SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

~~Draft~~ Final Environmental Assessment for Proposed Amended Rule 102 – Definition of Terms

September 2009

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PREFACE

This document constitutes the Final Environmental Assessment (EA) for Proposed Amended Rule 102 – Definition of Terms. The Draft EA was released for a 30-day public review and comment period from July 28, 2009 to August 26, 2009. Three comment letters were received from the public regarding the CEQA Draft EA and are included with responses to the comments in Appendix C. The environmental analysis in the Draft EA concluded that Proposed Amended Rule 102 would not generate any significant adverse environmental impacts.

Minor modifications were made to the Draft EA including an updated health risk analysis. To facilitate identifying modifications to the document, added and/or modified text is underlined. None of the modifications alter any conclusions reached in the Draft EA, nor provide new information of substantial importance relative to the draft document. As a result, these minor revisions do not require recirculation of the document pursuant to CEQA Guidelines §15088.5. Therefore, this document now constitutes the Final EA for Proposed Amended Rule 102.

TABLE OF CONTENTS

C H A P T E R 1 - P R O J E C T D E S C R I P T I O N

Introduction

California Environmental Quality Act

Project Location

Project Objective

Project Background

Project Description

INTRODUCTION

The California Legislature created the South Coast Air Quality Management District (SCAQMD) in 1977[1] as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin and Mojave Desert Air Basin referred to herein as the district. By statute, the SCAQMD is required to adopt an air quality management plan (AQMP) demonstrating compliance with all federal and state ambient air quality standards for the district[2]. Furthermore, the SCAQMD must adopt rules and regulations that carry out the AQMP[3]. The 2007 AQMP concluded that major reductions in emissions of volatile organic compounds (VOCs), oxides of sulfur (SOx) and oxides of nitrogen (NOx) are necessary to attain the air quality standards for ozone and particulate matter (PM10 and PM2.5). Ozone, a criteria pollutant which has been shown to adversely affect human health, is formed when VOCs react with NOx in the atmosphere. VOCs and NOx also contribute to the formation of PM10 and PM2.5.

SCAQMD staff is proposing to amend Rule 102- Definition of Terms. Rule 102 includes commonly used definitions for a number of words and terms used in air pollution control rules and regulations. By including commonly used words and terms in a single rule, they do not have to be continuously redefined in other air pollution control rules and regulations.

The United States Environmental Protection Agency (U.S. EPA) defines VOCs in 40 Code of Federal Regulations (CFR) 51.100. Included in this definition is VOC-exempt compounds, compounds that are not counted as VOCs for regulatory purposes. The U.S. EPA adds compounds to the VOC-exempt list based on recent studies or petitions from various stakeholders. Recently, U.S. EPA revised the federal VOC definition to exclude methyl formate, dimethyl carbonate, and propylene carbonate based on the compounds' negligible photochemical reactivity. All three compounds are not currently classified as hazardous air pollutants under the federal Clean Air Act. Additionally, propylene carbonate qualifies as non-VOC under the California Air Resources Board's (CARB) Consumer Products Regulation because of its low vapor pressure. In a letter to air pollution control officers dated May 19, 2008, CARB recommends that air districts consider methyl formate for exemption in the definition of VOC, but also to remain vigilant about possible adverse effects as its uses increase. At this time, CARB has not yet conducted an assessment of the health effects of exposure to dimethyl carbonate. Staff has reviewed the relevant documents provided by the U.S. EPA, CARB and industry, and is now proposing to amend Rule 102 – Definition of Terms, by adding methyl formate, dimethyl carbonate, and propylene carbonate to the Group I list of VOC exempt compounds in the rule.

The predominant industrial use of methyl formate is in the manufacture of formamide, dimethylformamide, and formic acid. Because of methyl formate's high vapor pressure, it is commonly used as a component of the solvent system for quick-drying coatings. It is also used in the manufacture of pharmaceuticals, and as a blowing agent in foam manufacturing. Additionally, methyl formate is a suitable replacement for hydrocarbon blowing agents used in

[1] The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., ch 324 (codified at Health & Safety Code, §§40400-40540).
[2] Health & Safety Code, §40460 (a).
[3] Health & Safety Code, §40440 (a).

polyurethane and polystyrene foam manufacturing. Besides having negligible reactivity, methyl formate has other desirable properties in that it has negligible ozone depleting potential (ODP) and a very low or zero global warming potential (GWP).

Dimethyl carbonate may be used as a paint, sealant and adhesive co-solvent, and may provide use as a multipurpose and thinning solvent. Because of its solubility properties, dimethyl carbonate may be useful as a co-solvent in acrylics, urethane and alkyd systems, and potentially replace alcohols, ketones, esters and glycol ethers. Dimethyl carbonate may also be used as a specialty solvent in industrial coating/sealant applications and may be incorporated in waterborne coatings and adhesives because of its partial miscibility in water. Dimethyl carbonate is not classified as an ozone depleting substance and has a very short atmospheric lifetime. There is, however, a study showing evidence of teratogenic effects in pregnant mice.

Propylene carbonate has been used in adhesives, paint strippers, and as a solvent for aerial pesticide application. Propylene carbonate is also currently used in more than 1,300 individual cosmetic products such as mascara, lip gloss, foundation, sunscreen, lip liner, deodorant, anti-aging products and concealers. Other known application of propylene carbonate includes special purpose lubricant, general purpose degreasers for industrial use, rubberized coatings, and non-flat aerosol paint products. Propylene carbonate may also be used as a tail solvent in products that contain a mixture of solvents due to its slow evaporation rate, and in certain solvent cleaning applications. Propylene carbonate is not classified as an ozone depleting substance and has a very short atmospheric lifetime.

If Rule 102 is amended as proposed, up to 238 tons per year that are currently emitted from the foam manufacturing industry may potentially be reduced. However, because of the uncertainty of the future quantity of methyl formate that will be used in foam manufacturing, no VOC emission reduction credit is assumed for adopting PAR 102.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

SCAQMD staff is proposing to add methyl formate, dimethyl carbonate, and propylene carbonate to the Group I list of VOC exempt compounds in Rule 102. Because the proposed project requires discretionary approval by a public agency, it is a "project" as defined by the California Environmental Quality Act (CEQA). SCAQMD is the lead agency for the proposed project and has prepared this ~~draft~~ Final Environmental Assessment (EA) with no significant adverse impacts pursuant to its Certified Regulatory Program (SCAQMD Rule 110). California Public Resources Code §21080.5 allows public agencies with regulatory programs to prepare a plan or other written document in lieu of an environmental impact report once the Secretary of the Resources Agency has certified the regulatory program. SCAQMD's regulatory program was certified by the Secretary of the Resources Agency on March 1, 1989, and is codified as SCAQMD Rule 110. Pursuant to Rule 110, SCAQMD has prepared this ~~draft~~ Final EA.

CEQA and Rule 110 require that potential adverse environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid significant adverse environmental impacts of these projects also be identified. To fulfill the purpose and intent of CEQA, the SCAQMD has prepared this ~~draft~~ Final EA to address the potential adverse environmental impacts associated with the proposed project. The ~~draft~~ Final EA is a public disclosure

document intended to: (a) provide the lead agency, responsible agencies, decision makers and the general public with information on the environmental effects of the proposed project; and, (b) be used as a tool by decision makers to facilitate decision making on the proposed project.

SCAQMD's review of the proposed project shows that the project would not have a significant adverse effect on the environment. Therefore, pursuant to CEQA Guidelines §15252, no alternatives or mitigation measures are required to be included in this ~~draft~~ Final EA. The analysis in Chapter 2 supports the conclusion of no significant adverse environmental impacts.

PROJECT LOCATION

PAR 102 would apply to applicable facilities within the jurisdiction of the SCAQMD. The SCAQMD has jurisdiction over an area of 10,473 square miles, consisting of the four-county South Coast Air Basin (Basin) and the Riverside County portions of the Salton Sea Air Basin (SSAB) and the Mojave Desert Air Basin (MDAB). The Basin, which is a subarea of the district, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The 6,745 square-mile Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County portion of the SSAB and MDAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. The federal non-attainment area (known as the Coachella Valley Planning Area) is a subregion of both Riverside County and the SSAB and is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east (Figure 1-1).

Figure 1-1
Boundaries of the South Coast Air Quality Management District

PROJECT OBJECTIVE
The project objectives of PAR 102 are summarized as the following:

- Following similar actions by the U.S. EPA, the SCAQMD is proposing to add methyl formate, dimethyl carbonate, and propylene carbonate to the Group I list of VOC-exempt compounds in Rule 102.

EMISSION EFFECTS OF PAR 102
The emission effects of PAR 102 are summarized as follows:

- To the extent that methyl formate is used in place of currently used foam blowing agents, PAR 102 could potentially reduce VOC emissions by approximately 238 tons per year (0.65 ton/day) by replacing hydrocarbon blowing agents used in foam manufacturing with a VOC-exempt methyl formate;
- Potentially reduce greenhouse gases by approximately 171 tons per year (0.47 ton/day) by substituting methyl formate for other global warming compounds; and
- Potentially further reduce greenhouse gases by substituting propylene carbonate and dimethyl carbonate for other compounds with higher ODP and GWP.

PROJECT BACKGROUND
The U.S. EPA periodically revises the definition of VOCs to add for chemical compounds that are excluded from the VOC definition based on the compound's negligible contribution to the formation of tropospheric ozone. Ozone is formed when VOCs react photochemically with nitrogen oxides in the atmosphere. However, different VOCs have different reactivity levels, i.e., they do not react to form ozone at the same rate or do not form ozone to the same extent. There are VOCs that react slowly, so they have limited effects on local or regional ozone pollution episodes. As a result, U.S. EPA's policy has been to exclude organic compounds with negligible reactivity level from the regulatory definition of VOCs. Exempting negligible photochemically reactive compounds from the definition of VOC helps states focus emission control efforts on VOCs that significantly increase ozone concentrations.

In determining negligible reactivity, the U.S. EPA compares the reactivity of a given organic compound to that of ethane. Compounds with reactivity levels lower than, or equal to, ethane under the assumed conditions may be deemed negligibly reactive, while compounds that are more reactive than ethane continue to be considered reactive VOCs, and therefore subject to control requirements.

The U.S. EPA uses three primary methods when comparing reactivity of a specific compound to that of ethane. The first method is based on the reaction rate constant (k_{OH}) of the compound with the hydroxyl (OH) radical in the air. This reaction is the initial step in a series of chemical reactions in the formation of ozone. If the reaction is slow, the compound will likely not form ozone at a fast rate.

Two other methods for comparing reactivity levels are based on maximum incremental reactivities (MIR) expressed either on a reactivity per gram basis or on a reactivity per mole basis. The MIR values are more recently developed measures of photochemical reactivity and

consider not only the initial reaction step, but also include the complete ozone-forming activity of a specific organic compound. MIR values are expressed either as grams of ozone formed per mole of VOC (molar basis), or as grams of ozone formed per gram of VOC (mass basis).

In past years, the U.S. EPA has revised the definition of VOCs to exclude several organic compounds from the definition of VOC based on their negligible contribution to ozone formation. In November 2004, the U.S. EPA delisted methyl formate in response to a petition from Foam Supplies, Inc. to exclude the compound from the definition of VOC. The U.S. EPA's decision to delist methyl formate was based on the compound's slightly lower k_{OH} value and reactivity rate at less than half that of ethane.

Effective February 2009, two additional organic compounds were added to the list of VOC exempt compounds, i.e., dimethyl carbonate and propylene carbonate, on the basis that these compounds are less photochemically reactive than ethane and, thus, have negligible contribution to tropospheric ozone formation. Kowa American Corporation petitioned the U.S. EPA seeking an exemption for dimethyl carbonate from the regulatory definition of VOC, while Huntsman Corporation submitted the exemption petition for propylene carbonate.

When exempting a compound from the definition of VOC, U.S. EPA only considers the reactivity of the compound. Other physical/chemical characteristics such as flammability, pH, and toxicity are not considered. Propylene carbonate currently qualifies as non-VOC under CARB's Consumer Products Regulation because of its low vapor pressure. In a letter to air pollution control officers dated May 19, 2008, CARB recommends that air districts consider methyl formate for exemption in the definition of VOC, but also to remain vigilant about possible adverse effects as its uses increase. At this time, CARB has not yet conducted an assessment of the health effects of exposure to dimethyl carbonate.

Adding methyl formate, dimethyl carbonate, and propylene carbonate to the Group I VOC-exempt list in Rule 102 could potentially affect various manufacturing industries including foam manufacturing, pharmaceutical manufacturing, cosmetics manufacturing, food container manufacturing, as well as various facilities and area sources utilizing paints, coatings/sealants, adhesives, solvents, co-solvents, lubricants, degreasers and rubberized coatings because they could replace currently used VOC-containing and exempt compounds with the compounds proposed for addition to Rule 102. The number of facilities that will use increased quantities of the three compounds that are currently proposed for delisting is speculative at this point.

Specifically with respect to the potential market penetration of methyl formate, based on 2006/2007 SCAQMD Annual Emissions Reporting (AER) data and industry input, there are currently four known polystyrene foam manufacturing facilities and approximately 10 known polyurethane foam manufacturing facilities located in the South Coast Air Basin. A health risk assessment (HRA) Tier 1 screening level evaluation was conducted for these facilities pursuant to PAR 102, and it was concluded that it is unlikely that a typical polyurethane foam manufacturing facility would have the potential to exceed the Tier 1 screening value. Additionally, based on AER data and industry input, the industry that is expected to potentially use the largest quantities of these three compounds in the future is the polystyrene foam manufacturing industry. Therefore, the four known polystyrene foam manufacturing facilities in

the South Coast Air Basin (Dart Container Corp., PACTIV Corp., Free Flow Packaging, and Dolco Packaging) were evaluated in this document for any potential impacts.

Based on the 2006/2007 AER data and industry input, replacement of hydrocarbon blowing agents used in polyurethane and polystyrene foam manufacturing with a VOC-exempt methyl formate may potentially reduce VOC emissions by approximately 238 tons per year or approximately 0.65 ton/day. In addition, the use of methyl formate as a substitute for global warming VOC-exempt compounds, such as HCFC-22 and HFC-152a, would potentially reduce greenhouse gases by 171 tons per year or approximately 0.47 ton/day.

The emissions impact in the South Coast Air Basin of exempting dimethyl carbonate and propylene carbonate is unknown. However, dimethyl carbonate may replace current solvents used in paints, co-solvents used in sealants and adhesives, and may replace current multipurpose and thinning solvents. Because of its solubility properties, dimethyl carbonate may be useful as a co-solvent in acrylics, urethane and alkyd systems, and potentially replace alcohols, ketones, esters and glycol ethers. Dimethyl carbonate may also be used as a specialty solvent in industrial coating/sealant applications and may be incorporated in waterborne coatings and adhesives because of its partial miscibility in water.

For propylene carbonate, it is not possible at this time to quantify its potential use in coatings formulations or in other likely applications. However, propylene carbonate may replace current solvents used in adhesives, paint strippers, and solvents for aerial pesticide application. Propylene carbonate is also currently used in more than 1,300 individual cosmetic products such as mascara, lip gloss, foundation, sunscreen, lip liner, deodorant, anti-aging products and concealers. Other known applications that may replace currently used solvents with propylene carbonate include special purpose lubricants, general purpose degreasers for industrial use, rubberized coatings, and non-flat aerosol paint products. Propylene carbonate may also be used as a tail solvent in products that contain a mixture of solvents due to its slow evaporation rate, and in certain solvent cleaning applications.

PROJECT DESCRIPTION

Rule 102- Definition of Terms, does not follow the typical format of other SCAQMD rules, as it simply provides definitions for specific words, terms, or phrases used in other SCAQMD rules and regulations. PAR 102 would only modify the list of Group I compounds in the definition of "exempt" by adding methyl formate, dimethyl carbonate, and propylene carbonate. No other definitions are affected by the proposed amendments to Rule 102. A copy of PAR 102 is included in Appendix A.

Because the proposed project is subject to CEQA, an analysis of potential adverse impacts is required. Potential adverse impacts from amending Rule 102 are analyzed in Chapter 2 of this EA.

C H A P T E R 2 - E N V I R O N M E N T A L C H E C K L I S T

Introduction

General Information

Environmental Factors Potentially Affected

Determination

Environmental Checklist and Discussion

INTRODUCTION

The environmental checklist provides a standard evaluation tool to identify a project's potential adverse environmental impacts. This checklist identifies and evaluates potential adverse environmental impacts that may be created by the proposed project.

GENERAL INFORMATION

Project Title:	Proposed Amended Rule 102 – Definition of Terms
Lead Agency Name:	South Coast Air Quality Management District
Lead Agency Address:	21865 Copley Drive Diamond Bar, CA 91765
CEQA Contact Person:	Mr. Jeffrey Inabinet (909) 396-2453
Rule 102 Contact Person	Mr. Rizaldy Calungcagin (909) 396-2315
Project Sponsor's Name:	South Coast Air Quality Management District
Project Sponsor's Address:	21865 Copley Drive Diamond Bar, CA 91765
General Plan Designation:	Not applicable
Zoning:	Not applicable
Description of Project:	PAR 102 would expand the definition of Group I VOC-exempt compounds to include methyl formate, dimethyl carbonate, and propylene carbonate.
Surrounding Land Uses and Setting:	Primarily industrial/commercial.
Other Public Agencies Whose Approval is Required:	Not applicable.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The following environmental impact areas have been assessed to determine their potential to be affected by the proposed project. As indicated by the checklist on the following pages, environmental topics marked with an "✓" may be adversely affected by the proposed project. An explanation relative to the determination of impacts can be found following the checklist for each area.

☐ Aesthetics	☐ Agriculture Resources	☑ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☑ Hazards & Hazardous Materials	☐ Hydrology/ Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☐ Solid/Hazardous Waste	☐ Transportation/ Traffic	☑ Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

☑ I find the proposed project, in accordance with those findings made pursuant to CEQA Guideline §15252, COULD NOT have a significant effect on the environment, and that an ENVIRONMENTAL ASSESSMENT with no significant impacts will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will NOT be significant effects in this case because revisions in the project have been made by or agreed to by the project proponent. An ENVIRONMENTAL ASSESSMENT with no significant impacts will be prepared.

☐ I find that the proposed project MAY have a significant effect(s) on the environment, and an ENVIRONMENTAL ASSESSMENT will be prepared.

☐ I find that the proposed project MAY have a "potentially significant impact" on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL ASSESSMENT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL ASSESSMENT pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL ASSESSMENT, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Date: September 11, 2009 **Signature:** Steve Smith

Steve Smith, Ph.D.
Program Supervisor

ENVIRONMENTAL CHECKLIST AND DISCUSSION

As discussed in Chapter 1, the main focus of PAR 102 is to add methyl formate, dimethyl carbonate, and propylene carbonate to the list of Group I VOC-exempt compounds. Similar to other Group I exempt compounds in Rule 102, methyl formate is not an ozone depleter or a global warming compound. Propylene carbonate is not an ozone depleting compound and is already a VOC-exempt compound under CARB's Consumer Products Regulation based on its low vapor pressure. In addition, dimethyl carbonate is not an ozone depleting substance. The toxicity of these three compounds is currently unknown due to the lack of testing and health affects data currently available.

Adding methyl formate, dimethyl carbonate, and propylene carbonate to the Group I list in Rule 102 could potentially affect various manufacturing industries including foam manufacturing, pharmaceutical manufacturing, cosmetics manufacturing, food container manufacturing, as well as various facilities and area sources utilizing paints, coatings/sealants, adhesives, solvents, co-solvents, lubricants, degreasers and rubberized coatings. Based on AER data and industry input, the industry that is expected to potentially use the largest quantity of methyl formate in the future is the polystyrene foam manufacturing industry based on the current quantities of hydrocarbon blowing agents used. The three proposed compounds for delisting are expected to be used as "drop in" compounds into existing equipment and systems located at existing facilities and area source operations subject to SCAQMD rules and regulations. Therefore, no construction activities, site preparation or grading activities requiring large construction equipment will be necessary. Additionally, no equipment replacement, equipment modifications, or add-on control equipment are expected to be necessary at the existing facilities.

If Rule 102 is amended as proposed, up to 238 tons per year that are currently emitted from the foam manufacturing industry may potentially be reduced. However, because of the uncertainty of the future quantity of methyl formate that will be used in foam manufacturing, no VOC emission reduction credit is assumed for adopting PAR 102.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
I. AESTHETICS. Would the project:			
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☑
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☑
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☑

	Potentially Significant Impact	Less Than Significant Impact	No Impact
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☑

Significance Criteria
The proposed project impacts on aesthetics will be considered significant if:

- The project will block views from a scenic highway or corridor.
- The project will adversely affect the visual continuity of the surrounding area.
- The impacts on light and glare will be considered significant if the project adds lighting which would add glare to residential areas or sensitive receptors.

Discussion
I.a), b), c) & d) Adoption of PAR 102 may result in the three new VOC-exempt compounds being used as replacements in VOC-containing or exempt compounds. To the extent this occurs, the three new VOC-exempt compounds will likely be used in operations where they simply replace the VOC-containing or exempt substance and will be used as "drop in" compounds into existing equipment and systems located at existing facilities, as well as area source operations subject to SCAQMD rules and regulations. The use of replacement "drop in" compounds for foam blowing agents and solvents currently used in coatings, clean-up solvents, etc., requires no construction of new buildings and no equipment replacement. Therefore, adoption of PAR 102 would not require the construction of new buildings or other structures that would obstruct scenic resources or degrade the existing visual character of a site, including but not limited to, trees, rock outcroppings, or historic buildings. Further, PAR 102 would not involve the demolition of any existing buildings or facilities, require any subsurface activities, require the acquisition of any new land or the surrendering of existing land, or the modification of any existing land use designations or zoning ordinances. Thus, the proposed project is not expected to degrade the visual character of any site where a facility is located or its surroundings, affect any scenic vista or damage scenic resources. Since the proposed project does not require existing facilities to operate at night, it is not expected to create any new source of substantial light or glare.

Based upon these considerations, significant adverse aesthetics impacts are not anticipated and will not be further analyzed in this ~~draft~~ Final EA. Since no significant aesthetics impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
II.	**AGRICULTURE RESOURCES.** Would the project:			
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☑
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☑
c)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☑

Significance Criteria
Project-related impacts on agricultural resources will be considered significant if any of the following conditions are met:

- The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.
- The proposed project will convert prime farmland, unique farmland or farmland of statewide importance as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.
- The proposed project would involve changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural uses.

II.a), b), & c) Adopting PAR 102 would expand the definition of Group I VOC-exempt compounds to include methyl formate, dimethyl carbonate, and propylene carbonate. These three new VOC-exempt compounds may potentially be used as replacements in currently used VOC-containing or exempt compounds. To the extent this occurs, the three new VOC-exempt compounds will likely be used in operations where they simply replace the VOC-containing or exempt substance and will be used as "drop in" compounds into existing equipment and systems located at existing facilities, as well as area sources that are regulated by the SCAQMD. The use of replacement "drop in" compounds for foam blowing agents and solvents currently used in coatings, clean-up solvents, etc., requires no construction of new buildings and no equipment replacement. Additionally, the existing industrial or commercial businesses that may be affected by the adoption of PAR 102 are primarily located within urbanized areas that are typically designated as industrial or commercial. Therefore, adoption of PAR 102 would not result in any new construction of buildings or other structures that would convert any classification of farmland to non-agricultural use or conflict with zoning for agricultural use or a Williamson Act contract.

Based upon these considerations, significant agricultural resource impacts are not anticipated and will not be further analyzed in this ~~draft~~ Final EA. Since no significant agriculture resources impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
III.	**AIR QUALITY.** Would the project:			
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☑
b)	Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☑	☐
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☑	☐
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☑
e)	Create objectionable odors affecting a substantial number of people?	☐	☐	☑
f)	Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?	☐	☐	☑

III.a) Attainment of the state and federal ambient air quality standards protects sensitive receptors and the public in general from the adverse effects of criteria pollutants which are known to have adverse human health effects. PAR 102 is being implemented to be consistent with the delisting action taken by the U.S. EPA and, to the extent the solvents proposed for addition to Rule 102 replace VOC-containing or exempt solvents, may assist in reducing VOC emissions from various manufacturing operations including: foam manufacturing, pharmaceutical manufacturing, cosmetics manufacturing, coating/sealant applications, as well as other manufacturing processes that utilize adhesives, paint strippers, solvents, lubricants, and degreasers. Based on the discussion under items III. b), c) and f), PAR 102 may contribute to carrying out the goals of the 2007 AQMP to the extent that VOC-containing or exempt compounds are replaced with any of the three compounds proposed for addition to the Group I list in Rule 102. Further, reducing VOC emissions will contribute to attaining the state and federal ambient air quality standards for ozone and, to a lesser extent, PM10 and PM2.5. In addition, to the exent that the proposed project results in replacing compounds with high global warming potential (GWP) and ozone depleting potential (ODP) with compounds that have low GWP and ODP, the proposed project would be consistent with the SCAQMD's climate change policy to reduce emissions of climate change pollutants. Thus, because PAR 102 may result in

achieving VOC reductions, the proposed project does not obstruct implementation of the applicable AQMP.

III.b), c), d) & f) For a discussion of these items, refer to the following analysis.

Air Quality Significance Criteria

To determine whether or not air quality impacts from adopting the proposed amendments are significant, impacts will be evaluated and compared to the criteria in Table 2-1. If impacts equal or exceed any of the criteria in Table 2-1, air quality impacts will be considered significant. All feasible mitigation measures will be identified and implemented to reduce significant impacts to the maximum extent feasible.

Table 2-1
Air Quality Significance Thresholds[4]

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation**
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
Sox	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants and Odor Thresholds		
Toxic Air Contaminants (TACs) Accidental Release of Acutely Hazardous Materials (AHMs)	MICR $\geq$ 10 in 1 million ; HI $\geq$ 1.0 (project increment) CAA §112® threshold quantities	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants [(a)]		
NO2 1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.25 ppm (state) 0.053 ppm (federal)	
PM10 24-hour average annual geometric average annual arithmetic mean	10.4 µg/m^3 (construction) [(b)] & 2.5 µg/m^3 (operation) 1.0 µg/m^3 20 µg/m^3	
PM2.5 24-hour average	10.4 µg/m^3 (construction) [(b)] & 2.5 µg/m^3 (operation)	

[4] CEQA Air Quality Handbook, SCAQMD, www.aqmd.gov/ceqa/hdbk.html.

Table 2-1 (concluded)
Air Quality Significance Thresholds[5]

Ambient Air Quality for Criteria Pollutants [(a)]	
Sulfate 24-hour average	1 ug/m^3
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)

(a) Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
(b) Ambient air quality threshold based on SCAQMD Rule 403.

KEY: MICR = maximum individual cancer risk; HI = Hazard Index; ug/m^3 = microgram per cubic meter; ppm = parts per million; AHM = acutely hazardous material; TAC = toxic air contaminant

Physical and Chemical Properties of Proposed Compounds

The following is a discussion of the physical and chemical properties of each of the three compounds proposed to be added to the Group I list of VOC-exempt compounds in Rule 102.

Methyl Formate

Methyl Formate, also called methyl methanoate, is the methyl ester of formic acid and has the following molecular formula: $HCOOCH_3$. It is a clear liquid with an ether-like odor and is very soluble in water and miscible with most organic solvents. The compound is not currently classified as a hazardous air pollutant under the federal Clean Air Act. The physical and chemical properties of methyl formate are summarized in Table 2-2.

Table 2-2 – Physical and Chemical Properties of Methyl Formate

Description	Colorless liquid; pleasant odor
Molecular Formula	$HCOOCH_3$
Molecular Weight	60.05 g/mol
Density	0.98 g/mL
Boiling Point	32 °C (89.7 °F)
Melting Point	-100 °C
Vapor Pressure	585.7 mmHg @ 25 °C
Solubility in Water	Soluble
Solvent Solubility	Miscible with most organic solvents
Flash Point	-19 °C (-2.2 °F)
Lower Explosive Limit	5%
Upper Explosive Limit	23%
NFPA[(a)] Flammability Rating	4

(a) National Fire Protection Agency

The predominant industrial use of methyl formate is in the manufacture of formamide, dimethylformamide, and formic acid. Because of methyl formate's high vapor pressure, it is commonly used as a component of the solvent system for quick-drying coatings. It is also used

[5] CEQA Air Quality Handbook, SCAQMD, November 1993.

in the manufacture of pharmaceuticals and as a blowing agent in foam manufacturing. The U.S. EPA's decision to exempt methyl formate as a VOC was based on the compound's low ozone forming potential (reactivity). Scientific studies indicate that the compound's reaction rate constant (k_{OH}) with the OH radical in the air is 2.27 x 10^{-13} cm^3/molecule/sec, which is slightly lower than ethane's k_{OH} value of 2.4 x 10^{-13} cm^3/molecule/sec. Further evidence of methyl formate's low reactivity, as reported in Dr. William Carter's 2007 research report titled "Development of the SAPRC-07 Chemical Mechanism and Updated Ozone Reactivity Scales," shows an MIR value of 0.053 gram of ozone formed per gram of VOC. This is less than the MIR value of 0.27 for ethane, which is the benchmark compound for exemption purposes. Because of methyl formate's low or negligible reactivity compared to ethane, it is not expected to have a meaningful contribution to ozone formation.

Dimethyl Carbonate

This organic compound, also known as carbonic acid dimethyl ester, is a colorless, fast-evaporating solvent that is used as a methylating agent and reaction solvent in chemical processing. It is also used as solvent for lithium ion batteries. It is highly flammable, with a flash point of 64 °F (closed cup). Dimethyl carbonate may potentially be used as an alternative to two commonly used VOC-exempt solvents: acetone and methyl acetate, which have lower flashpoints (-4 °F and 14 °F in closed cup, respectively). Table 2-3 summarizes the physical and chemical properties of dimethyl carbonate.

Table 2-3 – Physical and Chemical Properties of Dimethyl Carbonate

Appearance	Clear colorless liquid
Odor	Pleasant odor
Molecular Formula	$(CH_3)_2CO_3$
Molecular Weight	90.08 g/mol
Density	1.07 g/mL
Boiling Point	90 °C (194 °F) @ 760 mmHg
Vapor Pressure	55 mmHg @ 25 °C
Solubility in Water	13.9 g/100 g water
Solvent Solubility	Miscible with most organic solvents
Lower Explosive Limit	4.2%
Upper Explosive Limit	12.9%
NFPA Flammability Rating	3
Flash Point	18°C (64.4 °F)

Dimethyl carbonate is currently not identified as a hazardous air pollutant under the federal Clean Air Act nor is it classified as an ozone depleting substance. Effective February 20, 2009, the U.S. EPA excluded dimethyl carbonate from the definition of VOC based on its low potential to generate ozone in the troposphere. The report by Dr. Carter shows much lower MIR values for dimethyl carbonate than ethane, as summarized in Table 2-4 below.

Table 2-4 – Comparison of MIR Values for Dimethyl Carbonate and Ethane

MIR	Dimethyl Carbonate	Ethane
gram ozone/gram VOC	0.056	0.27

Table 2-4 – Comparison of MIR Values for Dimethyl Carbonate and Ethane (concluded)

MIR	Dimethyl Carbonate	Ethane
Gram ozone/mole VOC	5.04	8.12

Based on dimethyl carbonate's low MIR values, the U.S. EPA concluded that the compound is negligibly reactive, and excluded it from the VOC definition.

Propylene Carbonate

Propylene carbonate is an odorless, non-viscous clear liquid with a low vapor pressure, and a very slow evaporation rate. It is combustible, with a flash point of 132°C. A summary of the compound's physical and chemical properties is shown in Table 2-5.

Table 2-5 – Physical and Chemical Properties of Propylene Carbonate

Appearance	Colorless liquid
Odor	Odorless
Molecular Formula	$C_4H_6O_3$
Molecular Weight	102.09 g/mol
Density	1.25 g/mL
Boiling Point	240 °C (464 °F)
Vapor Pressure	0.03 mmHg @ 20 °C
Lower Explosive Limit	1.21%
Upper Explosive Limit	5.35%
NFPA Flammability Rating	1
Flash Point	132 °C (269.6 °F)

Huntsman Corporation submitted a petition to the U.S. EPA requesting VOC exempt status for propylene carbonate based on its low reactivity relative to ethane. More recent data from Dr. Carter's study indicates the reactivity values for propylene carbonate, as summarized in Table 2-6.

Table 2-6 – Comparison of MIR Values for Propylene Carbonate and Ethane

	Propylene Carbonate	Ethane
gram ozone/gram VOC	0.27	0.27
gram ozone/mole VOC	27.56	8.12
k_{OH} (cm3/molecule-sec)	6.9×10^{-13}	2.4×10^{-13}

From the above data, propylene carbonate has a higher k_{OH} value than ethane, meaning it initially reacts more quickly in the atmosphere than ethane. Further, a molecule of propylene carbonate is more reactive than ethane based on the MIR value calculated as gram ozone/mole VOC. However, a gram of propylene carbonate is less reactive or creates less ozone than ethane. Propylene carbonate has a molecular weight that is over three times that of ethane; thus, it

requires less than a third the number of molecules of propylene carbonate to weigh a gram than the number of molecules of ethane needed to weigh a gram.

Construction Air Quality Impacts

Adoption of PAR 102 may result in the three new VOC-exempt compounds being used as replacements in VOC-containing or exempt compounds. To the extent this occurs, the three new VOC-exempt compounds will likely be used in operations where they simply replace the VOC-containing or exempt substance and will be used as "drop in" compounds into existing equipment and systems located at existing facilities, as well as area sources subject to SCAQMD rules and regulations. The use of replacement "drop in" compounds for foam blowing agents and solvents currently used in coatings, clean-up solvents, etc., requires no construction of new buildings, no equipment replacement, or little or no equipment modification. Therefore, adoption of PAR 102 is not expected to require physical changes or modifications that would involve construction activities or equipment modification. As a result, no construction air quality impacts are expected to occur from the proposed project. Therefore, potential construction air quality impacts will not be considered further in this ~~draft~~ Final EA.

Operational Air Quality Impacts - Criteria Pollutants

Following similar actions by the U.S. EPA, the overall objective of the proposed project is to add methyl formate, dimethyl carbonate, and propylene carbonate to the Group I list of VOC-exempt compounds in Rule 102. Production levels are not expected to increase with adoption of PAR 102, particularly in light of the present global economic conditions. It is anticipated that various manufacturing operations will replace currently used VOC compounds with the three new VOC-exempt compounds. Therefore, the adoption of PAR 102 may result in increased use of the three new VOC-exempt compounds.

Methyl Formate

Based on current information and industry input, the primary operation in which methyl formate may be used as a replacement for currently used hydrocarbon blowing agents, such as pentane and butane, used in polyurethane and polystyrene foam manufacturing. To the extent that methyl formate replaces currently used blowing agents, VOC-exempt methyl formate would likely be used in operations where it simply replaces the currently used VOC-containing or exempt substance as a "drop in" compound into existing equipment and systems located at existing facilities. Polyurethane foam products include rigid insulating foam (used in refrigerators) and flexible foam (used in furniture). Polystyrene foams are commonly used in manufacturing food containers. As an example, demonstrating the air quality effects of using methyl formate in foam manufacturing operations, the Annual Emissions Reporting (AER) database was reviewed and industry input was considered. Based on 2006/2007 AER data and industry input, if all the known polyurethane and polystyrene foam manufacturing facilities in the district replaced currently used hydrocarbon blowing agents with VOC-exempt methyl formate on a one-to-one basis, up to approximately 476,000 pounds (238 tons) of VOC emissions per year or approximately 1,300 pounds (0.65 ton) per day may be potentially eliminated. However, because of the uncertainty of the future quantity of methyl formate that will be used, no VOC emission reduction credit is assumed for adopting PAR 102.

Dimethyl Carbonate

Based on current information and industry input, VOC-exempt dimethyl carbonate may be used as a co-solvent in paints, sealants, and adhesives, and may also be used as a multipurpose and thinning solvent. Because of its solubility properties, dimethyl carbonate may also be used as a

co-solvent in acrylics, urethane and alkyd systems, and potentially replace alcohols, ketones, esters and glycol ethers. Additionally, dimethyl carbonate may potentially be used as a specialty solvent in industrial coating/sealant applications and may be incorporated in waterborne coatings and adhesives because of its partial miscibility in water. To the extent VOC-exempt dimethyl carbonate is used, it would likely be used in operations where it simply replaces the currently used VOC-containing or exempt substance and will be used as a "drop in" compound into existing equipment and systems located at existing facilities.

Relative to area source operations that are subject to SCAQMD rules and regulations, for some cleaning applications, dimethyl carbonate may be used to replace isopropyl alcohol (IPA), although dimethyl carbonate is less polar than IPA. Because of its high boiling point, dimethyl carbonate is not expected to be used in vapor degreasing. In spite of its relatively low flash point, dimethyl carbonate may be a better alternative to acetone and other fast evaporating organic solvents in cold batch cleaning applications. In addition, the compound has solubility and other properties that might make it a replacement for trichloroethylene in solvent cleaning operations.

Based on information provided by industry representatives, dimethyl carbonate is more likely to be used as a co-solvent in various compounds. Therefore, it is not possible at this time to quantify dimethyl carbonate's potential usage in any of the applications mentioned above. Because of the uncertainty associated with it's future use, the emissions impact in the district of exempting dimethyl carbonate is highly speculative. Therefore, no VOC emission reduction credit is assumed for adopting PAR 102.

Propylene Carbonate

Based on current information and industry input, VOC-exempt propylene carbonate may be used as a co-solvent in adhesives, paint strippers, and as a solvent for aerial pesticide application. To the extent that propylene carbonate replaces currently used compounds, VOC-exempt propylene carbonate would likely be used in operations where it simply replaces the currently used VOC-containing or exempt substance and would be used as a "drop in" compound into existing equipment and systems located at existing facilities, as well as area source operations that are subject to SCAQMD rules and regulations.

Because it is an odorless solvent used to dissolve make-up constituents, propylene carbonate is currently used in more than 1,300 individual cosmetic products such as mascara, lip gloss, foundation, sunscreen, lip liner, deodorant, baby lotions and shampoos, anti-aging products, and concealers. Other known applications of propylene carbonate include special purpose lubricants, general purpose degreasers for industrial use, rubberized coatings, and non-flat aerosol paint products. Propylene carbonate may also be used as a tail solvent in products that contain a mixture of solvents due to its slow evaporation rate, and in certain solvent cleaning applications.

Although propylene carbonate is currently widely used in the cosmetics industry, its future use in industrial settings is unclear at this point. Due to the fact that propylene carbonate may be used as a co-solvent in various compounds, it is not possible at this time to quantify its potential usage in any of the applications mentioned above. Because of the uncertainty associated with its future use, the emissions impact in the district of exempting propylene carbonate is highly speculative. Therefore, no VOC emission reduction credit is assumed for adopting PAR 102.

No other operational criteria pollutant emissions changes are expected from adopting PAR 102.

Operational Air Quality Impacts - Toxic Air Contaminants

In assessing a chemical compound for possible delisting as a VOC in Rule 102, SCAQMD staff not only evaluates its potential air quality benefits, but also determines potential health risks associated with the use of such compound. While lower VOC emissions will result in a criteria pollutant benefit, human health impacts from exposure to air toxics could be generated if there is an increased use of the proposed compounds. To evaluate potential health impacts from PAR 102, staff has examined the health effects of each individual compound proposed to be added to the Group I list of VOC-exempt compounds.

Methyl Formate

In response to petitions for VOC exempt status and requests from some air districts, the California Air Resources Board, in conjunction with the Office of Environmental Health Hazard Assessment (OEHHA), conducted an environmental impact assessment of methyl formate, focusing on possible health effects associated with inhalation exposure to the compound.

Methyl formate is rapidly hydrolyzed in the body to methanol and formic acid. Methanol is enzymatically oxidized to formaldehyde, which is then rapidly oxidized to formic acid. These metabolites were also considered by OEHHA in assessing toxicity of methyl formate. Formaldehyde and methanol are listed as toxic air contaminants in SCAQMD Rule 1401, and formaldehyde is classified as A2 (suspected human carcinogen) by the American Conference of Industrial Hygienists (ACGIH) and 2A (probable human carcinogen) by the International Agency for Research on Cancer (IARC).

OEHHA's assessment indicates that the use of methyl formate as a substitute for more reactive blowing agents would increase exposure by inhalation of workers and the general public near facilities using the compound due to the increased quantities of methyl formate that may potentially be used. The report also indicates that methyl formate is expected to be less irritating to mucous membranes than its metabolites, formaldehyde or formic acid. In addition, OEHHA's toxicity assessment finds that methyl formate has no carcinogenicity or long-term toxicity effects. Similarly, there is no evidence of carcinogenicity for methanol despite a vast database on toxicity and long history of human exposure. On the other hand, the carcinogenicity of formaldehyde is associated with inhalation, but it has not been determined whether internal levels of dissolved or bound formaldehyde produced by intermediary metabolism or by methanol oxidation are associated with cancer.

OEHHA's toxicity assessment concluded that for methyl formate's intended use as a substitute blowing agent in foam manufacturing, the health concern is the internal levels of methanol and formic acid (or formate ion) in solution due to metabolism of methyl formate, and not the external air concentrations of the chemicals. Further, OEHHA, in a memorandum to CARB on the health effects of exposure to methyl formate, dated March 14, 2008, concluded that "at dose levels likely to be achieved in environmental exposures by inhalation, these concerns appear to be minor."

There is no chronic Reference Exposure Level (REL) or cancer potency values for methyl formate due to lack of data on long-term health effects. However, OEHHA has estimated an interim acute REL of 11,400 $\mu g/m^3$ (4.7 ppm) for methyl formate, which is much greater than the acute REL for formaldehyde (55 $\mu g/m^3$), and less than half that of methanol (28,000 $\mu g/m^3$). OEHHA's estimated interim REL for methyl formate, however, has not undergone external peer

review nor has it been approved by the Scientific Review Panel on Toxic Air Contaminants. According to OEHHA's report, formaldehyde's low acute REL reflects its reactivity, which causes sensory effects and tissue damage at the point of contact with the respiratory system and the eyes.

Based on OEHHA's assessment of exposures, as well as positive air quality benefits of using methyl formate, CARB, in a letter to air pollution control officers, dated May 19, 2008, recommends that air districts consider this compound for exemption in the definition of VOC, but also to remain vigilant about possible adverse effects as its uses increase.

The total number of facilities or types of operations that may use methyl formate in the future is speculative at this point. However, to evaluate methyl formate's likely use as a foam blowing agent, SCAQMD staff assumed that future use at new or existing facilities would be similar to the use at existing facilities. Based on 2006/2007 SCAQMD AER data and industry input, there are currently four known polystyrene foam manufacturing facilities and approximately 10 known polyurethane foam manufacturing facilities located in the district. Staff performed a Tier 1 health analysis (HRA) for the largest polyurethane foam blowing manufacturer and a Tier 2 and Tier 3 HRA for the four polystyrene foam blowing manufacturers using the assumption that all currently used foam blowing agents would be replaced with methyl formate. The analysis indicated that the polyurethane foam manufacturing facilities evaluated did not exceed the Tier 1 screening value.

Based on AER data and industry input, the industry that is expected to potentially use the largest quantities of methyl formate in the future is the polystyrene foam manufacturing industry. Therefore, the four known polystyrene foam manufacturing facilities in the district were evaluated to identify any potential human health impacts.

Since OEHHA has not adopted an REL for methyl formate, SCAQMD staff estimated methyl formate's Tier 1 screening value for an acute hazard index to be 5.7 pounds per hour (lb/hr), based on OEHHA's interim REL value, using the same methodology when adding a compound to Rule 1401, and worst-case scenario assumptions (see Table 2-7). The Tier I screening value was developed for this analysis and should not be cited as an approved regulatory value.

Table 2-7 – Tier I Screening Thresholds for Methyl Formate

HIA = (Qhr * (X/Q)hr) / (REL)

REL (µg/m3)

Methyl Formate = 11400

X/Q Values

	25m
Point	2,000

**assumed stack height of ≥ 14 to 24 ft; assumed building size < 3000 sq. ft*

Calculated Screening Limits

	Screening Limit in lbs/hr
Source Type	Within 25m
Point	5.7

AER data from 2005/2006 for the largest known polyurethane foam manufacturing facility in the district of approximately 3.6 pounds per day (lb/day) average emissions were reviewed and evaluated. Based on the REL derived in Table 2-7, as well as facility operating hours (50 weeks per year, five days per week, 16 hours per day), this facility is estimated to emit approximately 0.225 lb/hr, which is below the screening value of 5.7 lb/hr. Based on this analysis, the screening value of 5.7 lb/hr would not be exceeded by future use of VOC-exempt methyl formate at polyurethane foam manufacturing facilities in the district.

A second hypothetical Tier 1 HRA was performed based on methyl formate sales data provided by a foam supply distributor who currently distributes methyl formate to approximately ten polyurethane foam manufacturing facilities. According to the distributor, polyurethane foam blowing facilities use approximately four lb/day average emissions. Based on this information, the hourly emission rate is (0.5 lb/hr assuming 8 hr/day operation). Even with this higher hourly emission quantity of 0.5 lb/hr, the screening value of 5.7 lb/hr would not be exceeded.

For polystyrene facilities, however, daily emissions from the blowing agent are higher. Based on 2006/2007 SCAQMD AER data, blowing agent emissions of one of the petitioners for the methyl formate VOC exemption was 46 tons/year or about 10.5 lb/hr. Assuming a one-to-one replacement of butane or pentane with methyl formate, this emission rate would exceed the 5.7 lb/hr screening value for acute hazard index.

Staff conducted a Tier 2 HRA to identify the acute hazard index for each facility. The results are shown for each of the four known polystyrene foam manufacturing facilities in the district, as presented in Table 2-8.

Table 2-8 – Individual Acute Hazard Index (HIA) for Methyl Formate Used at Polystyrene Facilities

Facility Screening Analysis

Facility**	SCAQMD ID#	Current Blowing Agent (ton/yr)	Methyl Formate* (lb/hr)	X/Q,*** (ug/m3)/(ton/hr)	REL ug/m3	HI
Facility A	3721	160	36.5	2,000	11,400	6.40
Facility B	2909	46	10.5	2,000	11,400	1.84
Facility C	43605	24	5.5	2,000	11,400	0.96
Facility D	18698	17	3.9	2,000	11,400	0.68

**calculated at 1:1 exchange ratio; 24-hr/day, 365 days/year*
***calculated as a point source with worse case scenario stack height of ≥ 14 to 24 ft*
**** assumed the closest receptor would be within 25 meters of the facility.*

Sensitive receptors, as defined in SCAQMD Rule 1472, include public and private schools (kindergarten through Grade 12), hospitals, convalescent homes, and licensed day care centers The shortest screening receptor distance of 25 meters was used to represent receptor distances to both existing and future affected facilities. Both Facility C and Facility D do not exceed an HIA significance threshold of 1.0, for the shortest screening sensitive receptor distance. However, Facility A and Facility B would have an HIA of greater than 1.0 if the sensitive receptors were at the 25-meter sensitive receptor distance.

To further evaluate the two largest polystyrene manufacturing facilities (Facility A and Facility B) located within the district, SCAQMD staff conducted a Tier 3 screening dispersion modeling evaluation. Tier 3 uses the SCREEN3 air dispersion modeling computer program to estimate concentrations for health risk evaluation. In a Tier 3 HRA, facility-specific parameters, such as stack gas temperature, stack gas exit velocity or flow rate, and stack inside diameter were used to refine health risk estimates. The results of the Tier 3 HRA dispersion modeling are presented in Table 2-9 and Table 2-10. The concentrations used to estimate the HIA were the maximum concentration derived by the SCREEN3 model.

Table 2-9 – Facility A Tier 3 Screening Dispersion Modeling

Facility A

Source Type	Emission Rate, lb/hr	Emission Rate, g/s
Point	36.5	4.6

Stack Characteristics – Facility A Source Test, March 23, 2006

	Temp, K	Velocity, m/s	Diameter, m	Capped Stack Adjust Diameter, m
Exhaust 2	389.67	5.91	0.58	14.2

Used Exhaust 2 because it has the velocity and second lowest temp
Capped Stack Adjust Diam, m = actual diam, m x [(actual vel, m/s)/(0.01, m/s)]^0.5

Health Risk

Source Type	SCREEN3 Conc, ug/m3	REL ug/m3	HIA
Point	8,779	11,400	0.77

Table 2-10 – Facility B Tier 3 Screening Dispersion Modeling

Facility B

Source Type	Emission Rate, lb/hr	Emission Rate g/s
Point	10.5	1.3

Stack Characteristics – Facility B, Source Test Report, August 2007

Description	Temp, K	Velocity, m/s	Diameter, m	Capped Stack Adjust Diameter, m
RTO	309	14.82	0.71	27.4

Capped Stack Adjust Diam, m = actual diam, m x [(actual vel, m/s)/(0.01, m/s)]^0.5

Health Risk

Source Type	SCREEN3 Conc, ug/m3	REL ug/m3	HIA
Point	2,926	11400	0.26

As shown in Tables 2-9 and 2-10 above, using more refined parameters, neither Facility A or Facility B had an HIA that exceeded 1.0, based on the specific facility parameters and emission rates. Therefore, based on previous Tier 1 HRA results and the Tier 3 HRAs conducted for the two largest polystyrene foam manufacturing facilities located within the district, methyl formate used as a replacement compound is not expected to generate significant adverse acute non-cancer health risk impact.

Dimethyl Carbonate

Given the potential applications of dimethyl carbonate, inhalation is expected to be the primary pathway of exposure due to evaporation of the solvent. This exposure would be similar to any other paint, sealant and adhesive solvent it is intended to replace. There may also be some minor dermal exposure from coatings splattering or careless mixing operations. Oral exposure is rare and is limited to accidental ingestion.

Data from a distributor of dimethyl carbonate indicate that dimethyl carbonate is primarily metabolized in the body by de-esterification or hydrolysis by carboxyl esterase enzymes to produce methanol and carbon dioxide. At this time, CARB and OEHHA have not conducted an assessment of the health effects of exposure to dimethyl carbonate, although both agencies have done extensive research on methanol toxicity as part of the methyl formate VOC exemption petition. The SCAQMD has submitted a request with OEHHA to evaluate any health concerns from the use of dimethyl carbonate. Since no toxic values (not even interim) have been released by OEHHA, a toxic health risk assessment analysis cannot be performed for dimethyl carbonate.

In 1992, Exxon conducted a study[6] to evaluate the potential of dimethyl carbonate to produce maternal and developmental toxicity (including teratogenicity) when administered by inhalation

[6] Final Report, Inhalation Developmental Toxicity Study in Mice with Dimethylcarbonate, performed at Exxon Biomedical Sciences, Inc., completed on July 28, 1992.

to mice during major organogenesis. This study was performed in compliance with U.S. EPA TSCA Guidelines for inhalation developmental toxicity studies (40 CFR 798) and the OECD Guideline 414. Pregnant female mice were exposed by inhalation to 0, 300, 1,000, or 3,000 ppm of dimethyl carbonate during gestational days (GD) six through 15. Maternal body weights, clinical observations, and food consumption were monitored throughout the study. There were no treatment related deaths or clinical findings. Maternal body weights and body weight gains were significantly reduced at the 3,000 ppm exposure level. Food consumption was also significantly reduced in the 1,000 and 3,000 ppm exposure level groups. Gestational parameters affected at the 3,000 ppm exposure level included post implantation loss due to increased resorptions and altered sex ratio (decreased males). Fetal body weights per litter were reduced at the 3,000 ppm exposure level with an increased number of stunted fetuses. Total incidences of fetal malformations were significantly increased at the 3,000 ppm exposure level and included cleft palate, microtia, low set ears, multiple skull bone malformations, and fused vertebral arches. There was also a treatment-related increase in skeletal variations at the 3,000 ppm exposure level. The no-observed-effect-level (NOEL) for maternal and developmental toxicity was 1,000 ppm. Based on the observed results, this study indicates effects at high (3,000 ppm) inhalation exposure level. No observed effects were reported at 1,000 ppm exposure level. Such results are consistent with the teratology effect levels of methanol. There are no data available on the chronic cancer or non-cancer health effects of dimethyl carbonate. However, methanol has an overall low acute toxicity level and is not listed as a known carcinogen on the State of California Proposition 65 list.

No exposure guidelines have been established for dimethyl carbonate by OSHA, ACGIH, or NIOSH. As a result, the following HRA was conducted using the Tier 1 screening level for methanol, which is the primary metabolite of dimethyl carbonate. Four different sized solvent cleaning facilities with different amounts of solvent usage were screened to project future health risk analysis for solvent cleaning operations impacts from methanol. The results are presented below in Table 2-11.

Table 2-11 – Methanol Health Risk (commercial/industrial)

Density Conversions

Component	Specific Gravity, g/cc	Conversion, g/lb	Conversion, cc/gal	Solvent Density, lb/gal	Screening Emissions Level, lb/yr	Screening Emissions Level, lb/hr [a]
Methanol	0.7918	453.59	3,785	6.61	132,000	14

[a] SCAQMD, Risk Assessment Procedures for Rules 1401 and 212, August, 2000, Attachment G, Table 1A, 25 meters.

Emissions, lb/yr = Solvent Usage, gal/yr x Solvent Density, lb/gal x TAC Wt Fraction

Emissions, lb/hr = (Emissions, lb/yr)/(260 day/year)/(8 hour/day)

Facility	Solvent Usage, gal/yr	Solvent Density, lb/gal	TAC Wt Fraction	Emissions, lb/yr	Table 1 A Screening Emissions, lb/yr [a]	Emissions, lb/hr	Table 1 A Screening Emissions, lb/hr [a]	Adjusted Emissions for Dimethyl Carbonate (2X), lb/hr
Facility A	75	6.61	1	496	132,000	0.24	14	0.48
Facility B	420	6.61	1	2,775	132,000	1.33	14	2.66
Facility C	1274	6.61	1	8,418	132,000	4.05	14	8.10

~~Facility D~~	~~100~~	~~6.61~~	~~1~~	~~661~~	~~132,000~~	~~0.32~~	~~14~~	~~0.64~~

~~[a] SCAQMD, Risk Assessment Procedures for Rules 1401 and 212, August, 2000, Attachment G, Table 1A, 25 meters.~~

~~Emissions, lb/yr = Solvent Usage, gal/yr x Solvent Density, lb/gal x TAC Wt Fraction~~

~~Emissions, lb/hr = (Emissions, lb/yr)/(260 day/year)/(8 hour/day)~~

Table 2-11 – Methanol Health Risk from Usage at Permitted Facilities (commercial/industrial)

Conversion Factor for Dimethyl Carbonate Degradation to Methanol

MW DMC g/mol	Molar Ratio MeOH to DMC	MW MeOH g/mol	Conversion DMC to MeOH
90.08	2	32.05	0.71

MW - molecular weight

Dimethyl carbonate (DMC) chemical formula is C3H6O3; methanol's (MeOH) chemical formula is CH3OH

Degradation equation: C3H6O3 + 2H2O --> 2CH3OH + H2CO3; therefore two moles of methanol for every mole of dimethyl carbonate consumed.

Conversion DMC to MeOH = (2 mol MeOH/DMC x (MW MeOH/MW DMC)

Tier I - Health Risk Evaluation of Dimethyl Carbonate as the Degradation Product Methanol

Component	DMC Usage, gal/yr	DMC Density, lb/gal	DMC Emissions, lb/yr	DMC to MeOH Conversion	MeOHeq Emissions, lb/yr	Table 1-A Chronic Screening MeOH Emissions, lb/yr[a]	MeOHeq Emissions, lb/hr	Table 1-A Acute MeOH Screening Emissions, lb/hr[a]
Facility A	75	8.92	669	0.71	476	132,000	0.23	14
Facility B	420	8.92	3,747	0.71	2,666	132,000	1.28	14
Facility C	1,274	8.92	11,365	0.71	8,087	132,000	3.89	14
Facility D	100	8.92	892	0.71	635	132,000	0.31	14

[a] SCAQMD, Risk Assessment Procedures for Rules 1401 and 212, Package L, July 2008.

Dimethyl Carbonate (DMC) usage assume equal replacement of conventional solvent. Conventional solvent use from SCAQMD annual emission reporting database.

DMC Emissions, lb/yr = DMC Usage, gal/yr x DMC Density, lb/gal

Methanol equivalent (MeOHeq) Emission, lb/yr = DMC Emissions, lb/yr x DMC to MeOH conversion

MeOHeq Emissions, lb/hr = (MeOH Emissions, lb/yr)/(260 day/year)/(8 hour/day)

To quantify usage, a one-to-one replacement ratio of ~~methanol~~ dimethyl carbonate for the currently used solvents was utilized in the screening evaluation. The most conservative sensitive receptor distance for screening purposes was utilized in the evaluation (25 meters). Since there are no established OEHHA health risk values for dimethyl carbonate, health risk was estimated for dimethyl carbonate's metabolite, methanol. The ~~estimated~~ emissions were estimated ~~then doubled~~ based on a ~~the~~ two-to-one stoichiometric ratio of dimethyl carbonate to methanol. Based on the health risk screening evaluation conducted for methanol, neither the estimated emissions per year nor per hour exceed the ~~carcinogenic or~~ non-carcinogenic (acute/chronic) emissions thresholds and, therefore, are not considered significant. No cancer potency factors were identified for dimethyl carbonate or methanol, and therefore, no carcinogenic health risk was estimated.

In order to evaluate for the potential future usage of dimethyl carbonate in an area sources/architectural coatings application, SCAQMD staff conducted a Tier 1 health risk screening also using dimethyl carbonate's primary metabolite, methanol. Potential dimethyl carbonate quantities used in paint (10%) as well as in clean-up solvent (100%) were screened for a single family dwelling to project future health risk impacts. The results are presented below in Table 2-12.

~~Table 2-12 – Methanol Health Risk (residential/architectural coatings)~~

~~Single Family Home DMC Usage from Paint~~

~~Avg. Single Family Home Size, sq ft~~	~~Conversion, (sq ft wall)/ (sq ft footprint)~~	~~Paint Usage, sq ft wall/gal~~	~~Paint Usage, gal/home~~	~~Avg. DMC Content~~	~~DMC Usage from Paint, gal/home~~
~~1,800~~	~~2.7~~	~~180~~	~~27~~	~~0.1~~	~~2.7~~

~~URBEMIS2007 values for single family home size, conversion from area footprint to wall area and paint usage in gallons per wall area were used.~~

~~Total DMC Usage~~

~~DMC Usage from Paint, gal/home~~	~~DMC Usage from Solvent, gal/home~~	~~Total DMC Usage, gal/home~~
~~2.7~~	~~5~~	~~7.7~~

~~Tier I - Health Risk Evaluation~~

~~Total DMC Usage, gal/home~~	~~DMC to Methanol Conversion~~	~~Methanol Density, lb/gal~~	~~Methanol Usage, lb/day~~	~~Methanol Usage, lb/hr~~	~~Table 1-A Screening Methanol Emissions, lb/hr~~ [a]	~~Significant~~
~~7.7~~	~~2~~	~~6.61~~	~~102~~	~~12.7~~	~~14~~	~~No~~

~~[a] SCAQMD, Risk Assessment Procedures for Rules 1401 and 212, August, 2000, Attachment G, Table 1A, 25 meters.~~

Table 2-12 – Methanol Health Risk from Non-Permitted Fugitive Use (residential/architectural coatings)

Single Family Home DMC Usage from Paint

Avg Single Family Home Size, sq ft	Conversion, (sq ft wall)/ (sq ft footprint)	Paint Usage, sq ft/gal	Paint Usage, gal/home	Avg DMC Content	DMC Usage from Paint, gal/home
1,800	2.7	180	27	0.1	2.7

Avg Single Family Home Size and conversion of wall to footprint area from URBEMIS2007

Table 2-12 – Methanol Health Risk from Non-Permitted Fugitive Use (continued) (residential/architectural coatings)

Total DMC Usage

DMC Usage from Paint, gal/home	DMC Usage from Solvent, gal/home	Total DMC Usage, gal/home
2.7	5	7.7

Conversion Factor for Dimethyl Carbonate Degradation to Methanol

MW DMC g/mol	Molar Ratio MeOH to DMC	MW MeOH g/mol	Conversion DMC to MeOH
90.08	2	32.05	0.71

MW - molecular weight

Dimethyl carbonate' (DMC) chemical formula is C3H6O3; methanol's (MeOH) chemical formula is CH3OH

Degradation equation: C3H6O3 + 2H2O --> 2CH3OH + H2CO3; therefore two moles of methanol for every mole of dimethyl carbonate consumed.

Conversion DMC to MeOH = (2 mol MeOH/DMC x (MW MeOH/MW DMC)

Tier I - Health Risk Evaluation of Dimethyl Carbonate as the Degradation Product Methanol

Total DMC Usage, gal/home	DMC Density, lb/gal	DMC Emissions, lb/day	DMC to MeOH Conversion	MeOHeq Emissions, lb/day	MeOHeq Emissions, lb/hr	Table 1-A Acute Screening MeOH Emissions, lb/yr [a]	MeOHeq Emissions, lb/year	Table 1-A Chronic MeOH Screening Emissions, lb/hr [a]
7.7	8.92	68.7	0.71	49	6.1	14	684	132,000

[a] SCAQMD, Risk Assessment Procedures for Rules 1401 and 212, Package L, July 2008.

Dimethyl Carbonate (DMC) Emissions, lb/yr = DMC Usage, gal/yr x DMC Density, lb/gal

Methanol equivalent (MeOHeq) Emission, lb/yr = DMC Emissions, lb/yr x DMC to MeOH conversion

MeOHeq Emissions, lb/hr = (MeOH Emissions, lb/yr)/(260 day/year)/(8 hour/day)

MeOHeq Emissions, lb/yr = MeOH emissions x 14 day/year

A one-to-one replacement ratio of ~~dimethanol~~ dimethyl carbonate for the currently used solvents (in coatings and clean-up solvents) was utilized in the screening evaluation to quantify usage. ~~The estimated emissions were then doubled based on the two-to-one stochiometric ratio of dimethyl carbonate.~~ The most conservative sensitive receptor distance for screening purposes was utilized in the evaluation (25 meters). Since there are no established OEHHA health risk values for dimethyl carbonate, health risk was estimated for dimethyl carbonate's metabolite, methanol. The ~~estimated~~ emissions were estimated ~~then doubled~~ based on a ~~the~~ two-to-one stoichiometric ratio of dimethyl carbonate to methanol. Based on the health risk screening evaluation conducted for methanol, neither the estimated emissions per year nor per hour exceed the ~~carcinogenic or~~ non-carcinogenic (acute/chronic) emissions thresholds and, therefore, are not considered significant. No cancer potency factors were identified for dimethyl carbonate or methanol, and therefore, no carcinogenic health risk was estimated.

~~Based on the health risk screening evaluation conducted for methanol, the estimated emissions per hour did not exceed the Tier I non-carcinogenic (acute/chronic) emissions thresholds and, therefore, are not considered significant.~~

Propylene Carbonate

Effective February 20, 2009, the U.S. EPA delisted the compound from the definition of VOC. In addition, propylene carbonate qualifies as a non-VOC under CARB's Consumer Products Regulation because of its low vapor pressure.

Propylene carbonate is not listed as a hazardous air pollutant under the Clean Air Act. Based on current uses such as in cosmetics, lip liner, baby lotion and shampoos, etc., propylene carbonate appears to have low acute toxicity. However, prolonged contact with the skin as well as eye contact may cause irritation. No data are available on health effects caused by chronic exposure to the chemical. In addition, there is no established airborne occupational exposure limit for propylene carbonate. The SCAQMD has submitted a request to OEHHA to evaluate any health concerns from the use of propylene carbonate. Since no toxic values (not even interim) have been released by OEHHA, a toxic health risk assessment analysis cannot be performed for propylene carbonate. However, based on its current uses in consumer products, it is not expected that propylene carbonate would generate significant adverse health effects due to exposure to sensitive populations.

Climate Change and Ozone Depleting Potential

Global warming is the observed increase in average temperature of the earth's surface and atmosphere. The primary cause of global warming is an increase of greenhouse gas (GHG) emissions in the atmosphere. The six major types of GHG emissions identified in the Kyoto Protocol are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), haloalkanes (HFCs), and perfluorocarbons (PFCs). The GHG emissions absorb longwave radiant energy emitted by the earth, which warms the atmosphere. The GHGs also emit longwave radiation both upward to space and back down toward the surface of the earth. The downward part of this longwave radiation emitted by the atmosphere is known as the "greenhouse effect."

The current scientific consensus is that the majority of the observed warming over the last 50 years can be attributable to increased concentration of GHG emissions in the atmosphere due to human activities. Events and activities, such as the industrial revolution and the increased consumption of fossil fuels (e.g., combustion of gasoline, diesel, coal, et cetera), have heavily contributed to the increase in atmospheric levels of GHG emissions. As reported by the California Energy Commission (CEC), California contributes 1.4 percent of the global and 6.2 percent of the national GHG emissions (CEC, 2004). Further, approximately 80 percent of GHG emissions in California are from fossil fuel combustion (e.g., gasoline, diesel, coal, et cetera).

PAR 102 is not expected to generate additional GHG emissions, as explained in the following paragraphs. Of the elements in PAR 102 that were previously discussed in the "Construction Air Quality Impacts" section, there are no construction activities and thus no construction emissions associated with the proposed project. Adoption of PAR 102 may result in the three new VOC-exempt compounds being used as replacements in VOC-containing or exempt compounds. To the extent this occurs, the three new VOC-exempt compounds will likely be used in operations where they simply replace the VOC-containing or exempt substance and will be used as "drop in" compounds into existing equipment and systems located at existing facilities, as well as area

source operations that are subject to SCAQMD rules and regulations. The use of replacement "drop in" compounds for foam blowing agents and solvents currently used in coatings, clean-up solvents, etc., requires no construction of new buildings, no equipment replacement, and little or no equipment modification. Therefore, adoption of PAR 102 is not expected to require physical changes or modifications that would involve construction activities or equipment that could generate GHG emissions. Adoption of PAR 102 would not require an increase in the number of combustion sources. For this reason, PAR 102 is not expected to require any construction activities that would emit GHG emissions.

Operation of the currently proposed project will also not be a source of increased GHG emissions because methyl formate, dimethyl carbonate, and propylene carbonate are not GHGs in accordance with those listed under the Montreal Protocol. The following paragraphs evaluate the global warming potential (GWP) and ozone depleting potential (ODP) of the three compounds proposed to be added to Rule 102.

Besides having negligible reactivity, methyl formate has other desirable properties in that it has negligible ODP and a very low or zero GWP (Table 2-13). The GWP refers to the amount of global warming caused by a substance. It is the ratio of the warming caused by a substance to the warming caused by a similar mass of carbon dioxide. By definition, the GWP of carbon dioxide is 1.0. Methyl formate could be a suitable replacement for hydrocarbon blowing agents used in polyurethane and polystyrene foam manufacturing. Some of the substances that the compound may potentially replace for foam blowing include high GWP hydrofluorocarbons such as HFC-134a, HFC-152a, and HFC-245fa, and other VOC blowing agents such as butane and pentane (Table 2-13). To the extent that the three PAR 102 compounds are used in the future as replacement solvents, foam blowing agents, etc., PAR 102 may help achieve an overall reduction in greenhouses gases.

Table 2-13 – ODP and GWP for Currently Used and Proposed Compounds

Currently Used Compounds	**ODP**	**GWP (100 years)***
Butane	0	3
Pentane	0	11
HFC-134a	0	1,300
HFC-152a	0	140
HFC-245fa	0	820
PAR 102 Compounds	**ODP**	**GWP (100 years)**
Methyl Formate	0	Approx. 1
Dimethyl Carbonate	0	0
Propylene Carbonate	0	0

* Information obtained from *Energy and Global Warming Impacts of Next Generation Refrigeration and Air Conditioning Technologies*, prepared by Building Equipment Technology, presented at the 1996 International Conference on Ozone Protection Technologies, October 21-23, 1996.

Based on the mass MIR value for propylene carbonate being equal to or less than that of ethane, the U.S. EPA concluded that propylene carbonate is negligibly reactive and has low potential to generate ozone in the troposphere. Additionally, dimethyl carbonate and propylene carbonate are not classified as ozone depleting substances. To the extent that methyl formate, dimethyl carbonate, and propylene carbonate will replace currently used compounds that have greater ODPs and GWPs, there could be an overall climate change and ozone depleting potential benefit

from the adoption of PAR 102. Therefore, PAR 102 is not expected to generate significant adverse project-specific or cumulative climate change or atmospheric ozone depleting impacts.

Conclusion

Overall, project specific emissions impacts were concluded to be less than significant for the following reasons.

It is likely that future use of the three exempt compounds that would be added to the Group I list in Rule 102 would result in less usage of VOC containing compounds, which would contribute to the AQMP's goal of attaining state and federal ozone standards. It is likely the three compounds would be used in operations where they would be used as a "drop in" replacements for conventional VOC-containing solvents. As a result, few or no modifications at existing facilities are expected. Therefore, PAR 102 is not expected to generate significant adverse air quality impacts.

No significant adverse construction or operational air quality impacts once the project is implemented are anticipated, because, to the extent that the three substances are used, they would replace VOC-containing solvents, thus, reducing ozone formation.

As discussed previously, there is no substantial evidence that shows the use of the proposed compounds to be added to Group I of the list of VOC-exempt compounds would result in an increase in significant adverse toxic air contaminant impacts. The proposed compounds for inclusion are for the most part common chemicals that are already being used in a wide variety of industrial and commercial applications.

PAR 102 is not expected to generate additional GHG emissions. Adoption of PAR 102 may result in the three new VOC-exempt compounds being used as replacements in VOC-containing or exempt compounds. To the extent this occurs, the three new VOC-exempt compounds will likely be used in operations where they simply replace the VOC-containing or exempt substance and will be used as "drop in" compounds into existing equipment and systems located at existing facilities, as well as area source operations subject to SCAQMD rules and regulations. The use of replacement "drop in" compounds for foam blowing agents and solvents currently used in coatings, clean-up solvents, etc., requires no construction of new buildings, no equipment replacement, and little or no equipment modification. Therefore, adoption of PAR 102 is not expected to require physical changes or modifications that would involve construction activities or equipment that could generate GHG emissions. For this reason, PAR 102 is not expected to require any construction activities that would emit GHG emissions. Adoption of the currently proposed project is not expected to be a source of increased GHG emissions because methyl formate, dimethyl carbonate, and propylene carbonate are not GHGs in accordance with those listed under the Montreal Protocol. To the extent that methyl formate, dimethyl carbonate, and propylene carbonate will replace currently used compounds that have greater ODPs and GWPs, there could be an overall climate change and ozone depleting potential benefit from the adoption of PAR 102. Therefore, PAR 102 is not expected to generate significant adverse project-specific or cumulative climate change or atmospheric ozone depleting impacts.

Based on the information provided in this analysis, adoption of PAR 102 would not result in significant adverse air quality impacts. In fact, the proposed project may potentially result in an overall reduction in VOC emissions in the district, so PAR 102 is not expected to contribute to a violation of any air quality standard or contribute to an existing or projected air quality violation.

PAR 102 would not diminish an existing air quality rule or future compliance requirement, nor conflict with or obstruct implementation of the applicable air quality plan. Since air quality impacts from adopting PAR 102 do not exceed any air quality significance thresholds in Table 2-1, air quality impacts are not considered to be cumulatively considerable as defined in CEQA Guidelines §15065(c). Therefore, the proposed project is not expected to result in a cumulatively considerable net increase of any criteria pollutant.

Affected facilities are not expected to expose sensitive receptors to substantial pollutant concentrations from the adoption of PAR 102 for the following reasons: 1) there are no operational increases of VOC emissions associated with PAR 102; 2) adopting PAR 102 may potentially reduce VOC emissions in the district by approximately 238 tons per year; 3) currently used compounds may potentially be replaced with less reactive replacement compounds than what are currently used in the various affected manufacturing processes; and 4) the use of future compliant materials must comply with all applicable SCAQMD Rules and Regulations. Therefore, significant adverse air quality impacts to sensitive receptors are not expected from adopting PAR 102.

III.e) Odor problems depend considerably on the individual circumstances. For example, individuals can differ quite markedly from the population average in their sensitivity to odor due to any variety of innate, chronic or acute physiological conditions. This includes olfactory adaptation or smell fatigue (i.e., continuing exposure to an odor usually results in a gradual diminution or even disappearance of the smell sensation). Odor descriptions for currently used compounds, as well as the PAR 102 compounds, are provided in Table 2-14.

Table 2-14 – Odors of Currently Used Compounds and Proposed Compounds

Currently Used Compounds	**Odor Description**
Butane	Mercaptan odor
Pentane	Mild pleasant, gasoline like
HFC 134a	Slight ether
HFC 152a	Slight ether
HFC 245fa	No odor warning properties
Acetone	Ether odor
Ethylene Glycol	Odorless
Methyl Acetate	Fragrance like
Methyl Ethyl Ketone (MEK)	Sharp, mint like odor
Isopropanol	Rubbing alcohol odor
PAR 102 Compounds	**Odor Description**
Methyl Formate	Ethereal sweet odor
Dimethyl Carbonate	Pleasant odor
Propylene Carbonate	Odorless

It is anticipated that the compounds proposed to be added to the Group I list of VOC-exempt compounds would not have appreciably different odor impacts than the currently used compounds. Furthermore, local governments typically have ordinances that are intended to protect the public from adverse odors. SCAQMD Rule 402 – Nuisance, also protects the public from adverse odor impacts. For these reasons, PAR 102 is not anticipated to result in significant adverse odor impacts.

Since PAR 102 requires little or no construction or equipment modification, no construction odors are expected. Based on the odor descriptions presented in Table 2-14, operational odors generated from replacing the currently used compounds with the three proposed compounds are expected to be similar. Therefore, adoption of PAR 102 is not anticipated to result in significant adverse odor impacts.

Based upon all of the aforementioned considerations, the SCAQMD has demonstrated that adopting the proposed project will not create significant adverse air quality impacts, either individually or cumulatively. Therefore, mitigation measures are not required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
IV.	**BIOLOGICAL RESOURCES.** Would the project:			
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☑
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☑
c)	Have a substantial adverse effect on federally protected wetlands as defined by §404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☑
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☑
e)	Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☑
f)	Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☑

Significance Criteria

Impacts on biological resources will be considered significant if any of the following criteria apply:

- The project results in a loss of plant communities or animal habitat considered to be rare, threatened or endangered by federal, state or local agencies.
- The project interferes substantially with the movement of any resident or migratory wildlife species.
- The project adversely affects aquatic communities through construction or operation of the project.

Discussion

IV.a), b), c), & d) To the extent that the compounds in PAR 102 are used as "drop in" replacements for VOC-containing and exempt compounds, it is expected that PAR 102 would only affect existing facilities primarily located in industrial or commercial areas, which have already been greatly disturbed. The installation of new equipment units or retrofitting existing units is not necessary if the three compounds in PAR 102 are used as "drop in" replacements, therefore, the adoption of PAR 102 would not result in any new construction of buildings or other structures. In general, the areas where affected facilities are located currently do not typically support riparian habitat, federally protected wetlands, or migratory corridors. Additionally, special status plants, animals, or natural communities are not expected to be found in close proximity to the affected facilities.

IV.e) & f) PAR 102 is not envisioned to conflict with local policies or ordinances protecting biological resources nor local, regional, or state conservation plans because it will only affect primarily existing facilities in industrial or commercial areas. Additionally, PAR 102 will not conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or any other relevant habitat conservation plan for the same reason.

The SCAQMD, as the Lead Agency for the proposed project, has found that, when considering the record as a whole, there is no evidence that the proposed project will have potential for any new adverse effects on wildlife resources or the habitat upon which wildlife depends. Accordingly, based upon the preceding information, the SCAQMD has, on the basis of substantial evidence, rebutted the presumption of adverse effect contained in §753.5 (d), Title 14 of the California Code of Regulations.

Based upon these considerations, significant adverse biological resources impacts are not anticipated and will not be further analyzed in this ~~draft~~ Final EA. Since no significant adverse biological resources impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:			
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☑
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	☐	☐	☑
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☑
d) Disturb any human remains, including those interred outside formal cemeteries?	☐	☐	☑

Significance Criteria

Impacts to cultural resources will be considered significant if:

- The project results in the disturbance of a significant prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group.
- Unique paleontological resources are present that could be disturbed by construction of the proposed project.
- The project would disturb human remains.

Discussion

V.a), b), c), & d) Since no construction-related activities are associated with the use of the three compounds in PAR 102, no impacts to historical resources are expected to occur as a result of this project. PAR 102 is not expected to require physical changes to the environment, which may disturb paleontological or archaeological resources. Furthermore, it is envisioned that the areas where the affected facilities exist are already either devoid of significant cultural resources or whose cultural resources have been previously disturbed.

Based upon these considerations, significant adverse cultural resources impacts are not expected from the adopting of PAR 102 and will not be further assessed in this ~~draft~~ Final EA. Since no significant cultural resources impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
VI. ENERGY. Would the project:			
a) Conflict with adopted energy conservation plans?	☐	☐	☑
b) Result in the need for new or substantially altered power or natural gas utility systems?	☐	☐	☑
c) Create any significant effects on local or regional energy supplies and on requirements for additional energy?	☐	☐	☑
d) Create any significant effects on peak and base period demands for electricity and other forms of energy?	☐	☐	☑
e) Comply with existing energy standards?	☐	☐	☑

Significance Criteria
Impacts to energy and mineral resources will be considered significant if any of the following criteria are met:

- The project conflicts with adopted energy conservation plans or standards.
- The project results in substantial depletion of existing energy resource supplies.
- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.
- The project uses non-renewable resources in a wasteful and/or inefficient manner.

Discussion
VI.a) & e) PAR 102 proposes to expand the definition of Group I VOC-exempt compounds to include methyl formate, dimethyl carbonate, and propylene carbonate. The usage of these compounds is not expected to create any additional demand for energy at any of the affected facilities because the three compounds may be used as "drop in" replacements for currently used VOC-containing or other exempt compounds in existing equipment and operations or area source operations subject to SCAQMD rules and regulations. Since it is unlikely that the equipment or operations using any of the compounds in PAR 102 would require new equipment or modifications, it is unlikely that energy demand requirements would change. As a result, PAR 102 would not conflict with energy conservation plans, use non-renewable resources in a wasteful manner, or result in the need for new or substantially altered power or natural gas systems. Since PAR 102 would affect primarily existing facilities, it will not conflict with adopted energy conservation plans because existing facilities would be expected to continue implementing any existing energy conservation plans. Additionally, operators of affected facilities are expected to implement existing energy conservation plans or comply with energy standards to minimize operating costs. Accordingly these impact issues will not be further analyzed in the ~~draft~~ Final EA.

VI.b), c), & d) PAR 102 would not create any significant effects on peak and base period demands for electricity and other forms of energy since no construction of buildings or other structures are anticipated as a result of the affected facilities using the three proposed compounds

for delisting. Since no new structures would be built as a result of adopting PAR 102, no new energy demand is created.

Since the three proposed compounds may be used as "drop in" replacements for currently used VOC-containing or exempt compounds in existing equipment and operations or area sources regulated by the SCAQMD, adoption of PAR 102 is not expected to result in an increase in the demand for natural gas. Additionally, based on the fact that no equipment modification is expected to be necessary as a result of the adoption of PAR 102, no increased demand for energy resources is expected. Based upon these considerations, the proposed project is not expected to use energy in a wasteful manner, and will not exceed SCAQMD energy significance thresholds. There will be no substantial depletion of energy resources nor will significant amounts of fuel be needed when compared to existing supplies.

In light of the preceding discussion, PAR 102 would not create any significant effects on peak and base period demands for electricity and other forms of energy, similarly, it is expected that affected facilities would continue to comply with existing energy standards. Therefore, PAR 102 is not expected to generate significant adverse energy resources impacts and will not be discussed further in this ~~draft~~ Final EA. Since no significant energy impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
VII.	**GEOLOGY AND SOILS.** Would the project:			
a)	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☑
	• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☑
	• Strong seismic ground shaking?	☐	☐	☑
	• Seismic–related ground failure, including liquefaction?	☐	☐	☑
	• Landslides?	☐	☐	☑
b)	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑
c)	Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☑

		Potentially Significant Impact	Less Than Significant Impact	No Impact
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☑
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☑

Significance Criteria

Impacts on the geological environment will be considered significant if any of the following criteria apply:

- Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.
- Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.
- Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

Discussion

VII.a) Southern California is an area of known seismic activity. Structures must be designed to comply with the Uniform Building Code Zone 4 requirements if they are located in a seismically active area. The local city or county is responsible for assuring that a proposed project complies with the Uniform Building Code as part of the issuance of the building permits and can conduct inspections to ensure compliance. The Uniform Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage but with some non-structural damage; and 3) resist major earthquakes without collapse but with some structural and non-structural damage.

The Uniform Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The Uniform Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site. Accordingly, buildings and equipment at existing affected facilities are likely to conform with the Uniform Building Code and all other applicable state codes in effect at the time they were constructed.

No new buildings or structures are expected to be constructed in response to the proposed project. Similarly, the compounds in PAR 102 are expected to be used as replacement compounds for VOC-containing or other exempt compounds. As a result, little or no

modification to existing equipment would be necessary. Therefore, PAR 102 is not expected to affect a facility's ability to continue to comply with any applicable Uniform Building Code requirements. Consequently, PAR 102 is not expected to expose persons or property to geological hazards such as earthquakes, landslides, mudslides, ground failure, or other natural hazards. As a result, substantial exposure of people or structure to the risk of loss, injury, or death involving seismic-related activities is not anticipated and will not be further analyzed in this ~~draft~~ Final EA.

VII.b) Adopting PAR 102 would expand the definition of Group I VOC-exempt compounds to include methyl formate, dimethyl carbonate, and propylene carbonate. Adoption of PAR 102 would potentially affect the selection of chemicals in the future that could be utilized for various manufacturing processes at primarily existing facilities, as well as area source operations subject to SCAQMD rules and regulations. Soil disruption from excavation, grading, or filling activities; changes in topography or surface relief features; erosion of beach sand; or changes in existing siltation rates are not anticipated in response to the proposed project because the proposed project is not expected to require any construction activities that could cause soil erosion. Further, all future operations potentially affected by PAR 102 would potentially occur in existing commercial or industrial facilities. Consequently, soil disturbing activities that could cause soil erosion are not anticipated.

VII.c) & d) Since PAR 102 would only potentially affect the selection of chemicals utilized for various processes at primarily existing facilities, as well as area source operations subject to SCAQMD rules and regulations, it is expected that the soil types present at the affected facilities that are susceptible to expansion or liquefaction would be considered part of the existing setting. New subsidence impacts are not anticipated since no excavation, grading, or fill activities will occur at affected facilities. Further, the proposed project does not involve drilling or removal of underground products (e.g., water, crude oil, et cetera) that could produce new, or make worse existing subsidence effects. Additionally, the affected areas are not envisioned to be prone to new risks from landslides or have unique geologic features, since the affected facilities are located in industrial or commercial areas where such features have already been altered or removed. Finally, since adoption of PAR 102 would be expected to affect operations at primarily existing facilities, as well as area source operations subject to SCAQMD rules and regulations, the proposed project is not expected to alter or make worse any existing potential for subsidence, liquefaction, etc.

VII.e) Since the proposed project would affect operations at primarily existing facilities, it does not require installation of septic tanks or other alternative waste water systems. The main effect of the proposed project will be the utilization of alternative compounds in various manufacturing processes at the affected facilities.

Based upon the above considerations, significant geology and soils impacts are not expected from the adoption of PAR 102 and will not be further analyzed in this ~~draft~~ Final EA. Since no significant geology and soils impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS. Would the project:			
a) Create a significant hazard to the public or the environment through the routine transport, use, disposal of hazardous materials?	☐	☐	☑
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☑
c) Emit hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☑
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment?	☐	☐	☑
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☑
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☑
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☑
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☑
i) Significantly increased fire hazard in areas with flammable materials?	☐	☐	☑

Significance Criteria
Impacts associated with hazards will be considered significant if any of the following occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

Discussion
VIII.a) & b) PAR 102 has no provisions that would dictate the use of any specific material. Persons who currently use VOC compounds in manufacturing operations would continue to have the flexibility of choosing the product formulation best suited for their needs. It is likely that persons who utilize these materials will choose a compound that does not pose a substantially increased safety hazard.

Methyl Formate
Based on available information from the regulated facilities, methyl formate is a suitable replacement for hydrocarbon blowing agents used in polyurethane and polystyrene foam manufacturing. Polyurethane foam products include rigid insulating foam (used in refrigerators) and flexible foam (used in furniture). Polystyrene foams are commonly used in manufacturing food containers. The most commonly used blowing agents are primarily VOC blowing agents such as butane and pentane. However, several hydrofluorocarbons (HFCs), such as HFC134a, HFC152a, and HFC245fa, are reportedly used as well.

Table 2-15 summarizes the physical and chemical properties of methyl formate, one of the compounds proposed for delisting. Table 2-15 also presents the physical and chemical properties of two compounds currently classified as VOCs (pentane and butane) and three HFCs that may be replaced with methyl formate. Although methyl formate has a low flashpoint, other foam blowing agents have even lower flashpoints, except for two of the HFCs.

Table 2-15 – Physical and Chemical Properties for Methyl Formate and Currently Used Conventional Blowing Agents

	Conventional Blowing Agents					**Proposed Compound**
	HFC 134a	**HFC 152a**	**HFC 245fa**	**Pentane**	**Butane**	**Methyl Formate**
Appearance	Clear colorless gas	Clear colorless gas	Clear colorless gas	Clear colorless liquid	Clear colorless liquid	Clear colorless liquid
Odor	Slight ether	Slight ether	No odor warning properties	Mild pleasant, gasoline like	Mercaptan odor	Ethereal sweet odor

Table 2-15 – Physical and Chemical Properties for Methyl Formate and Currently Used Conventional Blowing Agents (concluded)

	Conventional Blowing Agents					Proposed Compound
	HFC 134a	**HFC 152a**	**HFC 245fa**	**Pentane**	**Butane**	**Methyl Formate**
Molecular Formula	$CH_2H_2F_4$	CH_3CHF_2	$CF_3CH_2CHF_4$	C_5H_{12}	C_4H_{10}	$HCOOCH_3$
Molecular Weight	102.03 g/mole	66.05 g/mole	134 g/mole	72.15 g/mole	58.12 g/mole	60.05 g/mole
Density	1.21 g/ml	0.91 g/mL	1.35 g/mL	2.48 g/mL	2.11 g/mL	0.98 g/mL
Boiling Point	-26.5 °C (-5.7°F)	-25 °C (-13 °F)	15.3 °C	36.1 °C (97 °F)	15.5 °C (31.1 °F)	32 °C (89.7 °F)
Melting Point	-101 °C	-117 °C	Not deter-mined	-130 °C (-202 °F)	-138.4 °C (-217.0 °F)	-100 °C
Vapor Pressure	4960 mmHg @ 25 °C	4500 mmHg @ 25 °C	921 mmHg @ 20 °C	426 mmHg @ 20 °C	1557 mmHg @ 20 °C	585.7 mmHg @ 25 °C
Solubility in Water	Soluble	Soluble	Soluble	Soluble	Insoluble	Soluble
Solvent Solubility	Not available	Not available	Not available	Miscible with most organic solvents	Not available	Miscible with most organic solvents
NFPA[A] Flammability Rating	0	4	0	4	4	4
Lower Explosive Limit	None per ASTM E681	3.9%	None	1.5%	1.6%	5%
Upper Explosive Limit	None per ASTM E681	16.9%	None	7.8%	8.4%	23%
Flash Point	No flashpoint	-50 °C (-58 °F)	No flashpoint	-49 °C (-56.2 °F)	Less than -117 °F	-19 °C (-2.2 °F)

[A] National Fire Protection Agency

Dimethyl Carbonate

Despite its relatively low flashpoint (18 °C), dimethyl carbonate may be used as an alternative to two commonly used VOC-exempt solvents: acetone and methyl acetate, which have lower flashpoints, as well as other conventional solvents such as methyl ethyl ketone (MEK), ethylene glycol, and isopropanol, currently used in paints, sealants, adhesives, and multipurpose and thinning solvent formulations. Because of its solubility properties, dimethyl carbonate may be useful as a co-solvent in acrylics, urethane and alkyd systems, and potentially replace alcohols, ketones, esters and glycol ethers. Dimethyl carbonate may likely be used as a specialty solvent in industrial coating/sealant applications as well as may be incorporated in waterborne coatings and adhesives because of its partial miscibility in water.

For some cleaning applications, dimethyl carbonate may be used to replace isopropanol. Because of its high boiling point, it is not expected to be used in vapor degreasing. Dimethyl carbonate has a flashpoint of 64.4° F, and may serve as an alternative to other fast evaporating organic solvents with lower flashpoints in cold batch cleaning applications. In addition, the compound has solubility and other properties that might make it a replacement for trichloroethylene in solvent cleaning operations.

Table 2-16 summarizes the physical and chemical properties of dimethyl carbonate, one of the compounds proposed for delisting. Table 2-16 also presents the physical and chemical properties of five compounds that are currently used that may be replaced with dimethyl carbonate.

Table 2-16 – Physical and Chemical Properties for Dimethyl Carbonate and Currently Used Compounds

Currently Used Compounds						**Proposed Compound**
	Acetone	**Ethylene Glycol**	**Isopropanol**	**Methyl Acetate**	**Methyl Ethyl Ketone**	**Dimethyl Carbonate**
Appearance	Colorless clear liquid	Colorless clear liquid	Clear colorless liquid	Colorless clear liquid	Colorless clear liquid	Clear colorless liquid
Odor	Ethereal	Odorless	Rubbing alcohol odor	Fragrance like	Sharp mint-like odor	Pleasant odor
Molecular Formula	C_3H_6O	$HOCH_2$ CH_2OH	$(CH_3)_2CHOH$	CH_3COOCH_3	CH_3COCH_2 CH_3	$(CH_3)_2CO_3$
Molecular Weight	58.08 g/mole	62.07 g/mole	60.09 g/mole	74.08 g/mole	72.11 g/mole	90.08 g/mole
Density	2 g/mL	2.14 g/mL	2.1 g/mL	2.8 g/mL	2.5 g/mL	1.07 g/mL
Boiling Point	56.2 °C	197.6 °C	82 °C	57 °C	80 °C	90 °C
Melting Point	-95.35 °C	-13 °C	-89 °C	-98.05 °C	-86 °C	2 °C
Vapor Pressure	180 mmHg @ 20 °C	0.06 mmHg @ 20 °C	44 mmHg @ 25 °C	173 mmHg @ 20 °C	78 mmHg @ 20 °C	55 mmHg @ 25 °C
Solubility in Water	Soluble	Soluble	Miscible in water	Soluble	Soluble	Soluble
Solvent Solubility	Not available	Slightly soluble	Not available	Easily soluble in methanol, diethyl ether	Miscible with most organic solvents	Miscible with most organic solvents
NFPA[A] Flammability Rating	3	1	3	3	3	3
Lower Explosive Limit	2.5%	3.2%	2.0%	3.1%	1.4%	4.2%

Table 2-16 – Physical and Chemical Properties for Dimethyl Carbonate and Currently Used Compounds (concluded)

Currently Used Compounds						Proposed Compound
	Acetone	**Ethylene Glycol**	**Isopropanol**	**Methyl Acetate**	**Methyl Ethyl Ketone**	**Dimethyl Carbonate**
Upper Explosive Limit	12.8%	36%	12.7%	16%	11.4%	12.9%
Flash Point	-20 °C	111 °C	12 °C	-10 °C	-9 °C	18 °C

[A] National Fire Protection Agency

Propylene Carbonate

Propylene carbonate may replace VOC compounds for usage in special purpose lubricants, general purpose degreasers for industrial use, rubberized coatings, and non-flat aerosol paint products. Propylene carbonate may also be used as a tail solvent in products that contain a mixture of solvents due to its slow evaporation rate, and in certain solvent cleaning applications. The compound has been used in adhesives, paint strippers, and as a solvent for aerial pesticide application. Propylene carbonate is also used in more than 1,300 individual cosmetic products such as mascara, lip gloss, foundation, sunscreen, lip liner, deodorant, anti-aging and concealers.

Table 2-17 summarizes the physical and chemical properties of propylene carbonate, one of the compounds proposed for delisting. Table 2-17 also presents the physical and chemical properties of five compounds that are currently used that may be replaced with propylene carbonate.

Table 2-17 – Physical and Chemical Properties for Propylene Carbonate

	Currently Used Compounds					Proposed Compound
	Acetone	**Ethylene Glycol**	**Isopropanol**	**Methyl Acetate**	**Methyl Ethyl Ketone**	**Propylene Carbonate**
Appearance	Colorless clear liquid	Colorless clear liquid	Clear colorless liquid	Colorless clear liquid	Colorless clear liquid	Colorless clear liquid
Odor	Ethereal	Odorless	Rubbing alcohol	Fragrance like	Sharp mint-like odor	Odorless
Molecular Formula	C_3H_6O	$HOCH_2CH_2OH$	$(CH_3)_2CHOH$	CH_3COOCH_3	$CH_3COCH_2CH_3$	$C_4H_6O_3$
Molecular Weight	58.08 g/mole	62.07 g/mole	60.09 g/mole	74.08 g/mole	72.11 g/mole	102.09 g/mol
Density	2 g/mL	2.14 g/mL	2.1 g/mL	2.8 g/mL	2.5 g/mL	1.25 g/mL
Boiling Point	56.2 °C	197.6 °C	82 °C	57 °C	80 °C	240 °C
Melting Point	-95.35 °C	-13 °C	-89 °C	-98.05 °C	-86 °C	-49.2 °C
Vapor Pressure	180 mmHg @ 20 °C	0.06 mmHG @ 20 °C	44 mmHG @ 25 °C	173 mmHg @ 20 °C	78 mmHG @ 20 °C	0.03 mmHg (@ 20 °C)
Solubility in Water	Soluble	Soluble	Miscible in water	Soluble	Soluble	Soluble
Solvent Solubility	Not available	Slightly soluble	Not available	Easily soluble in methanol, diethyl ether	Miscible with most organic solvents	Not available
NFPA[A] Flammability Rating	3	1	3	3	3	1
Lower Explosive Limit	2.5%	3.2%	2.0%	3.1%	1.4%	1.21%
Upper Explosive Limit	12.8%	36%	12.7%	16%	11.4%	5.35%
Flash Point	-20 °C	111 °C	12 °C	-10 °C	-9 °C	132 °C

[A] National Fire Protection Agency

VIII.i) Methyl formate, dimethyl carbonate, and propylene carbonate have NFPA flammability ratings of 4, 3, and 1, respectively. While methyl formate is considered extremely flammable, it may potentially replace other compounds with comparable flammability ratings, lower explosive limits, upper explosive limits, and flash points, as shown in Table 2-15. Therefore, in comparison to the compounds that are currently being utilized as blowing agents in foam

manufacturing, replacing existing compounds with methyl formate is not expected to produce a significantly increased fire hazard in areas with flammable materials.

Methyl formate may potentially replace two compounds that have lower NFPA flammability ratings: HFC-134a and HFC-245fa. Based on information obtained from the foam manufacturing industry, these two compounds are primarily used in polyurethane foam manufacturing operations. Blowing agent emissions from polyurethane foam manufacturing facilities within the district are estimated at approximately 16,000 lb/yr or eight tons/yr. This usage represents approximately two percent of the total estimated potential emissions reduction (238 tons/yr VOCs) from foam manufacturing operations. Therefore, methyl formate is more likely to replace compounds with similar flammability characteristics such as pentane and butane.

Dimethyl carbonate may also potentially replace other compounds with comparable flammability ratings, lower explosive limits, upper explosive limits, and flash points, as shown in Table 2-16. Therefore, in comparison to the compounds that are currently being utilized, replacing existing compounds with dimethyl carbonate is not expected to produce a significantly increased fire hazard in areas with flammable materials.

Propylene carbonate may potentially replace other compounds with the same or higher flammability ratings and lower flashpoints, as shown in Table 2-17. Therefore, in comparison to the compounds that are currently being utilized, replacing existing compounds with propylene carbonate is not expected to produce a significantly increased fire hazard in areas with flammable materials.

Local fire departments ensure that adequate permit conditions are in place to protect against potential risk of upset. The Uniform Fire Code and Uniform Building Code set standards intended to minimize risks from flammable or otherwise hazardous materials. Local jurisdictions are required to adopt the uniform codes or comparable regulations. Local fire agencies require permits for the use or storage of hazardous materials and permit modifications for proposed increases in their use. Permit conditions depend on the type and quantity of the hazardous materials at the facility. Permit conditions may include, but are not limited to, specifications for sprinkler systems, electrical systems, ventilation, and containment. The fire departments make annual business inspections to ensure compliance with permit conditions and other appropriate regulations.

VIII.c), e), & f) The effect of adopting PAR 102 is that the three newly exempt compounds may be used as "drop in" replacements for existing solvents in specific operations, e.g., foam blowing, cold cleaning, coatings and clean-up solvents, etc. Since operations of these equipment categories occur primarily at existing facilities located in industrial or commercial areas, as well as area source operations subject to SCAQMD rules and regulations, adoption of PAR 102 is not expected to increase existing, or create any new hazardous emissions which would adversely affect existing/proposed schools or public/private airports located in close proximity to the affected facilities. Accordingly, these impact issues are not further evaluated in this ~~draft~~ Final EA.

VIII.d) Even if some affected facilities are designated pursuant to Government Code §65962.5 as large quantity generators of hazardous waste, it is not anticipated that complying with PAR 102 will alter in any way how operators of affected facilities manage their hazardous wastes and

that they will continue to manage any hazardous wastes in accordance with all applicable federal, state, and local rules and regulations.

VIII.g) To the extent that the three compounds in PAR 102 are used as "drop in" replacements for VOC and other exempt compounds currently being used is not expected to require substantial changes to any existing business emergency response plans. Therefore, it is not anticipated that PAR 102 would require changes to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Health and Safety Code §25506 specifically requires all businesses handling hazardous materials to submit a business emergency response plan to assist local administering agencies in the emergency release or threatened release of a hazardous material. Business emergency response plans generally require the following:

- Identification of individuals who are responsible for various actions, including reporting, assisting emergency response personnel and establishing an emergency response team;
- Procedures to notify the administering agency, the appropriate local emergency rescue personnel, and the California Office of Emergency Services;
- Procedures to mitigate a release or threatened release to minimize any potential harm or damage to persons, property or the environment;
- Procedures to notify the necessary persons who can respond to an emergency within the facility;
- Details of evacuation plans and procedures;
- Descriptions of the emergency equipment available in the facility;
- Identification of local emergency medical assistance; and
- Training (initial and refresher) programs for employees in:
    1. The safe handling of hazardous materials used by the business;
    2. Methods of working with the local public emergency response agencies;
    3. The use of emergency response resources under control of the handler;
    4. Other procedures and resources that will increase public safety and prevent or mitigate a release of hazardous materials.

In general, every county or city and all facilities using a minimum amount of hazardous materials are required to formulate detailed contingency plans to eliminate, or at least minimize, the possibility and effect of fires, explosion, or spills. In conjunction with the California Office of Emergency Services, local jurisdictions have enacted ordinances that set standards for area and business emergency response plans. These requirements include immediate notification, mitigation of an actual or threatened release of a hazardous material, and evacuation of the emergency area. Adopting PAR 102 is not expected to hinder in any way with the above business emergency response plan requirements.

VIII.h) Since the potentially affected facilities are located primarily at existing industrial or commercial sites in urban areas where wildlands are not prevalent, risk of loss or injury

associated with wildland fires is not expected. Accordingly, this impact issue is not further evaluated in this ~~draft~~ Final EA.

All hazardous materials are expected to be used in compliance with established OSHA or Cal/OSHA regulations and procedures, including providing adequate ventilation, using recommended personal protective equipment and clothing, posting appropriate signs and warnings, and providing adequate worker health and safety training. When taken together, the above regulations provide comprehensive measures to reduce hazards of explosive or otherwise hazardous materials. Compliance with these and other federal, state and local regulations and proper operation and maintenance of equipment should ensure the potential for explosions or accidental releases of hazardous materials is not significant.

Based upon all of the considerations, significant hazards and hazardous materials impacts are not expected from the adoption of PAR 102 and will not be further analyzed in this ~~draft~~ Final EA. Since no significant hazards and hazardous materials impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	**Less Than Significant Impact**	**No Impact**
IX. HYDROLOGY AND WATER QUALITY. Would the project:			
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☑
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☑
c) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or offsite?	☐	☐	☑
d) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite?	☐	☐	☑

	Potentially Significant Impact	Less Than Significant Impact	No Impact
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☑
f) Otherwise substantially degrade water quality?	☐	☐	☑
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☑
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flaws?	☐	☐	☑
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☑
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☑
k) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☑
l) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☑
m) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☑
n) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☑
o) Require in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☑

Significance Criteria
Potential impacts on water resources will be considered significant if any of the following criteria apply:

Water Quality:

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

Water Demand:

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use a substantial amount of potable water.
- The project increases demand for water by more than five million gallons per day.

Discussion
If adopted, PAR 102 would expand the definition of Group I VOC-exempt compounds to include methyl formate, dimethyl carbonate, and propylene carbonate. The three new VOC-exempt compounds will likely be used in operations where they simply replace the VOC-containing or exempt substance and will be used as "drop in" compounds into existing equipment and systems located at existing facilities, as well as area source operations subject to SCAQMD rules and regulations. Therefore, replacing currently utilized compounds with the three new VOC-exempt compounds is not expected to affect water use in the future and would not likely increase water demand.

No additional water demand or wastewater generation is expected to result from the usage of these proposed compounds. Further, PAR 102 has no provision that would require the construction of additional water resource facilities, increase the need for new or expanded water entitlements, or alter existing drainage patterns. The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. PAR 102 would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Further, the adoption of PAR 102 would not create a change in the current volume of existing wastewater streams from the affected facilities. In addition, the proposed amended rule is not expected to require additional wastewater disposal capacity, violate any water quality standard or wastewater discharge requirements, or otherwise substantially degrade water quality.

IX.a), f), k), & l) The proposed project will not change existing operations at affected facilities, nor would it result in the generation of increased volumes of wastewater, because the expected usage of the proposed compounds would be as "drop in" replacements for currently used compounds in operations, and, therefore, are not expected to generate additional wastewater. As a result, there are no potential changes in wastewater volume expected from facilities as a result of the adoption of PAR 102. However, there may be a change in the composition of waste water due to the usage of the newly VOC-exempt compounds. It is expected, however, that facilities and operations will continue to handle wastewater generated in a similar manner and with the same equipment as the wastewater that is currently generated. Therefore, the potential change in wastewater composition is not expected to create any significant impacts. Further, PAR 102 is not expected to cause affected facilities to violate any water quality standard or wastewater discharge requirements since there would be no additional wastewater volumes generated as a result of adopting PAR 102.

It is possible that affected manufacturing facilities will replace currently used VOC-based or exempt compounds with the proposed VOC-exempt compounds. No water quality issues are expected to occur as a result of affected facilities utilizing the proposed VOC-exempt compounds as replacements for the compounds currently being utilized.

PAR 102 is not expected to have significant adverse water demand or water quality impacts for the following reasons:

- The proposed project does not increase demand for water by more than 5,000,000 gallons per day.
- The proposed project does not require construction of new water conveyance infrastructure.
- The proposed project does not create a substantial increase in mass inflow of effluents to public wastewater treatment facilities.
- The proposed project does not result in a substantial degradation of surface water or groundwater quality.
- The proposed project does not result in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The proposed project does not result in alterations to the course or flow of floodwaters.

IX.b), n), & o) If adopted, PAR 102 would to include methyl formate, dimethyl carbonate, and propylene carbonate in Group I of the list of VOC-exempt compounds in the rule, no increase to any affected facilities' existing water demand is expected due to the fact that these compounds would likely be used as "drop in" replacement compounds at existing facilities, as well as area source operations subject to SCAQMD rules and regulations. Adoption of PAR 102 is not expected to increase demand for, or otherwise affect groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level because it is not expected that adoption of PAR 102 and usage of the three compounds would not require construction of new structures. In addition, adoption of PAR 102 will not increase demand for water from existing entitlements and resources, and

will not require new or expanded entitlements because there would not likely be any new construction or equipment modification. Since equipment affected by PAR 102 generally occur in existing structures at existing facilities, no paving is required that might interfere with groundwater recharge. Therefore, no water demand impacts are expected as the result of adopting PAR 102.

IX.c), d), & e) Adoption of PAR 102 could affect future operations at existing facilities that are typically located in industrial or commercial areas that are paved and already have drainage infrastructures in place. Since PAR 102 does not involve major construction activities including site preparation, grading, etc., no changes to storm water runoff, drainage patterns, groundwater characteristics, or flow are expected. Therefore, these impact areas are not expected to be affected by PAR 102.

IX.g), h), i), & j) The proposed project could result in replacing VOC-containing or exempt compounds at existing facilities or area source operations subject to SCAQMD rules and regulations with any of the compounds in PAR 102. As a result PAR 102 would not require construction of new housing, contribute to the construction of new building structures, or require modifications or changes to existing structures. Further, PAR 102 is not expected to require additional workers at affected facilities because replacement of one compound with a new "drop in" compound does not affect how equipment is operated. Therefore, PAR 102 is not expected to generate construction of any new structures in 100-year flood areas as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood delineation map. As a result, PAR 102 is not expected to expose people or structures to significant new flooding risks, or make worse any existing flooding risks. Because PAR 102 would not require construction of new structures or the addition of new employees, PAR 102 will not affect in any way any potential flood hazards inundation by seiche, tsunami, or mud flow that may already exist relative to existing facilities or create new hazards at existing facilities.

IX.m) Adoption of PAR 102 would not increase storm water discharge because no construction activities are expected at affected facilities. Further, existing affected facilities are not expected to require additional paving as no new structures are expected to be necessary if any of the compounds in PAR 102 are used as replacement "drop in" materials. Consequently, the proposed project will not increase storm water runoff during operation. Therefore, no new storm water discharge treatment facilities or modifications to existing facilities will be required due to the adoption of PAR 102. Accordingly, PAR 102 is not expected to generate significant adverse impacts relative to construction of new storm water drainage facilities.

No additional water demand or wastewater generation is expected to result from the usage of these proposed compounds. Further, PAR 102 has no provision that would require the construction of additional water resource facilities, increase the need for new or expanded water entitlements, or alter existing drainage patterns. The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. PAR 102 would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Further, since compliance with PAR 102 does not involve wastewater processes, there would be no change in the current volume of existing wastewater streams from the affected facilities. In addition, the proposed amended rule is not expected to require additional wastewater disposal capacity, violate any water quality standard or wastewater discharge requirements, or otherwise substantially degrade water quality.

Based upon these considerations, significant hydrology and water quality impacts are not expected from the adoption of PAR 102 and will not be further analyzed in this ~~draft~~ Final EA. Since no significant hydrology and water quality impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
X.	**LAND USE AND PLANNING.** Would the project:			
a)	Physically divide an established community?	☐	☐	☑
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☑
c)	Conflict with any applicable habitat conservation or natural community conservation plan?	☐	☐	☑

Significance Criteria
Land use and planning impacts will be considered significant if the project conflicts with the land use and zoning designations established by local jurisdictions.

Discussion
X.a) Adoption of PAR 102 could potentially affect some types of operations at existing manufacturing facilities and area sources. Further, PAR 102 potentially changes the types of compounds that are currently utilized in manufacturing operations at existing facilities or area source operations subject to SCAQMD rule and regulations. Based on these considerations, PAR 102 does not include any components that would require physically dividing an established community.

X.b) & c) There are no provisions in PAR 102 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments and no land use or planning requirements will be altered by adding the proposed compounds to Group I of the VOC-exempt list in Rule 102. Replacing a non-VOC-exempt or VOC-exempt compound with a VOC-exempt compound is not considered a change in operations at affected facilities that would require changes to an existing conditional use permit or the local zoning designation. As already noted in the discussions under "Biological Resources," PAR 102 would not affect in any way habitat conservation or natural community conservation plans, agricultural resources or operations, and would not create divisions in any existing communities. Therefore, present or planned land uses in the region will not be significantly adversely affected as a result of PAR 102.

Based upon these considerations, significant land use and planning impacts are not expected from the adoption of PAR 102 and will not be further analyzed in this ~~draft~~ Final EA. Since no significant land use and planning impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES. Would the project:			
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☑
b)Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☑

Significance Criteria

Project-related impacts on mineral resources will be considered significant if any of the following conditions are met:

- The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- The proposed project results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Discussion

XI.a) & b) There are no provisions in PAR 102 that would result in the loss of availability of a known mineral resource of value to the region and the residents of the state, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. Some examples of mineral resources are gravel, asphalt, bauxite, and gypsum, which are commonly used for construction activities or industrial processes. Since the proposed project would expand the definition of Group I VOC-exempt compounds to include methyl formate, dimethyl carbonate, and propylene carbonate, PAR 102 would have no effects on the use of important minerals, such as those described above. Therefore, no new demand on mineral resources is expected to occur and significant adverse mineral resources impacts from adopting PAR 102 are not anticipated.

Based upon these aforementioned considerations, significant mineral resources impacts are not expected from the adoption of PAR 102 and will not be further analyzed in this ~~draft~~ Final EA. Since no significant mineral resources impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XII. NOISE. Would the project result in:			
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☑
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☑
f) For a project within the vicinity of a private airship, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☑

Significance Criteria
Impacts on noise will be considered significant if:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.
- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

Discussion
XII.a) Replacing existing compounds used at existing affected manufacturing facilities or area source operations subject to SCAQMD rules and regulations with one of the "drop in" compounds in PAR 102 is not expected to cause physical modifications that would require construction activities. Therefore, no significant adverse noise impacts are anticipated due to any construction activities. No other physical modifications or changes to existing affected facilities or operations associated with the adoption of PAR 102 are expected. Thus, the proposed project is not expected to expose persons to the generation of excessive noise levels above current facility levels because any affected facilities using the compounds in PAR 102

would continue to operate the same type of equipment at equivalent or similar noise levels and the replacement of non-VOC-exempt or VOC-exempt compounds with other VOC-exempt compounds would not result in increasing the existing noise levels. It is expected that any facility that may use PAR 102 compounds will continue to comply with all existing applicable noise control laws or ordinances. Further, Occupational Safety and Health Administration (OSHA) and California-OSHA have established noise standards to protect worker health. It is not expected that noise levels would increase to nearby receptors as a result of adopting PAR 102.

XII.b) PAR 102 is not anticipated to expose people to or generate excessive groundborne vibration or groundborne noise levels since no construction activities are expected to occur at the existing facilities and the affected equipment is not inherently noisy or create excessive vibrations.

XII.c) A permanent increase in ambient noise levels at the potentially affected facilities above existing levels as a result of adopting the proposed project is unlikely to occur because it is not expected that any new equipment would be installed as a result of adopting PAR 102. Therefore, the existing noise levels are unlikely to change and raise ambient noise levels in the vicinities of the existing facilities to above a level of significance in response to adopting PAR 102.

XII.d) No increase in periodic or temporary ambient noise levels in the vicinity of affected facilities above levels existing prior to adopting PAR 102 is anticipated because the proposed project would not require construction-related activities at affected facilities or change existing operational noise levels at the affected facilities where operators replace currently used VOC-containing or exempt compounds with any of the compounds in PAR 102. See also the response to item XII.a).

XII.e) & f) Adoption of PAR 102 would not result in or require improvements within the existing facilities that would require major construction activities. As indicated in the response to item XII. a), facility operators who replace currently used VOC-containing or exempt compounds with PAR 102 compounds are not expected to generate significant adverse noise impacts. Therefore, even if an affected facility is located near a public/private airport, there are no new noise impacts expected from any of the existing facilities as a result of complying with the proposed project. Thus, PAR 102 is not expected to expose people residing or working in the project vicinities of public or private airports to excessive noise levels. See also the response to item XII.a).

Based upon these considerations, significant noise impacts are not expected from the adoption of PAR 102 and are not further evaluated in this ~~draft~~ Final EA. Since no significant noise impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING. Would the project:			
a) Induce substantial growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)?	☐	☐	☑
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☑
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☑

Significance Criteria

Impacts of the proposed project on population and housing will be considered significant if the following criteria are exceeded:

- The demand for temporary or permanent housing exceeds the existing supply.
- The proposed project produces additional population, housing or employment inconsistent with adopted plans either in terms of overall amount or location.

Discussion

XIII.a) Because those facilities that use PAR 102 compounds in the future are expected to use these compounds as replacement "drop ins," little or no construction is expected to be necessary, so no construction workers would be needed. Future operations at facilities or area sources using PAR 102 compounds as "drop in" replacements are not anticipated to generate any significant effects, either direct or indirect, on the district's population or population distribution as no additional workers are anticipated to be required at affected facilities. Human population within the jurisdiction of the SCAQMD is anticipated to grow regardless of adopting PAR 102. As such, PAR 102 will not result in changes in population densities or induce significant growth in population.

XIII.b) & c) Because the proposed project primarily affects existing facilities located mostly in industrial and commercial areas, as well as area source operations subject to SCAQMD rules and regulations, PAR 102 is not expected to result in the creation of any industry that would affect population growth, directly or indirectly induce the construction of single- or multiple-family units, or require the displacement of people elsewhere.

Based upon these considerations, significant population and housing impacts are not expected from the adoption of PAR 102 and are not further evaluated in this ~~draft~~ Final EA. Since no significant population and housing impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES. Would the proposal result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:			
a) Fire protection?	☐	☐	☑
b) Police protection?	☐	☐	☑
c) Schools?	☐	☐	☑
d) Parks?	☐	☐	☑
e) Other public facilities?	☐	☐	☑

Significance Criteria
Impacts on public services will be considered significant if the project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives.

Discussion
XIV.a) & b) PAR 102 would potentially affect what compounds are utilized in manufacturing operations at various types of primarily existing manufacturing facilities. No other physical modifications or changes associated with the adoption of PAR 102 are expected. The overall amount of natural gas and liquid fuel usage at any one facility over their current levels is not expected to change substantially or increase the chances for fires or explosions that could affect local fire departments. Finally, PAR 102 is not expected to increase the need for security at affected facilities, which could adversely affect local police departments.

XIV.c) & d) The local labor pool (e.g., workforce) of affected facilities that use PAR 102 compounds in the future is not expected to be affected by adopting PAR 102 because the use of PAR 102 as "drop in" replacements for currently used compounds would not trigger any changes to current facility operations. Therefore, with no increase in local population anticipated, no significant adverse impacts are expected to local schools or parks that would be necessary to accommodate population increases.

XIV.e) The proposed project would potentially affect what compounds are utilized in manufacturing operations at various types of existing manufacturing facilities and area sources. Besides permitting the equipment or altering permit conditions, there is no other need for

government services. Adoption of PAR 102 would not result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives. There will be no increase in population and, therefore, no need for physically altered government facilities.

Based upon these considerations, significant public services impacts are not expected from the adoption of PAR 102 and are not further evaluated in this ~~draft~~ Final EA. Since no significant public services impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XV. RECREATION.			
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☑
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☑

Significance Criteria
Impacts to recreation will be considered significant if:

- The project results in an increased demand for neighborhood or regional parks or other recreational facilities.
- The project adversely affects existing recreational opportunities.

Discussion
XV.a) & b) As previously discussed under "Land Use and Planning," there are no provisions in the PAR 102 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments and no land use or planning requirements will be altered by the changes proposed in PAR 102. Because the adoption of PAR 102 may only affect the types of compounds used at existing facilities and area source operations subject to SCAQMD rules and regulations, the proposed project would not increase the demand for or use of existing neighborhood and regional parks or other recreational facilities or require the construction of new or expansion of existing recreational facilities that might have an adverse physical effect on the environment because it will not directly or indirectly increase or redistribute population.

Based upon these considerations, significant recreation impacts are not expected from the adoption of PAR 102 and are not further evaluated in this ~~draft~~ Final EA. Since no significant recreation impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XVI. SOLID/HAZARDOUS WASTE. Would the project:			
a)Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☑
b)Comply with federal, state, and local statutes and regulations related to solid and hazardous waste?	☐	☐	☑

Significance Criteria

The proposed project impacts on solid/hazardous waste will be considered significant if the following occurs:

- The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

Discussion

XVI.a) & b) Adopting PAR 102 would expand the definition of Group I VOC-exempt compounds to include methyl formate, dimethyl carbonate, and propylene carbonate. Adoption of PAR 102 will potentially affect the selection of chemicals utilized for various manufacturing processes at existing facilities and area source operations subject to SCAQMD rules and regulations. PAR 102 is not expected to require or accelerate the replacement of manufacturing equipment at affected facilities because the PAR 102 compounds are expected to be used as "drop in" replacements in existing equipment; therefore, no new solid or hazardous waste impacts specifically associated with PAR 102 are expected. PAR 102 compounds are likely to be used as "drop in" replacements for currently used compounds, and as a result, no substantial change in the amount of solid or hazardous waste streams is expected to occur. The character of solid or hazardous waste streams may occur as a result of the adoption of PAR 102 due to the use of the proposed replacement compounds. However, the compounds in PAR 102 are not expected to be more hazardous than the currently used compounds, and facilities are expected to dispose of their solid and hazardous wastes in a similar manner as the current operations. PAR 102 is not expected to increase the volume of solid or hazardous wastes from affected facilities, require additional waste disposal capacity, or generate waste that does not meet applicable local, state, or federal regulations. With regard to potential wastewater impacts, please see the discussion under item IX., "Hydrology and Water Quality."

Based upon these considerations, PAR 102 is not expected to increase the volume of solid or hazardous wastes that cannot be handled by existing municipal or hazardous waste disposal facilities, or require additional waste disposal capacity. Further, adopting PAR 102 is not expected to interfere with any affected facility's ability to comply with applicable local, state, or federal waste disposal regulations. Since no solid/hazardous waste impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XVII. TRANSPORTATION/TRAFFIC. Would the project:			
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☑
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☑
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☑
d) Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☐	☐	☑
e) Result in inadequate emergency access?	☐	☐	☑
f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	☐	☐	☑

Significance Criteria

Impacts on transportation/traffic will be considered significant if any of the following criteria apply:

- Peak period levels on major arterials are disrupted to a point where level of service (LOS) is reduced to D, E or F for more than one month.
- An intersection's volume to capacity ratio increase by 0.02 (two percent) or more when the LOS is already D, E or F.
- A major roadway is closed to all through traffic, and no alternate route is available.
- There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- The demand for parking facilities is substantially increased.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.
- The need for more than 350 employees
- An increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round trips per day
- Increase customer traffic by more than 700 visits per day.

Discussion

XVII.a) & b) Adopting PAR 102 would add three compounds to Group I of the VOC-exempt list in Rule 102. Therefore, the adoption of PAR 102 would not change or cause additional transportation demands or services and would not increase traffic or adversely impact the existing traffic load and capacity of the street system. To the extent that any facilities use PAR 102 compounds as "drop in" replacements, there could be an increase in material delivery trips. However, this increase is expected to be offset by the concurrent decrease in material delivery trips as currently used compounds are eliminated for use.

Since no construction-related trips and no additional operational-related trips per facility are anticipated, the adoption of PAR 102 is not expected to significantly adversely affect circulation patterns on local roadways or the level of service at intersections near affected facilities. Using PAR 102 compounds as "drop in" replacements for currently used compounds is expected to require little or no construction. Since no construction is required, no significant construction traffic impacts are anticipated.

XVII.c) PAR 102 will not require operators of existing facilities to construct buildings or other structures or change the height and appearance of the existing structures, such that they could interfere with flight patterns. Therefore, adoption of PAR 102 is not expected to adversely affect air traffic patterns. Further, PAR 102 will not affect in any way air traffic in the region because it will not require transport of any PAR 102 materials by air.

XVII.d) No physical modifications are expected to occur by adopting PAR 102 at the affected facilities. Additionally, no offsite modifications to roadways are anticipated for the proposed project that would result in an additional design hazard or incompatible uses.

XVII.e) Equipment replacements or retrofits associated with adopting PAR 102 are not expected to occur at the potentially affected existing facilities. Therefore, no changes to emergency access at or in the vicinity of the affected facilities would be expected. As a result, PAR 102 is not expected to adversely impact emergency access.

XVII.f) No changes to the parking capacity at or in the vicinity of the affected facilities are expected with adopting PAR 102. Use of PAR 102 compounds as "drop in" replacements does not change existing operations, so no new workers at affected facilities or area sources are expected. Since adoption of PAR 102 is not expected to require additional workers, no traffic impacts are expected to occur and additional parking capacity will not be required. Therefore, PAR 102 is not expected to adversely impact on- or off-site parking capacity. PAR 102 has no provisions that would conflict with alternative transportation, such as bus turnouts, bicycle racks, et cetera.

Based upon these considerations, PAR 102 is not expected to generate significant adverse project-specific or cumulative transportation/traffic impacts and, therefore, this topic will not be considered further. Since no significant transportation/traffic impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.			
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☑
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☑
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☑

XVIII.a) As discussed in the "Biological Resources" section, PAR 102 is not expected to significantly adversely affect plant or animal species or the habitat on which they rely because any affected facilities that use PAR 102 compounds as "drop in" replacements for VOC-containing or other exempt compounds are primarily existing facilities located in industrial or commercial areas which have already been greatly disturbed and that currently do not support such habitats. Additionally, special status plants, animals, or natural communities are not expected to be found within close proximity to the facilities affected by PAR 102, because industrial or commercial facilities are often devoid of plants or plant communities for fire safety purposes.

XVIII.b) Based on the foregoing analyses, since PAR 102 will not generate any project-specific significant adverse environmental impacts, PAR 102 is not expected to cause cumulative impacts in conjunction with other projects that may occur concurrently with or subsequent to the proposed project. Related projects to the currently proposed project include existing and proposed rules and regulations, as well as 2007 AQMP control measures. Furthermore, the effects of PAR 102 will not be "cumulatively considerable," as defined in CEQA Guidelines §15064 (h)(1), because no significant adverse project specific impacts were identified. For example, the environmental topics checked 'No Impact' (e.g., aesthetics, agriculture resources, biological resources, cultural resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, solid/hazardous waste and transportation and

traffic) would not be expected to make any contribution to potential cumulative impacts whatsoever. For the environmental topic checked 'Less than Significant Impact' (e.g., air quality), the analysis indicated that project impacts would not exceed any project-specific significance thresholds. This conclusion is based on the fact that the analyses for each of these environmental areas concluded that any incremental effects of the proposed project would be minor and, therefore, not considered to be cumulatively considerable. Also, in the case of air quality impacts, the net effect of adopting the proposed project with other proposed rules and regulations, and control measures in the 2007 AQMP is an overall reduction in district-wide emissions contributing to the attainment of state and national ambient air quality standards. Therefore, the proposed project has no potential for generating significant adverse cumulative or cumulatively considerable impacts.

XVIII.c) Based on the foregoing analyses, PAR 102 is not expected to cause significantadverse effects on human beings. The use of replacement "drop in" compounds for foam blowing agents and solvents currently used in coatings, clean-up solvents, etc., is not expected to create any significant air quality impacts. To the extent that the compounds in PAR 102 are used as "drop in" replacements for VOC-containing compounds, VOC-exempt compounds, or compounds with higher ODP and/or GWP, air quality benefits consistent with the goals of the AQMP may occur. HRAs were also prepared for methyl formate and dimethyl formate's metabolite. The results of these HRAs showed that the use of methyl formate or dimethyl carbonate would not generate significant adverse acute non-cancer health risks.

As discussed in items I through XVIII above, the proposed project has no potential to cause significant adverse environmental effects to aesthetics, agriculture resources, biological resources, cultural resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, solid/hazardous waste and transportation and traffic.

APPENDIX A

PROPOSED AMENDED RULE 102

(Adopted February 4, 1977)(Amended April 1, 1977)(Amended September 2, 1977)
(Amended November 4, 1988)(Amended July 9, 1993)(Amended November 17, 1995)
(Amended June 13, 1997) (Amended March 13, 1998)(Amended June 12, 1998)
(Amended April 9, 1999)(Amended October 19, 2001)(Amended December 3, 2004)
(Amended September 11, 2009)

PROPOSED AMENDED RULE 102.DEFINITION OF TERMS

Except as otherwise specifically provided in these rules and except where the context otherwise indicates, words used in these rules are used in exactly the same sense as the same words are used in Division 26 of the Health and Safety Code.

AGRICULTURAL BURNING means open outdoor fires used in agricultural operations in the growing of crops or raising of fowl or animals, or open outdoor fires used in forest management, range improvement, or the improvement of land for wildlife and game habitat or disease and pest prevention. Agricultural burning also includes open outdoor fires used in the operation or maintenance of a system for the delivery of water for the purposes specified above.

AGRICULTURAL OPERATIONS means any operation occurring on a ranch or farm directly related to the growing of crops, or raising of fowl or animals for the primary purpose of making a profit or for a livelihood.

AGRICULTURAL PERMIT UNIT means any article, machine, equipment or other contrivance or combination thereof operated at an agricultural source, which is an agricultural operation and may cause or control the emissions of air contaminants that is not exempt from permit. In addition, each of the following at an agricultural source shall be considered a single agricultural permit unit:

(A) All confined animal facilities, except that portion that is conveyorized feed storage and distribution.

(B) All conveyorized feed storage and distribution at confined animal facilities.

(C) All orchard wind machines powered by an internal combustion engine with a manufacturer's rating greater than 50 brake horsepower, and operated more than 30 hours in a calendar year.

AGRICULTURAL SOURCE means a source of air pollution or a group of sources used in the production of crops, or the raising of fowl or animals located on contiguous property under common ownership or control that meets any of the following criteria:

(A) Is a confined animal facility.

(B) Is a stationary or portable internal combustion engine used in the production of crops or the raising of fowl or animals except an engine that is used to propel implements of husbandry, as that term is defined in Section 36000 of the Vehicle Code, as that section existed on January 1, 2003.

(C) Is a stationary source required by federal law to be included in an operating permit program established pursuant to Title V of the Federal Clean Air Act (42 U.S.C. Sec. 7661 to 7661f, incl.) and the federal regulation adopted pursuant to Title V, or is a source that is otherwise subject to regulation by a district pursuant to this division or the Federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.)

AGRICULTURAL WASTES means unwanted or unsalable materials produced wholly from agricultural operations, other than forest or range management operations, directly related to the growing of crops or animals for the primary purpose of making a profit or for a livelihood. The term does not include wastes created by land use conversion to non-agricultural purposes unless the destruction of such waste by open outdoor fire is ordered by the County or State Agricultural Commissioner upon his determination that the waste is infested with infections transmittable or contagious plant disease which is an immediate hazard to agricultural operations conducted on adjoining or nearby property.

AIR POLLUTION CONTROL OFFICER means the Executive Officer, or designee of the South Coast Air Quality Management District.

AIR CONTAMINANT or air pollutant means any discharge, release, or other propagation into the atmosphere directly or indirectly caused by man and includes, but is not limited to, smoke, charred paper, dust, soot, grime, carbon, fumes, gases, odors, particulate matters, acids or any combination thereof.

ATMOSPHERE (This definition was adopted on November 16, 1954 for the Metropolitan Zone and on November 23, 1973 for the Southern Zone. It is currently applicable

only to the Metropolitan and Southern Zones.) "Atmosphere" means the air that envelopes or surrounds the earth. Where air pollutants are emitted into a building not designed specifically as a piece of air pollution control equipment, such emission into the building shall be considered an emission into the atmosphere.

BASIC EQUIPMENT means any article, machine, equipment or contrivance which causes the issuance of air contaminants.

BREAKDOWN means a condition caused by an accidental fire or non-preventable mechanical or electrical failure.

CLEAN AIR SOLVENT is a VOC-containing material used to perform solvent cleaning, solvent finishing, or surface preparation operations or activities which:

(A) Contains no more than twenty-five (25) grams of VOC per liter of material, as applied;

(B) Has a VOC composite partial vapor pressure less than 5 mm Hg at 20^{o}C (68^{o}F);

(C) Reacts to form ozone at a rate not exceeding that of toluene;

(D) Contains no compounds classified as Hazardous Air Pollutants (HAPs) by the Federal Clean Air Act, or Ozone Depleting Compounds (ODCs) and Global Warming Compounds (GWCs) as defined by the District; and

(E) Has been certified by the District to meet the criteria stated in (A) through (D) according to test methods and procedures approved by the District.

CLEAN AIR SOLVENT CERTIFICATE is a certificate issued by the District to a manufacturer, distributor, or facility for a specified product or class of products that meets the criteria for a Clean Air Solvent.

A Clean Air Solvent Certificate shall be valid for five years from the date of issuance, unless some lesser time is designated and written notification is given by the Executive Officer, and shall be renewed upon the Executive Officer's determination that the product(s) continues to meet the criteria for a Clean Air Solvent. However, the Executive Officer may revoke such Certificate if it is determined that the specific product or class of

products does not meet the requirements of Clean Air Solvents as defined at the time of issuance.

COMBUSTIBLE REFUSE means any solid or liquid combustible waste material containing carbon in a free or combined state.

COMBUSTION CONTAMINANTS are particulate matter discharged into the atmosphere from the burning of any kind of material containing carbon in a free or combined state.

COMPLIANCE SCHEDULE means the date or dates by which a source or category of sources is required to comply with specific emission limitations contained in any air pollution rule, regulation, or statute and with any increment of progress toward such compliance.

CONFINED ANIMAL FACILITY (CAF) means a source or group of sources of air pollution at an agricultural source for the raising of 3,360 or more fowl or 50 or more animals, including but not limited to, any structure, building, installation, farm, corral, coop, feed storage area, milking parlor, or system for the collection, storage, or distribution of solid and liquid manure; if domesticated animals, including but not limited to, cattle, calves, horses, sheep, goats, swine, rabbits, chickens, turkeys, or ducks corralled, penned, or otherwise caused to remain in restricted areas for commercial agricultural purposes and feeding is by means other than grazing.

CONTROL EQUIPMENT means air pollution control equipment which eliminates, reduces or controls the issuance of air contaminants.

DISTRICT means the South Coast Air Quality Management District.

DUSTS are minute solid particles released into the air by natural forces or by mechanical processes including, but not limited to, crushing, grinding, milling, drilling, demolishing, shoveling, conveying, covering, bagging, and sweeping.

EXECUTIVE OFFICER means the Executive Officer or designee of the South Coast Air Quality Management District.

EQUIPMENT means any article, machine, or other contrivance.

EXEMPT Compounds are any of the following compounds

(A) Group I

1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC-43-10mee)

1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC 225cb)

3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC 225ca)

acetone

ethane

chlorodifluoromethane (HCFC-22)

trifluoromethane (HFC-23)

2,2-dichloro-1,1,1-trifluoroethane (HCFC-123)

2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)

pentafluoroethane (HFC-125)

1,1,2,2-tetrafluoroethane (HFC-134)

1,1,1,2-tetrafluoroethane (HFC-134a)

1,1-dichloro-1-fluoroethane (HCFC-141b)

1-chloro-1,1-difluoroethane (HCFC-142b)

1,1,1-trifluoroethane (HFC-143a)

1,1-difluoroethane (HFC-152a)

cyclic, branched, or linear, completely fluorinated alkanes

cyclic, branched, or linear, completely fluorinated ethers with no unsaturations

cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations

sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

difluoromethane (HFC-32)

1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane ($C_4F_9OCH_3$)

2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane [$(CF_3)_2CFCF_2OCH_3$]

1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane ($C_4F_9OC_2H_5$)

2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane [$(CF_3)_2CFCF_2OC_2H_5$]

parachlorobenzotrifluoride (PCBTF)

methyl acetate

methyl formate

dimethyl carbonate

propylene carbonate

(B) Group II

methylene chloride (dichloromethane)

1,1,1-trichloroethane (methyl chloroform)

trichlorofluoromethane (CFC-11)

dichlorodifluoromethane (CFC-12)

1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113)

1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114)

chloropentafluoroethane (CFC-115)

cyclic, branched, or linear, completely methylated siloxanes (VMS)

tetrachloroethylene (perchloroethylene)

ethylfluoride (HFC-161)

1,1,1,3,3,3-hexafluoropropane (HFC-236fa)

1,1,2,2,3-pentafluoropropane (HFC-245ca)

1,1,2,3,3-pentafluoropropane (HFC-245ea)

1,1,1,2,3-pentafluoropropane (HFC-245eb)

1,1,1,3,3-pentafluoropropane (HFC-245fa)

1,1,1,2,3,3-hexafluoropropane (HFC-236ea)

1,1,1,3,3-pentafluorobutane (HFC-365mfc)

chlorofluoromethane (HCFC-31)

1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a)

1 chloro-1-fluoroethane (HCFC-151a)

The use of Group II compounds and/or carbon tetrachloride may be restricted in the future because they are either toxic, potentially toxic, upper-atmosphere ozone depleters, or cause other environmental impacts. By January 1, 1996, chlorofluorocarbons (CFC),

1,1,1-trichloroethane (methyl chloroform), and carbon tetrachloride were phased out in accordance with the Code of Federal Regulation Title 40, Part 82 (December 10, 1993).

Whenever there is a conflict between the definition of exempt compounds of VOCs in this rule and the definition of exempt compounds of VOCs in another District rule, the definition in Rule 102 shall apply.

FLEET VEHICLES means gasoline-powered motor vehicles as defined by Section 415 of the Vehicle Code and which are operated from one business address.

FUGITIVE DUST means any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of man.

GASOLINE means any petroleum distillate having a Reid vapor pressure of 200 mm Hg (3.9 pounds per square inch), or greater.

HAZARDOUS AIR POLLUTANT means any air pollutant listed as such by the United States Environmental Protection Agency in accordance with Section 112(b)(1) of the Federal Clean Air Act (42 U.S.C. Sec. 7412(b)(1)).

HEARING BOARD means the Hearing Board of the South Coast Air Quality Management District.

INCREMENTS OF PROGRESS means steps to be taken by an owner or operator to bring a source of air contaminants into compliance. (See definition of "Schedule of Increments of Progress.")

LOADING FACILITY means any aggregation or combination of organic liquid loading equipment which is both possessed by one person, and located so that all the organic liquid loading outlets, for such aggregation or combination of loading equipment can be encompassed within any circle of 90 meters (295 feet) in diameter.

MOTOR VEHICLE is a vehicle which is self-propelled.

MULTIPLE-CHAMBER INCINERATOR means any equipment, structure or part of a structure, used to dispose of combustible refuse by burning, consisting of three or more

refractory lined combustion chambers, physically separated by refractory walls, interconnected by gas passage ports or ducts.

OIL-EFFLUENT WATER SEPARATOR means any tank, box, sump or other container in which any petroleum or product thereof, floating on or entrained or contained in water entering such tank, box, sump, or other container, is physically separated and removed from such water prior to outfall, drainage, or recovery of such water.

ORCHARD HEATER or citrus grove heater means any equipment burning any type of fuel or material capable of being used, for the purpose of giving protection from frost damage that is approved by the California Air Resources Board to produce no more than one gram of unconsumed solid carbonaceous material. Equipment commonly known as Wind Machines are not included.

ORCHARD WIND MACHINE means an internal combustion engine powered fan used in orchards or in citrus groves exclusively for the purpose of giving protection from frost damage.

ORGANIC MATERIAL means a chemical compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, metallic carbonates and ammonium carbonate.

ORGANIC SOLVENTS include diluents and thinners and are defined as organic materials which are liquids at standard conditions and which are used as dissolvers, viscosity reducers or cleaning agents, except that such material exhibiting a boiling point higher than 104^{o}C (219^{o}F) at 0.5 mm Hg absolute pressure or having an equivalent vapor pressure shall not be considered to be solvents unless exposed to temperatures exceeding 104^{o}C (219^{o}F).

OZONE-DEPLETING COMPOUNDS (ODCs) are Class I substances identified in 40 CFR, Part 82, Appendix A, Subpart A, including, but not limited to the following compounds:

1,1,1-trichloroethane (methyl chloroform)
trichlorofluoromethane (CFC-11)
dichlorodifluoromethane (CFC-12)
1,1,2-trichloro-1,2,2,-trifluoroethane (CFC-113)
1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114)
chloropentafluoroethane (CFC-115)

PARTICULATE MATTER means any material, except uncombined water, which exists in a finely divided form as a liquid or solid at standard conditions.

PPM means parts per million by volume.

PERSON means any individual, firm, association, organization, partnership, business trust, corporation, company, contractor, supplier, installer, user or owner, or any state or local governmental agency or public district or any other officer or employee thereof. PERSON also means the United States or its agencies to the extent authorized by Federal law.

PHOTOCHEMICALLY REACTIVE SOLVENT means any solvent with an aggregate of more than 20 percent of its total volume composed of the chemical compounds classified below or which exceeds any of the following individual percentage composition limitations, referred to the total volume of solvent:

(A) A combination of hydrocarbons, alcohols, aldehydes, ethers, esters or ketones having an olefinic or cycloolefinic type of unsaturation except perchloroethylene: 5 percent;

(B) A combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene, methyl benzoate and phenyl acetate: 8 percent;

(C) A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: 20 percent.

Whenever any organic solvent or any constituent of an organic solvent may be classified from its chemical structure into more than one of the above groups of organic compounds, it shall be considered as a member of the most reactive chemical group, that is, that group having the least allowable percent of the total volume of solvents.

PM-10 means the particulate matter with an aerodynamic diameter smaller than or equal to 10 microns as measured by applicable State and Federal reference test methods.

PROCESS WEIGHT means the total weight of all materials introduced into any specific process which may discharge contaminants into the atmosphere. Solid fuels charged will be considered as part of the process weight, but liquid gaseous fuels and air will not.

PROCESS WEIGHT PER HOUR means the total process weight divided by the number of hours in one complete operation from the beginning of any given process to the completion thereof, excluding any time during which the equipment is idle.

RECEPTOR AREA means that specified geographic area in which the air contaminants emitted from a source area are present or to which they may be transported.

REDUCTION OF ANIMAL MATTER means any heated process, used for rendering, cooking, drying, dehydrating, digesting, evaporating and protein concentrating of animal matter.

REGULATION means one of the major subdivisions of the Rules of the South Coast Air Quality Management District.

RULE means a rule of the South Coast Air Quality Management District.

SCHEDULE OF INCREMENTS OF PROGRESS means a statement of dates when various steps are to be taken to bring a source of air contaminants into compliance with emission standards and shall include, to the extent feasible, the following:

(A) The dates of submittal of the final plan for the control of emissions of air contaminants from that source to the District.

(B) The date by which contracts for emission control systems or process modifications will be awarded, or the date by which orders will be issued for the purchase of component parts to accomplish emission control or process modification.

(C) The date of initiation of on-site construction or installation of emission control equipment or process change.

(D) The date by which on-site construction or installation of emission control equipment or process modification is to be completed.

(E) The date by which final compliance is to be achieved.

(F) Such other dates by which other appropriate and necessary steps shall be taken to permit close and effective supervision of progress toward timely compliance.

SMALL BUSINESS means a business which is independently owned and operated and meets the following criteria, or if affiliated with another concern, the combined activities of both concerns shall meet these criteria:

(A) the number of employees is 10 or less; and

(B) the total gross annual receipts are $500,000 or less; or

(C) not-for-profit training center.

For the purpose of qualifying for assistance offered by the District's Small Business Assistance Office only, a small business means a business with total gross annual receipts of $5,000,000 or less, or a business with a total number of employees of 100 or less.

SOLID PARTICULATE MATTER means particulate matter which exists as a solid at standard conditions.

SOURCE AREA means that specified geographic area in which air contaminants are emitted.

STANDARD CONDITIONS are a gas temperature of 60^{o}F and a gas pressure of 760 mm Hg (14.7 pounds per square inch) absolute.

SUBMERGED FILL PIPE means any fill pipe the discharge opening of which is completely submerged when the liquid level is 15 centimeters (6 inches) above the bottom of the container; or when applied to a container which is loaded from the side, it means any fill pipe the opening of which is entirely submerged when the liquid level is 45 centimeters (18 inches) above the bottom of the container.

VEHICLE is a device by which any person or property may be propelled, moved, or drawn upon a highway, excepting a device moved by human power or used exclusively upon stationary rails or tracks.

VOLATILE ORGANIC COMPOUND (VOC) is any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds.

A P P E N D I X B

TIER 3 MODEL RUN OUTPUT DATA SHEETS

```
08:57:21
  ***  SCREEN3 MODEL RUN  ***
  *** VERSION DATED 96043 ***

 C:\Lakes\ScreenView\Projects\PAR102\MeFor.scr

 SIMPLE TERRAIN INPUTS:
    SOURCE TYPE            =        POINT
    EMISSION RATE (G/S)    =      4.60000
    STACK HEIGHT (M)       =       7.6000
    STK INSIDE DIAM (M)    =      14.2000
    STK EXIT VELOCITY (M/S)=        .0100
    STK GAS EXIT TEMP (K)  =     388.7056
    AMBIENT AIR TEMP (K)   =     293.0000
    RECEPTOR HEIGHT (M)    =        .0000
    URBAN/RURAL OPTION     =        URBAN
    BUILDING HEIGHT (M)    =        .0000
    MIN HORIZ BLDG DIM (M) =        .0000
    MAX HORIZ BLDG DIM (M) =        .0000

 THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


 BUOY. FLUX =    1.217 M**4/S**3;  MOM. FLUX =     .004 M**4/S**2.

 *** FULL METEOROLOGY ***

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES
***

   DIST     CONC             U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
DWASH
 -------  ----------  ----  -----  -----  ------  ------  ------  ------  ---
--
     25.   8779.        4     8.0    8.0  2560.0    3.10    4.01    3.53
NO
    100.   2186.        4     2.0    2.0   640.0   12.41   16.09   14.24
NO

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND    25. M:
     25.   8779.        4     8.0    8.0  2560.0    3.10    4.01    3.53
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED
  DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
```

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	8779.	25.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

07/22/09

11:03:07
  *** SCREEN3 MODEL RUN ***
  *** VERSION DATED 96043 ***

 C:\Lakes\ScreenView\Projects\PAR102\MeFoSt2.scr

 SIMPLE TERRAIN INPUTS:
    SOURCE TYPE   =   POINT
    EMISSION RATE (G/S)   =   1.30000
    STACK HEIGHT (M)   =   6.0000
    STK INSIDE DIAM (M)   =   27.4000
    STK EXIT VELOCITY (M/S)=   .0100
    STK GAS EXIT TEMP (K) =   309.0000
    AMBIENT AIR TEMP (K)   =   293.0000
    RECEPTOR HEIGHT (M)   =   .0000
    URBAN/RURAL OPTION   =   URBAN
    BUILDING HEIGHT (M)   =   .0000
    MIN HORIZ BLDG DIM (M) =   .0000
    MAX HORIZ BLDG DIM (M) =   .0000

 THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

 BUOY. FLUX =   .953 M**4/S**3; MOM. FLUX =   .018 M**4/S**2.

 *** FULL METEOROLOGY ***

 ****
 *** SCREEN AUTOMATED DISTANCES ***
 ****

 *** TERRAIN HEIGHT OF   0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES
***

   DIST   CONC   U10M   USTK MIX HT   PLUME   SIGMA   SIGMA
    (M)   (UG/M**3)   STAB (M/S) (M/S)   (M)   HT (M)   Y (M)   Z (M)
DWASH
 ------- ---------- ---- ----- ----- ------ ------ ------ ------ ---
--
     25.   2926.   4   5.0   5.0 1600.0   4.13   4.05   3.57
NO
    100.   749.6   4   1.5   1.5   480.0   13.78   16.18   14.35
NO

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND   25. M:
     25.   2926.   4   5.0   5.0 1600.0   4.13   4.05   3.57
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	2926.	25.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

A P P E N D I X C

PUBLIC COMMENT LETTERS RECEIVED AND SCAQMD RESPONSES

Comment Letter #1

Institute for Research and Technical Assistance
a nonprofit organization
IRTA

August 24, 2009

Rizaldy Calungcagin
South Coast Air Quality
Management District
21865 Copley Drive
Diamond Bar, CA 91765

Dear Mr. Calungcagin:

I am writing about the South Coast Air Quality Management Districts (SCAQMD's) proposal to amend SCAQMD Rule 102 "Definition of Terms." The District is proposing to exempt dimethyl carbonate (DMC) from VOC regulations.

I have reviewed the draft staff report and have found an error in the risk assessment analysis. The District is using methanol as a surrogate in the risk assessment for DMC and indicates that DMC is metabolized to methanol. In the staff report, the District presents two scenarios, a commercial/industrial scenario with four different levels of solvent cleaning and a residential/architectural coatings scenario for a single family home.

The District states in the analysis that "the estimated emissions were then doubled based on the two-to-one stoichiometric ratio of dimethyl carbonate to methanol." The molecular weight of dimethyl carbonate is 90 and the molecular weight of methanol is 32. On this basis, the stoichiometric ratio is actually 2.8 to 1, rather than two-to-one as assumed by the District. If this value is put into the analysis in place of the factor of two, the risk for Facility C in the commercial/industrial case is 11.34 rather than 8.10. The risk for the residential/architectural coatings single family home case is 17.9 rather than 12.7. The significance or threshold level, according to the District, is 14 so the correctly calculated risk of 17.9 clearly exceeds the significance level. The risk of 11.34 for the commercial/industrial case is close to the significance level.

1-1

In exempting DMC, the District will promote its use. This means that workers will have a much higher risk since they will be using the chemical. In the commercial/industrial risk calculation, the District assumed the lowest receptor site distance of 25 meters. The District did not calculate the risk to workers but workers would obviously have a much lower receptor distance, perhaps as low as one foot. On this basis, the District would have to conclude that the risk to workers would exceed the significance level.

1-2

The District includes in the staff report some of the public comments and responses. In one case, the comment is that "AQMD staff needs to re-evaluate tertiary butyl acetate (TBAc) for inclusion in the list of VOC exempt compounds in Rule 102." This comment has been brought forward because of the District's intention to exempt DMC. The District response is that TBAc's risk may exceed threshold levels and that "AQMD has carefully carved out exemptions only in areas where the use of personal protective equipment is widespread."

1-3

The response to the TBAc comment indicates that the District does not want to grant a complete exemption because the risk may exceed the threshold levels. As demonstrated

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Glendale, CA 91206
(818) 244-0300 Fax (818) 244-0396

above, while using the corrected values for the molecular weight, the risk of DMC clearly exceeds the threshold level in the case of the residential/architectural coatings and would clearly exceed the threshold level for workers. If the District is not willing to exempt TBAc because the risk "may" exceed the threshold, then the District cannot exempt DMC because the risk "does"exceed the threshold.

1-3 cont.

The District cannot move forward to exempt DMC because the (corrected) calculated risk in the staff report exceeds the threshold level. When this is the case, the District is required to give substantially more notice than they have done in this rulemaking. As I have mentioned in earlier comments, DMC will replace safer materials in cleaning and thinning. These safer materials include water-based cleaners, soy based cleaners and acetone. Acetone is lower in toxicity than virtually all other organic solvents. These materials are all very low in toxicity and it is not good public policy to adopt the exemption to promote a chemical that poses a higher risk. The exemption will expose consumers and workers to large quantities of DMC and the risk is not acceptable.

1-4

I appreciate the opportunity to comment on this important rule. If you have questions on my comments, please call me at (818) 244-0300.

Sincerely,

Katy Wolf, Ph.D.
Executive Director

cc: Naveen Berry
Dr. Laki Tisopulos
Dr. Barry Wallerstein
SCAQMD Governing Board Members

RESPONSES TO COMMENT LETTER #1

(Institute for Research and Technical Assistance, August 24, 2009)

1-1 The commentator states that SCAQMD staff made an error by stating the emissions doubled based on a two-to-one stoichiometric ratio of dimethyl carbonate to methanol. The commentator then states that the correct ratio should be 2.8-to-one based on a ratio of the molecular weights of dimethyl carbonate to methanol.

The commentator is correct that the emissions would not double based on a two-to-one stoichiometric ratio of dimethyl carbonate to methanol. SCAQMD staff incorrectly doubled the mass emissions instead of doubling the molar emissions. However, only using a ratio of the molecular weights of dimethyl carbonate to methanol is also incomplete.

The correct procedure for calculating health risks is as follows:

1. To convert the mass rate of dimethyl carbonate to a molar rate. The mass rate of dimethyl carbonate is converted to a molar rate by dividing the mass rate of dimethyl carbonate by its molecular weight of 90 grams per mole.

2. The next step is to multiply the dimethyl carbonate rate by the stoichiometric ratio of dimethyl carbonate to methanol. The stoichiometric ratio of methanol to dimethyl carbonate is two-to-one (two moles of methanol to each mole of dimethyl carbonate). However, based on the following degradation formula, the ratio of dimethyl carbonate to methanol actually formed is 0.71 to 1.0.

   $C3H6O3 + 2\ H2O \rightarrow 2\ CH3OH + H2CO3$

3. Then, the molar rate of methanol is converted to a mass rate of methanol. The molar rate of methanol is converted to a mass rate by multiplying the molar rate of methanol by its molecular weight of 32 grams per mole.

   So for every gram of dimethyl carbonate, 0.71 gram of methanol would be formed as shown in the following equation.

   (1 gram C3H6O3)/(90 gram C3H6O3/mole C3H6O3) x (2 mole CH3OH/mole C3H6O3) x (30 gram CH3OH/mole CH3OH) = 0.71 gram CH3OH

Therefore, instead of the degradation causing methanol emissions that are double the mass emissions of dimethyl carbonate as stated in the Draft EA; methanol emissions would be 0.71 the mass of the dimethyl carbonate emissions. This correction has been made in the Final EA. The correction decreases the methanol emissions reported in the Draft EA by 2.81 (0.71/2). Since the methanol emissions reported in the Draft EA were determined to be not significant, the decreased emission in the Final EA would also be less than significant.

1-2 The commentator states in exempting DMC, the SCAQMD will promote its use and therefore, workers will have a much higher risk since they will be using the chemical more frequently. On-site worker exposure is under the jurisdiction of federal OSHA and the California Department of Industrial Relations Division of Occupational Safety and Health (DOSH). SCAQMD staff relies on OSHA and DOSH to establish and enforce health and safety regulations that will protect workers from chemical exposure and health risk impacts. The most conservative sensitive receptor distance for screening purposes was utilized in the Draft EA evaluation (25 meters).

Based on review of a Kowa American Corporation Material Safety Data Sheet for dimethyl carbonate, respiratory protection, protective clothing, protective gloves, and eye protection are recommended when using dimethyl carbonate.

The following safety practices and application techniques are recommended by the National Association of Corrosion Engineers (NACE) and the Society for Protective Coatings during the application of coatings including future compliant coatings. Thus, applicators are not expected to require additional training regarding the proper handling or application of compliant coatings containing hazardous materials which will further reduce the applicator's exposure because these safety measures tend to be established in existing affected facilities.

Worker Isolation – Areas where coatings with hazardous materials are applied should be restricted to essential workers. If feasible, these workers should avoid direct contact with hazardous materials by using automated equipment or area with plenty of ventilation.

Protective Clothing and Equipment – When there is potential for hazardous material exposure, workers should be provided with and required to use appropriate personal protective clothing and equipment such as coveralls, footwear, chemical-resistant gloves and goggles, full faceshields, and suitable respiratory equipment.

Respiratory Protection – Only the most protective respirators should be used for situations involving exposures to hazardous materials because they have poor warning properties, are potent sensitizers, or may be carcinogenic. These respirators include:

Any respiratory protection program must, at a minimum, meet the requirements of the OSHA respiratory protection standard [29 CFR 1910.134]. Respirators must be certified by NIOSH and MSHA according to 30 CFR or by NIOSH (effective July 19, 1995) according to 42 CFR 84. A complete respiratory protection program should include: (1) regular training and medical evaluation of personnel, (2) fit testing, (3) periodic environmental monitoring, (4) periodic maintenance, inspection, and cleaning of equipment, (5) proper storage of equipment, and (6) written standard operating procedures governing the selection and use of respirators. The program should be evaluated regularly. The following publications contain additional information about selection, fit testing, use, storage, and cleaning of respiratory equipment: NIOSH Guide to Industrial

Respiratory Protection [NIOSH 1987a] and NIOSH Respiratory Design Logic [NIOSH 1987b]. Examples of complying with these regulations include the following:

- Any self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode, and
- Any supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.

Worker and Employer Education – Worker education is vital to a good occupational safety and health program. OSHA requires that workers be informed about:

- Materials that may contain or be contaminated with hazardous materials;
- The nature of the potential hazard [29 CFR 1910.1200]. Employers must transmit this information through container labeling, material safety data sheets (MSDSs), and worker training;
- The serious health effects that may result from hazardous material exposures; and
- Any materials that may contain or be contaminated with hazardous materials.

Additionally, workers should take the following steps to protect themselves from hazardous material exposure:

- Be aware that the highest hazardous material concentrations may occur inside containment structures.
- Wash hands and face before eating, drinking, or smoking outside the work area.
- Participate in medical monitoring and examination programs, air monitoring programs, or training programs, offered by your employer.

As a result of being delisted as a VOC by the USEPA and many air districts, dimethyl carbonate, propylene carbonate and methyl formate usage have been increasing irrespective of the currently proposed amendments. SCAQMD staff has addressed adverse impacts to the environment and public that would not have access to the controls and health protective equipment that employers provide to their workers.

1-3 Staff has previously analyzed the risks from TBAc's primary metabolite, Tertiary Butanol, and determined that the risks may exceed threshold levels. As a result, the AQMD has carefully carved out exemptions only in areas where the use of personal protective equipment is widespread, such as automotive refinishing and industrial maintenance coatings. Based on recent feedback from OEHHA staff, they still have concerns about the manufacturer's conclusions on the potential health risk associated with the use of TBAc. Consequently, staff is not ready to propose TBAc for an exemption at this point. However, staff has committed to meet with CARB, OEHHA, and the manufacturer to continue discussions on the latest health studies presented by the manufacturer, and plans to follow OEHHA's guidance in the future and propose another amendment to Rule 102, if necessary.

1-4 With regard to the HRA results in the Draft EA for dimethyl carbonate, since the corrected HRA analysis resulted in a lower health risk than generated by the original analysis, which was not significant, none of the requirements for re-circulation of a CEQA document in CEQA Guidelines §15073.5 are triggered.

LYONDELL

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August 25, 2009

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Re: Comments on the Draft Environmental Assessment for Proposed Amended Rule 102 – Definition of Terms.

Dear Sirs:

As the developer and producer of tertiary-butyl acetate (TBAC) and a supplier of propylene carbonate (PC), Lyondell Chemical is pleased to provide the following comments on the Draft Environmental Assessment (DEA) for Proposed Amended Rule (PAR) 102 – Definition of Terms.

Propylene Carbonate

We fully support the listing of PC in the Group I list of exempt compounds. PC produces the same amount of ozone as ethane on a per gram basis. This has been the criterion used by the US EPA to exempt negligibly reactive compounds with reactivities close to ethane since acetone was exempted in 1995 and TBAC was exempted in 2004. Therefore, PC is not a reactive organic compound and should be exempted from VOC regulations in the SCAQMD. 2-1

In addition, PC is one of the safest solvents commercially available today. It is not flammable or combustible. PC is both safer than and can replace acetone in cleaning operations such as in the manufacturing of boats and tub baths and enclosures (SCAQMD Rule 1162 (Polyester Resin Operations)), Multipurpose Solvents (SCAQMD Rule 1143),

and Solvent cleaning operations (SCAQMD Rule 1171). Using PC instead of acetone in these operations would eliminate the high flammability risk posed by acetone. PC is also much less volatile than acetone and will virtually eliminate ozone formation caused by fugitive acetone emissions from these operations.

PC's saturated vapor pressure at 20˚C is 0.03 mm Hg and it already benefits from LVP-VOC exempt status in California. Its saturated vapor concentration at that temperature is 39 ppmv vs. 244,000 ppmv for acetone. Therefore PC also poses much less of an inhalation risk than acetone and most other solvents used in cleaning operations. The potential for overexposure to PC by inhalation is nil. PC is also a very safe solvent. It is not a dermal irritant or sensitizer. In fact, as your DEA notes, PC is approved for direct skin contact and is a component of cosmetic formulations.

On the other hand, PC, unlike TBAC, evaporates much too slowly to be useful as a coating solvent or thinner. Medium evaporating exempt solvents are still needed for operations and products where solvent evaporation is required for optimum product performance. This includes the majority of industrial coating operations and products.

2-1 cont.

Dimethyl Carbonate (DMC) and Methyl Formate (MF)

We oppose the addition of either DMC or MF to the Group I list of exempt compounds due to significant uncertainties about potential health risks associated with their widespread use. Both chemicals are known to metabolize to methanol which is a reproductive toxin. DMC itself is teratogenic, according to a 1992 Exxon study cited in the DEA.

In 2003, the National Toxicology Program (NTP), a body OEHHA considers to be authoritative, concluded that there was clear evidence of adverse effects for reproductive toxicity in laboratory animals and that methanol may adversely affect human development if exposures are sufficiently high (NTP-CERHR, 2003, p.2). In January 2009, OEHHA proposed to add methanol to the list of reproductive toxins on the Proposition 65 list via the authoritative bodies mechanism.[1] Given the potential for high volume use for both chemicals in industrial and consumer products, it is incumbent on SCAQMD staff to conduct more thorough exposure and use analyses than it did when it prepared the DEA to insure that the general population and workers are not overexposed to a known teratogen (DMC) and reproductive toxin (methanol).

2-2

Furthermore, no chronic or subchronic studies have been conducted on DMC or MF. However, methanol is known to metabolize to formaldehyde, a known human carcinogen included on the Proposition 65 list. OEHHA has speculated that formaldehyde is only carcinogenic by inhalation. However, formaldehyde is further metabolized to formic acid. Formic acid accumulation can cause permanent blindness, Parkinson's-like symptoms, and dementia.[2] Before either compound is listed as Group I exempt

[1] The Safe Drinking Water and Toxic Enforcement Act of 1986, commonly referred to by the proposition that enacted it, Proposition 65, requires OEHHA to publish a "List of chemicals known to cause cancer or reproductive toxicity." Cal. Health & Safety Code § 25249.8.

[2] D. R. McLean, H. Jacobs, B. W. Mielke, "Methanol poisoning: A clinical and pathological study", Annals of Neurology Vol 8, No 2, 1980, pp 161-167.

compounds in rule 102, we recommended that that SCAQMD staff thoroughly evaluate potential exposures from occupational and consumer use of these chemicals.

Thus, we respectfully disagree with the DEA conclusion that "there will be no significant adverse environmental impacts from implementing the proposed project." Both chemicals are known to metabolize into a reproductive toxin, which in turn metabolizes into a *known human* carcinogen; and DMC is teratogenic. Thus, an increase in the use of DMC or MF can lead to substantial adverse health effects of human beings, and at a minimum the DEA ought to have considered mitigation measures.[3]

2-2 cont.

TBAC

We note that your assessment does not include the TBAC evaluation we requested in our July 16, 2009 comments. TBAC was exempted by the US EPA in 2004 and is now exempt in 13 California counties. In January, the San Joaquin Valley UAPCD exempted TBAC in its definition rule.[4] TBAC is negligibly photochemically reactive, with an MIR of 0.17 grams ozone/gram (Dr. W. Carter SAPRC-07 mechanism).[5] TBAC is about 40% less reactive than ethane, acetone, and PC and clearly meets the reactivity requirement for exclusion from the VOC definition in rule 102.

We are aware of OEHHA's speculative concerns about the chronic toxicity of TBAC based on its metabolism to TBA. However, unlike methanol or formaldehyde, neither TBA nor TBAC are listed carcinogens or reproductive toxins. In addition, two independent panels of toxicologists convened by the non-profit organizations NSF international and TERA (Toxicology Excellence for Risk Assessment) have concluded that neither TBA nor TBAC are genotoxic, likely human carcinogens, or reproductive toxins. The reality is that the inclusion of TBAC in addition to or instead of DMC or MF on the Group I list will most likely (1) reduce the current level of VOCs emitted; and (2) mitigate the potentially significant adverse impact on human health caused by the inclusion of DMC and MF.

2-3

Since OEHHA has published an unofficial chronic risk factor for TBAC, we ask that SCAQMD staff help us conduct more realistic use and exposure assessments to determine if a broad VOC exemption could potentially pose a significant risk to workers, consumers, or the general population. We have initiated this study with the help of Sullivan Environmental and appreciate the information staff has provided so far on exposure modeling parameters. We hope that we continue our constructive dialogue so that we can determine if OEHHA's speculative toxicity concerns translate to any significant health risk under any realistic exposure scenarios.

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[3] Tile 14 of the California Code of Regulations section 15252(a)(2) requires the substitute for an Environmental Impact Report or Negative Declaration issued by a certified regulatory program to include either (1) alternatives that will reduce negative environmental impacts; or (2) a statement showing no significant environmental effects. While the DEA does state there are no significant environmental effects, that conclusion is incorrect and therefore mitigating measures, such as the inclusion of TBAC, ought to have been considered.

[4] http://www.valleyair.org/rules/currntrules/r1020.pdf

[5] http://www.engr.ucr.edu/%7Ecarter/SAPRC/

Conclusion

In summary, Lyondell supports the addition of PC to the Group I list of exempts and opposes the addition of DMC and MF until their chronic toxicity, potential exposures, and health risks are better defined. We also believe you should consider adding TBAC as a means of mitigating the potential adverse health risks of adding DMC and MF to the list. Thank you for considering these comments.

Sincerely,

Daniel B. Pourreau, Ph.D.

cc: Laki Tisopulos, Naveen Berry, Jean Ospital, Steve Smith,

RESPONSES TO COMMENT LETTER #2

(Lyondell Chemical Company, August 24, 2009)

2-1 Staff acknowledges the comment in support of the proposed exemption for propylene carbonate. This compound has favorable properties, e.g., lower flammability, when compared to some of the currently used compounds likely to be replaced. The addition of propylene carbonate as a VOC-exempt compound adds flexibility to product manufacturers and end users in formulating and using new compliant products.

2-2 In formulating a recommendation to exempt a particular compound from the VOC definition, SCAQMD staff evaluates the potential health effects and any trade-offs very carefully to ensure that the proposed action would not cause any undue health risk to the workers, end users and consumers. This evaluation includes the review of existing literature, utilization of risk models available and soliciting input from sister agencies, such as CARB and OEHHA.

Dimethyl Carbonate

SCAQMD staff is aware of the 1992 Exxon study in which mice were exposed to dimethyl carbonate during gestation. No effects were seen at exposures of 300 ppm or 1,000 ppm. Developmental effects were seen at exposures of 3,000 ppm. Based, in part, on this study, the manufacturer has established a recommended exposure level of 200 ppm. Regarding worker exposure, please see response 1-2. Regarding sensitive receptor exposures, refer to the following paragraphs.

At the time that the Draft EA was circulated for public review, CARB and OEHHA had not conducted an assessment of the health effects of exposure to dimethyl carbonate, although both agencies have done extensive research on methanol toxicity as part of the methyl formate VOC exemption petition. Furthermore, OEHHA has not yet provided any guidance on chronic risks in the absence of long-term studies. In the absence of final RELs from OEHHA and in an effort to further evaluate potential health impacts from dimethyl carbonate, SCAQMD staff conducted a health risk assessment for dimethyl carbonate using the screening level for methanol, which is the primary metabolite of dimethyl carbonate. This approach is similar to OEHHA's approach of assessing the effects of the known metabolites of a substance during its evaluation of the health effects from exposure to tertiary butyl alcohol, which is the primary metabolite of tertiary butyl acetate. An HRA was conducted for dimethyl carbonate using the Tier 1 screening level for methanol. Four different sized solvent cleaning facilities with different amounts of solvent usage were screened to project future health risks from exposure to methanol during solvent cleaning operations. The Draft EA included a Tier I screening analysis of dimethyl carbonate using its primary metabolite, methanol, as a surrogate using a 2:1 ratio of methanol to dimethyl carbonate. The analysis concluded that use of dimethyl carbonate at the four solvent cleaning facilities would not be significant. The stoichiometric ratio of methanol to dimethyl carbonate is 2:1 (two moles of methanol to each mole of dimethyl carbonate). However, subsequent to release of the Draft EA for review, SCAQMD staff discovered that, based on the following degradation formula, the ratio of dimethyl carbonate to methanol actually formed is 0.71 to 1.0 (see response 1-1).

$C_3H_6O_3 + 2\ H_2O \rightarrow 2\ CH_3OH + H_2CO_3$

The revised analysis indicates that the potential risks from exposure to dimethyl carbonate's metabolite is less than originally calculated and continues to be less than significant.

In order to evaluate for the potential future usage of dimethyl carbonate in an area sources/architectural coatings application, SCAQMD staff conducted a Tier 1 health risk assessment screening also using dimethyl carbonate's primary metabolite, methanol. A mass replacement ratio of one-to-one of dimethyl carbonate for the currently used solvents (in coatings and clean-up solvents) was utilized in the screening evaluation to quantify usage. The revised exposures were estimated based on a two-to-one stoichiometric ratio of dimethyl carbonate to methanol, also using the degradation formula (see response 1-1), resulting in an actual ratio of 0.71:1.0 dimethyl carbonate to methanol. Based on the health risk screening evaluation conducted for methanol, neither the estimated emissions per year (for chronic effects) nor per hour (for acute effects) exceed the applicable screening levels. Since the screening levels are derived using the appropriate RELs, results less than the screening levels means that exposures would result in hazard indexes less than 1.0, the non-cancer health risk significance threshold. No cancer potency factors were identified for dimethyl carbonate or methanol, and therefore, no carcinogenic health risk was estimated.

Based on these health risk assessments, SCAQMD staff has concluded that exempting dimethyl carbonate from the definition of VOC is not expected to result in usage or exposure to its metabolite, methanol, in amounts that exceed the applicable non-cancer health index significance threshold of 1.0. Should future studies or feedback from OEHHA reveal any new information that might alter staff's conclusions, staff will be prepared to expeditiously initiate a rule amendment to reflect the new information.

Methyl Formate

In response to petitions for VOC exempt status and requests from some air districts, CARB, in conjunction with OEHHA, conducted an environmental impact assessment of methyl formate, focusing on possible health effects associated with inhalation exposure to the compound. OEHHA's toxicity assessment concluded that for methyl formate's intended use as a substitute blowing agent in foam manufacturing, the health concern is the internal levels of methanol and formic acid (or formate ion) in solution due to metabolism of methyl formate, and not the external air concentrations of the chemicals. Further, OEHHA, in a memorandum to CARB on the health effects of exposure to methyl formate, dated March 14, 2008, concluded that "at dose levels likely to be achieved in environmental exposures by inhalation, these concerns appear to be minor." Based on OEHHA's assessment of exposures, CARB, in a letter to air pollution control officers, dated May 19, 2008, recommends that air districts consider this compound for exemption in the definition of VOC, but also to remain vigilant about possible adverse effects as its uses increase.

As indicated in the Draft EA, SCAQMD staff conducted Tier 1 and Tier 2 health risk assessment (HRA) screening analyses, as well as a more comprehensive Tier 3 HRA dispersion modeling. The results of the Tier 1 HRA analyses showed that no facility analyzed would exceed the applicable Tier 1 screening level. Similarly, the results of the Tier 2 screening HRA and the Tier 3 screening dispersion modeling analysis showed that the use of methyl formate at the facilities analyzed would not result in exposures that exceed the acute hazard index significance threshold of 1.0. No cancer potency factors were identified for methyl formate, and therefore, no carcinogenic health risk was estimated. Therefore, based on the above results, mitigation measures were not required to be included in the EA.

2-3 The Draft EA did not include an analysis of TBAc because it was not part of the proposed project. Staff has previously analyzed the risks from TBAc's primary metabolite, tertiary butanol, and determined that the risks may exceed threshold levels. As a result, the SCAQMD has carefully carved out exemptions only in areas where the use of personal protective equipment is widespread, such as automotive refinishing and industrial maintenance coatings. Based on recent feedback from OEHHA staff, they still have concerns about the manufacturer's conclusions on the potential health risk associated with the use

of TBAc. Consequently, staff will not propose TBAc for an exemption from the definition of VOC until chronic toxicity studies are completed and/or OEHHA makes a final determination regarding potential toxicity.

Comment Letter #3

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August 25, 2009

Mr. Jeffery Inabinet
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RE: Response to comments made on the proposed rule exempting DMC

Dear Jeff,

I am writing to clarify a few remarks made by Katy Wolf to the Stationary Source committee dated July 23, 2009. I have also talked with Katy a number of times on the phone and certainly understand her concerns about DMC, however I think there are a number of exaggerations or errors in her comments that need to be addressed.

I think the most important issue is Katy's reference to DMC being a developmental toxicant needing 17 ppm maximum workplace exposure limit to properly protect users. DMC has shown developmental toxicity at very high exposure levels and to classify DMC as a reproductive toxicant on that basis is certainly an exaggeration of these limited effects. DMC has the benefit of a very comprehensive development toxicity study undertaken by Exxon Mobil by the inhalation route that addresses this risk. The results have shown a No Observed Adverse Effects Level (NOAEL) of 1,000 ppm (or 3, 685 mg/m^3) , where the results of the 1,000 ppm level actually had a lower number of birth defects than the control group (0 PPM). The 3,000 ppm (next and last testing level up) had developmental toxicity effects, showing a significant increase in fetal malformations at these high levels. **These developmental toxicity results are very consistent with DMC's primary metabolite Methanol.**

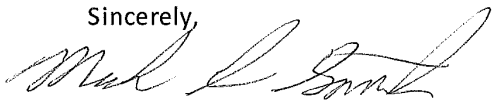
DMC as with all other methyl esters are rapidly hydrolyzed in the body to methanol by a number of esterase enzymes , for example methyl formate has a half life of 6 seconds in the body and methyl acetate is completely de-esterified in less than half an hour. DMC's other metabolite would be carbon dioxide. Methanol has been tested in a similar manner to the above Exxon study inhalation of mice most recently in 1993 (Rogers *et al.* 1993) where the NOAEL level was 1,300 mg/m^3 (992 ppm).

I dislike IRTA's heavy reliance on acetone as the only organic solvent they feel is safe for non-aqueous cleaning , since acetone would never have been exempted as a VOC if one used the most current MIR numbers instead of those available in the early 1990's when it was exempted. Acetone's ozone producing potential increases markedly when NOx levels increase, so on severe air quality days the potential is that acetone can contribute to smog, right when you need less ozone the most. DMC on the other hand has perhaps the lowest ozone producing potential of any liquid organic chemical in existence, so it is truly a chemical that can greatly assist ozone compliance and reduce smog in your basin.

I think the key point of exempting DMC is to give your constituents as many safe and practical choices as possible in coatings and cleaning applications that they can test and find the best approach possible to remain competitive with their peers outside the SCAQMD area. The risks posed by DMC are not in any way more severe than methyl acetate or PCBTF. Putting DMC in a group II severely limits its use for a variety of applications. I know IRTA would also like to restrict methyl acetate, PCBTF and a lot of other organic solvents into Group II, but I think putting tighter restrictions on DMC, while allowing these similar organic solvents to be used without restriction is very arbitrary. We agree with your group's assessment that insuring DMC is not used over its recommend exposure limit can be enforced by local workplace exposure laws and enforcement officials.

We have recently revised our MSDS for DMC and a copy of the new MSDS is attached, there were no significant changes to the MSDS from the old copy, except clarifying the federal VOC exemption for DMC in the regulatory section.

Sincerely,



Mark K. Smith

RESPONSES TO COMMENT LETTER #3

(KOWA American Corp., August 25, 2009)

3-1 SCAQMD staff is aware of the 1992 Exxon study in which mice were exposed to dimethyl carbonate during gestation. No effects were seen at exposures of 300 ppm or 1,000 ppm. Developmental effects were seen at exposures of 3,000 ppm. Based, in part, on this study, the manufacturer has established a recommended exposure level of 200 ppm.

With regard to potential health effects from exposure to methanol, the primary metabolite of dimethyl carbonate, please see responses 1-1 and 2-2. Aside from propylene carbonate, dimethyl carbonate, and methyl formate, no other compounds, e.g., PCBTF, are affected by the proposed project.