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**FINAL Socio-Economic Impact Study:  
Proposed Amendment to Regulation 8, Rule 50  
Polyester Resin Operations**

Submitted to:  
Bay Area Air Quality Management District

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# Executive Summary

The Bay Area Air Quality Management District (BAAQMD) regulates emissions from volatile organic compounds (VOC) associated with unsaturated polyester resin operations during the manufacturing and repair of composite products through Regulation 8, Rule 50: Polyester Resin Operations (Regulation 8-50). Currently, the BAAQMD is proposing to amend Regulation 8-50 to reduce VOC emissions through gel coat monomer limits, polyester monomer limits, lower VOC limits on polyester resin cleaning products, and VOC limits on vinyl ester resin cleaning products. The proposed Amendment would add and clarify definitions, and allow only the use of non-atomizing spray guns when spray guns are used to apply polyester and vinyl ester resins to open molds.

## Socio-Economic Impacts

In order to estimate the economic impacts of amending Rule 8-50 on the affected industries, this report compares the industry's annualized compliance costs with its profit ratios. The analysis uses data from the BAAQMD, US Census County Business Patterns, the IRS, and Dun and Bradstreet, a private data vendor.

### ***Economic Profile of Affected Industries***

The BAAQMD identifies the following industries as affected by the proposed amendments to reduce emissions of Volatile Organic Compounds (VOCs) by reducing the monomer content and VOC limits on polyester resins: Plastics Material and Resin Manufacturing (NAICS 325211), Custom Compounding of Purchased Resins (NAICS 325991), Other Plastics Product Manufacturing (NAICS 32619), Ship and Boat Building (NAICS 3366), Bare Printed Circuit Board Manufacturing (NAICS 334412), Aircraft Manufacturing (NAICS 336411), Military Armored Vehicle, Tank, and Tank Component Manufacturing (NAICS 336992), Wood Kitchen Cabinet and Countertop Manufacturing (NAICS 337110), Musical Instrument Manufacturing (NAICS 339992), All Other Home Furnishing Stores (NAICS 442299), Marinas (NAICS 713930), Automotive Body, Paint, and Interior Repair and Maintenance (NAICS 811121), and All Other Automotive Repair and Maintenance (NAICS 811198). According to the 2007 NAICS County Business Patterns, there are approximately 2,250 firms that could be associated with polyester resin manufacturing and repair in the region; however, BAAQMD records identify approximately 60 firms in the Bay Area that would be subject to the proposed amendment. In addition, BAAQMD staff contacted polyester resin suppliers who verified that there are approximately 60 regional manufacturing and repair firms that use polyester resins.

In order to maintain confidentiality of firm sales and profit data, this report uses three larger industry classes to analyze the economic impacts of the proposed rule: Furniture and Fixture Manufacturing and Repair, Transportation Manufacturing and Repair, and Electrical Equipment Manufacturing and Repair.

### ***Economic Impacts to Affected Industries***

**Furniture and Fixture Manufacturing and Repair.** IRS data indicate that firms in the furniture and

fixture manufacturing and repair sector, which include some of the affected industries, earn 6.4 percent profits on total revenue. For the 31 firms that use polyester resins and gel coats, and will have to comply with the amended regulations, the total profits are \$1.7 million. Compliance costs associated with amending Rule 8-50 were calculated based on data provided by the BAAQMD and California Air Resources Board (ARB), as well as the IRS and Dun & Bradstreet. The total annualized compliance costs will be approximately \$109,170. Dividing the compliance costs (\$109,170) by annual profits of firms that will have to comply with the amended rules (\$1.7 million) shows that the proposed Rule will result in a 6.5 percent reduction in firm profits, which is below the ARB's 10 percent threshold used to determine cost burden.

**Transportation Manufacturing and Repair.** IRS data indicate that firms in the transportation manufacturing and repair sector, which includes some of the affected industries, earn 3.4 percent profits on total revenue. For the 18 firms that use polyester resins and gel coats, and will have to comply with the amended regulations, the total profits are \$157,550. Compliance costs associated with amending Rule 8-50 were calculated based on data provided by the BAAQMD and California Air Resources Board (ARB), as well as the IRS and Dun & Bradstreet. The total annualized compliance costs will be approximately \$11,080. Dividing the compliance costs (\$11,080) by annual profits of firms that will have to comply with the amended rules (\$157,550 million) shows that the proposed Rule will result in a 7.0 percent reduction in firm profits, which is below the ARB's 10 percent threshold used to determine cost burden.

**Electrical Equipment Manufacturing and Repair.** IRS data indicate that firms in the transportation manufacturing and repair sector, which includes some of the affected industries, earn 9.6 percent profits on total revenue. For the 11 firms that use polyester resins and gel coats, and will have to comply with the amended regulations, the total profits are \$670.7 million. Compliance costs associated with amending Rule 8-50 were calculated based on data provided by the BAAQMD and California Air Resources Board (ARB), as well as the IRS and Dun & Bradstreet. The total annualized compliance costs will be approximately \$14,320. Dividing the compliance costs (\$14,320) by annual profits of firms that will have to comply with the amended rules (\$670.7 million) shows that the proposed Rule will result in a 6.5 percent reduction in firm profits, which is below the ARB's 10 percent threshold used to determine cost burden.

### ***Economic Impacts to Consumers***

Although the impacts to the industry are not significantly high, consumers will likely bear a portion of the cost burden. Since customers indirectly purchase polyester resins when purchasing cabinets, furniture, and other household fixtures, they will likely incur higher costs for the goods they purchase that require marble resin gel coats. However, as there are currently products on the market in compliance with the proposed amendment on other resin monomer levels, in order to remain competitive, manufacturers may not be able to pass all of these costs on to the consumers and would likely need to absorb some of the associated costs.

### ***Regional Employment, Indirect, and Induced Impacts***

Since on average, the proposed amendment to Rule 8-50 would not result in significant economic impacts to firms within the affected industries, and consumers will likely bear some portion of the cost burden, the

proposed amendment would not impact affected industry or regional employment.

## **Impacts to Small Businesses**

Using the California Government Code 14835's definition of a small business, approximately 98 percent of all affected firms are small businesses. However, as this analysis projects that compliance costs are small enough not to significantly impact profitability, amending Rule 8-50 would not adversely impact small businesses.

## Description of Proposed Rule

Since 1990, the Bay Area Air Quality Management District (BAAQMD) has regulated emissions from volatile organic compounds (VOC) associated with unsaturated polyester resin operations during the manufacturing and repair of composite products through Regulation 8, Rule 50: Polyester Resin Operations (Regulation 8-50). Regulation 8-50, which has been amended three times since its adoption, limits the amount of styrene monomer in uncured resins, requires the uses of emissions minimizing vapor suppressants, or requires the use of a closed-mold system.<sup>1</sup> Polyester resins are used in the manufacture and repair of the following products: recreational and commercial watercraft, recreational vehicle bodies, automotive vehicle bodies and interior parts, commercial and military aircraft parts, bathware products, architectural products, personal computer board parts, pipelines, and storage tanks for the sewage treatment industry and secondary containment for gasoline fuel dispensing components.<sup>2</sup>

BAAQMD proposes to amend Regulation 8-50 to reduce VOC emissions through gel coat monomer limits, polyester monomer limits, lower VOC limits on polyester resin cleaning products, and VOC limits on vinyl ester resin cleaning products. The proposed Amendment would add and clarify definitions, and bring Bay Area polyester monomer limits into alignment with other California Air Districts' limits. Finally, the Amendment would “clarify the permissible methods for applying polyester resins to open molds, and allow only the use of non-atomizing spray guns when spray guns are used to apply polyester and vinyl ester resins to open molds.”<sup>3</sup> The proposed monomer limits for resin and gel coat materials are presented in Table 1.

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<sup>1</sup> BAAQMD. Bay Area 2005 Ozone Strategy Control Measure SS-4 BAAQMD Regulation 8, Rule 50: Polyester Resin Operations, Workshop Report. August 2009.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

**Table 1: Proposed Monomer Limits for Resin and Gel Coat Materials**

<b>Gel Coats and Resin Materials</b>	<b>Monomer Percentage by Weight as Applied</b>
<b>Gel Coats</b>	
Clear Gel Coats	
Marble Resin Gel Coats	42%
Boat Manufacturing Gel Coats	48%
All Other Clear Gel Coats	44%
Pigmented Gel Coats	
White and Off-White Gel Coats	30%
Non-White Boat Manufacturing Gel Coats	33%
Other Non-White Gel Coats	37%
Primer Gel Coats	28%
Specialty Gel Coats	48%
<b>Resins</b>	
	10% with fillers or 32%
Marble Resins	without fillers (a)
Solid Surface Resins	17%
	24% with fillers or 35%
Tub/Shower Resins	without fillers (a)
Boat Manufacturing (atomized)	28%
Boat Manufacturing (non-atomized)	35%
	31% with fillers or 35%
Lamination Resins	without fillers (a)
Fire Retardant Resins	38%
Corrosion Resistant, High Strength, and Tooling Resins	
Non-atomizing Mechanical Application	46%
Filament Application	42%
Manual Application	40%
Other Resins	35%

Note:

(a) As supplied by manufacturers

Sources: BAAQMD; BAE, 2009.

These amendments would fulfill Bay Area 2005 Ozone Strategy Control Measure SS-4, and manufacturers would need to begin producing compliant products by October 1, 2010. Currently, VOC emissions from the application of resins and gel coats in composite operations in the Bay Area total 0.8 tons per day (tpd). In addition, the polyester resin operations also emit approximately 0.8 tpd of Toxic Air Contaminants (TAC) because styrene, a monomer that is typically used in polyester resin operations, is a TAC. The use of cleaning products associated with resin and gel coat operations contribute an additional 0.5 tpd of VOC. The proposed amendments to Rule 8-50 would achieve a reduction in VOC emissions of 0.46 tpd or about 35 percent of the Bay Area's polyester resin related emissions.

# Regional Trends

This section provides background information on the demographic and economic trends for the San Francisco Bay Area, which represents the BAAQMD’s District. The San Francisco Bay Area includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties. Regional trends are compared to statewide demographic and economic patterns since 2000, in order to show the region’s unique characteristics relative to the State.

## Regional Demographic Trends

Table 2 shows the population and household trends for the nine county Bay Area and California between 2000 and 2009. During this time, the Bay Area’s population increased by 8.9 percent, compared to 13.3 percent in California. Likewise, the number of Bay Area households grew by 7.7 percent, compared to a 10.7 percent statewide increase.

**Table 2: Population and Household Trends, 2000-2009**

<u>Bay Area (a)</u>	<u>2000</u>	<u>2009 (est.)</u>	<u>Percent Change 2000-2009</u>
<b>Population</b>	6,640,974	7,230,189	8.9%
<b>Households</b>	2,466,020	2,656,487	7.7%
<b>Average Household Size</b>	2.69	2.72	
 <b>California</b>			
<b>Population</b>	33,051,896	37,432,601	13.3%
<b>Households</b>	11,502,871	12,733,414	10.7%
<b>Average Household Size</b>	2.87	2.94	

Note:

(a) Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties.

Sources: California, Department of Finance, 2009; BAE 2009.

The slower growth in the Bay Area is related to its relatively built out environment, compared to the state overall. While Central Valley locations, such as the Sacramento region, experienced large increases in the number of housing units, the Bay Area, which was relatively built out before the housing boom, only experienced moderate increases in housing units.



## Regional Economic Trends

In the five-year period between the third quarters of 2003 and 2008, the Bay Area's economic base grew by 3.9 percent, increasing from 3.21 million jobs to 3.34 million jobs. This growth was somewhat slower than growth for the State, which grew by 4.7 percent during the same time period.

The three largest private (non-government) sectors in the Bay Area's economy are Manufacturing; Retail Trade; and Professional, Scientific & Technical Services, each of which constituted approximately 10 percent of the region's total jobs in 2008. Over the five-year period the Manufacturing sector lost five percent of its jobs, while the Retail Trade sector was relatively stagnant, losing one percent of its jobs. However, during this period, the Professional, Scientific, and Technical Services sector grew by 24 percent.

Statewide, the Manufacturing sector declined by eight percent while Retail Trade and Professional, Scientific, and Technical Services grew by three and 19 percent, respectively. Overall, the Bay Area's economic base reflects the state's base, sharing a similar distribution of employment across sectors. Table 3 shows the jobs by sector in 2003 and 2008. Most of the industries that would be affected by the proposed change to Regulation 8-50 belong to the Manufacturing sector, while repair jobs are categorized under Other Services. While manufacturing represents a relatively large portion of the region's job base, employment within this sector contracted between 2003 and 2008.

**Table 3: Jobs by Sector, 2003-2008 (a)**

Industry Sector	Bay Area					California				
	2003 (b)		2008 (c)		% Change 2003-2008	2003 (b)		2008 (c)		% Change 2003-2008
	Jobs	% Total	Jobs	% Total		Jobs	% Total	Jobs	% Total	
Agriculture, Forestry, Fishing and Hunting	17,710	1%	18,725	1%	6%	377,944	3%	392,535	3%	4%
Mining	1,744	0%	973	0%	-44%	20,406	0%	26,340	0%	29%
Construction	177,987	6%	178,147	5%	0%	784,565	5%	782,505	5%	0%
Manufacturing	361,948	11%	343,673	10%	-5%	1,532,004	10%	1,414,511	9%	-8%
Utilities	4,639	0%	5,498	0%	19%	55,239	0%	58,493	0%	6%
Wholesale Trade	91,775	3%	116,686	3%	27%	645,987	4%	705,159	5%	9%
Retail Trade	335,893	10%	333,990	10%	-1%	1,588,998	11%	1,635,570	11%	3%
Transportation and Warehousing	51,995	2%	54,032	2%	4%	406,254	3%	430,029	3%	6%
Information	117,546	4%	114,937	3%	-2%	471,860	3%	467,870	3%	-1%
Finance and Insurance	150,174	5%	136,692	4%	-9%	610,777	4%	571,945	4%	-6%
Real Estate and Rental and Leasing	61,693	2%	58,086	2%	-6%	273,325	2%	274,806	2%	1%
Professional, Scientific, and Technical Services	277,412	9%	344,565	10%	24%	909,716	6%	1,079,097	7%	19%
Management of Companies and Enterprises	67,779	2%	60,908	2%	-10%	255,557	2%	205,632	1%	-20%
Administrative and Waste Services	177,198	6%	185,002	6%	4%	931,115	6%	945,574	6%	2%
Educational Services	63,905	2%	76,018	2%	19%	227,601	2%	271,970	2%	19%
Health Care and Social Assistance	283,259	9%	305,578	9%	8%	1,269,614	9%	1,407,845	9%	11%
Arts, Entertainment, and Recreation	48,740	2%	59,821	2%	23%	235,375	2%	252,856	2%	7%
Accommodation and Food Services	252,693	8%	219,673	7%	-13%	1,161,169	8%	1,308,555	8%	13%
Other Services, except Public Administration	137,155	4%	156,866	5%	14%	641,046	4%	738,330	5%	15%
Unclassified	342	0%	11,901	0%	3380%	48,534	0%	72,511	0%	49%
Government (d)	445,545	14%	448,109	13%	1%	2,360,572	16%	2,456,041	16%	4%
<b>Subtotal</b>	<b>3,127,132</b>	<b>97%</b>	<b>3,229,880</b>	<b>97%</b>	<b>3.3%</b>	<b>14,807,658</b>	<b>100%</b>	<b>15,498,174</b>	<b>100%</b>	<b>4.7%</b>
Additional Suppressed/Confidential Employment (e)	85,993	3%	109,612	3%		-2	0%	1	0%	
<b>Total, All Employment</b>	<b>3,213,125</b>	<b>100%</b>	<b>3,339,492</b>	<b>100%</b>	<b>3.9%</b>	<b>14,807,656</b>	<b>100%</b>	<b>15,498,175</b>	<b>100%</b>	<b>4.7%</b>

Notes:

(a) Includes all wage and salary employment covered by unemployment insurance.

(b) Represents annual employment for 2003.

(c) Represents annual employment for 2008.

(d) Government employment includes workers in all local, state and Federal sectors, not just public administration. For example, all public school staff are in the Government category.

(e) Employment for some industries were suppressed by EDD due to the small number of firms reporting in the industry for a given jurisdiction.

Sources: California Employment Development Department, 2009; BAE, 2009.

## **Affected Industries**

Affected industries primarily consist of furniture and fixture manufacturing, auto repair, plastics and resin manufacturing, ship and boat building and repair, aircraft manufacturing and repair, military vehicle manufacturing, musical instrument manufacturing, and bare printed circuit board manufacturing.

According to the US Census, the Bay Area had 2,250 firms classified in these industries in 2007. These firms accounted for a significant number of jobs in the Bay Area, totaling over 28,120 jobs (See Table 4). Furniture stores hold the greatest concentration of affected jobs, with approximately 8,230 jobs in 2007. However, as not all firms in these categories engage in manufacturing and repair using polyester resins, only some would be affected. BAAQMD staff estimate that only 60 firms in the Bay Area would be affected.

**Table 4: Profile of Affected Industries, 2007**

NAICS	Industry Description	Employment (a)	Number of Establishments by Size of Workforce							Total
			1-4	5-9	10-19	20-49	50-99	100-249	250+	
325211	Plastics Material and Resin Manufacturing	264	3	1	1	1	4	0	0	10
325991	Custom Compounding of Purchased Resins	(a)	3	2	2	1	1	0	0	9
32619	Other Plastics Product Manufacturing	5,312	36	21	25	30	21	10	3	146
327999	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	58	5	1	1	2	1	0	0	10
3366	Ship and Boat Building	128	11	3	4	1	1	1	0	21
334412	Bare Printed Circuit Board Manufacturing	3754	15	11	4	16	10	10	2	68
336411	Aircraft Manufacturing	(a)	1	0	1	0	0	0	1	3
336992	Military Armored Vehicle, Tank, and Tank Component Manufacturing	(a)	0	0	0	0	0	0	1	1
337110	Wood Kitchen Cabinet and Countertop Manufacturing	2,208	127	61	26	19	8	1	0	242
339992	Musical Instrument Manufacturing	68	9	3	3	1	0	1	0	17
442299	All Other Home Furnishings Stores	8,227	222	134	112	58	37	7	0	570
713930	Marinas	510	33	20	17	5	0	1	0	76
811121	Automotive Body, Paint, and Interior Repair and Maintenance	7,325	390	246	173	85	3	0	0	897
811198	All Other Automotive Repair and Maintenance	<u>161</u>	<u>152</u>	<u>19</u>	<u>0</u>	<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>176</u>
	<b>Affected Industries Total</b>	<b>28,015 0</b>	<b>1,007</b>	<b>522</b>	<b>369</b>	<b>224</b>	<b>86</b>	<b>31</b>	<b>7</b>	<b>2,246</b>

Note:

(a) Some employment is suppressed and is not included in the total.

Sources: US Census; BAE, 2009.

# Socio-Economic Impacts

This section discusses the methodology, economic profile of the affected industry, annualized compliance costs, and estimates of the economic impacts associated with the proposed amendment to Rule 8-50.

## Methodology

In order to estimate the economic impacts of amending Rule 8-50 on the affected industry, this report compares the affected industry's annualized compliance costs with its profit ratios. The analysis uses data from the BAAQMD, US Census County Business Patterns, the IRS, and Dun and Bradstreet, a private data vendor.

The BAAQMD identifies the following industries as affected by the proposed amendments to reduce emissions of Volatile Organic Compounds (VOCs) by reducing the monomer content and VOC limits on polyester resins: Plastics Material and Resin Manufacturing (NAICS 325211), Custom Compounding of Purchased Resins (NAICS 325991), Other Plastics Product Manufacturing (NAICS 32619), Ship and Boat Building (NAICS 3366), Bare Printed Circuit Board Manufacturing (NAICS 334412), Aircraft Manufacturing (NAICS 336411), Military Armored Vehicle, Tank, and Tank Component Manufacturing (NAICS 336992), Wood Kitchen Cabinet and Countertop Manufacturing (NAICS 337110), Musical Instrument Manufacturing (NAICS 339992), All Other Home Furnishing Stores (NAICS 442299), Marinas (NAICS 713930), Automotive Body, Paint, and Interior Repair and Maintenance (NAICS 811121), and All Other Automotive Repair and Maintenance (NAICS 811198). According to the 2007 NAICS County Business Patterns, there are approximately 2,250 firms that could be associated with polyester resin manufacturing and repair in the region; however, BAAQMD records identify approximately 60 firms in the Bay Area that would be subject to the proposed amendment. In addition, BAAQMD staff contacted polyester resin suppliers who verified that there are approximately 60 regional manufacturing and repair firms that use polyester resins.

In order to maintain confidentiality of firm sales and profit data, this report uses three larger industry classes to analyze the economic impacts of the proposed rule. Firms engaged in manufacturing or repairing materials for use in fixtures, furniture, or infrastructure are categorized into the Furniture and Fixture Manufacturing and Repair class and account for 31 firms or approximately 52 percent of total affected firms. Firms engaged in manufacturing or repairing modes of transportation (e.g., airplanes, cars, trains, etc.) are classified into the Transportation Manufacturing and Repair class and represent approximately 29 percent of total affected firms, while firms engaged in the manufacture or repair of electronics (e.g., circuit boards, etc.) are classified as Electrical Equipment Manufacturing and Repair firms and account for the remaining 19 percent of total affected firms.

## Economic Profile of Affected Industries

Table 5 shows the average sales and number of employees for each class of affected industries. According to Dun & Bradstreet data, the average firm in the Furniture and Fixture Manufacturing sector has approximately eight employees and average annual sales of approximately \$834,660. The average firm in the Transportation Manufacturing and Repair sectors has three employees and average annual sales of approximately \$265,460, while the average firm in the Electrical Equipment Manufacturing and Repair sector has an average of 176 employees and \$620.2 million.

**Table 5: Sales of Affected Industries, 2008**

Sector/# of Employees	Number of Businesses	Avg. Annual Annual Sales	Average # of Employees	Total Sales	Total Employees
<b>FURNITURE AND FIXTURE MANUFACTURING (a)</b>					
1-4	20	\$194,358	2	\$3,878,389	37
5-9	5	\$812,308	7	\$3,975,904	36
10-19	2	\$1,461,150	12	\$2,750,660	23
20-49	3	\$3,025,000	27	\$9,111,446	82
50-99	1	\$6,366,667	60	\$6,366,667	60
100-249	0	\$0	0	\$0	0
250+	0	\$34,800,000	252	\$0	0
<b>Total</b>	<b>31</b>	<b>\$834,658</b>	<b>8</b>	<b>\$26,083,064</b>	<b>239</b>
<b>TRANSPORTATION MANUFACTURING AND REPAIR (b)</b>					
1-4	12	\$165,645	2	\$1,987,746	26
5-9	2	\$517,031	6	\$1,034,063	12
10-19	1	\$1,623,750	13	\$1,623,750	13
20-49	0	\$2,216,154	24	\$0	0
50-99	0	\$0	0	\$0	0
100-249	0	\$34,000,000	100	\$0	0
250+	0	\$2,000,000	1,614	\$0	0
<b>Total</b>	<b>18</b>	<b>\$265,460</b>	<b>3</b>	<b>\$4,645,558</b>	<b>51</b>
<b>ELECTRICAL EQUIPMENT MANUFACTURING AND REPAIR (c)</b>					
1-4	4	\$190,571	2	\$762,286	7
5-9	1	\$1,401,429	7	\$1,401,429	7
10-19	2	\$3,175,000	14	\$6,350,000	29
20-49	2	\$4,492,225	27	\$8,984,450	54
50-99	0	\$6,200,000	50	\$0	0
100-249	0	\$18,144,073	126	\$0	0
250+	1	\$6,959,550,000	1,880	\$6,959,550,000	1880
<b>Total</b>	<b>11</b>	<b>\$620,182,059</b>	<b>176</b>	<b>\$6,977,048,165</b>	<b>1,977</b>

Notes:

(a) Includes all affected NAICS codes related to furniture and fixture manufacturing and repair, including: 325211, 325991, 32619, 327999, 337110, and 442299.

(b) Includes all affected NAICS codes related to transportation manufacturing, including: 3366, 336411, 336992, 713930, 811121, 811198.

(c) Includes all affected NAICS codes related to electrical equipment manufacturing, including: 334412

Sources: US Census; Dun and Bradstreet; BAAQMD; BAE, 2009.

The majority of affected firms (36 out of the total 60, or 60 percent) are small businesses, employing

between one and four employees. For these firms, the average number of employees is two and the average annual sales are calculated to be \$184,360.

Based on IRS data on total sales and net income for the various categories of affected firms, firms average between a 3.4 and 9.6 percent rate of return on total sales. Table 6 presents the average profits for affected of varying sizes based on an average rate of return per major affected category (e.g., furniture and fixtures, transportation, etc.).

**Table 6: Profits of Affected Industries**

Sector/# of Employees	Number of Businesses	Average Annual Sales	Avg. Return on Sales	Avg. Profits Per Firm	Total Profits
<b>FURNITURE AND FIXTURE MANUFACTURING</b>					
1-4	20	\$194,358	6.4%	\$12,468	\$248,798
5-9	5	\$812,308	6.4%	\$52,109	\$255,053
10-19	2	\$1,461,150	6.4%	\$93,733	\$176,454
20-49	3	\$3,025,000	6.4%	\$194,053	\$584,497
50-99	1	\$6,366,667	6.4%	\$408,420	\$408,420
100-249	0	\$0	6.4%	\$0	\$0
250+	0	\$34,800,000	6.4%	\$2,232,413	\$0
<b>Total</b>	<b>31</b>	<b>\$26,083,064</b>		<b>\$2,993,197</b>	<b>\$1,673,223</b>
<b>TRANSPORTATION MANUFACTURING AND REPAIR</b>					
1-4	12	\$165,645	3.4%	\$5,618	\$67,411
5-9	2	\$517,031	3.4%	\$17,534	\$35,068
10-19	1	\$1,623,750	3.4%	\$55,067	\$55,067
20-49	0	\$2,216,154	3.4%	\$75,157	\$0
50-99	0	\$0	3.4%	\$0	\$0
100-249	0	\$34,000,000	3.4%	\$1,153,052	\$0
250+	0	\$2,000,000	3.4%	\$67,827	\$0
<b>Total</b>	<b>18</b>	<b>\$4,645,558</b>		<b>\$1,374,254</b>	<b>\$157,546</b>
<b>ELECTRICAL EQUIPMENT MANUFACTURING AND REPAIR</b>					
1-4	4	\$190,571	9.6%	\$18,319	\$73,276
5-9	1	\$1,401,429	9.6%	\$134,714	\$134,714
10-19	2	\$3,175,000	9.6%	\$305,202	\$610,403
20-49	2	\$4,492,225	9.6%	\$431,822	\$863,644
50-99	0	\$6,200,000	9.6%	\$595,984	\$0
100-249	0	\$18,144,073	9.6%	\$1,744,126	\$0
250+	1	\$6,959,550,000	9.6%	\$668,997,106	\$668,997,106
<b>Total</b>	<b>11</b>	<b>\$6,977,048,165</b>		<b>\$672,227,273</b>	<b>\$670,679,143</b>

Sources: US Census; Dunn and Bradstreet; IRS; BAAQMD; BAE, 2009.

As Table 6 shows, affected firms have estimated annual net profits that generally ranging from \$5,600 to \$431,800 depending on the firm's industry and size, with one large firm estimated to have net profits of approximately \$670 million annually. Total annual profits from all smaller affected businesses (less than 100 employees) equals approximately \$3.5 million. When the one large firm is also included, total annual profits for all affected businesses equals \$672.5 million.<sup>4</sup>

<sup>4</sup> It should be noted that since profit ratios come from the IRS, these profit rates represent the profit rate on net taxable income after depreciating capital equipment and writing down bad debt.

## **Description of Compliance Costs**

There are several methodologies to determine the compliance costs associated with amending Rule 8-50. The BAAQMD's Workshop Report specifies that there are a few different ways that different businesses can comply with the new regulation, including switching to lower content gel coats and resins. In addition, firms that use resin coatings can also modify their spray guns.

### ***Ongoing Costs***

BAAQMD staff estimate that 80 to 90 percent of all affected firms with the exception of those that use marble resin gel coats are currently in compliance with the proposed monomer limits. For those firms that need to switch to lower monomer gel coats and resins, BAAQMD staff estimate that the cost of switching will be approximately \$0.05 per pound of material switched. Using existing throughput estimates, the annual ongoing implementation costs would range between nine dollars and \$24,970 per firm. Firms in the Furniture and Fixture Manufacturing and Repair sector would have the highest annual ongoing costs, while smaller firms in the Electrical Equipment Manufacturing and Repair sector would have the lowest.

The analysis uses data from BAAQMD to assume that 31 percent of materials in the Furniture and Fixture Manufacturing and Repair sector would not be in compliance with the proposed amendment, including 7.5 percent of materials that are clear gel coats and 25 percent of other resins that would need to be replaced with a lower monomer content version. The analysis assumes that 100 percent of materials used by the other sectors would need to be replaced.

### ***Capital Costs***

In addition, firms that use resins will be required to comply with the proposed non-atomizing spray gun requirement, which requires firms to use more efficient spray gun technologies that result in reduced emissions and enhanced transfer efficiencies of applying resin to a mold. BAAQMD staff estimate that about one half of the affected firms use resins and would be subject to the proposed capital requirement. In total, the affected firms would purchase 16 spray guns. Those firms that purchase non-atomizing spray gun equipment will also incur capital compliance costs. BAAQMD estimates that the capital costs for purchasing new spray equipment will cost approximately \$10,000 per spray gun system. This analysis assumes that capitalization of new equipment will occur over the first 10 years, and that annual operating and maintenance costs would be an additional \$393 per year. Thus, the annualized costs of new spray equipment would be approximately \$1,393.

### ***Total Compliance Costs***

The total compliance costs for the 60 complying regional firms were calculated by multiplying the number of businesses times their average annual pounds of high monomer material used times the average annual incremental cost per pound of material. This total is then added to the total annualized capital costs, in this case the additional costs of 16 new non-atomizing spray gun systems.

Table 7 presents a detailed estimate of the compliance costs to firms in each of the affected industries using the methodology described above. As Table 7 shows, the total annualized compliance costs to



manufacturing firms would be approximately \$130,390.

**Table 7: Annualized Compliance Costs**

Sector/# of Employees	Number of Businesses	Avg. Annual lbs. of Materials	Cost per lb. of Material	Annualized Ongoing Costs Per Firm	Annualized Capital Costs Per Gun (a)	Number of Guns	Total Annual Costs
<b>FURNITURE AND FIXTURE MANUFACTURING</b>							
1-4	20	15,551	\$0.05	\$778	\$1,393	1	\$17,037
5-9	5	61,478	\$0.05	\$3,074	\$1,393	1	\$16,521
10-19	2	101,567	\$0.05	\$5,078	\$1,393	1	\$10,498
20-49	3	227,902	\$0.05	\$11,395	\$1,393	2	\$37,689
50-99	1	499,511	\$0.05	\$24,976	\$1,393	2	\$27,425
100-249	0	0	\$0.05	\$0	\$1,393	0	\$0
250+	0	2,097,945	\$0.05	\$104,897	\$1,393	0	\$0
<b>Total</b>	<b>31</b>	<b>1,988,389</b>				<b>7</b>	<b>\$109,170</b>
<b>TRANSPORTATION MANUFACTURING AND REPAIR</b>							
1-4	12	2,287	\$0.05	\$114	\$1,393	3	\$5,581
5-9	2	6,588	\$0.05	\$329	\$1,393	1	\$2,680
10-19	1	13,868	\$0.05	\$693	\$1,393	2	\$2,821
20-49	0	25,727	\$0.05	\$1,286	\$1,393	0	\$0
50-99	0	0	\$0.05	\$0	\$1,393	0	\$0
100-249	0	107,195	\$0.05	\$5,360	\$1,393	0	\$0
250+	0	1,730,135	\$0.05	\$86,507	\$1,393	0	\$0
<b>Total</b>	<b>18</b>	<b>54,483</b>				<b>6</b>	<b>\$11,082</b>
<b>ELECTRICAL EQUIPMENT MANUFACTURING AND REPAIR</b>							
1-4	4	183	\$0.05	\$9	\$1,393	0	\$52
5-9	1	747	\$0.05	\$37	\$1,393	0	\$53
10-19	2	1,462	\$0.05	\$73	\$1,393	0	\$206
20-49	2	2,769	\$0.05	\$138	\$1,393	0	\$391
50-99	0	5,128	\$0.05	\$256	\$1,393	0	\$0
100-249	0	12,889	\$0.05	\$644	\$1,393	0	\$0
250+	1	192,820	\$0.05	\$9,641	\$1,393	3	\$13,615
<b>Total</b>	<b>11</b>	<b>202,761</b>				<b>3</b>	<b>\$14,317</b>

Note:

(a) Assumes one new non-atomizing spray gun system costs \$10,000, and will be capitalized over ten years. Operations and maintenance will cost an additional \$393 per year, for a total annualized cost of \$1,393.

Sources: BAAQMD; BAE, 2009.

## Affected Industry Economic Impact analysis

In order to determine the impacts of facilities of various sizes, this analysis uses average revenue estimates from Dun & Bradstreet, in conjunction with IRS profit ratios, to determine whether the estimated annualized compliance costs would result in profit losses of 10 percent or more. The California Air Resources Board (ARB) uses the 10 percent threshold as a proxy for burden, where profit losses greater than 10 percent indicate a potential for significant adverse economic impacts. Table 8 shows the annualized compliance costs as a share of total profits. This analysis estimates compliance costs using the ARB's methodology.

**Table 8: Total Annualized Compliance Costs as a Share of Total Profits**

Sector/# of Employees	Number of Businesses	Total Sales	Total Profits	Total Annualized Compliance Costs	Compliance Costs as a Share of Annual Profits
<b>FURNITURE AND FIXTURE MANUFACTURING</b>					
1-4	20	\$3,878,389	\$248,798	\$17,037	6.8%
5-9	5	\$3,975,904	\$255,053	\$16,521	6.5%
10-19	2	\$2,750,660	\$176,454	\$10,498	5.9%
20-49	3	\$9,111,446	\$584,497	\$37,689	6.4%
50-99	1	\$6,366,667	\$408,420	\$27,425	6.7%
100-249	0	\$0	\$0	\$0	0.0%
250+	0	\$0	\$0	\$0	0.0%
<b>Total</b>	<b>31</b>	<b>\$26,083,064</b>	<b>\$1,673,223</b>	<b>\$109,170</b>	<b>6.5%</b>
<b>TRANSPORTATION MANUFACTURING AND REPAIR</b>					
1-4	12	\$1,987,746	\$67,411	\$5,581	8.3%
5-9	2	\$1,034,063	\$35,068	\$2,680	7.6%
10-19	1	\$1,623,750	\$55,067	\$2,821	5.1%
20-49	0	\$0	\$0	\$0	0.0%
50-99	0	\$0	\$0	\$0	0.0%
100-249	0	\$0	\$0	\$0	0.0%
250+	0	\$0	\$0	\$0	0.0%
<b>Total</b>	<b>18</b>	<b>\$4,645,558</b>	<b>\$157,546</b>	<b>\$11,082</b>	<b>7.0%</b>
<b>ELECTRICAL EQUIPMENT MANUFACTURING AND REPAIR</b>					
1-4	4	\$762,286	\$73,276	\$52	0.1%
5-9	1	\$1,401,429	\$134,714	\$53	0.0%
10-19	2	\$6,350,000	\$610,403	\$206	0.0%
20-49	2	\$8,984,450	\$863,644	\$391	0.0%
50-99	0	\$0	\$0	\$0	0.0%
100-249	0	\$0	\$0	\$0	0.0%
250+	1	\$6,959,550,000	\$668,997,106	\$13,615	0.0%
<b>Total</b>	<b>11</b>	<b>\$6,977,048,165</b>	<b>\$670,679,143</b>	<b>\$14,317</b>	<b>0.0%</b>

Sources: BAAQMD; BAE, 2009.

Overall, annualized compliance costs represent between 0.0 and 8.3 percent of profits for all firms. Compliance costs are lowest for Electrical Equipment Manufacturing and Repair businesses, averaging 0.0 percent of profits and are highest for Transportation Manufacture and Repair businesses averaging 7.0

percent of profits. For all business and sectors, compliance costs are well below the 10 percent threshold.

## **Consumer Impacts**

Consumers indirectly purchase most polymer resins when they purchase cabinets, furniture, bathroom sinks, other household furniture and fixture products, computers, and auto body repair services. As marble resin gel coats don't yet exist that meet the proposed monomer level, manufacturers using marble resin gel coats would be able to pass along 100 percent of their cost increases to consumers through higher furniture and fixture prices. However, as 75 percent of other resins are currently compliant with the proposed other resin monomer limits there are already compliant products on the market; thus, firms using other resins won't likely be able to pass all of the cost increases along to consumers and remain competitive. Therefore, manufacturers that use marble resin gel coats would likely be able to pass cost increases on to customers, while manufacturers that use other resins would likely need to absorb some portion of their costs.

## **Affected Industry and Regional Employment Impacts**

Since on average, the proposed Rule amendment would not result in significant economic impacts to firms within the affected industries, and consumers could bear some portion compliance cost burden, amending the Rule would not impact the affected industry or regional employment.

## **Regional Indirect and Induced Impacts**

Indirect and induced impacts refer to regional multiplier effects of increasing or decreasing regional economic activity. If the Rule were to significantly impact local businesses, any closures would result in direct regional economic losses. Firms would no longer buy goods from local suppliers, thereby resulting in reduced indirect impacts, or business-to-business expenditures. In addition, firms would no longer employ regional residents, resulting in reduced induced impacts, or household spending.

However, since the proposed amendment to the Rule is not expected to result in significant direct impacts, its adoption would not result in any indirect or induced impacts either.

# Impact on Small Businesses

According to California Government Code 14835, a small business is any business that meets the following requirements:

- Must be independently owned and operated;
- Cannot be dominant in its field of operation;
- Must have its principal office located in California;
- Must have its owners (or officers in the case of a corporation) domiciled in California; and
- Together with its affiliates, be either:
  - A business with 100 or fewer employees, and an average annual gross receipts of \$10 million or less over the previous three tax years, or
  - A manufacturer with 100 or fewer employees.

Using these definitions, approximately 98 percent of all affected firms are small businesses. As shown in Table 8, this analysis finds that firms with lower revenues would not experience higher impacts on return on profits as a result of the proposed amendment to the rule.