Draft Economic Impacts Assessment for Regulation of Ozone Emissions from Indoor Air Cleaning Devices

Research Division
California Air Resources Board

June 14, 2007

Draft Economic Impacts Assessment for Regulation of Ozone Emissions from Indoor Air Cleaning Devices

A. Economic Impacts

1. Summary

The potential economic impacts of the regulation will primarily be cost increases to most manufacturers to certify air cleaners, i.e., to meet testing and labeling requirements. About 60 manufacturers and their distributors may be affected. For most manufacturers of intentional ozone generators (OG) and a few manufacturers of By-Product devices (BP: devices that emit ozone as a by-product of their design), this certification also will require redesign of some products to meet ozone emission limits. The potential economic impact for most manufacturers is estimated to be insignificant relative to total sales. However, some smaller manufacturers of OG and BP devices will be impacted over the short-term. The potential economic impacts on distributors, retailers, and consumers, are estimated to be minimal, except for those distributors whose suppliers choose not to provide a compliant product.

2. Affected Businesses and Agencies

The proposed regulation will affect the manufacturers, distributors, and sellers of portable air cleaners for occupied spaces if the products are marketed for sale in California. Staff estimated that about 60 manufacturers may be affected, and that their combined annual California sales averaged approximately $40,000,000 per year from 2003-2006, as discussed in the following section.

Only a few of the manufacturers are based in California: three large manufacturers (Jarden Consumer Solutions, Sharper Image, and Biotech Research), and at least three smaller manufacturers (Aqua Sun Ozone International, Zojirushi America Corporation, Wein Products). A large majority of the actual manufacturing is done under contract with manufacturers in Asia, according to industry representatives.

ARB is the only state agency directly affected by this regulation. The California Department of Health Services, a few other state agencies, and some local health agencies such as health departments and district attorneys may also be affected, to a negligible extent.

3. Potential Impacts on Businesses

a) Manufacturers

Industry-wide information on the number of air cleaner manufacturers, the number of models to be certified and the likely cost of redesign and certification is not currently available. Consequently, ARB staff sent a confidential market survey and a follow-up

survey to all major manufacturers of portable air cleaners, and to known manufacturers of ozone generators. The survey asked about annual sales volume, price mark-ups, the number of models to be certified, the number of employees, and sales distribution channels. It also asked about the expected costs to redesign products, conduct ozone and safety tests, and label the products affected by the regulation.

Only six manufacturers responded to these ARB requests for information. Nearly all of the responses supplied information on sales volumes, distribution channels, and employee numbers, but not on the number of models to be certified and the expected costs. Detailed, comprehensive listings of all manufacturers and models of air cleaners sold in California were not available. Therefore, to estimate the number of manufacturers affected and the number of models that will require certification under the regulation, ARB staff used available sources of information on air cleaner models on the market, including the followlng:

- The list of ozone generator models on the ARB website (ARB, 2006).
- The final report and data from a statewide survey of residential air cleaner use (Lee *et al*., 2006).
- The listing of portable air cleaner models, brands, and their Clean Air Delivery Rates (CADR) by the Association of Home Appliance Manufacturers (AHAM, 2007).
- The websites of various manufacturers.

Based on the information indicated above, ARB staff estimated that a total of 61 manufacturers have current models of air cleaners that would need to be certified in the first year (Year 1) after the effective date of the regulation (see Table 1). About eight of those manufacturers are large manufacturers, based on their share of the California market (Lee *et al*., 2006).

Staff also estimated that the California sales of air cleaners in 2003-2006 averaged about $40,000,000 per year. This estimate is based on household sales purchase data from the California survey by Lee *et al*. (2006). This estimate is consistent with estimated California sales of $41,000,000 for 2006, derived from an interpolation of national estimates of $275,000,000 in 2003 and $485,000,000 in 2013 (Freedonia, 2004), after adjusting for California's relative population size of 12% of the national population. Freedonia (2004) estimated that the U.S. market would grow by 76% from 2003 to 2013.

Table 1: Estimated Number of Air Cleaner Models to Be Certified, By Type of Portable Air Cleaner

A Type of Air Cleaner	B Average # of Models per Manufacturer [5]	C # of Manufacturers in Category	D Total # of Models to be Certified (B X C)
Ozone Generators [1]			
Small Share	3	10	30
Large Share	6	2	12
Subtotal	NA	12	42
By-Product Devices [2,3]			
Small Share	3	22	66
Large Share	7	4	28
Subtotal	NA	26	94
Mechanical Devices [2,3,4]			
Small Share	3	21	63
Large Share	8	2	16
Subtotal	NA	23	79
Total	**NA**	**61**	**215**

Notes:

1. The number of models per Ozone Generator (OG) manufacturer was compiled from ARB (2006). The number of OG manufacturers was compiled from Lee *et al*. (2006).
2. The number of By-Product (BP) device manufacturers and market share are from a California statewide survey (Lee *et al*., 2006, Appendix B, and brand name data). Brands made by the same manufacturer were identified using the CADR directory list (AHAM, 2007). For Mechanical devices, the number of models was estimated using the same approach described above for BP devices.
3. Older models that are currently in retail and distribution channels but are no longer produced are assumed to be phased out by the time the regulation is in effect.
4. Assumes that about half of the models from Small Share Producers that are on the CADR list are currently marketed in California and are considered Mechanical devices.
5. NA: not applicable.

Number of Models to Be Certified

The following definitions of types of air cleaners were used to distinguish among different levels of ozone emissions and the resultant certification costs:

- Ozone Generators (OG): devices that intentionally produce ozone.

- By-Product (BP) Devices: devices that produce ozone as a by-product of their air cleaning technology. BP High Emitter Devices are BP devices that produce ozone emission concentrations near or above the UL 867 standard.

- Mechanical Devices (M): devices that only use filtration with a physical barrier, and non-electronic techniques; they produce *de minimis* ozone emissions.

Based on the available information indicated above, ARB estimated that a total of 215 models of air cleaners will need to be certified in the first year (Year 1) after the effective date of the regulation (Table 1).

The results in Table 1 are listed for the three general types of portable air cleaner technologies. Each type of air cleaner is also broken down into Large Share and Small Share, based on the brand prevalence (market share) in the California survey data (Lee *et al*., 2006). Brands were combined when they had the same manufacturer, based on the CADR list and product websites. Staff assumed all models other than those with only cosmetic differences such as color would require certification. Staff also assumed that older models that are currently in retail and distribution channels, but no longer produced, will be phased out by the time the regulation is in effect. Note that the CADR directory lists at total of about 30 manufacturers of BP or Mechanical devices, while the California survey (Lee *et al*., 2006) indicates about 40 manufacturers after subtracting those brands made by the same manufacturer. This difference is attributed to the fact that not all manufacturers are AHAM members with CADR listings.

The total number of models to be certified was estimated by multiplying the average number of models per manufacturer (column B) by the number of manufacturers in the category (column C). The total number of models was estimated to be 215 models: 42 OG models, 94 BP models, and 79 mechanical models. As seen in Table 1, the estimated average numbers of models were similar among manufacturers in the same market share category. The Large Share manufacturers were estimated to produce 6-8 models on average, while Small Share manufacturers were estimated to produce 3 models on average. The available lists of manufacturers and models are not completely comprehensive, so these estimates may be an underestimate for the current market. However, once this regulation is adopted, staff expects some smaller OG manufacturers to drop out of the California market and other manufacturers to streamline the number of models they market in California to reduce their compliance costs.

For OGs, the number of models per manufacturer was compiled from the list of OG models (ARB, 2006) and the manufacturers' websites, and the number of manufacturers was compiled from Lee *et al*. (2006). Model information was updated for the top two manufacturers (Large Share) which make up over 90% of the California market for OGs (Lee *et al*., 2006): Alpine Air / Ecoquest and Biotech / Edenpure. Alpine and Ecoquest products were assumed to be from the same manufacturer because they market some of the same products and have historically been connected. Alpine / Ecoquest has 10 different OG models listed on their websites. Biotech / Edenpure has 2

OG models on their website. The average number of models among the Large Share manufacturers of OGs is 6 models.

Among the remaining 31 OG manufacturers on the ARB list (Small Share), none were found in more than 2% of the households with OGs in the California survey (Lee *et al.,* 2006). The number of models in the Small Share category ranged from 1-6, with an average of 3 models.

For By-Product (BP) devices, the number of manufacturers was estimated by first counting the different brands sold in California (Lee *et al*., 2006, Appendix B, and brand name data for first and second air cleaners, by air cleaner type). Next, the brands most commonly found in California (Large Share) and the brands made by the same manufacturer were identified. Then, the websites of these brands were checked for current models for sale. The Large Share manufacturers comprise about 75% of the units reported in this category, and consist of the following manufacturers:

- Sharper Image currently lists 5 models of BPs on their website.

- Oreck lists 2 BP models on their website.

- Jarden Consumer Solutions / The Holmes Group (JCS/THG) makes air cleaner models under the brand names of not only Bionaire, but also under Arm and Hammer, Family Care, General Electric, and Holmes (AHAM, 2007). Bionaire and Holmes each have almost 40 models on the CADR list, but their websites currently list only 6 and 4 BP models for sale, respectively. Arm and Hammer has 2 BP models currently on their website, and a web listing of GE air cleaners could not be found. This suggests that JCS/THG has a total of about 12 current BP models.

- The Kaz website indicates they make 4 Honeywell BP models, 2 Enviracaire BP models, and 4 Vicks BP models, suggesting a total model number of 10 BP models for Kaz.

Based on these results, staff estimated the range of BP model numbers for Large Share is about 2-12 models, with an average of 7 models per manufacturer.

The remaining 22 BP manufacturers were considered Small Share manufacturers. The large majority of these manufacturers have only 1-4 models on the CADR list, and not all of those models are BP devices. Only a few manufacturers had higher numbers of models, i.e., in the 5-18 models range. Based on inspection of websites for several manufacturers, staff estimated typically half of the models on the CADR list are currently produced and fall into the BP category. Although a few manufacturers have many models on the CADR list, a much smaller number are actually BP models that are currently marketed. For example, Hunter Fan / Casablanca has 66 models on the CADR list, but their website lists only 18 models of BPs currently marketed. The three other manufacturers that have 8-11 models on the CADR list (3M, Hung Hsing, and

Winix) currently have only 0, 6, and 5 BP devices listed on their website, respectively. Therefore, staff estimated the number of BP models for Small Share manufacturers has a range of 1-18; because the distribution is skewed, staff estimated an average of 3 models per Small Share manufacturer.

For mechanical devices, the number of models was estimated using the same approach described above for BP devices. The most commonly found brands (Large Share) in the California survey were Honeywell (made by Kaz) and Holmes (made by JCS). These brands comprised over 50% of the units reported in this category. These manufacturers currently list 11 and 4 different mechanical models on their websites, respectively, for an average of 8 models per manufacturer.

All but one of the mechanical device manufacturers in the Small Share category have 1-8 models on the CADR list. Hunter Fan Company / Casablanca has 66 fans listed, but their website lists only 11 mechanical devices. Therefore, assuming about half of the models from Small Share manufacturers are currently marketed and are considered mechanical devices, staff estimated manufacturers of mechanical devices produce a range of 1-4 models, with average of 3 models per manufacturer.

The available lists of manufacturers and models are not comprehensive, so these estimates may be an underestimate for the current market. On the other hand, many of the BP and mechanical models in the Small Share groups may actually be made by one the Large Share manufacturers, or be in the same "model group" regarding ozone test requirements. However, once this regulation is adopted, some smaller manufacturers may decide to drop out of the California market, and other manufacturers may streamline their model assortment to reduce their certification costs.

Cost of Certification to Manufacturers

The cost to manufacturers to comply with this regulation would vary widely, depending on the type of air cleaner and the number of models made. First, estimates were developed for the initial costs per model for manufacturers to redesign, test ozone emissions, and label their products (Table 2). The BP category was broken into two categories – High Emitters and Low Emitters – because of potential differences in certification costs. A range of initial costs for a single model was obtained from test laboratories currently performing the UL 867 and UL 507 tests and from AHAM, and staff used the mid-points of the cost ranges. The assumptions for the estimates in columns A, B, and C are provided in the footnotes to Table 3.

The sum of these costs per model is shown in column D of Table 2. The Total Initial Cost per manufacturer ranged from $14,500 to $51,500 per model. In column E, the initial costs were annualized, assuming a 5% discount rate over 5 years, to estimate the real cost over the product life. A product life of 5 years is typically used for research activities and equipment, so it is an appropriate time period for air cleaner redesign, testing, and labeling. The Years 1-5, Annualized Initial Costs, shown in column E of Table 2, ranged from $3,300 to $11,900 per model.

Table 2: Initial Certification Costs per Model

A Year 1 Redesign Cost ($/model)	B Year 1 UL Testing ($/model) [1]	C Year 1 UL Labeling ($/model) [2]	D Total Initial Cost ($/model) (A+B+C)	E Years 1-5, Annualized Initial Cost ($/yr) [3]
OG				
20,000	14,000	17,500	51,500	11,900
BP High Emitter				
10,000	12,000	10,000	32,000	7,400
BP Low Emitter				
0	10,000	10,000	20,000	4,600
Mechanical				
0	4,500	10,000	14,500	3,300

Notes:

1. Assumptions: UL ozone test costs for UL 867 Clarification Sec. 37 protocol, at 3 settings, no 2nd units tested.
   OG cost: 2 ozone pre-tests ($2,000 each), plus 1 UL Test ($10,000), totals $14,000.
   BP High Emitter: 1 ozone pretest ($2,000), plus 1 UL test ($10,000), totals $12,000.
   BP Low Emitter: 1 UL test ($10,000).
   Mechanical: $4,500 for UL 507 certification; no ozone tests.
2. OG: mid-point of 5,000 - $30,000, equals $17,500. BP and Mechanical: midpoint of $5,000 - $15,000, equals $10,000.
3. Total Initial Cost discounted at 5% over Years 1-5. Rounded to the nearest $100.

In Table 3, the potential costs for manufacturers were estimated using the annualized initial costs, plus ongoing costs due to model turnover. The Model Turnover Cost in Years 2-5 (column C) were estimated by assuming 10% of the models on average would be replaced by new models that required testing and labeling only.

In addition, Table 3 shows the Years 1-5 Total Cost per Manufacturer in column E for each category of manufacturer. The Years 1-5 Annualized Initial Cost in column B was multiplied by 5 years, and the Year 2-5 Model Turnover Cost in column C was multiplied by 4 years. The sum of these two values was then multiplied by the Average Number of Models per Manufacturer in column D to yield the Years 1-5 Total Cost per Manufacturer in column E. This value was then divided by 5 years to yield the Annual Average Cost per Manufacturer (column F).

Table 3: Typical Costs to Manufacturers

Total Cost per Model			Typical Cost per Manufacturer		
A Year 1 Initial Cost ($/model) (Table 2)	B Years 1-5, Annualized Initial Cost ($/yr) (Table 2)	C Years 2-5, Model Turnover Cost per Model ($/yr) [1]	D Average # of Models per Mfr (Table 1)	E Years 1-5 Total Cost per Mfr ($)[2] Dx(5B+4C)	F Annual Average Cost per Mfr ($/yr) (E / 5)
OG					
Small Share					
51,500	11,900	3,200	3	217,000	43,400
Large Share					
51,500	11,900	3,200	6	434,000	86,800
BP - High					
Small Share					
32,000	7,400	2,200	3	137,000	27,400
Large Share					
32,000	7,400	2,200	7	321,000	64,200
BP - Low					
20,000	4,600	2,000	3	93,000	18,600
Large Share					
20,000	4,600	2,000	7	217,000	43,400
Mechanical					
Small Share					
14,500	3,300	1,500	3	68,000	13,600
Large Share					
14,500	3,300	1,500	8	180,000	36,000

Notes:

1. Assumption: 10% model turnover per year; only testing and labeling needed. Ongoing costs in Years 2-5 = (B + C from Table 2) x 10%. Rounded to nearest $100.
2. Includes annualized costs and ongoing costs. Rounded to nearest $1,000.

The estimated Years 1-5 Total Costs per Manufacturer range from $68,000 to $434,000. The total costs are greatest for the OG group, followed in declining order by the BP High Emitter group, the BP Low Emitter group, and the Mechanical group. As expected, the total costs estimated for the Small Share manufacturers in all categories are about ½ those of the Large Share manufacturers. These differences are largely due to different costs for redesign and labeling, and the number of models to be certified. The estimated Annual Average Cost per Manufacturer ranges from $13,600 to $86,800.

Smaller businesses will likely be impacted more by the increased costs for product certification. The Annual Average Cost for Large Share manufacturer was estimated to be about $36,000 to $86,800, as shown in Table 3. These costs are practically insignificant compared to annual sales for manufacturers in this group, which are estimated to reach $50-120 million worldwide. For Small Share manufacturers, the Annual Average costs were estimated to be about $13,600 to $43,400 per year, while their sales were estimated to be $500,000 or less per year. However, because air cleaners appear to have a markup or profit margin on the order of 40-60%, the actual economic impact of the regulation is expected to be relatively insignificant for typical Small Share manufacturers, as well. In addition, the annual costs would decline rapidly after Year 5, reflecting only the ongoing costs from model turnover.

The potential impact of certification costs on the profits of manufacturers is shown in Table 4. The Annual Sales per Manufacturer (column B), as estimated above, were multiplied by 0.5, assuming a 50% markup on costs, to estimate Annual Profits per Manufacturer (column C). Then the Annual Average Cost (column D) was divided by the annual profits (column C) to estimate the percent change in profits for each category of manufacturers (column E).

Table 4: Potential Impact on Profits of Manufacturers

A Type of Air Cleaner	B Annual Sales per Mfr ($/yr)	C Annual Profits per Mfr ($/yr) (0.5 x B)	D Annual Average Cost per Mfr ($/yr) (Table 3)	E % Loss in Profitability (100 x D / C) [1]
OG				
Small Share	500,000	250,000	43,400	17.4
Large Share	50,000,000	25,000,000	86,800	0.3
BP High Emitter				
Small Share	500,000	250,000	27,400	11.0
Large Share	50,000,000	25,000,000	64,200	0.3
BP Low Emitter				
Small Share	500,000	250,000	18,600	7.4
Large Share	50,000,000	25,000,000	43,400	0.2
Mechanical				
Small Share	500,000	250,000	13,600	5.4
Large Share	50,000,000	25,000,000	36,000	0.1

Notes:

1. Calculation assumes a 50% retail markup.

ARB has consistently used a threshold of a 10% decrease in profits as an indicator of significant impacts on a company's profitability. Estimates for all but two categories of manufacturers are below this threshold, as shown in Table 4. The Small Share manufacturers in the OG and BP High Emitter categories are estimated to have profit decreases of about 17% and 11%, respectively. Therefore, staff does not expect the regulation to have a significant impact on the long-term profitability of manufacturers, although there may be short term impacts on some of the Small Share manufacturers.

Cost to All Manufacturers

In order to estimate the total cost of the regulation for all manufacturers combined, the total costs for all types of air cleaners were estimated for Years 1-5 (Table 5).

Table 5: Total Potential Cost to All Manufacturers, Years 1-5

A Type of Air Cleaner	B # of Models [1] (Table 1)	C Year 1 Annualized Cost per Model ($/yr) (Table 3)	D Year 2-5 Model Turnover Cost per Model ($/yr) (Table 3)	E Year 1-5 Total Industry Cost ($) [2] [Bx(5C+4D)]	F Year 1-5 Average Industry Cost ($/yr), (E / 5) [2]
OG	42	11,900	3,200	3,036,600	607,300
BP High Emitter	19	7,400	2,200	870,200	174,000
BP Low Emitter	75	4,600	2,000	2,325,200	465,000
Mechanical	79	3,300	1,500	1,777,500	355,500
TOTAL INDUSTRY COSTS				**8,000,000**	**1,600,000**

Notes:

1. Assumed that 20% of By-Product devices are high emitters, and 80% are low emitters.
2. Rounded to nearest $100. Totals rounded to nearest $100,000.

For each category of air cleaner, the Years 1-5 Annualized Cost (column C) was multiplied by 5 years, and the Year 2-5 Model Turnover Cost per Model (column D) was multiplied by 4 years. The sum of these two values was then multiplied by the Average Number of Models per category of air cleaner type (column B). This yields the Years 1-5 Total Industry Costs, shown in column E. For this table, the BP models were apportioned into two categories: 20% were estimated to be High Emitter, and 80% were

estimated to be Low Emitters. Staff based this apportionment on an estimated number of ionizer and photocatalytic oxidation model with ozone emissions that may approach or exceed the UL 867 limit of 0.05 ppmv.

Column E values were divided by 5 to estimate the Years 1-5 Total Average Industry Cost per Year, as shown in column F. The Year 1-5 Total Industry Costs based on the sum for all types of air cleaners, was estimated to be $8.0 million. The Total Average Industry Cost is estimated at $1.6 million per year over the first 5 years (column F). The annual average would decline rapidly after Year 5 because only the model turnover costs would be a factor.

b) Distributors and Retailers

OG devices are distributed much differently than BP and mechanical devices. For example, California survey results indicate that 26% of OG owners report purchasing their unit from an independent distributor, 24% at a retail store, 19% from the Internet, and 29% from "somewhere else" (primarily "over the phone") (Lee *et al*., 2006). In contrast, 64% of BP owners report purchasing their units at a retail store, and 15% report purchasing via the Internet (Lee *et al*., 2006). Staff estimated some OG manufacturers sell as much as 80 to 100% of their units through independent distributors.

Economic impacts on distributors and retailers as a whole in California are expected to be insignificant, but may be significant for small distributors and retailers of some OG brands. Some OG manufacturers have indicated that they will provide products that meet California certication requirements, so their distributors and retailers should not be affected significantly unless there is a temporary shortage of product. Some companies may decide to leave the California market, especially some Small Share manufacturers of OGs, because the redesign and certification cost impacts for OGs are high compared to the other types of air cleaners. For the distributors and retailers of OGs that are 1- or 2-person businesses, impacts from the regulation may be substantial, depending on whether or not the manufacturers decide to certify air cleaners for the California market.

For BP and mechanical devices, the increased costs to manufacturers are expected to be relatively insignificant, and should not affect distributors and retailers unless there is a temporary shortage of product. In addition, for all types of air cleaners, the proposed sell-through period will allow manufacturers to sell existing inventory or perhaps continue selling it in other states. This sell-through provision would help minimize any potential impacts of the regulations on distributors and retailers.

4. Potential Impacts on Consumers

Potential economic impacts of the regulation on consumers in California were estimated by calculating the potential impacts on retail prices to consumers (Table 6). First, the Average Number of Units Sold per Year in California (column A) was calculated using the 2003-2006 sales data by air cleaner category from the California survey (Lee *et al*.,

2006) and averaged over 3.5 years. The median sales prices in column B also were taken from the California survey. The Average Industry Cost per Year for All Manufacturers per year (column C) for each category was taken from Table 5, and adjusted for a 50% retail markup (column D). This adjusted cost was then divided by the Average Number of Units Sold per Year (column A), to yield the Average Price Increase per Unit (column E).

The results shown in Table 6 indicate that the Average Price Increase per Unit (column E) would potentially be $11 to $16. This translates into a Percent Increase in Median Retail Price (column F) of 5% to 12%. Because many of the manufacturers of mechanical air cleaners already have UL certification and would not need to have additional UL testing, their equivalent price increase is likely to be much less than 12%. In addition, manufacturers in general may choose to absorb these costs because their customers are price-sensitive and the manufacturers' markup is currently about 40-60%. Therefore, the actual impact of these cost increases is expected to be invisible and insignificant to consumers.

Table 6: Potential Cost to Consumer

A Avg. # of Units Sold per Year in CA, 2003-2006 (units/yr) [1]	B Median Retail Price ($/unit) [2]	C Average Industry Cost: All Mfrs ($/yr) (Table 5) [3]	D Average Industry Cost with 50% Markup ($/yr) (1.5 x C) [4]	E Average Price Increase per Unit ($/unit) (D / A) [5]	F % Increase in Median Retail Price (100 x E / B)
OG					
55,600	$300	607,300	911,000	16	5
BP					
74,400	$250	639,000	958,500	13	5
Mechanical					
49,900	$90	355,500	533,300	11	12

Notes:

1. Based on California data on percent of households buying OG between 2003 and mid-2006, averaged over 3.5 yr (Lee *et al*., 2006). Rounded to nearest 100.
2. Based on California data for (Lee *et al*. 2006).
3. From Table 5. Total costs for BP High & Low Emitter mfrs from Table 5 are added to get an overall cost for BPs. Rounded to nearest $100.
4. Assumption: 50% retail markup on cost increases to manufacturer. Rounded to nearest $100.
5. Manufacturers will probably absorb these costs because their customers are price-sensitive and the manufacturers' markup is currently about 40-60%.

5. Potential Impact on Business Competitiveness

The proposed regulation would have no noticeable impact on the ability of California manufacturers to compete with manufacturers of similar products in other states. This is because all manufacturers that produce indoor air cleaning devices for sale in California are subject to the proposed regulation regardless of their location. Only a few of these manufacturers are located in California. In addition, the proposed regulation is expected to cause a negligible increase in the retail price of indoor air cleaning devices which is unlikely to dampen the demand for these products in California.

6. Potential Impact on Business Creation, Elimination, or Expansion

The proposed regulation is likely to have a small impact on the status of the manufacturing of indoor air cleaning devices in California. Most manufacturers are located outside of California. However, it is likely that some of the Small Share manufacturers will drop out of the California market because of the cost associated with the proposed regulation, especially for those manufacturers that focus primarily on water purification. Some small distributors and retailers may also decide to discontinue the sales of these products in California. However, we do not expect the impact to be significant because indoor air cleaning devices account for only a small share of products carried for sale by these businesses.

Businesses that perform testing and certification for these products, however, may experience an increase in demand for their services.

7. Other Possible Economic Impacts

No other major economic impacts of the regulation are expected. Because the costs to individual manufacturers, distributors, and retailers are estimated to be insignificant or very small, staff does not expect any significant impacts on the number of California jobs or the air cleaner market in California. Two Large Share manufacturers are based in California – Sharper Image and JCS/THG, but the impact on their California jobs and market should be insignificant because they have a large worldwide market and their products are manufactured in Asia. One of the Small Share manufacturers of OGs, Aqua Sun Ozone International, is based in California, but because they also manufacture water purification products, the proposed regulation should not force this company out of business.

References

AHAM, 2007. 2007 Directory of Certified Room Air Cleaners, Edition No. 2 – April 2007. Association of Home Appliance Manufacturers, Washington, DC. http://207.140.180.12/dirsvc/aham.nsf/vwPDF/AirCleanerFull/$file/AirCleanerFullDir.pdf?OpenElement.

ARB, 2006. Hazardous Ozone Generators Sold as Air Purifiers. ARB Research Division, Sacramento, CA. http://www.arb.ca.gov/research/indoor/o3g-list.htm, Updated May 5, 2006.

Freedonia Group, Inc., 2004. Consumer Water Purification & Air Cleaning Systems to 2008. Report No. 1829. Cleveland, OH.

Lee RH, J Hayes, Piazza T, 2006. Survey of the Use of Ozone-Generating Air Cleaners by the California Public. Final Research Report. Survey Research Center, University of California, Berkeley, CA. Prepared for California Air Resources Board, Research Division, ARB Contract No. 05-301. ARB Research Division, Sacramento, CA. http://www.arb.ca.gov/research/apr/past/indoor.htm, see Exposure Assessment category.