thus, the effect of this proposed national requirement applies to the remaining 49 states.

EPA estimates that the long-term annual cost per ton to be about $180 per ton without fuel savings, and estimates that fuel savings will outweigh the costs in the long-term.

REFERENCES:

On-the-Books Measure (OTC Model Rule):

E.H. Pechan & Associates, Inc., *Control Measure Development Support Analysis of Ozone Transport Commission Model Rules*, March 31, 2001. Much of the analysis in this report was based on CARB's analysis for CARB's original 1999 PFC rule , which estimated a 75% reduction that would be fully achieved after 5 years (CARB's assumed life cycle for PFCs). The OTC used a more conservative 10-year turnover rate in its analysis. CARB later revised the reductions to 65% because the expected reductions in the permeation and spillage categories have fallen short due to due operator error or equipment malfunction. Table II-5 of the Pechan report shows the cost of compliance to be $581/ton.

On-the-Way Measure (Proposed 2/28/06 Federal Rule):

U.S. EPA Office of Transportation and Air Quality. *Estimating Emissions Associated with Portable Fuel Containers (PFCs), Draft Report*, EPA420-D-06-003, February 2006.

U.S. EPA Office of Transportation and Air Quality. *Draft Regulatory Impact Analysis: Control of Hazardous Air Pollutants from Mobile Sources*, EPA420-D-06-004, February 2006.

Candidate Measure (CARB 2005 Amendments):

California Air Resources Board. *Final Statement of Reasons for Rulemaking, Including Summary of Comments and Agency Response: PUBLIC HEARING TO CONSIDER AMENDMENTS TO THE PORTABLE FUEL CONTAINER REGULATIONS.* September 15, 2005. Estimated a 16.5 ton per day reduction compared to existing regulation. Since OTC's model rule is very similar to the CARB's original rule, and further assuming that PFC emissions are roughly proportional to population, CARB's 16.5 ton per day reduction was prorated to the OTC region based on the ratio of OTR 2002 population (63 million) to CA 2002 population (35 million) yielding 29.7 tons per day in the OTR (roughly equal to 10,840 tons per year).

California Air Resources Board. *Initial Statement of Reasons for Proposed Amendments fot he Portable Fuel Container Regulations.* July 29, 2005. Table 5.1 shows the cost-effectiveness of the proposed amendments to be $0.40 to $0.70 per pound ($800 to $1,400 per ton)