

State of California  
Environmental Protection Agency  
AIR RESOURCES BOARD

**PORTABLE FUEL CONTAINER  
SPILLAGE CONTROL REGULATIONS**

**FINAL STATEMENT OF REASONS**

June 2000

State of California  
AIR RESOURCES BOARD

Final Statement of Reasons for Rulemaking,  
Including Summary of Comments and Agency Response

**PUBLIC HEARING TO CONSIDER THE ADOPTION OF PORTABLE FUEL  
CONTAINER SPILLAGE CONTROL REGULATIONS**

Public Hearing Date: **September 23, 1999**

Agenda Item No.: **99-7-1**

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## INTRODUCTION AND BACKGROUND

This rulemaking was initiated by the publication on August 6, 1999 of a notice of public hearing to consider the adoption of portable fuel container spillage control regulations. Concurrently, the Staff Report entitled *Initial Statement of Reasons for Proposed Rulemaking* (Initial Statement of Reasons for Proposed Rulemaking, hereafter "Staff Report"), was made available upon public request from the Air Resources Board (ARB or Board) as required by Government Code SS 11346.2. Included in the Staff Report was the regulatory language initially proposed by the staff and a statement of rationale for the proposal.

On September 23, 1999, the ARB conducted a public hearing to adopt regulations to reduce emissions from the use of portable fuel containers, or "gas cans." At the conclusion of the hearing, the Board unanimously adopted Resolution 99-33 approving the adoption of "Portable Fuel Container Spillage Control Regulations". This regulatory action as originally proposed is described in detail in the Staff Report released to the public on August 6, 1999. At the hearing the Board approved the proposed regulations with various modifications to the originally proposed language. These revisions were incorporated into the regulatory language by way of two separate 15-day notices, which were publicly available on November 19, 1999, and May 12, 2000, respectively. These notices centered on changes to the fill level and flow rate requirements, the addition of a labeling requirement for products that cannot be used to refuel on-road motor vehicles, and the placement of required text to adhere to the labeling requirements on either the spill-proof systems or the spill-proof spouts.

Appendix A to Resolution 99-33 describes the addition of Article 6, Portable Fuel Containers and Spouts, to Title 13, California Code of Regulations (CCR), as suggested by the staff and approved by the Board. In accordance with section 11346.8 of the Government Code, the Board in Resolution 99-33 directed the Executive Officer to make the text of the modified regulations available to the public for a supplemental written comment period of 15 days. He was then directed either to adopt the amendments with such additional modifications as may be appropriate in light of the comments received, or to present the regulations to the Board for further consideration if warranted in light of the comments.

The text of the regulatory modifications was made available to the public for a 15-day comment period by issuance of a Notice on November 19, 1999. The modifications discussed in that notice included: changes in the fill level requirements; extending the fuel flow rate requirement of one-half gallon per minute to include containers with a nominal capacity of 1.5 gallons; an option that would allow manufacturers to offer containers greater than 1.5 gallons but less than or equal to 2.5 gallons nominal capacity with one-half gallon per minute flow rates as well as the originally proposed 1 gallon per minute flow rate; and a labeling requirement for

products that cannot be used to refuel on-road motor vehicles. The staff also made other modifications throughout the regulations and test procedures to correct errors and improve clarity. During this 15-day comment period, 4 written comments were received. After considering the comments, a second “Public Hearing to Consider the Adoption of Portable Fuel Container Spillage Control Regulations” was issued with further modifications on May 12, 2000. With the addition of two new labeling requirements included in the first series of modifications to the originally proposed regulatory language, manufacturers may have had difficulties complying with all of the labeling requirements due to the physical limitations of some smaller spill-proof spout designs. The second notice modified the regulatory language with respect to the placement of the required text on the spill-proof spouts. One additional comment was received during the 15-day comment period for the Second Notice of Modified Text. All comments received regarding the modifications to the original proposal are discussed separately in Section III and IV in this Final Statement of Reasons (FSOR).

A complete description of the proposed regulatory action and its rationale is contained in the Staff Report and the information made available in the supplemental 15-day Notices. These documents are incorporated by reference herein. This FSOR updates the Staff Report by identifying and addressing comments received regarding the originally proposed regulations and the associated modifications that were proposed in the 15-day mailouts.

**Incorporation of Test Procedures.** The amended test procedures are incorporated by reference in Title 13, CCR, Section 2477 and are identified by title and date. The test procedures are readily available from the ARB upon request and were made available during the subject rulemaking in the manner specified in Government Code Section 11346.7(a).

The test procedures are incorporated by reference because it would be impractical to print them in the CCR. The existing ARB administrative practice has been to have the test procedures incorporated by reference rather than printed in the CCR because these procedures are highly technical and complex. Because the ARB has never printed complete test procedures in the CCR, the directly affected public is accustomed to the incorporation format utilized therein. The ARB’s test procedures as a whole are extensive and it would be both cumbersome and expensive to print these lengthy, technically complex procedures for a limited audience in the CCR.

**Economic and Fiscal Impact.** In developing the regulatory proposal the ARB staff evaluated the potential impacts on private persons and businesses. As with any other regulatory item, the staff acknowledges that there could be potential impacts associated with this program. These impacts were fully disclosed and discussed in the Staff Report (pp. 19-22). Any business involved in the manufacturing, sale, distribution, or use of portable fuel containers and spouts could potentially be affected by the

proposed regulations. However, the proposed regulations are not expected to have a noticeable adverse impact on the affected businesses or on consumers. Furthermore, the proposed regulations will not have a significant adverse economic impact on the ability of California businesses to compete with businesses in other states.

The cost-effectiveness of the proposed regulations is \$2.01 per pound of Reactive Organic Gas (ROG) reduced. Assuming that manufacturers are able to pass on the entire cost of compliance to the portable fuel container purchasers, this corresponds to an average price increase of approximately \$6.00 to \$11.00 per container. This amounts to an annual increase of about \$1.20 to \$2.20 in the price of a container over its useful life. Since portable fuel containers have a current retail price of \$4.25 on average, a price increase of this magnitude is unlikely to have a significant adverse impact on the demand for these products. Furthermore, the cost-effectiveness of the proposal is well within the range of other regulatory proposals presented by the ARB.

During the September, 1999 hearing, several gas can manufacturers expressed concerns about their ability to meet the proposed permeation standard. While the Board adopted the permeation standard, they directed staff to provide a status report on the manufacturers' progress towards the development of a fully compliant spill-proof system. Staff continued to review the available information and track the progress of individual manufacturers. Several have indicated that they will have compliant spill-proof spouts ready by the regulations implementation date of January 1, 2001. This information was provided to the Board at a public meeting held March 28, 2000. No further action was taken by the Board.

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district, the costs of which are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code. The regulations apply to persons who sell, supply, offer for sale, or manufacture for sale in California portable fuel containers or spouts or both portable fuel containers and spouts. Therefore, State and local government entities will not incur additional costs or savings in reasonable compliance with the proposed regulations since they do not manufacture or distribute portable fuel containers. There may be a minimal secondary impact for such agencies purchasing containers not otherwise exempted.

**Consideration of Alternatives.** The proposed rulemaking was the result of extensive discussions and meetings involving staff and the portable fuel container and spout manufacturers, off-road equipment manufacturers and representatives, petroleum company representatives, environmental consultants, and Underwriters Laboratory. Staff considered all of the alternatives proposed by the stakeholders, and was able to incorporate many of their suggestions in the rulemaking effort. The Board rejected

several major alternatives for the reasons described in the Staff Report at pages 27-33, and in responses in Sections II and III. Several modifications proposed during the comment periods were incorporated into the final regulations. The Board has further determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed or would be as effective and less burdensome to affected private persons than the action taken by the Board.

**Comparable Federal Regulations.** Currently, there are no comparable federal regulations that address the ROG emissions associated with the use of portable fuel containers. The U.S. Environmental Protection Agency (U.S. EPA) does not at this time contemplate the promulgation of regulations to control emissions from portable fuel containers.

**Overview of Comments.** At the September 23, 1999 hearing, oral testimony was received from 12 individuals. Of the entities providing oral testimony, 8 submitted written comments as well. Additional written comments received by the hearing date were submitted by other organizations. During the public comment period, the Board received a total of 11 written comments addressing concerns with the proposal, in the form of both letters and electronic mail. The comments and the ARB responses are listed below. A complete list of all comments is included in Section VI.

Approximately 10 oral and written comments were received in support of the adopted regulations. These commenters included two petroleum manufacturers and several environmental organizations. These statements of support from oral and written comments are generally not summarized below, unless the comment has relevance to another comment or response.

Set forth below is a summary of each objection or recommendation made regarding the specific regulatory actions proposed, together with an explanation of how the proposed action was changed to accommodate each objection or recommendation, or the reasons for making no change. The comments have been grouped by topic, whenever possible. Comments not involving objections or recommendations specifically directed toward the rulemaking or to the procedures followed by the ARB in this rulemaking are not summarized below.

## **II. SUMMARY OF PUBLIC COMMENTS AND AGENCY RESPONSES - COMMENTS PRIOR TO OR AT THE HEARING**

This section, II, summarizes and responds to comments that the ARB received during the period required by Government Code Section 11346.4. It addresses oral comments made at the September 23, 1999, public hearing and written comments not duplicative of comments given orally.

## A. Performance Standards

### 1. Automatic Closure

1. **Comment:** The automatic closure requirement is not technically justified. (John Kowalczyk)

**Agency Response:** The ARB disagrees. The need for the automatic closure performance standard is discussed at length in the Staff Report on p. 8. Ensuring that portable fuel containers automatically remain closed and sealed when not in use is a critical element in mitigating the effects of diurnal evaporative emissions from open containers, as well as in eliminating the possibility of fuel spillage during transport and storage. Surveys conducted by the ARB indicate that 34% of residential and 49% of commercial gas cans are stored with either open spouts or secondary vents, or both. Approximately 70% of all emissions attributable to the normal use of gas cans occur from some part of the gas can being left open by the user.

The automatic closure performance standard, together with the one opening performance standard that eliminates secondary vents, will ensure that the new portable fuel containers remain closed and sealed when not in use without any interaction from the user. Several manufacturers have products on the market that have this feature making it impossible to accidentally leave the spout open.

Furthermore, while conducting interviews with commercial users of conventional gas cans staff observed several spilling fuel while trying to place the spout of the gas can into the equipment fuel tank opening. Automatic closure allows the user to invert the gas can and place the spout into the fuel tank opening without any fuel spillage. The automatic closure performance standard will also help to mitigate refueling spillage.

2. **Comment:** The automatic closure requirement is not incrementally cost effective. (John Kowalczyk)

I question the cost-effectiveness of requiring a self-closing spout cap. (Envirocan, Inc., letter dated February 9, 1999)

In regulating consumer products, I believe your Board would expect you to propose a regulation that is cost-effective and provides a fully safe product that serves the needs of the consumers. I believe that this criteria can only be met if non-automatic closing spouts are included in the regulation. Non-automatic closing spouts are more cost-effective than automatic-closing spouts by about a factor of two. I trust that you will include a disclosure and full analysis of the



cost-effectiveness and other technical aspects of this non-automatic closure issue in the staff report that goes to the Board supporting the spillage control rule. (Envirocan, Inc., letter dated July 12, 1999)

Let's talk about costs. There are a lot of poor people in this State. Your staff is saying that it is going to take a \$3.79 can all the way up to \$12. That is quite a bit. (John Kowalczyk)

**Agency Response:** While the ARB agrees that the cost of portable fuel containers will increase, as described in the Staff Report (pp. 22-27) the ARB has met its California Administrative Procedure Act requirements for economic analysis. This analysis included the increase in costs associated with the automatic closure performance standard. As discussed during the September 23, 1999, public hearing, due to a revision in the emissions inventory estimates following the publication of the Staff Report, the cost effectiveness of the adopted regulation is \$2.01 per pound of ROG removed and not \$1.72 as reported in the Staff Report on p. 27 (see Transcript pp. 23 - 24). This includes the automatic closure requirement and should be compared with \$5 per pound of HC + NO<sub>x</sub> reduced, which is a typical value for recent emission control activities in California, and to \$11 per pound which is considered an upper threshold.

While certain non-automatic closing spouts may be less expensive than those meeting the automatic closure performance standard, they do not provide the same level of emission reduction (see Comment 1). The ARB is required to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to attain state standards at the earliest practicable date (HSC Section 43018). Because the automatic closure requirement is both technically feasible and cost effective, staff presented the most cost effective proposal to the Board for its approval.

3. **Comment:** The automatic closure requirement is going to result in real world emissions that are greater than what your staff is showing. (John Kowalczyk)

**Agency Response:** The ARB disagrees. The implication of the comment seems to be that the ARB has erred in its emissions estimates regarding the effectiveness of the automatic closure requirement. However, since several commercially available spouts were available with automatic closure during the development of the regulations, the ARB conducted extensive tests on their effectiveness as part of a 'spill-proof' system. This was the basis for determining the percent reduction of uncontrolled portable fuel container ROG emissions attributable to the adopted regulations as shown in the Staff Report on p. 25. As previously stated in Comment 1, the ARB believes that the automatic closure

performance standard provides the best means of ensuring that the new gas cans remain closed and sealed when not in use.

4. **Comment:** The majority of the cans that are left open are because either there is no cap or they have lost the cap. (John Kowalczyk)

When you have a tether on your cap, the majority of the time it is going to be closed. (John Kowalczyk)

**Agency Response:** The ARB considered these arguments throughout the regulatory development process. The statements are not supported by the survey data collected by the ARB which was used to develop the emissions inventory, and no stakeholder presented statistically valid survey data to verify these statements.

During engineering evaluations of conventional gas can performed by ARB, including those with tethered caps, it was determined that even if the tethered caps were closed, several still allowed fuel vapors to vent to the atmosphere. Some of the gas cans evaluated had poor thread designs on the caps and closures which would not allow them to completely seal against the fill neck. Even those evaluated that create an adequate seal when closed still require the user to ensure that the caps are sufficiently tightened so that they remain sealed. If users of these products do not sufficiently tighten the caps, fuel vapors can vent to the atmosphere even though the cap is “closed”. However, the automatic closure devices evaluated by the ARB ensured that the gas cans remained closed and sealed when not in use without any additional interaction from the user.

In addition, one commenter incorrectly interpreted the ARB survey data collected to develop the emissions inventory (Transcript at p. 70, John Kowalczyk) in an effort to validate these comments. The ARB survey was conducted to determine population and usage information on all gas cans in the state, not just those with tethered caps. Respondents of the survey were not specifically asked about gas cans with tethered caps. Therefore, it would not be statistically valid to base any information regarding the storage, use, or other characteristics of gas cans with tethered caps on this sample set.

5. **Comment:** None of these so-called complying spouts with the automatic closure will fit some automobile fill pipes. (John Kowalczyk)

Non-automatic closing spouts universally fits all types of target fuel tanks while existing automatic-closing spouts will not fit any automobile fill-pipe. (Envirocan, Inc., letter dated July 12, 1999)

**Agency Response:** The ARB disagrees with the commenters assertions that none of the products can be used to refuel on-road motor vehicles. Several of the commercially available spouts with automatic closure were used to dispense fuel into automobiles by staff. In addition, the issue of on-road vehicle refueling was discussed in the Staff Report on p. 6. However, the ARB agrees that this may be an issue for consumers at the point of purchase, specifically their ability to identify those products that could be used to dispense fuel into an on-road vehicle. Therefore, as noted at the Board hearing, the ARB has included an additional labeling requirement to identify products that cannot be used to dispense fuel into an on-road vehicle (see Section 2475 (g) in the First 15-Day Notice).

6. **Comment:** Let me show you some lawn and garden engines that have obstructed fill pipes. Certainly some of these and maybe all of these devices that are currently marketed are going to have a difficult time, if not an impossible time filling these types of systems. (John Kowalczyk)

CARB should also consider that a firm requirement for a self-closing spout appears to be limiting designs to systems that will not fit automobile fill-pipes, not fit many types of obstructed fill-pipes on non-road engines and not allow adjustable fill levels which are necessary, particularly for shallow gas tanks like those on some lawn edgers and chain saws. (Envirocan, Inc., letter dated February 9, 1999)

**Agency Response:** We agree with the commenter's assessment that there are many different configurations of fill pipes and gas tanks requiring gas can manufacturers to carefully consider the design of the spout they include with their gas cans. Manufacturers of conventional gas cans currently provide consumers with a wide range of products and designs in an effort to capture market share by meeting the refueling needs of the consumer. Even so, consumers will undoubtedly find that their conventional gas can may not fit every application. In these instances consumers generally purchase a different style of conventional gas can or use a funnel to dispense fuel into the fuel tank. While we believe that manufacturers have sufficient lead time to develop the wide range of products necessary to meet these different needs, the automatic closing spout requirement does not preclude consumers from continuing to use a funnel for these special applications.

The ARB believes that automatic closing spouts will be able to meet the overwhelming majority of consumers refueling needs based on our engineering evaluation of several commercially available models. At least one spout manufacturer testified that he uses an automatic closing spout to refuel the

example of a piece of equipment with an obstructed fill pipe used by the commenter (Transcript at p. 123).

7. **Comment:** When these systems are set in the sun and they are closed, they are going to build pressure. So, you are going to be surprised sometimes when that pressure is built up and you have a puff and gasoline is going to come out. (John Kowalczyk)

Non-automatic closing spouts will not create an emission and safety hazard from blow out of residual gasoline in small tanks from relief of pressure built up in containers with automatic-closing spout caps ( a problem cited by small engine manufacturers at ARB's recent spillage control workshop). (Envirocan, Inc., letter dated July 12, 1999)

Now I have a can here that I have pressurized at about 5 psi. That's a pressure that's easily obtainable if you set this in the sun on a 110 degree day, and I'm going to show what happens (John Kowalczyk, Transcript at p. 78).

**Agency Response:** The ARB agrees that since the automatic closure performance standard requires containers to remain closed, they will at times develop positive or negative internal pressure as they are subjected to changes in ambient temperature. This was discussed in the Staff Report (p. 31). However, we do not agree with the commenter's characterization that automatic closure will create an emission and safety hazard. Users of these products will at times find it necessary to manually vent the container by following the manufacturers instructions prior to conducting a refueling event. The possible release of fuel vapor was quantified by tests conducted during the development of the regulations and included in the estimated emissions inventory. During these tests staff determined that the containers never exceed an internal pressure of 5 pounds per square inch even under the most severe temperature conditions. This is far less than the containers' Underwriters Laboratory® (UL) certification test requirement of 30 pounds per square inch to which manufacturers almost universally certify their gas cans before sale in California.

During the Board hearing one of the commenters demonstrated their concern by pressurizing a small gas can with compressed air with an attached automatic closing spout. They then inverted the can and quickly opened it into a small fuel tank containing water without first venting the container, resulting in a spray of compressed air and water being blown out of the fuel tank (Transcript p. 77). We believe that this potential problem was adequately addressed in the Staff Report (p. 31) and by a manufacturer of automatic closing spouts during the hearing (see Transcript pp. 122-123). Spouts of this type have been sold in excess of ten years with no consumer complaints of fuel blow-back from the

target fuel tank (Staff Report p. 31). It should be noted that when a gas can has positive internal pressure to this extent it is visibly obvious and prompts the user to perform the manual venting operation previously mentioned.

8. **Comment:** Let's talk about some other problems. Fill level and shallow tank problem. These systems that are so-called compliant (those with automatic closure) will not meet your performance specs for fill level. (John Kowalczyk)

CARB should also consider that a firm requirement for a self-closing spout appears to be limiting designs to systems that will not fit automobile fill-pipes, not fit many types of obstructed fill-pipes on non-road engines and not allow adjustable fill levels which are necessary, particularly for shallow gas tanks like those on some lawn edgers and chain saws. This type of a limitation could undermine the entire program from consumer backlash. (Envirocan, Inc., letter dated February 9, 1999)

Non-automatic closing spouts provide fuel flow rates and fill level control closer to what consumers are used to than existing automatic-closing spout cap systems. Thus will provide a greater disincentive to tampering, which could defeat the automatic shutoff system and lead toward higher emissions than from non-automatic closing spouts. (Envirocan, Inc. letter dated July 12, 1999)

If you try the smallest available nozzle now into this particular tank, you will not fill it half full. (John Kowalczyk, Transcript at p. 80)

**Agency Response:** The ARB agrees with the commenters' assertion that consumers may be tempted to modify these new products if they are not satisfied with their performance, which could result in higher than anticipated emissions. This is why the adopted regulations include performance standards for fill levels as discussed in the Staff Report (pp. 7-8). The fill level performance standards are designed to ensure that the new gas cans provide consumers with products that fill equipment fuel tanks to a sufficient level without overflowing.

The ARB disagrees with the comment that compliant systems cannot meet the performance specs for fill level. A compliant system, by definition, must meet all of the performance standards, including the fill level performance standards. The commenter seems to be referring to several products that were developed and manufactured prior to the adoption of the regulations. The technology exists to allow these products to be redesigned to meet the fill level performance standards if they do not currently meet them, while maintaining compliance with the automatic closure performance standard. Furthermore, while the adopted regulations do not include a requirement for adjustable fill levels, the ARB

believes that the technology exists that would allow the manufacturers to develop a spout that would provide adjustable fill levels and meet the automatic closure performance standard.

Finally, as to the statement made by the commenter regarding the smallest available nozzle used during the demonstration performed at the hearing. This type and size of spout was included in the engineering analysis performed by the ARB during the development of the regulations (see Comments 3 & 4). Staff used spouts similar to the one used during the commenters demonstration, to fill several small fuel tanks found on hand-held equipment to the level required by the regulations.

9. **Comment:** The Automatic closure is defined as being “designed to reduce emissions from evaporation and potentially eliminate transport and storage losses that would otherwise occur in normal use”. What percentage of current evaporation losses is the new technology expected to remove? Do storage losses refer to diurnal losses? This function may require some consumer maintenance, for which the consumer must be educated. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** The automatic closure performance standard, together with the one opening performance standard, will provide a 70% reduction in evaporative emissions as discussed in the Staff Report on p. 25. Storage losses are diurnal evaporative losses as discussed in the Staff Report on p. 8. The ARB disagrees with the commenters’ assertion that consumer education will be required to maintain the automatic closure. In fact, the automatic closure performance standard requires no additional interaction from the consumer whatsoever.

10. **Comment:** Most current gasoline cans are filling at a rate of about three to four gallons a minute. When you put these slide valve systems on there (automatic closure), they are dropping the flow rate to about half to 1.4 gallons a minute. That’s really quite a reduction. (John Kowalczyk)

I presented data to you at the workshop that indicated current container flow rates are generally in the range of 3-4 gpm. If consumers are only able to purchase new spill-proof containers with very restricted flows (in the range of 1/3 - 1/4 of current rates), I am certain many, especially those using larger containers for larger fuel tanks, will find ways to circumvent this limitation, such as by taking the spout off and pouring fuel through a funnel, poking a vent hole in the container or simply using some other form of a container. This, of course, will circumvent the spill-proof provision and result in much higher emissions to the atmosphere. (Envirocan, Inc., letter dated February 9, 1999)

Non-automatic closing spouts provide fuel flow rates and fill level control closer to what consumers are used to than existing automatic-closing spout cap systems. Thus will provide a greater disincentive to tampering, which could defeat the automatic shutoff system and lead toward higher emissions than from non-automatic closing spouts. (Envirocan, Inc. letter dated July 12, 1999)

The Sure Pour ® nozzles restricted the flow of fuel somewhat. Some people will find it annoying or uncomfortable to hold a gasoline can upside down for that long. (Consumer Reports article published October, 1993 and included as an attachment with testimony submitted by John Kowalczyk)

Your inventory shows that there are 900,000 large gas tanks that are above 2.5 gallons in size, so there is a lot of equipment out there that needs these big gas tanks to fill quickly, and consumers are going to circumvent the problem if they are not happy with the flow rate. My system (non-automatic closing spout) will not have that problem. (John Kowalczyk)

**Agency Response:** The ARB agrees with the commenters assertion that consumers may be tempted to modify these new products if they are not satisfied with their performance, which could result in higher than anticipated emissions. This is why the adopted regulations include performance standards for flow rates as discussed in the Staff Report (pp. 9 - 10). The flow rate performance standards are designed to ensure that the new gas cans provide consumers with products that fill equipment fuel tanks in an amount of time that, based on ARB experience, is reasonable when compared to conventional gas cans, while providing significant emissions benefits.

Furthermore, these flow rate performance standards are defined to provide minimum acceptable levels. Comments from several manufacturers indicate that the technology exists to surpass these performance standards while still adhering to the automatic closure performance standard.

Since larger conventional gas cans and spouts flow at a rate of approximately two to three gallons per minute, the ARB believes that requiring spill-proof spouts sold with the larger cans provide a fuel flow rate of at least two gallons per minute will meet consumer expectations with regards to refueling larger equipment fuel tanks. It should be noted that the products referred to in the Consumer Reports article submitted by the commenter do not meet this requirement and therefore, would not be considered in compliance with the adopted regulations.

11. **Comment:** CARB should base the requirement for a self-closing spout cap on sound data, not intuition or supposition. I urge CARB to conduct a statistically

valid survey to determine specifically what percentage of gasoline containers that have tethered spout caps attached are stored in the non-closed position. (Envirocan, Inc., letter dated February 9, 1999)

Now, I asked your staff to give you a full disclosure of the alternatives for non automatic closure systems in a July 12<sup>th</sup> letter. I asked them to give you a full disclosure of what the alternatives were, and I am sorry to say that they have not done that. So, I am going to provide that alternative to you. .... when you use your staff's numbers, your staff's test data and you apply the tethered cap system (non-automatic closure) with permeation control, you get 70 percent collection efficiency, you are only three percent different than what your current proposal is, and you can avoid all these problems that I am talking about. (John Kowalczyk)

Non-automatic closing spouts provide overall spillage emission reductions almost as high as automatic closing spouts (85% - 94% (based on 15% or 5% of spout caps left open versus 96% for automatic closing spouts). The above characterization of non-automatic closing, tethered cap spouts is based on ARB's survey which indicates that 34% of consumers store their containers in an open mode and 49% of commercial users do the same. However, at most 15% of consumers leave spout caps that are tethered open. The data from ARB's survey are for Blitz containers, which are the only ones identified with tethered caps. The survey indicates that 15% of the Blitz containers were stored with spout and vent caps open and it indicated only 5% were stored with just the spout cap open. (Envirocan, Inc., letter dated July 12, 1999)

**Agency Response:** The ARB disagrees that non-automatic closing spouts will provide the significant emissions reductions detailed by the commenter. All of the comments listed above were provided by John Kowalczyk of Envirocan, Inc., a manufacturer of a spillage reducing spout with a tethered cap. Staff worked closely with Mr. Kowalczyk during the development of the regulations, but came to a different conclusion regarding the effectiveness of automatic closing spouts versus spouts with tethered caps.

The automatic closure performance standard is not based on intuition or supposition, but rather on sound engineering principals and practices. The ARB determined during its engineering evaluation of both conventional gas cans and gas cans currently available with automatic closure, that automatic closure is the best means of maintaining a closed system which provides the highest emissions benefit (see Comment 1 and 4). This information was presented to the stakeholders at one of the workshops held during the regulatory development. All of the gas can and spout manufacturers in attendance concurred with the ARB findings, except for Mr. Kowalczyk.



Therefore, the ARB survey that was conducted to collect information on population and usage of gas cans for development of the emissions inventory was not specifically structured to collect information on one type of gas can spout, but rather on all gas cans and spouts currently in use in the State. To collect the information requested by Mr. Kowalczyk would have required a separate survey in which the only respondents would have to be those owners of gas cans with a spout that had a tethered cap. Since only a few manufacturers make products of this type, developing a statistically valid response would have required a significant investment of resources. Furthermore, the results of such a survey could not be used to determine population and usage information on all gas cans currently in use in the State, information necessary to create an emissions inventory for proposing reductions, but rather, only those with a tethered cap. Since the engineering evaluation clearly identified the significance of automatic closure and the remaining manufacturers agreed, the ARB respectfully declined Mr. Kowalczyk's request. Since the ARB was presented with no data to suggest that owners of gas cans with tethered caps behave differently than the rest of the gas can owners, we anticipate that if such a survey were conducted the percentage of open cans would remain similar.

The ARB did evaluate three alternatives to the currently proposed regulations (Staff Report pp. 27 - 29), including the issue raised by Mr. Kowalczyk, but came to a different conclusion regarding the effectiveness of spouts with a tethered cap.

The ARB disagrees with the commenters analysis that removing the automatic closure performance standard and replacing it with spouts with tethered caps will provide emissions benefits within three percent of staff's current proposal. The commenter's methodology (see Transcript pp. 69 - 70) erred on the frequency of gas cans stored open with tethered caps. The commenter assumed that one brand of gas can, Blitz, could be used to represent all gas cans with tethered caps in the State. This assumption was incorrect for two reasons. The first, this type of gas can does not have a tethered cap on the spout, but rather a tethered cap on the can closure that covers a "pull-out" spout. There is no provision that allows the user to cap the spout with it fully extended. And second, it is not statistically valid to extract this piece of information from the body of the survey data to determine the percentage of gas cans with tethered caps stored in an open condition in the State. As previously mentioned, developing this information would require a separate survey of only those cans with a tethered cap. Since the basis of the commenters' methodology relied on this survey to determine the frequency with which gas cans with a tethered cap are stored in an open condition, and this information is incorrect, the commenters' assertion is incorrect.

12. **Comment:** I do have a recommendation for you. The first is to drop the self-closing requirement in Section 2472 (a) (2). This is for the can, and substitute the following, that would be within five years, have your staff report back to you with a statistically valid data survey on the real world emission reductions from the automatic closure versus the tethered spout cap systems and whether universally usable automatic closures have been developed which would justify their sole allowance. (John Kowalczyk)

Recommendation two has to do with removing the automatic closure requirement on retrofit spouts. Delete 2472 (b) (2) Automatic closure requirement for retrofit spouts and in place add automatic closure shall be required on retrofit spouts 5 years from the effective date of regulation if spouts with such closures have been developed which will universally meet the consumers needs. (John Kowalczyk)

**Agency Response:** The ARB considered the commenters recommendations during the development of the regulations and found that they do not provide the emissions reductions benefits needed for California, as described in the Staff Report (pp. 8, 27 - 29). To mitigate the effects of diurnal evaporative emissions from gas cans, staff has determined that the cans must remain closed when not in use. Conducting additional surveys would provide no greater emissions reductions. Furthermore, the ARB considers the emissions reductions obtained through the adopted regulations are necessary to meet California's air quality goals, are feasible as demonstrated by currently available technology, and can be achieved in a cost effective manner.

If the Board continued to allow manufacturers to sell spouts that do not meet the automatic closure requirement, they would not be seeking the maximum emissions reductions possible from this source category. This would be contrary to California's Health and Safety Code.

## 2. Permeation Standard

13. **Comment:** The only additional reduction of permeation that would occur with this new requirement will be something around 3.3 percent. (Michael Poirier, Wedco)

**Agency Response:** The ARB disagrees. The permeation standard will reduce base line permeation emissions by almost 75 percent. This information was presented to the Board during staff's presentation (see Transcript at p. 37) and was addressed in the Staff Report (p. 75). The average permeation rate for untreated gas cans was determined through tests to be 1.57 grams per gallon

per day. Since the standard requires new portable fuel containers not to exceed a permeation rate of 0.4 grams per gallon per day, staff does not understand the commenter's assertions as to the 3.3 percent reduction.

14. **Comment:** While supporting CARB's overall strategy of ROG emissions, the industry will be put under tremendous financial pressure and time constraints to comply with the proposed 0.4 grams per gallon per day permeation rate, utilizing treatment or manufacturing processes not proven to be reliable or cost effective in the market today. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

While the industry has had sufficient time to accurately assess most other performance criteria described in the proposed regulations, the permeation limit is a relatively recent requirement and with little consistent information available with which to base an accurate cost or a feasibility study. (Ron Raboin)

**Agency Response:** While the ARB appreciates the support of the Fuel Container Industry during the development of the regulations, we disagree with the commenters' assertions regarding the permeation standard. The ARB believes the regulations provide sufficient time for industry to refine one of several currently available technologies to meet the adopted standard, and this was discussed during the hearing (see Transcript at pp. 139 - 140). The issue of permeation was discussed with the public and affected parties at the January 26, 1999, workshop, and the proposed permeation standard was presented to stakeholders with supporting test data at the June 28, 1999, workshop prior to issuing the Staff Report on August 6, 1999. However, while the effective date of the regulations is January 1, 2001, the ARB has included a provision that would allow manufacturers to continue to sell existing products up to one year after the effective date provided that they were manufactured prior January 1, 2001. The ARB believes the sell-through provision will provide industry with additional time to select and implement an appropriate control strategy if necessary.

As discussed in the Staff Report (pp. 10 - 12) the ARB tested two types of Barrier Surface Treatment technologies that could be used to meet the standard. Both methods have been used to mitigate the effects of permeation from plastic automotive fuel tanks. With all due respect to these commenters, the ARB is in a better position to assess manufacturers' ability to meet the standard based on these technologies due to tests conducted during the development of the regulations. Furthermore, the ARB has continued to test and review the technical feasibility of additional technologies that could be used by industry to meet the standard. Results of these tests have been made available to the fuel container industry and are still readily available to interested parties by request or at our web site ([www.arb.ca.gov/msprog/spillcon/reg.htm](http://www.arb.ca.gov/msprog/spillcon/reg.htm)). Therefore, the

ARB disagrees with the commenters' statements that little information is available regarding the various control technologies.

As to the comments regarding cost effectiveness of the permeation standard, the ARB disagrees. As discussed in Comment 2, the overall cost effectiveness of the regulations, including the permeation standard, is well within the range for previous emissions control regulations. The record shows that the ARB analyzed the issue of cost effectiveness of the permeation standard independently as an alternative to Staff's proposal. This analysis was based on the most current information provided by the process manufacturers who provide the barrier surface treatments and is discussed in the Staff Report on pp. 28 - 29.

The ARB acknowledges that the fuel container industry may face a slightly greater challenge when meeting the permeation standard compared to the other performance standards, but believes that the lead time is adequate for them to develop complying products, in part because they should be able to adapt technologies developed for automotive fuel tanks.

15. **Comment:** The standard that you are recommending here of .4 grams per gallon per day is easily attainable with just a little bit of cooperation from the gas tank manufacturers with some very minor modifications in the resin package that they presently use. (Bill Brown, Fluoro-Seal)

**Agency Response:** The ARB has reviewed the commenters submission and agrees that fluorination provides a means for the gas can manufacturers to meet the permeation standard.

16. **Comment:** The industry's finding indicate, for instance, the total projected cost increment, the total cost for permeation-related reduction processes, in this case sulfonation, which is claimed to provide an effective barrier against permeation, is actually several times over that projected in the proposal. (Ron Raboin)

The known options (and in most cases unproven technology) available to achieve a .4 grams per gallon per day permeation rate include several process choices. EVOH molding technology, fluorination barrier surface treatment, and sulfonation barrier surface treatment. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

Based on current quotes EVOH will increase the retail price of portable fuel containers in the range of \$15.97 to \$18.86, to meet the proposed permeation limit, it is economically unfeasible to consider this option. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

Fluorination will add significant cost to the retail price of portable fuel containers, in the range of \$3.07 to \$16.28 per portable fuel container for sale in the State of California. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

If the process was proven effective (sulfonation), its direct cost addition to the retail prices of portable fuel containers sold in the State of California will be in the amount of \$7.81 per container to meet the proposed permeation standard. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

In consideration of the information available at this time and the detailed costing analysis attached, no permeation reduction process currently available presents a viable cost efficient alternative to reduce permeation levels further and meet the proposed permeation standard. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

We just don't have at this point in time enough information to put together all of the costs involved, but from what we see and what we preliminarily have determined, that we are talking about an increment of somewhere between \$6 to \$8 perhaps on an average size container due to that type of process (barrier surface treatment). (Ron Raboin)

**Agency Response:** The ARB takes no position on which technology is most appropriate for meeting the permeation standard. Indeed, the ARB expects compliance with the permeation standard to be achievable from multiple directions. However, the ARB disagrees with the commenters' analyses of the costs associated with barrier surface treating portable fuel containers.

The ARB calculated that the price of a new gas can will increase in the range of \$0.50 to \$1.58 per container to meet the permeation standard. This estimate is based on the application of one of two types of barrier surface treatments and is discussed in the Staff Report on p. 28.

A closer analysis of the industry's detailed cost estimates indicate that they reported the final cost of a treated gas using a suggested retail price. These estimates include a profit margin of between 33% to 35% on the cost of treatment for the manufacturers, plus a 100% increase above these same costs to arrive at the suggested retail price. However, even using this methodology, the ARB estimates that the retail price increase for an average size container would be approximately \$3.00 per gas can. Since the permeation standard will reduce ROG emissions by 6 tons per day, even using the higher estimated cost of \$3.00 for an average size can, the cost effectiveness to control permeation is approximately \$5.27 per pound of ROG reduced. Even using this higher

estimate that includes a 133% profit on the cost of treatment, this cost/benefit ratio is consistent with that of other ARB regulations.

The ARB does not believe that industry will ultimately include a 133% profit on the price of treatment in determining the final retail price of gas cans. The ARB does acknowledge and regrets that manufacturers may have their profitability reduced in order to comply with the permeation standard. In addition, staff did take into account manufacturers' submissions regarding costs of treatment. However, manufacturers' costs did not correlate at all with current treatment prices submitted by several barrier surface treatment process manufacturers as noted during the hearing (see Transcript pp. 137 - 141, 141 - 145). For this reason we chose to go with the actual costs supplied by the process manufacturers.

17. **Comment:** Regarding the fluorination of off-site fluorination barrier, we had to add transport cost, we added the special packaging, as Fluoro-Seal mentioned, it has been added to, and we use their figures regarding cost of fluorination. (Michael Poirier, Wedco)

**Agency Response:** In developing cost estimates for off-site treatment of fluorinating gas cans, staff included additional costs to ship the containers to the treatment facility. However, staff is unaware of any special packaging needed to fluorinate gas cans. In fact, staff visited several retail establishments in California where the commenters products are sold and found that they are offered for sale without any packaging. In fact, Fluoro-Seal indicated to staff that the prices they quoted for treating gas cans, on which the ARB relied, included receiving the products, removing the products from any packaging and treating, then replacing the products in the packaging with the option of drop shipping directly to the customer.

18. **Comment:** The cost to them for sulfonation, as best as we can figure, is going to be 93 cents a container. That is on the high end, if they only manufactured 300,000 containers a year. That cost will go down as they manufacturer more containers. (Tom Schmoyer, Enviro, Inc.)

Cost runs 35 cents to 37 cents per gallon, in that neighborhood (for fluorination). So, on a five-gallon tank, whatever, five times, take the highest, 37 cents, it would be the additional cost to the gas tank manufacturers. (Bill Brown, Fluoro-Seal)

**Agency Response:** Staff believes that these costs are more representative of the portable fuel container manufacturers' likely costs than those provided by the manufacturers. The commenter's statements support staff's estimates of the

costs associated with applying barrier surface treatments to portable fuel containers (see Comment 16).

19. **Comment:** The industry is requesting more time to evaluate all possible means of permeation reduction in portable containers and to determine whether the proposed limit can be achieved at a reasonable cost and maintained on a consistent basis. (Ron Raboin)

The time to implement any of the above permeation reduction treatment processes (EVOH, fluorination, sulfonation) taking into consideration, mold design and development, initial production manufacturing and initial permeation testing, the certification process for CARB and Underwriters Laboratories is a minimum of 18 months after the technology is proven. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

It is strongly recommended that the implementation date to regulate permeation rates of plastic jerry cans be extended a year. Only multi-layer co-extrusion (EVOH) has durability data, and it's mostly in the hands of the automotive people. Co-extrusion is expensive to capitalize with long lead times for equipment. Other possible viable processes, such as fluorination, sulfonation, Selar, epoxy coatings, etc., either don't have durability data, or it is fragmentary. More time is needed for these people to verify durability of a given barrier. (Don Peters, Phillips Chemical Company)

**Agency Response:** ARB considered industry's arguments and believes adequate lead time is available to adapt existing technologies for use with gas cans. Clearly, currently available technologies can be modified to meet the ARB permeation standard for portable fuel containers. The regulations were adopted by the Board on September 23, 1999, giving the industry 15 months to select and implement an appropriate control strategy. By using a portion of the one year sell through period, most manufacturers can increase this lead time to 21 months.

The ARB believes that most manufacturers will be able to provide a full range of products for the 2001 model year. We are confident that the industry as a whole will provide an adequate supply of portable fuel containers to meet consumers needs. This schedule is appropriate because of California air quality and the knowledge that the technology to meet the permeation standard currently exists.

20. **Comment:** I might say the technology is also proven. People like BMW and General Motors also have a 10-year service life for their fuel tanks. We did our first fluorination of fuel tanks in 1987, in France. (Bill Brown, Fluoro-Seal)

**Agency Response:** The ARB agrees that fluorination is a proven barrier surface treatment technology, and based on the ARB's experience in evaluating other technologies, can be adapted in time to meet the needs of the portable fuel container industry.

21. **Comment:** The industry has proposed an increment permeation limit, effective January 2001, of one gram per gallon per day, which is attainable with increased container wall thickness. This represents a full one-third reduction in permeation losses compared with products that are sold today. (Ron Raboin)

The Industry recommends for adoption by the Air Resources Board, an interim permeation limit that is attainable with increased wall thickness. Laboratory tests of pre-conditioned containers underway at Phillips Chemical Company indicate a limit equivalent to an average rate of one gram per gallon of capacity per day in permeation can be achieved with this control measure, utilizing the ASTM PS 119 test standards for permeation, final test data will be available in 45 days. This represents a full one third reduction in permeation losses compared to products sold today. The Industry further recommends this interim specification to remain in effect through June, 2002, with an additional one year allowance for product sell through. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

We believe that through the heavier wall thickness that the industry will need to do anyway, we can meet the requirement that we ask of one gram per gallon per day instead of .4 grams per gallon per day. (Michael Poirier, Wedco)

**Agency Response:** As mentioned in Comment 2, The ARB is required to achieve the maximum degree of emission reduction possible from this source in order to attain state standards at the earliest practicable date. While the ARB recognizes the industry's effort to reduce the effects of permeation by one-third with an interim standard, Staff's proposal reduces permeation losses by almost 75 percent. Furthermore, the industry's schedule for implementation would delay implementation of the 0.4 permeation standard for an additional 18 months and include an additional one-year sell through provision. Based on statewide emissions estimates for 2007, this represents a reduction of ROG emissions of 4.6 tons per day compared to staff's current proposal which will yield 5.8 tons per day of ROG reductions in 2007. This would represent a 1.2 tons per day shortfall under the planned implementation schedule which has an anticipated turnover date of 2007.

Because most of the State does not meet air quality standards, and a 1.2 tons per day reduction in ROG emissions beyond the industry's proposed interim



standard was both technically feasible and cost effective, staff presented the more stringent and cost effective proposal to the Board for its approval.

22. **Comment:** The permeation standard defines an initial maximum permeation rate. However, no mention is made as to how long this rate is maintained. The coatings/treatment processes have some rate of degradation. No, statement for the anticipated useful life and or expected rate of increase of permeation loss is made for the five (5) year expected useful life of the container portion of the system. Additionally, the report does not define a useful life parameter, and no life expectancy parameter is proposed as a test criterion.

**Agency Response:** The ARB disagrees. As discussed in the Staff Report on pp. 11 - 12, a durability procedure has been included to ensure that the new products continue to meet the adopted permeation standard over their expected useful life of five years. The remainder of the commenters statements seem to contradict themselves, as the commenter is obviously aware that the life expectancy parameter is five years.

### 3. Fill Level

23. **Comment:** Your proposal requires the automatic shut off system to fill the test target tank, to a minimum level of one inch (1") below the neck of the opening of the target tank. We recommend, subject to receiving the data from the Outdoor Power Equipment Institute, a minimum target test tank fill level of 1 ½' from the neck opening of the ARB test target tank. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

After a through investigation of Briggs & Stratton small engine fuel tanks, we have concluded that this "maximum" fill level is inconsistent with Briggs & Stratton's small engine safe operation recommendations and therefore suggest the following:

That the ARB establish a maximum fill level of 1.25 inches from the top of the tank opening and delete the minimum fill level requirement to aid in the prevention of overfills that could lead to uncontrolled fuel conditions and safety issues. (Scott Alderton, Briggs & Stratton Corp.)

I have been working on a large nozzle designed to meet the two gallon per minute requirement for use with five gallon fuel containers. While doing so I have some things that concern me. There is a great variation of air space in the larger containers (from full to empty) over the smaller ones. Due to this variation some consideration needs to be given to the shut-off requirement of five and six gallon size fuel cans. The five and six gallon containers will be used to fill larger fuel tanks on power equipment and these larger tanks will be considered full at a

more varied fuel level than the smaller ones. I would suggest that a level ranging from one to two inches below the top of the neck of the receiving test container be adequate for five gallon fuel systems rather than the firm one inch requirement now suggested for all containers. (Verl Law, Vemco, Inc.)

**Agency Response:** The issue of fill level was discussed extensively with various manufacturers and was a reoccurring topic at all three public workshops. Staff addressed this issue in the Staff Report (pp. 7 - 8, 30 - 31). The fill level performance standard specifies a minimum acceptable level to eliminate unnecessary refueling of under-filled equipment fuel tanks and to ensure customer satisfaction with the new products.

However the ARB agrees that more than one fill level provides the best compromise between ensuring customer satisfaction and providing adequate fill levels for a broad range of applications. Therefore, as discussed at the public hearing, the ARB modified Section 2472 (a) & (b) in the first 15-day Notice. Smaller containers that are generally used for hand-held equipment refueling are required to fill to a minimum of 1 inch below the top of the target fuel tank opening. Mid sized containers that are generally used to refuel larger fuel tanks on lawn and garden equipment are required to fill to a minimum of 1.25 inches below the top of the target fuel tank opening. And large containers are no longer required to adhere to a specified fill level requirement.

As to the comments that the minimum fill level be changed to a maximum, the ARB disagrees. The concept of the fill level requirements is to ensure minimum acceptable standards, not to force all manufacturers to adhere to one level. The ARB believes that products that fill to levels closely matching what consumers currently experience with conventional gas cans will have a competitive advantage over their counterparts. This will help to build consumer confidence in the new products and mitigate efforts to circumvent the regulations by modifying the spout. The minimum fill level will allow for manufacturer flexibility whereas a maximum fill level will not. Furthermore, compliant products by definition cannot overfill the equipment fuel tank creating a safety hazard, as they are required to fill the target fuel tank without overflowing (automatic shut-off performance standard). By their design, spill-proof systems and spill-proof spouts will not fill the target fuel tank completely full, creating the uncontrolled fuel conditions and safety issues mentioned by the commenter.

#### **4. Fuel Flow Rates**

24. **Comment:** Your requirement is to have 3 different flow rates depending on the size of the container. This issue is a function of marketing and application. We

recommend having two minimum flow rates; this will eliminate confusion by the consumer in using various sizes of containers.

A. 0.5 gpm minimum flow rate for portable fuel containers 2 ½ gallons and smaller

B. 2 gpm minimum flow rate for portable fuel containers larger than 2 ½ gallons.

(Fuel Container Industry and ASTM F15.10 Subcommittee members)

I am also concerned about the small openings of portable power equipment tanks not being able to accommodate entry of nozzles of the size necessary for one and two gallon pour rates. Many fuel users of commercial application, as well as home owners, purchase two and one half gallon containers for mixed-fuel applications in these small tanks. It will be very tempting for these people to remove the nozzle and attempt to pour into these small openings despite substantial spillage. I would strongly recommend that two and one half gallon containers be made available to end users with a choice of either large or small nozzles depending upon their desired application. (Verl Law, Vemco, Inc.)

**Agency Response:** The ARB agrees and modified Sections 2472 (a) (4) and 2472 (b) (3) in the 15-day Notice to accommodate the commenter's stated concerns. This provides an option that will allow the manufacturers to offer spill-proof systems with nominal capacities greater than 1.5 gallons but less than or equal to 2.5 gallons for sale with one-half gallon per minute flow rate spouts as well as the originally proposed one gallon per minute flow rate spouts. Spill-proof systems offered for sale with the one-half gallon per minute spouts in this nominal capacity range must clearly display the phrase "Low Flow Rate" on the product and packaging to inform consumers of its intended use.

25. **Comment:** The fuel flow rate is specified as a minimum rate. The guiding criterion here is end user satisfaction, not the environment. This parameter should have a maximum allowable flow rate value as a safety precaution, in addition to a defined minimum. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** The ARB disagrees. The flow rate standards are designed to provide consumers with an acceptable flow rate without restricting the manufacturers ability to development products that will provide flow rates closer to products currently on the market. Though staff does not currently anticipate flow rates exceeding those of conventional gas cans, manufacturers are free to and encouraged to exceed these rates provided they meet all of the other performance standards, most notably the automatic shut-off performance standard.

## 5. Automatic Shut-Off

26. **Comment:** The one opening specification requires that the spout be removed to fill/refill the can. Questions arise as to the functionality, repeatability and longevity of the automatic shut-off in the hands of the consumer. For proper operation and to gain full benefit, this function may require proper installation when replacing the spout; the consumer must be educated to this procedure. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** During engineering evaluations of currently available products the ARB found the spouts and closures easy to work with and similar to those found on conventional gas cans. However, Staff agrees with this concern and will be monitoring this issue closely by examining the new products as they reach the market and during compliance testing.

## 6. One Opening

27. **Comment:** The one opening performance standard applies only to spill-proof systems. (i.e. Container and spout sold as an integrated system, under proposed regulation. Once again this specification can be used to exempt some commercial and all government users from the same legislation imposed on private homeowners, because of OSHA requirements. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** The ARB disagrees. The one opening performance standard applies to all portable fuel containers offered for sale, sold, or manufactured for sale in California, whether they are used by the residential or commercial sector.

## 7. Warranty

28. **Comment:** The structure of the warranty state that the manufacturer is to provide a warranty for spill-proof systems and spill-proof spouts which will, “warrant these products for a period of not less than one year against defects in materials and workmanship. This performance standard was added to ensure customer satisfaction with the new containers and spouts and to protect the consumers’ investment.” Considering the purpose of the proposed regulations, “materials and workmanship” may be far too general a criterion to cover the environmental properties of these products. Those parameters tested for initial approval should be specifically warranted. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** The ARB believes that the one year warranty requirement will ensure that only high quality spill-proof systems and spill-proof spouts find their way into California's marketplace. One year seems a reasonable period given the estimated lifespan of a gas can, and anything less than a year is not seen as useful to the consumer. Furthermore, "materials and workmanship" will cover all aspects on the new products. As to the commenters statement regarding parameters tested for initial approval, the regulations do not contain provisions for certification testing. Rather, the ARB will determine compliance with the regulations by purchasing products from retail establishments and ensuring that they adhere to all of the performance standards using the test methods included in the Staff Report (see Staff Report, Appendix B).

## Exemptions

### 1. Rapid Refueling Devices

29. **Comment:** The AMA offers the following underlined revision to Section 2473., item (e) of the Regulations.

This article does not apply to rapid refueling devices designed for use in officially sanctioned motorcycle and ATV competition with nominal container capacities greater than or equal to four gallons designed to operate in conjunction with a receiver permanently installed on the target fuel tank or designed to seal against a stock target fuel tank with full control of fuel flow that prevents spillage prior to and following fuel dispersion.

(Dana Bell, American Motorcyclist Association)

**Agency Response:** The ARB modified Section 2473 (e) in the first 15-day Notice and allowed an exemption for these devices which serve a specific purpose in the refueling community. These devices are few in numbers and emissions from them are expected to be negligible.

### 2. Safety Cans

30. **Comment:** The proposed regulations do not require all users to upgrade their cans to ones meeting the new specification. DOT/OSHA approved containers (safety cans) are used primarily by commercial and governmental agencies because of HAZMAT regulations. This action will exempt most commercial users and all government users from the same legislation imposed on private homeowners. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** The ARB exempted safety cans that meet the requirements of federal Department of Transportation regulations due to potential conflicts

with federal and state workplace safety requirements. However, the ARB disagrees that this will exempt most commercial users of gas cans. ARB surveys of commercial gas can users found that only a small percent actually use safety cans. This is probably due primarily to their significantly higher costs, which should remain well above the new gas cans meeting the performance standards. Furthermore, the overwhelming majority of the gas can population in California (94%) is found in the residential sector.

### C. Population Turn Over

31. **Comment:** It does concern me that one of the elements of this regulation is to assume that in five years we will have turn-over, because it is so important to get old gas cans out of people's sheds and replace them with these newer gas cans, I would really hope that the ARB would work with the California Environmental Dialogue, of which I am a member, and see if we can find a program, a way of enticing people to return their gas cans, that otherwise they would be storing in their homes and replace them with these (spill-proof systems). (Janet Hathaway)

**Agency Response:** Though this commenter did not request a regulatory change, the ARB agrees that as directed by the Board, staff will work to develop outreach programs to educate consumers on the significance of the adopted regulation. Furthermore, staff will investigate the feasibility of developing a buy-back or trade-in program for convention gas cans to accelerate the turn over of the statewide gas can population.

### D. Displaced Vapors

32. **Comment:** Control of refueling vapors was initially proposed but CARB indicated at the January 26<sup>th</sup> workshop it was dropping this requirement on the basis that it felt the collected vapors are simply vented back to the atmosphere when the container is opened. An analytical evaluation of this assumption indicates that effective vapor collection will still retain almost 90% of the vapors collected even when the container is opened and possible pressure buildup is released. Thus, it is recommended that CARB reinstate a vapor control requirement. (Envirocan, Inc.)

**Agency Response:** The ARB agrees that the new gas cans will collect a significant amount of displaced vapors during refueling since they only vent through the spout. We disagree with the commenters analytical evaluation because it is based on the ideal gas law. Gasoline, the fuel predominantly dispensed by portable fuel containers, is a mixture of compounds and does not behave as an ideal gas when in its vapor state. When the Board approved the

regulation, there was not enough information to develop an accurate and feasible vapor collection efficiency test method to support a proposed standard. Staff will continue to monitor this issue and will make future recommendations as information is gathered.

#### **E. Innovative Products Exemption**

33. **Comment:** As I mentioned at the January 26 workshop, it is an excellent idea to include a provision for innovative products. The proposed provision in 2474 (a) as written, however, is unworkable. The requirement that an innovative product have fewer emissions than a representative container could not be met by any innovative product because CARB's proposed requirements for a representative container essentially require 100% control. It is recommended that "fewer" be replaced in this provision by the words "substantially the same". (Envirocan, Inc., letter dated February 9, 1999)

**Agency Response:** A change in the regulatory language was made prior to the publication of the Staff Report on August 6, 1999. The final language reads "... will result in cumulative ROG emissions below the highest emitting representative spill-proof system or spill-proof spout in its product category as determined from applicable testing", in place of "fewer ROG emissions".

34. **Comment:** The innovative product portion seems to be a catch-all category. It can be used as an escape clause for any product that does not meet all the requirements as specified. It could also be used to forego the test of specific parameters on certain products, if the cumulative environmental gains are greater than minimum required total of the regulations currently in affect. This decision would hinge on the concept of what is considered an "innovative product" and is decided at ARB discretion. The problem is that this still concerns only container systems and spouts, no other technology is considered. This procedure could also be considered unfair by manufacturers of systems and spouts who meet all necessary parameters. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** As discussed in the Staff Report on p. 13, the innovative products exemption is designed to encourage the development of innovative products that may not adhere to one or more of the performance standards. However, to be eligible, a manufacturer must demonstrate to the satisfaction of the Executive Officer that the use of the product will result in cumulative ROG emissions below the highest emitting representative spill-proof system or spill-proof spout in its product category as determined from applicable testing. Staff disagrees with the commenter's characterization that the innovative products exemption is a catch all category or an escape clause. With all due respect to

the commenter, innovative products provisions provide incentives to the various manufacturers to continue to perfect and develop new and better ways to adhere to, and even exceed, many regulations. This can provide additional air quality benefits for the State. Furthermore, since the regulations only apply to portable fuel containers and spouts we are confused as to the commenters statement regarding consideration of additional technologies. As to the statement that this procedure could be considered unfair by the gas can and spout manufacturers, none expressed these sentiments during the regulatory development and in fact, were supportive of this concept.

## **F. Applicability**

35. **Comment:** It seems to be recognized that if CARB portable fuel container regulations do not apply to containers used for on-road as well as off-road engines there will be a major loop-hole in the regulation which will allow total circumvention. CARB seems to feel that the Portable Fuel Container definition in the proposed regulations addresses this problem. I urge you to have your attorney review this matter further as the definition is still within the context of Chapter 9 which pertains to off-road engines. It would seem like this regulation or reference to it has to be included in CARB's on-road regulations as well.

**Agency Response:** The ARB disagrees. The definition of portable fuel containers refers to all products of this type regardless of their final use. (See Staff Report, Appendix A, page 2)

## **G. Test Methods**

### **1. Test Method 512**

36. **Comment:** I also want to emphasize the point I made that it is erroneous to measure the "average" flow rate of a container by starting out with a half full container. The "true" average flow must be determined by integrating the changing flow rate from a container which is full to a container which is empty or nearly empty. This is the "average" flow rate consumers will actually experience. (Envirocan, Inc., letter dated February 9, 1999)

**Agency Response:** The ARB agrees and the appropriate changes were made to Test Method 512 prior to publication of the Staff Report on August 6, 1999. (See Staff Report, Appendix B)

### **2. Test Method 513**



37. **Comment:** It is our opinion that the pressure/vacuum cycle (Durability Procedure, p 7) should be deleted. As Written, it is an unrealistically severe test. There is no data that shows a P/V cycle would correlate with quality of the barrier. We believe it would not be definitive. (Don Peters, Phillips Chemical Company)

The requirement to perform a 1000 cycle durability procedure is designed to verify the adhesion or durability of a barrier to the wall of the HDPE fuel container. The only barrier process where this is of concern at the moment is the fluorination process. The pressure cycling testing does not account for other effects on the adhesion or durability of the barrier during use of the container and sloshing of fuel inside the container and its effect on the fluorination barrier treatment. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

**Agency Response:** The ARB disagrees that the durability test is too severe and not indicative of the durability of all barriers. The durability test procedure included in Test Method 513 was developed to simulate the normal swelling and paneling a closed gas can experiences during its anticipated lifetime due to daily temperature variations. Data collected by the ARB during the development of the regulations show that fluorinated containers did show a marked increase in average permeation rates when continuously exposed to a variable temperature profile. This was discussed in the Staff Report on pp. 10 - 12. This test data was presented to the manufacturers at a workshop prior to publication of the Staff Report. The new style of portable fuel containers will remain closed when not being used to dispense fuel and will continually panel and swell to some extent depending on the manufacturers' final design.

38. **Comment:** CARB should not have to do screening tests, such as the proposed test above. The fundamental barrier durability work should be done prior to adopting any particular barrier process. (Don Peters, Phillips Chemical Company)

The barrier process vendor should have data on durability of their barrier. If they don't, it should be their responsibility to develop such data. (Don Peters, Phillips Chemical Company)

**Agency Response:** The ARB makes no determination regarding the "best" technology to meet the permeation standard. However, we must determine the technical feasibility and cost effectiveness of any regulatory effort. During these tests staff became aware of a possible durability problem with one of the methods selected for testing. This prompted staff to develop a durability test to ensure that whatever method is selected by the manufacturers to meet the

permeation standard, it remains effective over the estimated lifetime of the portable fuel container. This was discussed in the Staff Report on pp. 11 - 12. While the regulations do not specify a certification process for the new products, the ARB will perform compliance tests during its implementation to ensure that the new style of portable fuel containers meet all of the adopted standards.

39. **Comment:** The requirement to utilize a Sealed Housing For Evaporative Determination (SHED) will add significant costs to the initial testing costs of all sizes of containers for complying with permeation testing. This requirement would necessitate the utilization of outside SHED test facilities, adding additional time and cost to ongoing Quality Control compliance. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

The requirement to use a variable temperature profile will add significant costs to the initial testing of portable fuel containers to confirm compliance with the proposed permeation standard. This requirement would necessitate our utilization by manufacturer of outside test facilities to perform this testing in conjunction with permeation testing. A constant temperature profile would be much simpler to achieve and would allow us to effectively monitor the reduction of permeation levels. (Fuel Container Industry and ASTM F15.10 Subcommittee members)

**Agency Response:** While the ARB understands the commenter's concerns we do not believe that these tests are unnecessarily burdensome. The SHED test using a variable temperature profile is most representative of what the average can is exposed to on a daily basis. These tests are necessary in order to determine the environmental impact of a failure to comply with the permeation standard. However, to support the manufacturers in their initial testing, the ARB has agreed to provide tests using our own SHED facilities. This offer extends to all manufacturers and will assist them in determining the most appropriate control strategy for their products. Furthermore, the ARB is continuing to work closely with manufacturers in an effort to develop a steady state temperature test that could be used by the manufacturers to determine compliance with the permeation standard. While the ARB will elect to continue to use the variable temperature profile for compliance testing, the manufacturers could use the steady state temperature test for production line testing to ensure that their products are in compliance with the permeation standard.

## H. Administrative Requirements

40. **Comment:** Systems, specifically the container portion of the system which are fabricated with surface treatments will have an increase in permeation losses due to deterioration of surface treatments. The products should be clearly

marked with a projected mean end of life date. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** While the ARB shares the commenter's concern, the durability test included in Test Method 513 and discussed in the Staff Report on pp. 11 - 12 is designed to ensure that adherence to the permeation standard is effective over the estimated useful life of the new products. Therefore, the ARB does not see a benefit in an additional labeling requirement.

## I. Miscellaneous

41. **Comment:** Since September of 1997, in response to mail out #MSC 97-15, EFC has made a number of attempts to share information and present the advantage of its technology in detail to the appropriate branches within the ARB. Our efforts to develop a meaningful dialogue with those offices have been declined or diverted. To be frank, we have been bewildered by that reaction as it contradicts the claim that the ARB has "aggressively pursued every feasible emissions reduction during the past four (4) years." (Joseph Collins, Environmental Fuel Controls, Inc.)

Our concern is over on basic question, how does our product fit under the proposed regulations? Will a product such as ours be regulated and tested under the proposed regulations. Are we exempt from these regulations due to our technology or will our product require a new or amended version of the regulations? (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** The ARB disagrees that the commenter's efforts at dialogue have been declined or diverted. Staff had numerous private conversations with the commenter and they were invited to participate in all public meetings. However, the commenter manufactures and distributes a refueling product that falls outside the scope of the adopted regulations. The commenters product is not a portable fuel container, but rather a device that uses an on-road motor vehicle's own fuel delivery system to dispense fuel into portable equipment. Staff received and evaluated the commenters product and informed the commenter that it falls outside the scope of the current regulatory effort. The adopted regulations do not apply to the commenter's product.

42. **Comment:** Cartage losses are the secondary emissions and costs produced by transporting empty containers from the point of use to the gas pump for filling and the associated return trip to the point of use. (Joseph Collins, Environmental Fuel Controls, Inc.)

Catastrophic losses are the result of a disaster, natural or otherwise. This is defined as any event that causes release of the contents of gas containers into the environment. (Joseph Collins, Environmental Fuel Controls, Inc.)

Spoilage losses are the result of the de-volatilization of stored gasoline. Gasoline has a shelf life, after approximately 45 days it starts to breakdown. Another source of spoilage loss is gasoline contaminated in a catastrophic event such as a flood. Gasoline containing water is basically useless. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** These categories may be additional sources of emissions, however they were not a target of the regulations and this comment falls outside the scope of the adopted regulations.

43. **Comment:** EFC does not necessarily agree that the regulation is a viable solution to the non-road refueling emission problem. However, if the ARB believes regulation is the most effective way to solve this problem, then EFC feels that the regulations should be subject to trial. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** The ARB disagrees, having supported the findings and conclusions of and for the adopted regulations with substantial evidence in the record. The Board approved regulations it found to be reasonable and achievable based on substantial evidence in the record. In addition, the ARB periodically reviews adopted regulations for efficacy, compliance, and alignment with estimated emissions reductions.

44. **Comment:** The estimated useful life of a container is estimated from manufacturers sales figures. It is estimated at five years. This approach may, or may not, be useful for projecting replacement of existing containers through attrition, but it should not be assumed that this is a valid useful life expectancy figure for the newly proposed containers. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** The ARB shares the commenter's concerns. Since no fully compliant spill-proof systems exist, the ARB chose to use the current estimated useful life of conventional portable fuel containers. As spill-proof systems become available, staff will monitor the situation closely. If found to be a problem, the ARB has the authority to alter the regulations and modify the durability test procedure which should be the only part of the regulations impacted by a longer useful life expectancy.

45. **Comment:** EFC believes that figures projected for total emission reductions have been substantially over estimated. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** The ARB disagrees. Given that there were products available for engineering analysis and subsequent testing by staff, the emissions reductions attributable to the use of spill-proof systems and spill-proof spouts were based predominantly on test data and not estimates of effectiveness. Furthermore, the Board approved a portable gasoline container inventory at the hearing that preceded this regulatory item. This inventory was based on the best available inventory information at that time. This inventory was used to calculate the total emissions reductions attributable to the regulations.

46. **Comment:** A more equitable option to the proposed regulations would be an approach similar to that used for establishing automobile emissions standards; the regulatory document should define the parameters to be tested and expected attainment levels, not the technology, method or product used for attainment. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** The ARB is unclear as to the commenter's assertions. The regulations consist of a set of performance standards all new containers and spouts must adhere to. The regulations do not endorse a specific technology in the regulations, nor a specific product. As to the method, we can only assume that the commenter is referring to the accompanying Test Methods. However as previously stated, the Test Methods will be used by the ARB to determine compliance with the adopted regulations.

47. **Comment:** EFC has major concerns about the projected cost of these systems and spouts. EFC firmly believes that the consumer will be required to bear a cost much greater than ARB estimates suppose. We have found that costs estimated to increase by 220% were actually increased by 560%, resulting in the environmental version of a 2.5 gallon can (\$3.79 in generic form) selling for \$24.95. (Joseph Collins, Environmental Fuel Controls, Inc.)

**Agency Response:** The ARB disagrees with the commenter's cost estimates. As stated in the Staff Report on pp. 22 - 27, the estimated price of a spill-proof system with a nominal capacity of 2.5 gallons is \$12.00. Staff is unaware of an environmental version of a 2.5 gallon can selling for \$24.95, and has been presented with no evidence of such a can's existence. The ARB fully considered the economic impacts, as indicated by the substantial evidence in the record, and found them to be acceptable due to the significant environmental benefits that will be derived from these regulations.

48. **Comment:** I have just heard that you are going to make it a crime to use my gas cans. I have invested a lot of money in cans for my gardening business and you are now going to take them away from me? (Charles Wilson)

**Agency Response:** The regulations do not make it a crime to continue to use conventional gas cans. Furthermore, implementation of the regulations is through attrition. Under this regulation, consumers will replace their existing portable fuel containers at a rate not greatly different from what would have occurred in the absence of the portable fuel container spillage control program.

49. **Comment:** The Boards plan to require a new design for gas cans is absolutely ridiculous. This is overkill. ([Mykgib@aol.com](mailto:Mykgib@aol.com))

**Agency Response:** The ARB disagrees. ROG emissions from portable fuel containers are estimated at 87 tons per day, statewide. With no control these emissions will grow to 96 tons per day by 2010. This is a comparatively significant emission source that is currently unregulated. The adopted regulations reduce these emissions by 73% when fully implemented.

50. **Comment:** I'm writing to express my objections to the methodology used to compile ARB Staff's Portable Gasoline Container Emissions Inventory. I feel the method used to compile the residential gas can population were seriously flawed - due mainly to the extremely small number of households actually involved in the survey. (J.C. DeLaney, J.C. DeLaney Consulting)

**Agency Response:** This comment addresses a non-regulatory item not directly at issue in this rulemaking. However, staff disagrees that the residential gas can population is flawed. The Board was aware of this commenters statements in approving a portable gasoline container inventory at the hearing that preceded this regulatory item. This inventory was based on the best available inventory information at that time.

51. **Comment:** In the derivation of emissions inventories and the making of regulations, the Air Resources Board continues to use a number for off-road motorcycles which is much, much smaller than that used by another state agency, the Department of Parks and Recreation. (Thomas Walsh, The San Bernardino Mountains Group San Gorgonio Chapter, Sierra Club)

**Agency Response:** This comment addresses a non-regulatory item not directly at issue in this rulemaking. The Board was aware of this commenters statements in approving a portable gasoline container inventory at the hearing that preceded this regulatory item. This inventory was based on the best available inventory information at that time.

## **J. Support**

In addition to comments received supporting specific regulatory components as discussed above, statements of support were provided at the Board hearing from Todd Campbell of the Coalition for Clean Air, and Janet Hathaway of the Natural Resources Defense Council.

In addition to these organizations providing oral support testimony at the Board hearing, the agency received support letters from David Smith of Arco, Victor Weisser of the California Council for Environmental and Economic Balance, Dean Prat of the California Regional Water Quality Control Board, Jane Fruin of Chevron, and Barry Wallerstein of the South Coast Air Quality Management District. In addition, written support was also received from one manufacturer, Justrite Manufacturing Company.

The ARB appreciates receiving and including in the record these many positive comments in support of the adopted regulations.

## **III. MODIFICATIONS TO THE ORIGINAL PROPOSAL - FIRST NOTICE OF MODIFIED TEXT**

The first Notice of modified text included changes in the fill level requirements, extending the fuel flow rate requirement of one-half gallon per minute to include containers with a nominal capacity of 1.5 gallons, an option that would allow manufacturers to offer containers greater than 1.5 gallons but less than or equal to 2.5 gallons nominal capacity with one-half gallon per minute flow rates as well as the originally proposed 1 gallon per minute flow rate, and a labeling requirement for products that cannot be used to refuel on-road motor vehicles.

There were 4 comment letters received during the 15-day comment period for the first notice of modified text. The majority of the letters were from portable fuel container manufacturers, and contained comments that were outside the scope of the 15-day changes. Comments within the scope of the changes were received from Briggs & Stratton and Wedco.

### **A. Fill Level**

- 1. Comment:** As a manufacturer of both small engines and portable fuel containers, Briggs & Stratton opposes CARB's specified fill level of "... less than or equal to 1.25 inches below the top of the target fuel tank opening..." for containers between 1.5 and 2.5 gallons [2472 (a) (4) (B)] (see Figure 1). We recommend that CARB instead finalize a fill range of between 1.75 inches

(minimum fill level) and 1.25 inches (maximum fill level), in order to preserve operator safety, protect the environment, and maintain consumer acceptance (see Figure 2). The Briggs & Stratton's Smart-Fill fuel can, designed to fill to a level of approximately 1.5 inches below the top of a tank, has shown excellent consumer acceptance in its five years on the market. (Allan Schmitz, Briggs & Stratton Corp.)

**Agency Response:** The ARB disagrees and makes no change in response. The issue of fill level was discussed extensively during the development of the regulations and the 1.25 inches below the top of the target fuel tank opening represents a compromise from staff's original proposal of 1 inch (see Staff Report pp. 7 - 8). In approving the regulations, the Board did not direct staff to further change the fill level requirements.

The fill level requirement is necessary to ensure that equipment fuel tanks are filled to a level consistent with what consumers now experience using conventional gas cans, and to eliminate additional refueling events due to under-filled equipment fuel tanks. As discussed in Comment 23, based on comments received from manufacturers, the regulations now include a range of fill levels to accommodate the various types and sizes of equipment.

The ARB is aware of vented fuel tank caps and the issue of fuel leakage from over-filling equipment fuel tanks. However, by their design spill-proof spouts will not fill equipment fuel tanks completely full. By comparison, conventional gas cans currently used to refuel the majority of portable off-road equipment have no safe guards to preclude users from filling the fuel tank to any level they choose, including overfilling. Based on tests conducted by the ARB, we do not believe that the current fill levels pose any threat to operator safety or the environment. In addition, the regulations point out the manufacturers' continuing obligation to meet other federal and state health and safety requirements. Therefore, the ARB believes that specifying a maximum fill level is unnecessary and would be overly burdensome.

## **B. Administrative Requirements**

2. **Comment:** CARB proposes that fuel containers "... must clearly display the phrase 'Not intended for Refueling On-Road Motor Vehicles' in type of 34 point or greater on the spill proof systems or spill-proof spout, any sticker or label affixed thereto, and on any accompanying package" [2475 (g)]. Briggs & Stratton recommends that the size requirement be finalized as 3.0 millimeters or greater. In today's global market, information often appears in more than one language on consumer products. For instance, Briggs & Stratton's Smart-Fill fuel can displays all information in both English and Spanish. Requiring a type



size as large as 34 point will occupy significant space on the product and packaging. (Allan Schmitz, Briggs & Stratton Corp.)

**Agency Response:** The intent of the labeling requirement is to ensure that consumers can easily identify products that cannot be used to dispense fuel into an automobile in an ‘out-of-gas’ or emergency situation. The ARB believes that type of 34 point provides a minimum visibility requirement for easy identification by consumers. However, since the intent of the labeling requirement is to provide consumers with specific information at the point of purchase, the ARB issued the second 15-day Notice for public comment with modifications to Section 2475 (g). The revised and now final adopted language provides manufacturers of spill-proof systems the option of placing the phrase ‘Not intended for Refueling On-Road Motor Vehicles’ in type of 34 point or greater on the system OR label affixed thereto, or both. This will allow the manufacturers an option of placing a label on the system instead of molding the text into the products surface.

3. **Comment:** Briggs & Stratton is concerned about the term “Spill-Proof”, as used throughout CARB’s proposed regulation. We recommend the use of the more moderate term “Spill-Resistant” in place of “Spill-Proof”, to project a more realistic picture to the public. (Allan Schmitz, Briggs & Stratton Corp.)

**Agency Response:** These comments are outside the scope of the proposed modifications. However, the ARB selected the term spill-proof systems and spill-proof spouts based on its initial evaluation of the automatic shut-off performance standard. The automatic shut-off feature eliminates over filling of equipment fuel tanks and hence, over filling spillage. The ARB believes that the term spill-proof is an accurate characterization of devices of this type.

4. **Comment:** Our understanding is that, when a container is sold with the spout assembly only a part number need to be marked on the spout and a reference to the spout part number must be marked on the container. There should not be a need for additional marking requirement on the spout in this situation. If the same spout is sold separately, as a replacement part, only a reference to the proper designed matching container should be required to be marked on the packaging but not the spout. (Michel Poirier, Wedco)

It is not clear if a replacement spout sold separately for a product that falls under subsection (a) ‘spill-proof system’ will also be need to meet section (e) requirements. Our understanding is that subsection (e) has been drafted for manufacturers that produce only a spout to fit other manufacturers portable fuel

containers. Can CARB clarify this situation and rephrase as follows:  
Recommendation: add in subsection (e): “Not required for a spill-proof system that meets subsection (a) requirements.” (Michel Poirier, Wedco)

**Agency Response:** These comments are outside the scope of the proposed modifications. However, a replacement spout must meet the labeling requirements described in Section 2475 (e) if it is sold independently of a spill-proof system. This information is necessary to inform consumers buying replacement spouts, and spouts sold independent of a spill-proof system, of those products which can be used to create a fully compliant spill-proof system. Staff realized that it may be difficult to place this text on both the spout and the package and issued a second 15-day Notice for public comment. The final and adopted Section 2475 (e) now requires manufacturers to display the make, model number, and size of only those portable fuel container(s) the spout is designed to accommodate and can demonstrate compliance with Section 2472 (a) on the accompanying package, or for spill-proof spouts sold without packaging, on either the spill-proof spout or a label affixed thereto.

### C. Test Methods

6. **Comment:** Our test laboratory (EG&G) pointed out to us, they have never used a process requiring the use of a fusion welded cover a fuel container that contains gasoline inside. They normally perform all permeation test with the supplied fuel tank components or by adding a plug with epoxy sealant. It appears that some testing labs may not be equipped to perform fusion welding or may refuse to perform it for various safety concerns. Recommendation: Add in Principal and Summary of test procedure and at subsection (9) for sealing procedure:

“A high density polyethylene (HDPE) coupon is then fusion welded over the container opening or a plug with an impermeable epoxy sealant can be used to seal the opening., or the container may be tested with the components it is sold with.” (Michel Poirier, Wedco)

**Agency Response:** The ARB disagrees and makes no change in response. Since the Test Method in question will be used by the ARB to determine compliance with the permeation standard, and the regulations do not include any provisions for certification of spill-proof systems, the manufacturers are free to continue to use the ‘plug and seal’ method for their own compliance testing. It is the opinion of the ARB that this will not affect the results of Test Method 513. Staff included the change in sealing methods because it is faster, easier, and when labor and time are factored into the test procedure, less costly. Staff was made aware of the sealing technique by a major supplier of HDPE, who has used this method for a number of years with great success. Staff have used this

method on over 100 containers and found it be safe and efficient, with an additional one-time equipment cost of approximately \$400.

#### **D. Permeation**

7. **Comment:** As a portable fuel containers manufacturer, we still have a major concern regarding the permeation requirement of 0.4 gram/gal/day that is required in the test method 513. We recommend to increase the permeation rate requirement to a level obtainable with current proven technology and provide the industry sufficient time to develop or thoroughly evaluate the treatment options available and produce a product that will reliably meet and or exceed California's expectations and make a real step in reducing fuel container permeation based on reliable real world solutions. An extension of at least 18 months should be provide to implement any requirement regarding permeation. (Michel Poirier, Wedco)

Blitz requests a time extension of 18 to 24 months on the permeations requirement to further find/prove a reliable process to achieve the new permeation standards that we can have confidence in. Asking our industry to invest in a process, which is not proven, does not seem to resolve the permeation problems. (Larry L. Chrisco, Blitz U.S.A., Inc.)

CARB's proposed permeation specification of 0.4 grams per gallon per day requires the entire portable fuel container industry to fully adopt a new manufacturing technology in a time frame of approximately one year. We recommend that CARB instead finalize a phased-in permeation specification of 1.6 grams per gallon per day for 2001 and 2002 (equivalent to the performance of a well-designed container today) and a permeation specification of 0.4 grams per gallon per day for 2003 and beyond. This phase-in schedule provides industry with additional lead time to investigate and incorporate a new technology into its products, and investigate whether means other than sulfonation or fluorination may be more viable. (Allan Schmitz, Briggs & Stratton Corp.)

**Agency Response:** These comments are outside the scope of the proposed modifications. These issues were discussed extensively with the affected parties during the development of the regulations and resolved at the hearing ( see response to Comments 13 - 22). The record shows that the ARB analyzed the issues raised by the commenter's but came to a different conclusion regarding the technical feasibility and cost effectiveness of the adopted permeation standard.

#### **E. Miscellaneous**

3. **Comment:** We are the only manufacturer to date who has designed a jerrican with safety in mind, and we would like our products to be evaluated and considered by the Board as a standard basic. We need information on existing and new funding opportunities to further our research and development. We would like to receive copies of all performance standards for portable fuel containers, and spill-proof spouts. (Ken Combs, TankWorks Enterprises, LTD)

**Agency Response:** These comments are outside the scope of the proposed modifications. However, staff responded to the commenter's request for information by forwarding copies of the regulations which include the performance standards.

#### **IV. MODIFICATIONS TO THE ORIGINAL PROPOSAL - SECOND NOTICE OF MODIFIED TEXT**

With the addition of two new labeling requirements included in the first series of modifications to the originally proposed regulatory language, manufacturers may have had difficulties complying with all of the labeling requirements due to the physical limitations of some smaller spill-proof spout designs. The second notice modified the regulatory language with respect to the placement of the required text on the spill-proof spouts.

One comment letter was received during the 15-day comment period for the second notice of modified text. This letter was from the Engine Manufacturers Association and all comments therein were outside the scope of the 15-day changes.

## V. LIST OF ACRONYMS

AMA	American Motorcyclist Association
ARB	Air Resources Board
ASTM	American Society of Testing and Materials
CAA	Clean Air Act Amendments of 1990
CCA	Coalition For Clean Air
CCAA	California Clean Air Act
CCEEB	California Council for Environmental and Economic Balance
EFC	Environmental Fuel Controls, Incorporated
FSOR	Final Statement of Reasons
HC	Hydrocarbon
HSC	Health and Safety Code
NRDC	Natural Resources Defense Council
OSHA	Occupational Safety and Health Association
ROG	Reactive Organic Gases
SCAQMD	South Coast Air Quality Management District

## **VI. COMMENTERS AND SIGNATORIES**

### **A. Public Comment at the 9/23/99 Board Hearing**

1. Todd Campbell, CCA
2. John Kowalczyk, Envirocan, Inc.
3. Ron Raboin, ASTM - Chilton Products
4. Don Peters, Phillips Petroleum
5. Verl Law, Vemco, Inc.
6. Dana Bell, AMA
7. Harold Soens, AMA District 38
8. Dave Oakleaf, AMA District 37
9. Janet Hathaway, NRDC
10. Thomas Schmoyer, Enviro, Inc.
11. Bill Brown, Fluoro-Seal, Inc.
12. Michael Poirier & John Evans, Wedco

### **B. Lists of Signatories to Written Communications**

1. Envirocan, Inc., signed by John Kowalczyk
  - a. letter submitted at hearing by Envirocan, Inc., dated February 9, 1999
  - b. letter submitted at hearing by Envirocan, Inc., dated July 12, 1999
2. Phillips Chemical Company, signed by Don Peters
3. Phillips Chemical Company, signed by Don Peters, John Rathman, Buddy Dillard
4. AMA, signed by Dana Bell
5. Vemco, Inc., signed by Verl Law
6. ASTM, signed by Larry Chrisco, Scott Alderton, Ron Raboin, John Trippi Jr., John Ferguson, Verl Law, John Evans
7. NRDC, signed by Janet Hathaway, Ted Holcombe, V. John White, Todd Campbell, Sandy Spelliscy, Ronald Hwang
8. ARCO, signed by David Smith
9. Briggs & Stratton, signed by Scott J. Alderton
10. CCEEB, signed by Victor Weisser
11. California Regional Water Quality Control Board, signed by Dean Prat
12. Chevron, signed by Jane Fruin
13. EFC, signed by Joseph B. Collins
14. Charles Wilson, electronic mail
15. [Mykgib@aol.com](mailto:Mykgib@aol.com), electronic mail

16. J.C. DeLaney Consulting, signed by J. C. DeLaney
17. SCAQMD, signed by Barry R. Wallerstein
18. JUSTRITE, signed by Mike Baldwin
19. Sierra Club, signed by Thomas J. Walsh

**C. First 15-day Modifications**

1. Briggs & Stratton, signed by Allan Schmitz
2. Blitz U.S.A., signed by Larry Chrisco
3. Wedco, signed by Michel Poirier
4. TankWorks Enterprises, LTD, signed by Ken Combs

**D. Second 15-day Modifications**

1. EMA, signed by Kate Drakos