Appendix A:
ASPA / CSPA Technical Review Committee Correspondence to ARB on IRTA's "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents"

1. ASPA / CSPA's First Correspondence of Concerns

June 16, 2003

Mr. Kevin Cleary
Research Division
California Air Resources Board
Sacramento, CA
kcleary@arb.ca.gov

Re: Task 3 Interim Report on Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents

Dear Mr. Cleary:

The Automotive Specialty Products Alliance (ASPA) and Consumer Specialties Products Association (CSPA) have been involved since late last year as members of the Technical Review Committee (TRC) for the Institute for Research and Technical Assistance (IRTA) study, "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents," which is being funded by the California Air Resources Board (ARB). The seven ASPA/CSPA representatives on the TRC are Doug Raymond, Larry Beaver, Ed Piszynski, Adam Selisker, Bill Lafield, Andy Hackman and Doug Fratz. We are pleased to have this opportunity to comment to ARB on IRTA's Task 3 Interim Report for this study.

ASPA is an alliance of three non-profit, national trade associations representing companies engaged in the manufacture, formulation, distribution, and sale of automotive specialty products. The Alliance combines the efforts of Automotive Aftermarket Industry Association (AAIA), the Consumer Specialty Products Association (CSPA), and the Motor & Equipment Manufacturers Association (MEMA) to form a unified industry voice for their members engaged in the automotive chemical and vehicle appearance products markets.

CSPA is a voluntary, non-profit national trade association representing approximately 225 companies engaged in the manufacture, formulation, distribution, and sale of formulated consumer products for household, institutional and industrial use. These products are formulated and packaged in many forms. The majority of these products are generally marketed nationally. CSPA and its member companies are committed to the

safe manufacture, distribution, use and disposal of consumer products, and assuring that our products provide the numerous environmental, health and safety benefits that consumers need in California and elsewhere.

The ASPA/CSPA members of the TRC, along with other members of ASPA and the CSPA Air Quality Special Committee's Automotive and Solvent Products Task Force, have reviewed the Task 3 Interim Report submitted by IRTA, and would like to submit the following technical and scientific comments.

Background

In 2001, ARB issued RFP #01-317 seeking proposals for a $200,000, 18-month study on water-based, near-zero VOC, low-toxicity aerosol alternatives to traditional products used for cleaning mechanical parts in automobiles. In March 2002, IRTA submitted a technical proposal for a study, "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents," that included six tasks. Formation of a TRC to provide outside technical and scientific guidance to the research project was part of Task 1. This proposal was subsequently accepted by ARB. In September, IRTA submitted to ARB its "Task 1 Plan." The TRC was formed and had its "Kickoff Meeting" by conference call in November, 2002. ASPA/CSPA representatives on the TRC offered to assist the research project with advice on appropriate testing protocols, and subsequently assisted in the filling of aerosol products for testing based on liquid concentrates provided by IRTA. Industry members of TRC, however, had no input into the protocols for the testing, and were not present to observe the tests, per earlier agreements, and we expressed our concerns to ARB.
In April 2003, IRTA delivered to ARB a Task 3 Interim Report. In a May conference call, ARB agreed to supply the report to the TRC for review and comment by June 25th.

The first three tasks of the six tasks in IRTA's research project proposal can be summarized as follows:

Task 1

- Assemble TRC to advise project
- Develop study plan with detailed protocols for evaluating cleaning effectiveness and cost effectiveness of products selected for testing
- Review existing water-based automotive products for brake cleaning, carburetor/fuel injector cleaning, engine degreasing and general purpose degreasing, review the types of ingredients, and review toxicity
- If no or few such commercial aerosol products are found, identify other products that could be effective
- Collect automotive parts for use in preliminary testing in Task 2

Task 2

- Perform preliminary efficacy testing of selected aerosol products in two phases: test at least 25 non-aerosol spray cleaners to determine which concentrates work best (Phase 1), and then test selected concentrates in aerosol form (non-VOC propellants preferred)

- Testing will include tests appropriate for each type of cleaning (brake, carburetor/fuel injector, engine, general purpose)
- If water-based and vegetable-based cleaner are ineffective, acetone-based products may be tested
- Testing will be conducted at Applied Cleaning Technologies in Anaheim, California
- At least five formulations will be identified that work for each of the four product types
- At least two solvent-based commercial aerosol formulations will be used as baseline for efficacy
- Successful alternatives must be effective cleaners, not rust the parts, not foam excessively, not leave unacceptable residues, and be low cost

Task 3

- A draft report summarizing the results of Task 1 and Task 2 will be submitted to ARB, including:
    - Information on low-VOC aerosol products currently marketed
    - Results of preliminary testing
    - VOC contents of products, types of surfactants used, toxic ingredients used, and product costs
    - Recommend products for field testing in Task 4
    - Provide a field testing plan in 10 to 15 repair facilities, with at least 5 products representing each product category
    - Identify candidate facilities for field testing
- The interim report is to be reviewed by ARB staff

Although the IRTA proposal does not identify the specific role of the TRC in these tasks, it was agreed in the November call that the TRC would be actively involved in providing technical and scientific advice to IRTA and ARB on the project. Beyond some preliminary discussions in the November 2002 call, however, the TRC was not asked to comment on any of the key study documents prior to the Task 3 Interim Report. Comments were not solicited on the proposal, or the Task 1 Plan (dated September 30, 2002). These comments on the Task 3 Interim Report are therefore the first technical and scientific comments ASPA and CSPA have developed on this research project.

Specific Comments on the Task 3 Interim Report

I. Introduction

We do not agree with the statement in the first paragraph that "water-based products would offer a better alternative to both the VOC and chlorinated solvent products from a health and environmental standpoint." It is not a foregone conclusion that water-based cleaners would be better alternatives; they could be worse for health and environmental conditions if not formulated properly. The relative benefits of various products should be evaluated scientifically in this research project, not simply assumed. Regarding the selection of products for testing, the introduction provides no information regarding how alternative water-based cleaners were selected for the screening tests. This is one of the many key pieces of information missing from this report.

II. Low-VOC, Low Toxicity Cleaners

It is important to note that the 50 g/l is a weight/volume measure does not relate directly to weight-weight percent VOC in aerosols. The contents of an aerosol cannot be accurately described in the weight per volume units used for liquids because the volume of the contents is not readily measurable. Moreover, aerosol products are required to be labeled in units of measure by weight making any volumetric measure confusing and possibly contradictory.

The Task 3 report states that a Google search was used to identify companies that manufacture water-based aerosol automotive products. While an internet search can most certainly find some products, it is not an adequate mechanism to identify all water-based aerosol automotive products currently marketed. The TRC should have been asked to assist in this task. No explanation is provided regarding how water-based aerosol products were identified, and no definition of water-based is provided. A product that contains 10% water could arguably be water-based. Many water-based products contain some water-miscible organic solvents, and a VOC propellant. The IRTA criterion of "275 grams per liter of VOC" seems both arbitrary and nonsensical, aerosol products can only theoretically be assigned a weight-volume content for reasons stated earlier. Depending on the specific gravity of the formulation and the propellant content, packaging a liquid containing VOC at, 275 g/l could result in a product containing 28-35% VOC. If any VOC-based criterion is used to define "water-based" for aerosols, it must be provided as a weight-weight percent. It is also important to remember that in the South Coast, the automotive maintenance facility VOC limits do not apply if the daily usage is less than 160 fluid ounces.

The failure of one commercial aerosol product to be tested because the manufacturer did not send a free sample seems arbitrary. Why could the product not be purchased for testing? Table 2-1, although very incomplete, includes products developed for purposes outside of the scope of this study (e.g., wheel cleaners). It is important to note that there are no brake cleaners, carburetor/fuel intake cleaners on this list.

No explanation is provided regarding how the non-aerosol products in Table 2-2 were selected for use in the preliminary testing. Only three "non-water-based" products were selected, only one of which may be an aerosol, and one of which is simply acetone, despite the wide variety of low-VOC aerosol products available for selection in this area. Little information is provided regarding the formulations of the products selected, or why they were selected, or why other products were not selected.

The "preliminary screening test protocol" described is inadequate and flawed in a number of areas. There appears to have been no effort to standardize, quantify or even characterize the soil being removed in the test. No solvent-based aerosol products seem to have been used for baseline efficacy comparison, as described in the proposal. A "base-line solvent cleaner" is mentioned as having been tested, but no description given for what that product may have been. It is stated that efficacy was judged by observing that water "sheets" off the part, based on the theory that if this occurs, the part is "clean". In actuality, however, simple water sheeting (or beading) does not automatically indicate

whether or not a part is clean. The data from this testing is described as whether the product "performed well". Even for screening tests, better criteria must be provided to have a scientifically relevant test. The conclusion that "14 of the water-based cleaners performed well" has limited relevance to aerosol products or formulations, since conversion of liquid products to aerosol form requires corrosion inhibitors and extensive stability and performance testing to insure the inhibitors work correctly without negatively impacting product performance. Formulating effective aerosol products requires more than taking an effective liquid concentrate and adding an appropriate propellant. Numerous other factors, including corrosion inhibition, degree and speed of foaming, etc., must be considered.

It is not accurate to state that, "Disc brakes do not need to be degreased." Effective brake cleaners should be used to remove contaminants from disc brake as well as drum brake components. This type of misinformation should not be allowed to spread among automotive repair facilities, or public safety could be compromised. It is also inaccurate to assume that used brake components are always replaced; this is very often the case, especially for components other than disc pads and brake drum shoes. It is important to note that general purpose parts degreasing cannot be used to judge brake cleaning performance.

IRTA has failed here to even begin to address the unique efficacy and regulatory requirements of carburetor/fuel injector system cleaners. The statements included in the report about this category are very misleading. There are many other types of motorized equipment that have a need for carburetors. There is also still a need in fuel injection air intake systems for an aerosolized cleaner.

Regarding engine degreasers, it is not true that "only large shops or car washes perform engine degreasing." It is also not true that shops using aerosol engine degreasers "most often use a foaming cleaner." Non-foaming engine degreasers still outsell foaming products. Also, the IRTA assumption that thick foaming is effective is not necessarily true.

It is stated that the "results of the first phase of screening tests indicated that four of the 10 water-based low-VOC aerosol cleaners performed well" and would be further evaluated in the second phase. No data or criterion is provided to document what "performed well" means. Based on our knowledge of the products, it appears the selection could have been made randomly. The 18 water-based cleaners are described as being tested in "pesticide applicators." More information should be provided on these spray devices. More information on the content of these cleaners needs to be provided. Further information (including test protocol and data) is also needed regarding the decision that acetone and one engine degreaser "performed well" while a Soy Gold solvent did not.

The excessive foaming problem encountered for some of the liquid products re-packaged as aerosols could have been alleviated through working more closely with the aerosol packagers on the TRC. This is a problem that must be addressed and optimized in the formulation of aerosol products. The products our members were asked to fill were not optimized for cleaning effectiveness or aerosol formulation. Input from aerosol

manufacturers during long-term product development will be needed to make testing more productive. However, this is beyond the scope of this study.

Our review of the data in Table 2-3 (the first actual data in the report) does not provide confidence in the reliability of this type of evaluation technique. It is unclear what cleaners were being used as the "current cleaners" for baseline comparison. We must especially question the consistency of the results from Connell Chevrolet. Even the "best rated" cleaners "did not perform well" in at least three of the nine facilities. Our best guess is that the gross inconsistency in these data was primarily the result of inconsistent evaluating techniques at the facilities. Depending on what they were trying to do, and what product they would normally use, any product could be rated ineffective or effective, depending on the circumstance.

The study described here falls far short of providing scientifically valid or even technically useful data regarding the potential for formulating safe and effective low-VOC aerosol products for various types of automotive maintenance cleaning. This section provides neither the step-by-step protocol nor the actual data obtained in conducting the preliminary screening tests or the second phase of testing. If subjective visual evaluations were used, they should be accompanied with photographs. The protocol should have been reviewed by the TRC prior to tests being run, and the data from these tests should have been reviewed prior to the conduct of the second phase of cleaning tests.

One major factor not considered in the IRTA cost assessment is labor time. This is a critical flaw, since labor is the number one cost for these types of facilities, far above cleaning products. Products that prolong the time needed for these critical automotive cleaning tasks could have economic impacts, and result in the products being rejected by the facilities. Factors that can cause delays include increased drying time and excessive foaming, in addition to failure to remove soil quickly. Another factor not considered is the amount of product needed for a given task; if more product must be used, the cost effectiveness of the product decreases.

III. Field Testing Protocol

The field testing "protocol" outlined here (presumably for Task 4 evaluations) is likely to obtain results no more reliable than those described earlier in this report as being obtained in Task 2. In addition, many of the product evaluations described must be done in the context of a rigorous product development evaluation, and cannot be accomplished in the manner described, and are indeed arguably beyond the scope of the research project as originally proposed. Aerosol product formulations cannot be made at random and field tested; extensive laboratory evaluations are necessary before a product can be safely filled and placed in use. The evaluations described here are marketing evaluations that are done after the completion of the product research and development phase.

We do not agree with the contention that "brake cleaning is not a challenging cleaning application." The types of soils that develop on brake parts can be very challenging, and there are few automotive systems that are more critical to automotive safety than braking systems. Even a small decrease in brake performance can lead to increased risks.

Arguably, brake system cleaning is among the more critical and challenging automotive maintenance tasks.

The section on alternative propellants is based on an inadequate understanding of the inherent technical limitations of the available non-hydrocarbon propellants. Carbon dioxide cannot be used in water-based systems because it can be neutralized in alkaline formulations, it can create corrosive conditions in some formulations, it has limited solubility in water, and it will lead to severe pressure drop during product life. Nitrogen also will not dissolve in water, and therefore would create a severe pressure drop during the life of the product, which has severe effects on product spray performance. HFC propellants have been identified as having high global warming potential, and CSPA has therefore signed on as a founding member of the alliance adhering to Responsible Use Principles for HFCs. CSPA members can make only limited use of these propellants. The U.S. Environmental Protection Agency and United Nations Environmental Program are among the sponsors of these Principles.

In any field testing, users must be given clear and consistent instructions regarding how they are to use and evaluate products, and how they are to record the data. This data must be recorded while the products are being used, and logged at least daily. Weekly interviews tend to be inaccurate and biased. In addition, the data should be as quantitative as possible, not just qualitative as proposed by IRTA. The questions listed in this section would not obtain reliable data, and would not obtain the most important quantitative data, such as time requirements and amount of product used to accomplish tasks using different products. It is also essential that the evaluations be "double-blinded" so that neither the evaluators nor any observers know the actual identity or composition of any product; evaluations that are not blinded can be unreliable due to bias.

IV. Characteristics of Alternative Cleaners

This section purveys the misunderstanding that it is difficult to determine the weight-weight VOC of aerosol and non-aerosol products. Aerosol products are filled on a net weight basis, and therefore percent VOC can be easily determined from the formulation. For liquid products, the conversion is also simple if the specific gravity (weight per volume) of the product (or the individual ingredients) is known. Any manufacturer should be able to provide the weight-weight percent VOC of their liquid or aerosol product, provided that a consistent definition of "VOC" is given. On the other hand, the process provided here by IRTA for determining the VOC content of the Mirachem aerosol product is incorrect, and does not properly compute the exact VOC content.

On the other hand, it is not true that, "CARB requires aerosols to be labeled with the percentage VOC in the package." No such regulatory requirement exists. We would also once again note that the South Coast VOC limits only apply to usage of aerosol products over a certain amount per day, and we contend that these limits do not apply to consumer products that are regulated by CARB.

In aerosol formulations, it cannot be assumed what percent propellant is required for proper performance over the life of the product. It varies significantly, depending on the

overall product formulation. While only 6-7% hydrocarbon propellant is needed in some water-based products, others may require significantly more.

The prices provided for various ingredients in Table 4-1 are very low, sometime varying by a factor of two from the costs currently paid by formulators. IRTA needs to seek input from formulators to obtain correct costs. In any case, ingredient costs are just one of the costs of making an aerosol product. Manufacturing costs can vary greatly depending on both formula and packaging. Even more important, as noted earlier, product cost is just one of many cost factors for automotive maintenance facilities, and must be considered along with product efficacy factors, since increased product usage and increased labor costs can far outweigh cost-of-product considerations.

It is not true that carbon dioxide propellant would add little cost, since its use would require barrier packaging to keep it separate from any water-based formula, a very expensive technology. Also the statement that a water-based cleaner at $10/gallon can be reduced to $2-3/gallon based on quantity ordered is not an accurate assessment.

V. Summary and Conclusions

This Task 3 Interim Report, which primarily serves describe the work accomplished under Tasks 1 and 2 of IRTA's proposed research project, does not meet most of the goals established for the proposed project by IRTA. Although some of the modifications in activities has been caused by the infeasibility of various aspects of the project as proposed by IRTA, other changes in the project cannot be easily justified. Most of the key elements of Tasks 1, 2 and 3 of IRTA's proposal (reviewed earlier in these comments) have not been accomplished or adequately addressed to date.

We believe that further laboratory evaluations are needed on a wider variety of existing aerosol product formulations using reliable testing protocols. These protocols are needed to provide the basis for any further work on this project. Laboratory evaluations of product performance must take into account the varying soils, substrates and other parameters involved in these four categories of automotive maintenance products, and must provide accurate and precise measurements of relative efficacy.

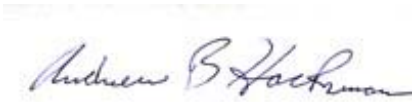
Significant modifications are also required in the protocols for field testing to allow reliable quantitative and qualitative data to be obtained.

We suggest that IRTA make better use of the Technical Review Committee assembled for this project. Significant expertise exists on the committee, especially among the ASPA/CSPA members, that could have been utilized to save significant efforts that have been spent to gather data that is neither quantitative nor reliable.

We once again appreciate the opportunity to comment on this Interim Report. ASPA and CSPA look forward to assisting IRTA and ARB in efforts in the future on this important research project.

Sincerely,

D. Douglas Fratz
Vice President, Scientific and Technical Affairs
Consumer Specialty Products Association



Andrew Hackman
Automotive Specialty Products Alliance

cc: Jeanette Brooks, ARB
Carla Takemoto, ARB
Olufemi Olaluwoye, ARB
ASPA Members
CSPA AQSC Automotive and Solvent Products Task Force

2. ASPA / CSPA's Second Correspondence of Concerns

August, 26, 2003

Mr. Kevin Cleary
Research Division
California Air Resources Board
Sacramento, CA
kcleary@arb.ca.gov

Re: The Study "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents"

Dear Mr. Cleary:

The Automotive Specialty Products Alliance (ASPA) and Consumer Specialty Products Association (CSPA) are writing to express our continued concerns with conduct of the research project entitled "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents," which is being funded by the California Air Resources Board (ARB) and conducted by the Institute for Research and Technical Assistance (IRTA). Specifically, we are concerned that the testing being performed by IRTA lacks true scientific credibility and is therefore inadequate to serve as the basis for future Volatile Organic Compound (VOC) reduction measures. We are also concerned that in light of California's, and the ARB's current budget problems, continuing to fund this project might prove financially irresponsible.

ASPA is an alliance of three non-profit, national trade associations representing companies engaged in the manufacture, formulation, distribution, and sale of automotive specialty products. The Alliance combines the efforts of Automotive Aftermarket Industry Association (AAIA), the Consumer Specialty Products Association (CSPA), and the Motor & Equipment Manufacturers Association (MEMA) to form a unified industry voice for their members engaged in the automotive chemical and vehicle appearance products markets.

CSPA is a voluntary, non-profit national trade association representing approximately 225 companies engaged in the manufacture, formulation, distribution, and sale of formulated consumer products for household, institutional and industrial use. These products are formulated and packaged in many forms. The majority of these products are generally marketed nationally. CSPA and its member companies are committed to the safe manufacture, distribution, use and disposal of consumer products, and assuring that our products provide the numerous environmental, health and safety benefits that consumers need in California and elsewhere.

Statement of Interest

ASPA and CSPA have been involved since late last year as members of the Technical Review Committee (TRC) for this study. ASPA/CSPA, and several companies, including: Amrep, Inc., CRC Industries, Hydrosol, Inc., and Radiator Specialty Company, and Sherwin-Williams Diversified Brands voluntarily participated in several aspects of the project, from filling aerosol samples, to witnessing preliminary tests on June 25, 2003. Our member companies are leaders in the manufacturing of automotive consumer products and will be directly affected by the outcome of this study and any subsequent reduction measures that are taken as a result.

ASPA/CSPA members of the TRC, along with other members of ASPA and CSPA's Air Quality Special Committee's Automotive and Solvent Products Task Force, have reviewed the Task 3 Interim Report submitted by IRTA, and witnessed preliminary tests conducted on June 25 and would like to submit the following technical and scientific comments. These comments will substantiate our claim that the current performance of this project lacks the necessary scientific quality needed for a study of this magnitude.

Background

In 2001, ARB issued RFP #01-317 seeking proposals for a $200,000, 18-month study on water-based, near-zero VOC, low-toxicity aerosol alternatives to traditional products used for cleaning mechanical parts in automobiles. In March 2002, IRTA submitted a technical proposal for a study, "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents," that included six tasks. Formation of a TRC to provide outside technical and scientific guidance to the research project was part of Task 1. This proposal was subsequently accepted by ARB. In September, IRTA submitted to ARB its "Task 1 Plan." The TRC was formed and had its "Kickoff Meeting" by conference call in November, 2002. ASPA/CSPA representatives on the TRC offered to assist the research project with advice on appropriate testing protocols, and subsequently assisted in the filling of aerosol products for testing based on liquid concentrates provided by IRTA. Industry members of TRC, however, had no input into the protocols for the testing, and were not present to observe the tests, per earlier agreements, and we expressed our concerns to the ARB. In April 2003, IRTA delivered to ARB a Task 3 Interim Report. ASPA/CSPA submitted comments on the Task 3 Report. Subsequently ASPA/CSPA staff members, ARB personnel, and industry representatives witnessed re-performed preliminary tests by IRTA at a testing facility in Anaheim, California on June 25, 2003.

Comments

A. Preliminary Screening Tests Provide Inconclusive and Unreliable Data

According to the Task 3 Interim Report, provided by IRTA, preliminary screening tests were conducted, in April 2003, to determine which water-based cleaners "performed well" and would be tested further in the field-testing portion of the project. No raw data from these tests was provided in the report[1], and it is unclear what specific versions of products were tested[2], what procedures were followed, or what criteria were used to evaluate relative efficacy.

There was also no explanation provided in the Task 3 Interim Report regarding how these non-aerosol products in Table 2-2 were selected for use in the preliminary testing. Only three "non-water-based" products were selected, only one of which may be an aerosol, and one of which was simply acetone, despite the wide variety of low-VOC aerosol products available for selection in this area. Little information was provided regarding the formulations of the products selected, or why they were selected, or why other products were not selected. IRTA needs to provide additional detailed and specific justification on the preliminary screening test selection process.

The "preliminary screening test protocol" described in the report is also inadequate and flawed in a number of areas. There appears to be no written test methods / procedures for the screening tests. Such test procedures are needed to ensure consistency.

Our comments on the Interim Report expressed these and other serious concerns regarding the testing reported in the Report. After viewing the second set of screening tests on June 25, ASPA and CSPA representatives expressed the following additional concerns with the conduct of the preliminary screening tests:

- The procedure used made no significant distinctions between various usages supposedly being evaluated (brake cleaning, carburetor cleaning, engine degreasing and general degreasing) in terms of usage rate, types of soils, or other factors that would make the evaluations relevant to those specific product usages. The "baseline" was set with the same commercial product for each set of tests, and seems to be randomly chosen.

- There was no effort to standardize, quantify or even characterize the soil being removed in the testing.

- There was no record of any written standard or criteria for determining scoring of the test results for individual products in the test. There is no written description of the criteria used by operators on how to determine whether a test product was

[1] This data was subsequently provided after the June tests; see our comments later in this section regarding the lack of consistency between these two datasets.

[2] All aerosols filled by ASPA/CSPA members were filled in each of two alternative forms, with different valving systems to provide high spray rates and low spray rates to allow for better comparisons of base product effectiveness.

"the same," "close," or "not as good" as the "baseline".

- Testing of the sample products used different automotive parts with varying degrees of soil / dirt on the parts. This use of various parts could undermine evaluated performance of a product sample.

- There was no reference to any ASTM test methods (or any other objective or standardized test methods or procedures) used during the preliminary tests.

- It was clear that the product evaluations were not "blinded" to remove the potential for subconscious bias in subjective evaluations by the operator(s).

These deficiencies in the conduct of the preliminary tests call into question to the methods used by IRTA throughout this project, and demonstrate the lack of consistency and control needed for a scientific study. Indeed, the further tests witnessed by ASPA/CSPA staff and various industry representatives confirmed this lack of scientific protocol.

B. Tests Conducted on June 25, 2003 Lacked Appropriate Scientific Protocol and Evaluation Criteria

The repeated screening tests witnessed by ASPA/CSPA representatives and others on June 25, 2003 in Anaheim, were conducted without a written test protocol and the results were inconsistent with reported preliminary testing. For these tests to have been a meaningful evaluation of these samples additional testing procedures were needed. These tests were not standardized, provided misleading results, and were conducted in a highly unscientific manner. There was seemingly no standardized test procedure for the tests of the samples. Specifically, no standard spray timing was witnessed, these tests lacked standard soils, there was no standard data collection method, the test samples were not "blinded," and there were no standard scoring criteria.

Additional deficiencies in the June 25 tests included poor methodology for mask off sections of the automotive part. It was observed that run-off occurred several times to other sections of the part not yet tested. Product contamination may have skewed the results of the tests. In addition, during the tests representatives witnessed no established classification system on how to evaluate sample performance according to a quantitative data set. In fact, evaluation of sample performance was very subjective and not quantitative.

Subsequent to the June 25 testing, IRTA provided copies of the data they collected during the testing. Eventually, data from both the June tests and the earlier tests was provided. Our review and comparison of the data, as well as the data in the Task 3 Interim Report Table 2-3, found a lack of consistency between the test results, and supports our concerns regarding the reliability of IRTA's evaluation techniques.

Specifically, of the water-based test products that were references as "selected" in the Interim Report (April 2003), only one (Gunk Foaming Engine Brite) was rated as "same as baseline" on all three of the June 25 tests. However, Gunk Foamy Engine Brite is a

commercial product that is used for engine degreasing, not specifically designed for brake or carburetor / choke cleaning. The other two water-based cleaners that were rated "same as baseline" on all three of the June 25 tests—Metalnox M6319 and Brulin 815GD—were rated as "not selected" in the Interim Report by showing ratings of "not as good as baseline" in two of the four earlier tests. The two water-based products that scored best on the March testing—Daraclean 257 and ACT Sprayclean-12, with four ratings of "same as baseline"—were scored much lower in the June 25 testing. There is not even consistency between the Interim Report list of selected products and the March test data provided later; two of the products selected for further testing—Metalnox M6410MS and Brulin 1990GD—actually scored "not as good as baseline" on three or four of the four tests. This again draws into question what criteria were used to select "effective" products. Looking at the overall dataset of products tested in all seven tests, virtually every product received high scores in some tests, and low scores in others. The results appear statistically indistinguishable from random.

Considering the importance of this study and the potential impact of future VOC reduction measures, these tests fall short of providing scientifically valid or even technically useful data. They provide little or no reliable insights regarding the potential for formulating safe and effective low-VOC aerosol products for various types of automotive maintenance cleaning.

C. Tests conducted on June 25 Lacked Consistency with Operators

During preliminary tests on June 25, industry representatives witnessed numerous inconsistencies. These inconsistencies could have profoundly affected the overall results of the tests and they undermine the validity of the conclusions that IRTA will draw at the completion of this project. Some of the specific operator inconsistencies noted on June 25 were as follows:

- The specific version of the aerosol product chosen seemed to sometimes be the low-flow version and sometimes the high-flow version; no record seems to have been kept regarding which was which.

- The time used to spray product (described at the beginning of the tests as intended to be 10 seconds) and water bottle (never characterized by time period intended) seemed to differ between the various products and the operators.

- Soils on the various parts used in the tests were not standardized. In testing a product category (e.g., general purpose degreaser) several different parts were used. The use of different parts added inconsistencies to the comparison of the 25 products tested.

- Rating the various products to the baseline and foam determination seemed inconsistent, and not based on any set criteria.

- Water application also varied on the amount used to clean off foam on parts. Some products used a considerable amount of water to remove the foam and other products did not even require a water rinse. The method on wiping with the

rag to determine soil removal was also inconsistent.

In addition, with respect to water rinsing, no protocol was established by IRTA to determine when rinsing is appropriate and just how much water rinse is to be used. The issue of disposal of this rinsate is also not addressed at any point. Steps must also be taken to determine the repair industry's willingness to accept water-based products and the generation of water/oil wastes and their disposal. The issue of corrosion on some parts has not been addressed. The repair industry and original equipment manufacturers must be polled to determine which parts, if any, cannot be water rinsed due to risk of corrosion.

For future tests to be scientific and reliable, they must be conducted in a more uniform and documented manner, with blinded samples and set protocols and evaluation criteria. This would eliminate potential operator variables, and ensure that products are truly being evaluated on their actual performance.

D. The Current Design of Future Field Tests is Inadequate to Produce Reliable Data

The Task 3 Interim Report also outlines a field testing "protocol" (presumably for Task 4 evaluations). The protocol described, however, is likely to obtain results as unreliable as those in the preliminary testing. Once again there was no written procedure or test methods that IRTA specified for use by the 9 auto shops, and no written product evaluation criteria. This lack of testing protocol causes great concern and prompts the following questions that need to be addressed by IRTA.

- How will each auto shops rate and determine how a sample product compares to the baseline?
- How will each auto shop test each product?
- How will each auto shop rate these products?
- How will each auto shop record the results of their tests?
- How will various factors be recorded by the auto shops? (These factors should include evaporation rate, dry time, odor, amount used, cleaning, etc.)

In addition to these answering these questions, in any field testing, users must be given clear and consistent instructions regarding how they are to use and evaluate products, and how they are to record the data. This data must be recorded while the products are being used, and logged at least daily. Weekly interviews tend to be inaccurate and biased. In addition, the data should be as quantitative as possible, not just qualitative as proposed by IRTA in the Task 3 Interim Report. It is also important that the product evaluations be "blinded" if commercial products are used in the testing.

If ARB decides to have IRTA continue with this study, they must also ensure that all products to be tested at the auto shops perform under generally accepted guidelines for these types of studies. For this next round of field testing, the same product baseline needs to be established so that all auto shops will be making the same comparison. In addition, it is also essential that the evaluations be "double-blinded" so that neither the

evaluators nor any observers know the actual identity or composition of any product; evaluations that are not blinded can be unreliable due to bias.

E. Incorrect Assumptions Need to be Corrected from the Report and Study Planning

Within the Task 3 Interim Report and throughout our participation in this process, ASPA/CSPA and our members have had concerns with several of the assumptions that IRTA is using for this project. First, it is not a foregone conclusion that water-based cleaners would be better alternatives. The relative benefits of various products should be evaluated scientifically in this research project, not simply assumed

Within the Task 3 Interim Report it was stated that, "Disc brakes do not need to be degreased." However this assumption is not valid. Effective brake cleaners should be used to remove contaminants from disc brake as well as drum brake components prior to returning the vehicle to use. In addition, it is incorrect to state that "only large shops or car washes perform engine degreasing." It is also not true that shops using aerosol engine degreasers "most often use a foaming cleaner." Non-foaming engine degreasers still outsell foaming products. Also, the IRTA assumption that thick foaming is effective is not necessarily true.

Finally, we do not agree with the contention that "brake cleaning is not a challenging cleaning application." The types of soils that develop on brake parts can be very challenging, and there are few automotive systems that are more critical to automotive safety than braking systems.

F. Aerosol Factors Must Be Considered for this Project

For this project to assess the true viability of automotive consumer products in the aerosol product form, issues specific to aerosols must be addressed. For example, questions were brought up at the site testing regarding cost, corrosion, and formulation. Because a number of these products are used in specialized applications, the costs of these water-based chemicals are 500% more expensive than those presented in the Task 3 Interim Report. IRTA needs to seek input from formulators to obtain correct costs.

Also aerosol container corrosion is a major concern with some of these test samples which need to be evaluated to see if they are acceptable for aerosol application. It cannot be assumed that all formulations of these water-based cleaners will remain stable in aerosol packages for extended periods of time.

These sample products are being put into aerosol form without necessary rigorous product development evaluations. Issues regarding foam, spray rate, spray pattern were not addressed in the preliminary screening tests (April & June). These factors must be considered in any future tests due to their impact on the performance of a product.

Conclusions

ASPA /CSPA and our members believe that the Task 3 Interim Report and tests witnessed on June 25 fall far short of providing scientifically valid or even technically useful data regarding the potential for formulating safe and effective low-VOC aerosol products for various types of automotive maintenance cleaning. For this reason ASPA/CSPA and our members continue to have serious reservations about the reliability of this project and any resulting VOC reduction requirements. In consideration of the severe fiscal problems now facing California and ARB, we recommend that ARB seriously consider discontinuing funding of this project.

The data generated from the testing to date are clearly too variable to provide reliable information on the efficacy of the products tested for any automotive maintenance and repair activities. Contrary to some assumptions, aerosol product formulations, such as consumer automotive products, cannot simply be made at random and field tested. Extensive laboratory evaluations are necessary before a product can be safely filled and placed in use. The evaluations described in the Task 3 Report are marketing evaluations that are done by manufacturers after the completion of the significant product research and development phase. Many of the product evaluations described in the Task 3 Report are done in the context of a rigorous product development evaluation, and cannot be accomplished in the manner described, and are indeed arguably beyond the scope of the research project as originally proposed.

For these reasons and due to the monumental budget crisis that California and the ARB are facing, we suggest that the ARB consider ending this project. Considering that the consumer and automotive products industry is being charged "fees" to support the ARB's programs we have an inherent stake in ARB expenditures. We consider the use of ARB funds to support this fundamentally flawed project not fiscally responsible.

However, should the ARB wish to continue to fund this project, we believe that IRTA must be compelled to adhere to strict scientific protocols that will ensure that the results of the study is more reliable and quantitative. IRTA must also be required to generate information on past and future evaluation and selection criteria. ASPA/CSPA and our members also believe that further laboratory evaluations are needed on a wider variety of existing aerosol product formulations using reliable testing protocols. Laboratory evaluations of product performance must take into account the varying soils, substrates and other parameters involved in these four categories of automotive maintenance products, and must provide accurate and precise measurements of relative efficacy. Significant modifications would also be required in the protocols for field testing to allow collection of reliable data.

Should this project continue, we also suggest that IRTA make better use of the Technical Review Committee assembled for this project. Significant expertise exists on the committee, especially among the ASPA/CSPA members, that could have been utilized to save significant efforts that have been spent to gather data that is neither quantitative nor reliable.

We once again appreciate the opportunity to comment on this project. ASPA and CSPA look forward to our continued participation in this process, and working cooperatively with the ARB in the future.

Sincerely,

D. Douglas Fratz
Vice President, Scientific and Technical Affairs
Consumer Specialty Products Association

Andrew Hackman
Automotive Specialty Products Alliance

cc: Peter Venturini, ARB
Bart Croes, ARB
Jeanette Brooks, ARB
Carla Takemoto, ARB
Olufemi Olaluwoye, ARB
ASPA Members
CSPA AQSC Automotive and Solvent Products Task Force

3. ASPA / CSPA's Third Correspondence of Concerns

September 10, 2003

Mr. Kevin Cleary
Research Division
California Air Resources Board
1001 I Street, P.O. Box 2815
Sacramento, CA 95812
kcleary@arb.ca.gov

Re: Test Protocol for the Study "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents"

Dear Mr. Cleary:

The Automotive Specialty Products Alliance (ASPA) and the Consumer Specialty Products Association (CSPA) are writing to respond to comments by the Institute for Research and Technical Assistance (IRTA) in their letter dated, September 8, 2003 and to express our strong support for requiring laboratory testing be conducted for this research project entitled "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents," which is being funded by the California Air Resources Board (ARB) and conducted by IRTA.

We also want to express our concerns that IRTA is not planning on conducting preliminary laboratory testing prior to field testing of water-based samples (in accordance with their Task 1 Plan). ASPA / CSPA also want to express our concerns with the safety of these water-based cleaners being used on consumers' vehicles during the proposed field tests. Finally, in response to IRTA's letter, we assert that laboratory testing is a valid means of evaluation for this project, and must be completed for this project to serve as the basis for future VOC reduction measures.

The Revised: *Engine, General Purpose, and Brake Cleaning Test Methods*

ASPA and CSPA members strongly support the (attached) test protocols, which have now been revised to address specific issues, raised by IRTA and are now entitled: *Engine, General Purpose, and Brake Cleaning Test Methods*. Our members believe these laboratory tests are necessary for the scientific conduct of the remainder of this project and should be required to fulfill satisfactory performance of this contract. We also believe that laboratory testing is a valid way of assessing performance of samples in this project. ASPA / CSPA members continue to regard the performance of this project to date as unscientific and non-uniform and believe that if these protocols are not required and not conducted this project cannot contribute to the development of future volatile organic compound (VOC) reduction measures. Our members are leaders in the engine degreasing, general purpose degreasing, and brake cleaning markets and they feel that the newly revised test protocols address IRTA's concerns and represent a general and

scientifically sound way to test and evaluate the overall performance of these types of cleaners. These protocols are relatively simple and not particularly time consuming and we assert that they can be accomplished within the scope of this project. These protocols represent a standard example of tests our individual companies perform prior to taking a product to market. As with any scientific dialogue we are open to credible suggestions and we have improved our protocol to address most of the issues raised in IRTA's letter. In addition, the following comments address specific issues that IRTA raised as flaws within our recommended test protocol.

- This test method provides one overall test that can be used for brake cleaning, engine degreasing, and general purpose degreasing. The method recommends two uniform soils that can be used for these types of tests for a baseline comparison. We would not argue that these types of applications are the same; however, initially performing preliminary tests on uniform automotive soils will provide a more objective comparison.
- In response to issues regarding contamination / soils (baked-on and greasy oil) for both test methods, these uniform soils are used to standardize results for objective comparisons to be made. The soils are representative of automotive soils traditionally encountered in these types of operations. These soils are used in laboratory tests that are performed by individual companies ***before*** field testing.
- In reference to carburetor and fuel injection cleaner testing, we strongly believe that water-based cleaners cannot be used in this function because they are non-combustible and will interfere with the performance of an engine. Therefore, we would recommend that this area of testing be discontinued.
- In response to the evaluation of foaming products, it is accepted by this industry that if the foam does not break-up it is not adequately cleaning a product. After the foam break-up occurs these products can be evaluated exactly like other products.
- In reference to the question regarding the use of an exhaust hood, it is standard practice that this apparatus be used when conducting these types of tests, where workers might be exposed to potentially harmful vapors. This apparatus provides protection for these laboratory workers.
- To clarify the conduct of spraying for the *Baked-On Oil Residues Test* test-operators are to begin at the top/middle portion of the panel and spray down to ensure proper application.
- Suppliers for Carbon Black and a (10) mil drawdown bar have also been provided in the revised test protocol.

Revisions to the test protocols also provide more specific evaluation criteria, which will help define when a product is clean in terms of the specific percent of soil removal measurement that can be taken to quantify this result.

In addition to our test protocols, ASPA/CSPA would also recommend that ARB require IRTA to perform tests for braking effectiveness for the evaluation of these water-based cleaners used in the brake cleaning function. As industry representatives noted during the August 28th TRC meeting, it would be advisable to perform these effectiveness tests prior to field testing, due to the uncertainty of these products. These tests can easily be

performed by a third party laboratory and can also serve as a way to compare the effectiveness of water-based cleaners and solvent solvent-based cleaners.

Conduct of Preliminary Laboratory Testing is Needed Prior to Field Testing

As stated during the August 28, Technical Review Committee (TRC) meeting/conference call, ASPA and CSPA continue to believe that preliminary laboratory tests should be performed ***prior*** to field testing these water-based cleaners. This would save time, effort and resources, by eliminating products that do not work or do not perform as intended. In fact, IRTA's Task 1 Plan dated September 30, 2002 states the following under the Preliminary Testing Cleaning Protocol:

> "It [Preliminary Testing] involves identifying existing water-based near-zero-VOC aerosol products for brake cleaning, carburetor and fuel injection system cleaning, engine degreasing and general purpose cleaning…. In Task 1, the cleaning agents will be screened to identify the most effective cleaners…. The cleaning capability of the alternative products will be compared with the cleaning capability of baseline solvent aerosol products. ***All*** of the products will first be tested in a laboratory setting." (Pages 11-12, emphasis added)

In addition, the Summary and Conclusions section states:

> "The cleaners that perform best in the laboratory setting and the auto repair facilities will be packed in aerosol form and tested in the same manner." (Page 17)

These comments clearly show that IRTA had originally intended to conduct preliminary laboratory tests prior to full scale field testing. We would request that the ARB require this preliminary testing ***do*** take place, and in accordance with our recommended testing protocols. ASPA/CSPA believes that moving forward with field tests without first conducting preliminary laboratory tests on those products used would be irresponsible and wasteful.

Draft Automotive Field Testing Interview

ASPA / CSPA has reviewed the Automotive Field Testing Interview Form sent out to members of the Technical Review Committee on September 8, 2003, and finds that this interview method is a reasonable set of questions to document their experience with these products. If field testing interviews are conducted using this form useful data should be collected. In reference to specific questions we would suggest that the following question, "Would you switch to the test product (if less expensive, if more expensive)" be amended to include, if the test product was "as expensive as your current product". It would be also useful if this form were to collect quantitative data on the total number of operations undertaken with each product. ASPA / CSPA look forward to reviewing this valuable data upon completion of the project.

Field Testing Consumer Issues Also Need to be Addressed

Although the new form should make the field testing more effective, we still have concerns for the safety of consumers whose vehicles will be used as part of this project's proposed field tests. In particular, tests conducted for brake cleaning could dramatically degrade the safety of consumer vehicles if these water-based products should not perform correctly and leave residue on brakes that reduces braking action. This potential liability could be both costly for the field-test participants and dangerous for unsuspecting consumers. Preliminary testing performed prior to field testing should help reduce potential liabilities and eliminate those products that could pose a danger to consumers. However, we also believe that field-testing facilities should be required to notify customers that these investigational water-based products are being used or require consumers to sign a waiver, releasing all parties from potential liability due to inadequate product performance.

ASPA / CSPA also believes that post-maintenance interviews need to be conducted with consumer participants of the field testing. These interviews would determine if negative effects from these products would be seen after a consumer leaves the field testing facility. This follow-up interview with a consumer can be done easily by the field testing facility, by phone, and would be useful in determining long-term performance of these products. It would also isolate product benefits or potential problems such as brake squealing, flash rusting, improved/reduced braking ability, and overall performance of these test products. We also believe these interviews are necessary to help obtain more "real world" data about these products performance.

Preliminary Laboratory Testing Is Valuable for This Project

Finally, ASPA / CSPA strongly disagrees with the flawed assertion by IRTA that, "laboratory testing would not be meaningful for this project." We believe that laboratory testing is of the utmost importance for this project to be considered a science-based examination of alternatives to VOC based products.

In IRTA's letter the assertion is made that field testing is all that is needed for this project because these tests are performed by "people who know best what they need for cleaning (auto repair technicians)". While we agree that field testing does provide very valuable

insights into a product's performance and possible acceptance by users, we strongly believe that laboratory testing provides specific and quantifiable data that can be evaluated for more sound conclusions.

Laboratory testing provides important information, and a number of important safeguards, prior to field testing. It is important to determine to what extent automotive soils are actually removed in the laboratory testing, because the degree of soil removal may not always be readily apparent to the automotive technician, especially when cleaning parts *in situ* in hard to access or remote areas. Likewise, residues left by the cleaner may also not be readily observable by the technician. Field testing cleaners that do not adequately remove basic automotive soils or leave residues could result in the need to field test more products than necessary. It can even present avoidable risks to the customers whose automobiles are being serviced in the field tests.

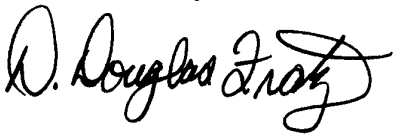
As mentioned earlier, we also find it particularly it disturbing that in the Task 1 Plan, IRTA found preliminary laboratory testing for all products valuable, but now no longer does. Without laboratory testing this project lacks the objectivity and conditional uniformity that such tests provide. This laboratory data would be particularly valuable should the ARB desire this project to be a sound basis for developing VOC reduction measures.

Summary & Conclusions

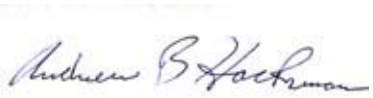
In summary, we have put significant effort into addressing issues raised in reference to ASPA / CSPA's recommended laboratory testing protocol and we believe that it should be a required element of this project. We also believe that these preliminary laboratory tests should be conducted prior to field testing. Also, consumers should be informed that these products are being used at the field testing facilities and post-maintenance interviews should be performed. Finally, for this project to be considered scientific laboratory testing is necessary. We believe that these recommendations are essential to this project and will ensure that conclusions drawn from project data and future VOC reductions based on this study will be sound and constitute accurate science.

ASPA and CSPA appreciate this opportunity to express our recommendations on this very important project. We hope that our recommendations are useful in improving this overall project.

Sincerely,



D. Douglas Fratz
Vice President, Scientific and Technical Affairs
Consumer Specialty Products Association



Andrew Hackman
Automotive Specialty Products Alliance

cc: Jeanette Brooks, ARB
Carla Takemoto, ARB
Olufemi Olaluwoye, ARB
ASPA Members
CSPA AQSC Automotive and Solvent Products Task Force

Engine, General Purpose, and Brake Cleaning Test Methods
BAKED-ON OIL RESIDUES TEST

PANEL PREPARATION:

* Equipment Supplies
  - Used crank case motor oil
  - 1" x 4" steel panels or 4" X 6" Q-panels (Byk Gardner Instruments)
  - 1 standard hot plate
  - Disposable transfer pipettes, 2 ml
  - Stopwatch / timer

1) Weigh steel panel to obtain a tare weight.
2) Place steel panel on the hot plate.
3) Set the heat setting at 4 (low/medium heat).
4) Turn unit on.
5) Apply one small drop of used oil approximately 1/4" in diameter to the top section of the panel approximately 1 inch from the narrow edge.
6) Start timer.
7) After four (4) minutes, apply a second drop, approximately 1/4" in diameter, to the panel approximately 1" below the first drop.
8) After an additional three (3) minutes, apply a third drop, approximately 1/4" in diameter, to the panel approximately 1" below the second drop.
9) Turn off hot plate unit.
10) After (3) minutes, remove panel from hot plate and allow it to cool. The panel is exposed to heat for a total of ten (10) minutes.
11) After allowing hot plate to cool, repeat procedure to prepare additional test panels.
12) Panel should be weighed after cooling and before testing for soil removal to determine the amount of soil applied.

CLEANING TEST:

1) Suspend the weighed panel vertically in an exhaust hood. A catch container should be directly underneath.
2) Weigh the test aerosol can prior to use.
3) Direct the spray at the top / middle portion of the panel. The nozzle should be 10 to 12 inches away from the panel.
4) Start the stopwatch at the same time can is sprayed
5) Apply the product under test to the entire test panel; the product should be applied evenly as possible.
6) Stop the spray after 10 seconds.
7) Re-weigh the can.
8) Record weight of product can.
9) Allow the test panel to dry.
10) Reweigh test panel to determine the amount of soil left on the panel.
11) Calculate the amount of product sprayed and the percent of soil removal.

GREASY OIL RESIDUES TEST

PANEL PREPARATION:

* Equipment Supplies
  - General purpose grease (such as Exxon-Unirex EP Automotive Chassis Grease with 2-3% (w/w) carbon black added)
  - Carbon Black (see Supplier List)
  - 1" x 4" steel panels or 4" X 6" Q-panels (Byk Gardner Instruments)
  - Drawdown bar, 10 mil (see Supplier List)
  - Stopwatch / timer

1) Weigh steel panel to obtain a tare weight.
2) Apply the grease to the panel by using a ten (10) mil drawdown bar.
3) Re-weigh panel to determine amount of grease that was applied.

CLEANING TEST:

1) Suspend the weighed panel vertically in an exhaust hood. A catch container should be directly underneath.
2) Weigh the test aerosol can prior to use.
3) Direct the spray at the top / middle portion of the panel. The nozzle should be 10 to 12 inches away from the panel.
4) Start the stopwatch at the same time can is sprayed
5) Apply the product under test to the entire test panel; the product should be applied evenly as possible.
6) Stop the spray after 10 seconds.
7) Re-weigh the can.
8) Record weight of product can.
9) Allow the test panel to dry.
10) Reweigh test panel to determine the amount of soil left on the panel.
11) Calculate the amount of product sprayed and the percent of soil removal.

Note: Both Test methods (Baked-on / Greasy) must be performed for a thorough evaluation. A minimum of three panels per product should be evaluated and averaged to ensure accuracy and reproducibility.

SUPPLIERS FOR TESTING SUPPLIES

Carbon Black

Degussa Corporation
379 Interpace Parkway
Parsippany, NJ 07054
973-541-8000

Distributed by:

Palmer Holland Inc.
North Olmsted, OH
800-635-4822

Walsh & Associates, Inc.
St. Louis, MO
314-781-2520

FitzChem Corporation
Elmhurst, IL
630-941-0410

Draw-down Applicators

BYK-Gardner USA
RiversPark II
9104 Guillford Road
Columbia, MD 21046
800-343-7721

4. ASPA / CSPA's Fourth Correspondence of Concerns

January 30, 2004

Kevin Cleary
Research Division
California Air Resources Board
1001 I Street, P.O. Box 2815
Sacramento, CA 95812
kcleary@arb.ca.gov

Dear Mr. Cleary:

The Automotive Specialty Products Alliance (ASPA) and the Consumer Specialty Products Association (CSPA) are writing to request additional information in relation to your January 7, 2004 Status of IRTA Project on Water-Based Auto Parts Cleaners Report.

We believe answers to the following questions will provide useful information to the Technical Review Committee (TRC) of this project. This information would also be useful in understanding the process that IRTA is using to conduct field testing.

Fuel Injection Cleaners

1. What performance criteria is being used to evaluate the acetone, acetone/soy blends, and acetone/soy/methanol blends?
2. What is the point of entry for the fuel injection cleaner?

Engine Degreasers

1. What is being considered the standard for classifying a compound as toxic?
2. What types of propellants are being used in these products?
3. What is the standard for considering VOC content as high?
    a. According to California consumer product regulations VOC content is calculated as a percent of total weight. What does the 275 grams per liter "cutoff" equate to in percent of total weight?
4. What commercially available cleaners are being tested as engine cleaners in addition to the Mirachem product?

General Purpose & Brake Cleaners

1. ASPA and CSPA assert that General Purpose Cleaners and Brake Cleaners are not the same product and therefore should not be considered as one product type. For example a slight foaming action for a General Purpose cleaner would be

acceptable, however, for a brake cleaner foaming would cause problems and slow drying time. Is there a specific reason why these products were combined in the status report? ASPA and CSPA request that these two categories be separated in further considerations of this project.

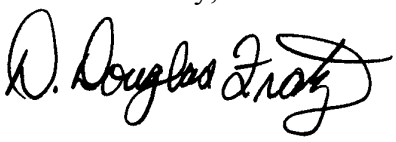
2. In regards to foaming issues, why was the TRC not consulted for potential solutions to the foaming problem?

Information Requests

1. ASPA and CSPA would like to request that all individual field testing interview sheets be provided to the TRC for review.
2. ASPA and CSPA would also like to request that the TRC be provided 21-days notice prior to the upcoming field testing review.

ASPA and CSPA appreciate the consideration that the ARB has given our concerns and requests throughout this project. We also look forward to reviewing this requested information and the draft final report of this project and providing our input on these results and conclusions. Please contact us if you would like to discuss our questions further. We look forward to working with you and members of the ARB in the future.

Sincerely,



D. Douglas Fratz
Vice President, Scientific and Technical Affairs
Consumer Specialty Products Association

Andrew Hackman
Automotive Specialty Products Alliance

cc: Carla Takemoto, ARB
ASPA Members
CSPA AQSC Automotive and Solvent Products Task Force

5. ASPA / CSPA's Fifth Correspondence of Concerns

September 2, 2004

Kevin Cleary
Research Division
California Air Resources Board
1001 I Street, P.O. Box 2815
Sacramento, CA 95812
kcleary@arb.ca.gov

Dear Mr. Cleary:

The Automotive Specialty Products Alliance (ASPA) and the Consumer Specialty Products Association (CSPA) are writing to provide input on the cost assessment process, regarding the research project entitled "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents," which is being conducted by the Institute for Research and Technical Assistance (IRTA). As stated in the past, ASPA / CSPA has appreciated the consideration that the Air Resources Board (ARB) and IRTA have given to our viewpoints regarding this project

Per IRTA's request during the August 18, Technical Review Committee (TRC) conference call, ASPA / CSPA are providing our recommendations on how to appropriately conduct a reliable cost assessment for the products that were considered acceptable by users during the field testing process. ASPA / CSPA believe that limited laboratory tests would be the optimal and most efficient way to truly provide a reliable cost comparison, between the field tested products and products currently used in automotive repair facilities.

ASPA / CSPA strongly believe that laboratory testing for the cost assessment process provides quantitative data that field testing cannot provide. Laboratory tests are important to determine the actual amount of product used to remove automotive soils in comparison to automotive products currently on the market. The results of limited laboratory tests can then be used to develop a relative use assessment model that will accurately determine the true cost of a product relative to the amount of the product required to perform a standard cleaning operation.

Engine, General Purpose, and Brake Cleaning Test Methods

As previously purposed ASPA and CSPA believe the (attached) test protocols entitled: *Engine, General Purpose, and Brake Cleaning Test Methods* provides a scientific way to determine how much product is used to complete a standard operation. This test method provides one overall test method that can be used for brake cleaning, engine degreasing,

and general purpose degreasing. The method recommends two uniform soils that can be used for these types of tests for a baseline amount of product used comparison. The soils are representative of automotive soils traditionally encountered in these types of operations. These types of soils are used in laboratory tests that are performed by our member companies when they conduct cost assessments during their own research and development processes.

ASPA / CSPA recommend that laboratory testing be performed on both water-based cleaners and the current (solvent-based) products used in the field testing locations. This data will facilitate a relative cost and use comparison.

Calculating the Relative Cost of Various Automotive Cleaners

After completion of laboratory tests with the selected water-based and solvent-based products, a relative use assessment can be performed by determining the multiple of a product used to clean these standard soils. This multiple can be determined by averaging the amount (weight) of a product used (in ten seconds) and the percent of soil removed; and then determining the amount of product needed to clean 100% of the soil. The multiple can then be applied to the cost of the raw ingredients used in each product. This model should then provide a very accurate true cost of these water-based products which can be compared to the same true cost of solvent-based products.

The formula for this model would be as follows:

PW = Average amount of product used (weight = ounces) in ten seconds
SR = Average percent of soil removed in ten seconds
TP = Total weight (ounces) of product needed to fully clean soil
RA = Amount (number ounces) of each raw ingredient in the cleaner
CA = Cost of each raw ingredient amount (per ounce)
WP = Total weight of each product (ounces)
RC = Average raw ingredient cost (per ounce)
TC = Relative cost of cleaner needed to fully clean that specific soil

Step 1: Solve for TP

$$\frac{PW}{SR} = TP$$

Step 2: Solve for RC

$$\frac{\sum (RA's * CA's)}{WP} = RC$$

Step 3: Multiply TP by RC to find TC

TP * RC = TC

Step 4: Compare TC for Selected Products: Upon completion of these calculations the cost (TC) of the water-based cleaners should then be compared to the cost calculated for the solvent-based products currently used in field testing locations. The result will provide a cost comparison between solvent-based products and water-based products relative to not only their raw ingredient cost, but also the use required for soil removal.

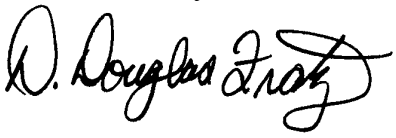
ASPA / CSPA also believe that this quantitative cost assessment method would provide the most cost effective way to develop data relative price data on these water-based products. Laboratory tests would not require extensive packaging of additional samples and could be done in a relatively short period of time compared to providing a large supply of products to a field testing facility.

Summary and Conclusions

ASPA / CSPA strongly believe that laboratory testing is the most effective and efficient way to determine the relative cost of the water-based cleaners. Without laboratory testing we would have serious reservations about the ability of this project to produce reliable cost estimate data that can serve as the basis for determining the commercial feasibility of future VOC reductions in these product categories. Without quantitative data regarding such things as the amount of product used to remove a soil it will be difficult to determine the commercial feasibility of these products in relation to products currently on the market. Therefore, ASPA and CSPA hope that the ARB and IRTA will consider limited laboratory testing of these water-based cleaners during the cost assessment phase of this project.

Once again, ASPA / CSPA have appreciated the consideration that the ARB and IRTA have given our ideas throughout this project. We look forward to the upcoming field testing visits and reviewing the draft final report of this project. Please contact us if you have any questions or would like to discuss our recommendations further. We look forward to working with IRTA and the ARB in the future.

Sincerely,



D. Douglas Fratz
Vice President, Scientific and Technical Affairs
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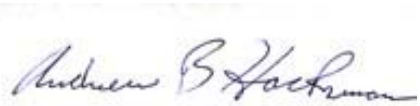


Andrew Hackman

Automotive Specialty Products Alliance

cc: Jeanette Brooks, ARB
Carla Takemoto, ARB
Olufemi Olaluwoye, ARB
Katy Wolf, IRTA
ASPA Members
CSPA AQSC Automotive and Solvent Products Task Force

6. ASPA / CSPA's Sixth Correspondence of Concerns

January 3, 2005

Mr. Kevin Cleary
Research Division
California Air Resources Board
Sacramento, CA
kcleary@arb.ca.gov

Re: Final Report "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents"

Dear Mr. Cleary:

The Automotive Specialty Products Alliance (ASPA) and Consumer Specialty Products Association (CSPA) are writing to comment on the Final Report (Dated December 2004) on the research project entitled "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents," which has been funded by the California Air Resources Board (ARB) and conducted by the Institute for Research and Technical Assistance (IRTA). Specifically, as noted in our previous comments we continue to believe that IRTA's testing and conduct of this project lacks scientific credibility and the study's conclusions therefore should not be used as the basis for future VOC reduction measures.

ASPA is an alliance of three non-profit, national trade associations representing companies engaged in the manufacture, formulation, distribution, and sale of automotive specialty products. The Alliance combines the efforts of the Automotive Aftermarket Industry Association (AAIA), the Consumer Specialty Products Association (CSPA), and the Motor & Equipment Manufacturers Association (MEMA) to form a unified industry voice for their members engaged in the automotive chemical and vehicle appearance products markets.

CSPA is a voluntary, non-profit national trade association representing approximately 245 companies engaged in the manufacture, formulation, distribution, and sale of formulated consumer products for household, institutional and industrial use. These products are formulated and packaged in many forms. The majority of these products are generally marketed nationally. CSPA and its member companies are committed to the safe manufacture, distribution, use and disposal of consumer products, and assuring that our products provide the numerous environmental and health benefits that consumers need in California and elsewhere.

Statement of Interest

ASPA and CSPA have been involved for two years as members of the Technical Review Committee (TRC) for this study. ASPA/CSPA, and several companies, including: Amrep, Inc., CRC Industries, Hydrosol, Inc., Radiator Specialty Company, and Sherwin-Williams Diversified Brands voluntarily participated in several aspects of the project, from filling aerosol samples, to witnessing preliminary and field tests. Our member companies are leaders in the manufacturing of automotive consumer products and will be directly affected by the outcome of this study and any subsequent reduction measures that are taken as a result.

ASPA/CSPA members on the TRC have reviewed the Final Report submitted by IRTA, and would like to submit the following technical and scientific comments. These comments will provide clear evidence supporting our claim that the conduct of this project has lacked the scientific approach necessary needed for a study of this potential importance.

Background

In 2001, ARB issued RFP #01-317 seeking proposals for a $200,000, 18-month study on water-based, near-zero VOC, low-toxicity aerosol alternatives to traditional products used for cleaning mechanical parts in automobiles. In March 2002, IRTA submitted a technical proposal for a study, "Alternatives to Automotive Consumer Products that Use Volatile Organic Compounds (VOC) and/or Chlorinated Organic Compound Solvents," that included six tasks. This proposal was subsequently accepted by ARB.

This draft Final Report (dated December 2004) relies upon research conducted over the last two years and asserts that water-based and soy-based products can be used for engine degreasing, carburetor and fuel injection system cleaning, brake cleaning, and general purpose cleaning. This report further asserts that these products perform "adequately" or "very well" and have between 0 and 10 percent VOC content.

General Comments on the Approach and Methods

A. Lack of Formal Laboratory Testing

ASPA and CSPA have continuously objected to the conduct of this project without formal laboratory testing. While we agree that field testing can provide, "real-world" data, quantitative laboratory data have proven crucial as our members have developed similar products in the past. Such laboratory testing is necessary for test standardization. Laboratory testing also allows for comparison of test results through the use of objective and quantifiable data points.

Specifically, we believe that laboratory evaluation of product performance should have been used to take into account the varying soils, substrates and other parameters involved in these four categories of automotive maintenance products, and used to provide

accurate and precise measurements of relative efficacy. Aerosol product formulations cannot be made at random and field tested; extensive laboratory evaluations are necessary before a product can be safely filled and placed in use. The evaluations described in the Final Report are more similar to marketing evaluations that are only done after the completion of the product research and development phase.

B. Inconsistent Testing Protocols and Evaluation

Throughout this project we have had serious questions as to the application of testing protocols or lack thereof. ASPA and CSPA member companies have significant experience in developing new products and technology. In order to develop these products companies spend significant sums of money on laboratory and real-world testing. Throughout this process companies adhere to explicit internal testing protocols.

These protocols are designed to eliminate variation and errors so that true product performance can be gauged. As members of the TRC, we had requested that testing be performed according to generally accepted industry protocols. However, subsequently these protocols were not adopted. In fact, according to our witnessing of the preliminary and field tests, we found that even the one criterion IRTA developed for the testing protocol for this project – "spray the product for 10 seconds" – was not adhered to.

In regards to test evaluation, throughout the preliminary testing and field testing phases of this project several different types of evaluation scales were employed. For one series of screening tests a two-factor (S,N) nominal scale was used for performance evaluation. Then in a second series of preliminary tests a three-factor (C,S,B) nominal scale was used. However, in field testing two separate continuous (numbered) scales were used; how these continuous variables corresponded to nominal performance descriptions was not explained. The use of four types of evaluation schemes for this project not only makes it difficult to determine consistency of product performance, but also make it extremely hard to draw reliable conclusions.

Serious flaws also existed in data collection during field testing. Evaluators must be given clear and consistent instructions regarding how they are to use and evaluate products, and how they are to record the data. This data must also be recorded while the products are being used, and logged at least daily. Weekly interviews tend to be unreliable or even biased. The Final Report clearly shows that this type of data collection did not occur. It is also essential that the evaluations be "double-blinded" so that neither the evaluators nor any observers know the actual identity or composition of any product; evaluations that are not blinded can be unreliable due to bias. Tests witnessed by ASPA and CSPA personnel and members throughout this project documented that these products were not blinded, therefore allowing user bias to play a role in the overall evaluation of alternative products.

This lack of test standardization and evaluation calls into question IRTA's observations that water-based and soy based products, with VOC concentrations of 0-10 percent VOC

performed "very well" or "adequately". These results need to be quantifiable; this statement is very vague and subject to individual interpretation.

C. Incorrect Assumptions

Throughout this project ASPA and CSPA have asserted that IRTA has made several assumptions that have created bias and impacted the results of the study.

One major assumption has been that all soils encountered on automobiles are the same. However this is not correct; for example, many automotive greases require solvents for soil removal to compensate for the lack of mechanical force. In order to properly evaluate the performance of water-based cleaners laboratory tests are needed to analyze product performance for specific soils.

Another flawed assumption presented in the final report, is that the inclusion of corrosion inhibitors will eliminate problems associated with the combination of carbon dioxide and water-based products. However, ASPA and CSPA members who manufacture aerosol automotive products assert that the combination of carbon dioxide and water-based products will inherently create problems associated with container corrosion. Such container corrosion could result in products that are unstable and are potential hazards for storage. ASPA and CSPA member strongly believe that the use of carbon dioxide for the applications examined in this project poses serious technical issues that need to be further examined in a laboratory setting by experts that are involved in the production of aerosol products each day.

Another assumption used throughout this project is that water-based products would be better alternatives than VOC and chlorinated solvent products for environmental reasons. However, it is not a foregone conclusion that water-based cleaners would be better alternatives; they could, in fact, be worse for environmental conditions if not formulated properly. Instead of assuming this statement, the relative benefits of various products should be evaluated scientifically through laboratory tests, and not simply assumed.

ASPA and CSPA have concerns that these unsupported general assumptions may have impacted the observations made in the Final Report presented by IRTA.

D. Testing Conflict of Interest

As described in the Final Report, 13 auto repair facilities and several detailers, car washes, and individual consumers were selected to take part in preliminary and field testing phases of this project. No description of how these parties were chosen is provided in this report. ASPA and CSPA are concerned that these parties have a bias toward water-based technology.

In fact, field tests witnessed by ASPA personnel were performed at the facility that services the vehicle of the Executive Director of IRTA. The fact that the Executive Director of IRTA is a customer of this specific facility undermines the objectivity of the

project's field test participants. ASPA and CSPA are concerned that all product evaluators where chosen in the same manner.

This potential bias, combined with the lack of product blinding, seriously calls into question the objectivity of the parties that evaluated the performance of these alternative products. Without objectivity of evaluators, we find it very difficult to trust the credibility of the observations made in this report.

Discussion of Specific Testing Results

G. Preliminary Screening Tests Provide Inconclusive and Unreliable Data

ASPA and CSPA representatives witnessed Preliminary Screening tests in June of 2003 and reviewed the published results of these tests in the Task 3 Interim Report and in this Final Report. We assert that there are several flaws in the design and conduct of these tests that undermine the foundation of this research project.

The "preliminary screening test protocol" was inadequate. There appeared to be no written test methods / procedures for the screening tests. Such test procedures are needed to ensure consistency and reliability of testing results. After viewing a second set of screening tests on June 25, 2003 ASPA and CSPA representatives expressed the following specific concerns with the conduct of the preliminary screening tests:

- The testing process used made no significant distinctions between various usages supposedly being evaluated (brake cleaning, carburetor cleaning, engine degreasing and general degreasing) in terms of usage rate, types of soils, or other factors that would make the evaluations relevant to those specific product usages. The "baseline" was set with the same commercial product for each set of tests, and appears to be randomly chosen.

- There was no effort to standardize, quantify or even characterize the soil being removed in the testing. In testing a product category (e.g., general purpose degreaser) several different parts were used. The use of different parts added inconsistencies to the comparison of the products tested.

- There was no record of any written standard or criteria for determining scoring of the test results for individual products in the test. There is no written description of the criteria used by operators on how to determine whether a test product was "better," "the same," "close," or "not as good" as the baseline product.

- There was no reference to any ASTM test methods (or any other objective or standardized test methods or procedures) used during the preliminary tests.

- It was clear that the product evaluations were not "blinded" to remove the potential for subconscious bias in subjective evaluations by the operator(s).

- Repeated screening tests witnessed by ASPA/CSPA representatives were conducted without a written test protocol and the results were inconsistent with reported preliminary testing.

- The time used to spray product (described as intended to be 10 seconds) differed between the various products and the operators.

- Poor methodology for masking off sections of the automotive part. It was observed that run-off occurred several times to other sections of the part not yet tested. Product contamination may have skewed the results of the tests. In addition, during the tests representatives witnessed no established classification system on how to evaluate sample performance according to a quantitative data set. In fact, evaluation of sample performance was very subjective and not quantitative.

- With respect to water rinsing, no protocol was established by IRTA to determine when rinsing is appropriate and just how much water rinse is to be used.

These deficiencies in the conduct of the preliminary tests call into question to the methods used by IRTA throughout this project, and demonstrate the lack of consistency and control needed for such a scientific study.

H. Unreliability of Field Testing Data

ASPA and CSPA also have concerns with the specific conduct of the field testing phase of this project. As mentioned above we believe that laboratory testing is essential to developing reliable data on the performance of these products in relation to standardized soils. Without reliable laboratory testing on standard samples data is not comparable because soils found in the "real-world" are varied and make comparison difficult. The viability of the soils found in various repair facilities seriously taints the sample data that is observed in this project.

Beyond our concerns that laboratory testing has not been performed ASPA and CSPA also have some specific concerns with the conduct of field testing. These concerns are listed below:

- One major issue presented in this project is the lack of consumer and technician baseline product comparison. As noted in the report, the consumers and technicians often use the most cost effective products. However, for the purposes of this study a baseline product should have been provided for comparison purposes.

- As witnessed in field testing visits, and as documented in the Final Report, often technicians rated the effectiveness of a product based upon the way a product "smells". We would argue that the smell of a product is unrelated to actual performance. The fact that technicians factored this into their evaluation of products calls into question the objectivity of their evaluations and the data presented in this report.

- The use of acetone is discussed within the consideration of carburetor cleaners and it is presented that acetone has a very high vapor pressure and evaporates quickly. However, no data is presented to substantiate this claim and no comparison is made with current product evaporation times.

- Another issue discussed in the final report is oil residue related to gasket preparation. It is stated that one way to avoid an oily residue is by using a high acetone product. However, no data is presented on this alternative nor for such product, "already on the market in Southern California."

- Another major element not addressed in the field testing is the issue of corrosion on automotive parts. Corrosion of automotive parts due to water-based cleaners or their residues could jeopardize the efficacy of major automotive systems. The repair industry and original equipment manufacturers should have been polled to determine which parts, if any, would be at risk of corrosion due to the use of water-based products.

- An additional element of field testing evaluation that has been completely ignored is follow-up with the actual customers whose cars had maintenance performed on them with these alternative cleaners. This follow-up would have provided needed "real-world" data beyond the repair technician's interviews and evaluations. For example, this follow-up would have provided valuable information in regard to: brake squealing due to residual residues, problems with fuel system/carburetor operation, and engine/electrical system malfunctions due to residues left on engines.

Unreliable Cost Assessment Model

As noted in this Final Report product purchasing decisions for these types of products are very cost-driven. According to our members who are the major marketers in these categories of products, even the slightest increase in cost, such as one-cent to a half, can dramatically affect the purchasing behavior of consumers in this market and cause loss of business. Cost differences are particularly important since raw material prices have increased and the cost of zero-VOC solvents, such as acetone, are extremely high per unit and are often on allocation. IRTA needs to quantify cost data with real numbers, the report states that lower-VOC alternatives are higher in cost, but no numbers are provided.

There is also no explanation on what source is being used to make this cost determination. Therefore, the limited cost analysis presented in this report is inadequate to evaluate the commercial feasibility of these alternative cleaners.

ASPA and CSPA strongly believe that laboratory testing would have been most effective and efficient way to determine the relative cost of the water-based cleaners. Without laboratory testing we have serious reservations about the ability of this project to produce reliable cost estimate data that can serve as the basis for determining the commercial feasibility of future VOC reductions in these product categories.

As noted in this report, without quantitative data regarding such things as the amount of product used to remove a soil, it will be difficult to determine the commercial feasibility of these products in relation to products currently on the market. In September 2004 ASPA and CSPA submitted this recommendation for limited laboratory testing and a model that would have provided a reliable estimate of relative costs. However, this recommendation was denied. Therefore, ASPA and CSPA continue to have serious reservations as to the reliability of the cost assessment model used by IRTA.

Specifically, a major factor not considered in the IRTA cost assessment is labor time. This is a critical flaw, since labor is the number one cost for these types of facilities, far above the product cost. Products that prolong the time needed for these critical automotive cleaning tasks could have economic impacts, and result in the products being rejected by facilities. Factors that can cause delays include increased drying time and excessive foaming, in addition to failure to remove soil quickly.

These cost issues need to be examined before a true assessment of commercial feasibility of these types of alternative products.

Toxicity Comparison

In the draft Final Report, IRTA attempts to provide a toxicity comparison between low-VOC alternatives and baseline solvent based cleaners. This comparison completely overlooks the relationship between toxicity, dose, and exposure when comparing products. The specific uses of each of these four categories of products have varied use patterns. Each of these product categories differ in the length of time a product is used, the average amount of product used, and therefore the potential for human exposure to these substances.

The degree of toxicity should have been evaluated in relation to average quantitative dosages for each of these four product categories. This evaluation needed to have been done through monitoring during field testing. This quantitative method would have allowed for a more direct toxicity and exposure comparison between baseline products, and alternative products, as compared to established limits on exposure by OSHA and ACGIH.

For an example, the use pattern of an engine degreaser would not provide the user with the same exposure level as brake cleaner, carburetor cleaner, or general degreaser products. Also, some automotive parts are handled more frequently during certain cleaning operations, such as brake cleaning; this may contribute to lower or higher levels of contact with product compounds. Exposure comparisons need to allow for the varied doses users would be exposed to for these four product types.

Another major flaw in this Final Report, which is particularly troublesome in this section, is the lack of adequate footnoting. This is particularly important in this section of the report because several statements are made about the potential harm human health caused by chemical compounds in current products (*i.e.* heavy aromatic solvent naphtha and 2-butoxyethanol). However, studies are not referenced to support these statements. In fact, scientific experts in chemical safety still disagree as to the toxic effects of heavy aromatic solvent naphtha and 2-butoxyethanol on human health under normal use conditions and concentrations.

Conclusions

ASPA /CSPA and our members believe that the research performed by IRTA on this project falls short of providing scientifically valid and technically useful data regarding the potential for formulating safe and effective low-VOC aerosol products for various types of automotive maintenance cleaning. For this reason ASPA/CSPA and our members continue to have serious reservations about the reliability of this project and any resulting VOC reduction requirements.

The data generated from the testing are too variable to provide reliable information on the efficacy of the products tested for any automotive maintenance and repair activities. Contrary to assumptions, aerosol product formulations, such as consumer automotive products, cannot simply be made at random and field tested. Extensive laboratory evaluations are necessary before a product can be safely filled and placed in use. The evaluations described in this project's Final Report are marketing evaluations that are done by manufacturers only after the successful completion of the significant product research and development phase. Many of the product evaluations described are done in the context of a rigorous product development evaluation, cannot be accomplished in the manner described, and are indeed arguably beyond the scope of the research project as originally proposed.

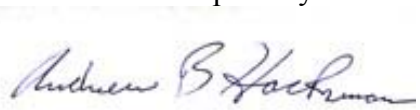
As a result of these inconsistencies and issues highlighted in these comments, we urge the ARB to carefully consider the weight and importance that is given to the results of this project. We believe that this project does not provide an adequate scientific basis to evaluate the feasibility of VOC emission reduction measures.

Specifically, ASPA and CSPA strongly believe that the 10 percent and 2 percent VOC emissions limits proposed in this project's conclusions cannot be supported scientifically, and cannot be applied to all categories of products evaluated in this project.

ASPA and CSPA urge the ARB to continue to work with industry representatives in the development of subsequent regulations. We once again appreciate the opportunity to comment on this project. ASPA and CSPA look forward to working cooperatively with the ARB on the upcoming CONS-2 regulations which will likely impact these product categories.

Sincerely,

D. Douglas Fratz
Vice President, Scientific and Technical Affairs
Consumer Specialty Products Association



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