

SECTION 3.5

COATINGS & RELATED PROCESS SOLVENTS INDUSTRIAL COATINGS

(Updated February 1990; Reissued October 1997)

EMISSION INVENTORY SOURCE CATEGORY

Cleaning & Surface Coatings / Coatings & Related Process Solvents

EMISSION INVENTORY CODES (CES CODES) AND DESCRIPTIONS

230-220-9000-0000	(66613)	Marine Coatings
230-222-9000-0000	(66621)	Paper Coatings
230-224-9000-0000	(66639)	Fabric Coatings
230-226-9000-0000	(66647)	Metal Furniture & Fixture Coatings
230-228-9000-0000	(66654)	Can & Coil Coatings
230-230-9000-0000	(66662)	Metal Parts & Products Coatings
230-232-9000-0000	(66670)	Wood Furniture & Fixture Coatings.
230-995-9000-0000	(46748)	Industrial Coatings (Unspecified)

METHODS AND SOURCES

These categories are used to inventory the total organic gas (TOG) emissions from the application of surface coatings in the manufacturing and industrial sectors.

The following methodology describes how TOG emissions were estimated for 1983. Emission estimates for 1983 were then updated to 1987 (Tables III to X) by using the growth factors listed in Table I. Growth factors for each category vary by county.

Table I: Growth Factors

Category	Growth Parameter	Growth Factor Range
<i>marine ctgs.</i>	employment in manufacturing of transportation equipment (SIC 37)	0.810 to 2.235

<i>paper ctgs.</i>	dollar output from manufacturing of paper and allied products (SIC 26)	1.000 to 2.293
<i>fabric ctgs.</i>	dollar output from manufacturing of textiles (SIC 22)	1.000 to 2.422
<i>metal furniture/fixtures ctgs.</i>	dollar output from manufacturing of furniture (SIC 25)	1.000 to 2.206
<i>wood furniture/fixtures ctgs.</i>		
<i>can & coil ctgs.</i>	Dollar output from the total manufacturing industry (SICs 20-39)	0.964 to 2.338
<i>metal parts & prods. ctgs.</i>		
<i>unspecified industrial ctgs.</i>		0.909 to 2.338

The emission estimates for 1983 are based on national production data from the 1982 Census of Manufacturers, Paint and Allied Products ¹ and the emission factors used for the 1979 emission inventory. ² These emission factors (Table II) were derived from results of 1976 and 1977 surveys of manufacturing industries and paint manufacturers. The surveys include the amounts of surface coatings used and the corresponding emissions. These surveys were conducted by the Stationary Source Division (SSD) of the Air Resources Board (ARB).

Table II: Emission Factors

Category	TOG Emission Factor (lb /1000 gallons of coating)
<i>marine ctgs.</i>	3,617
<i>paper ctgs.</i>	1,717
<i>fabric ctgs.</i>	4,080
<i>metal furniture & fixtures ctgs.</i>	6,240
<i>can & coil ctgs.</i>	3,775
<i>metal parts & products ctgs.</i>	2,000
<i>wood furniture & fixture ctgs.</i>	3,210
<i>unspecified industrial ctgs.</i>	3,210

The amounts of **marine, metal furniture & fixture, can & coil, metal parts & products, and wood furniture & fixtures coatings** are based on the national production data for 1982. It was assumed that the amount used is equal to the amount produced. Production of metal parts and products listed in the 1982 census report was found to be a factor of ten lower than the production reported for 1979. Therefore, the 1982 production reported for this category was multiplied by a correction factor of ten. The 1982 national production of industrial coatings was updated to 1983 by using a growth factor of 1.1508. This growth factor was obtained by dividing the 1983 national production of original equipment manufacturers (OEM) product coatings by the 1982 national production of OEM product coatings. California's use fraction of the industrial coatings (except marine coatings) was estimated by multiplying the national coating production by the ratio of population of California to that of the nation. The distribution of coating consumption in California counties is assumed to be the same as that obtained from the 1977 survey by the SSD, ARB.

Results from the 1977 survey by SSD showed that California used 16.1 percent of the marine coatings produced in the United States. This percentage was applied to the 1982 nationwide production data in order to estimate the usage in California. The 1982 marine coating usage estimate was updated to 1983 by using a 1.1508 growth factor for those emissions related to OEM and a 1.06 growth factor for Special-Purpose Coatings. The growth factor of 1.06 was obtained by dividing the 1983 national production of special purpose coatings by the 1982 national production of special purpose coatings. Distribution of marine coating consumption in California counties is based on the location of shipyards obtained from a 1977 ARB report.

The amount of **paper and fabric coatings** used for 1983 was estimated based on the 1977 survey data and an annual growth factor of 1.68. The total amount of coating used for paper and fabric was divided between paper coatings and fabric coatings using a split of 92.9 and 7.1 percent respectively. The emissions from the use of these coatings were calculated based on composite emission factors estimated from the 1977 SSD survey (Table 1).

The **unspecified industrial coating** category is used to account for emissions from coating usage reported by the Bureau of the Census ³ that is not inventoried in any point source or area source category. It includes the use of varnishes (insulating and industrial) and industrial lacquers (wood and others). Emissions from this category are estimated by summing all of the OEM and Special Purpose Coatings not already covered by the other industrial coatings categories. The production of this group of OEM coatings listed in the 1982 Bureau of the Census was updated to 1983 by using a 1.1508 growth factor. Usage of special purpose coatings is updated from 1982 to 1983 by using a 1.06 growth factor.

ASSUMPTIONS

1. The national production data from the Bureau of Census represent the amount of industrial coatings consumed nationwide.
2. The amounts of industrial coatings (except marine coatings) used in California can be estimated from national production data multiplied by the ratio of California population to that of the nation.
3. The ratio of marine coatings used in California in 1977 to the production of marine coatings in the United States in 1977 (16.1%) still applies in 1983 for use in estimating the usage of marine coatings in California.
4. The 1983 distribution of marine coatings usage to the counties can be based on 1977 data on the distribution of the 13 shipyards in California.
5. The 1983 distribution of industrial coatings usage and emissions to the counties can be based on the distribution obtained from the 1977 ARB survey.
6. A composite emission factor for unspecified industrial surface coatings operations can be based on data obtained from the 1977 ARB survey.
7. The 1983 paper and fabric coatings emissions can be estimated based on data and growth factors obtained from the results of the 1977 ARB survey and the California EDD manufacturing data.

COMMENTS AND RECOMMENDATIONS

Based on the 1977 extensive surveys of major surface coating operations, the Stationary Source Division of the ARB has developed suggested control measures for volatile organic gas emissions from industrial coating operations. Resurvey is necessary to determine the impact of the control on the usage of surface coating products. Updated usage data would improve emission estimates.

Some industrial surface coating operations (e.g. wood furniture coatings) not surveyed by the ARB may need further investigation to ascertain the amounts, solvent contents, and emissions from the use of these coatings.

TEMPORAL ACTIVITY

The application of industrial coatings is assumed to be uniform throughout the year. During the week, the activity is uniform on weekdays and reduced on the weekend. Daily activity occurs during a normal working shift (8am to 4pm) with no activity during the remainder of the day.

SAMPLE CALCULATIONS

1. Growth Factor Calculation

Growth factors from 1982 to 1983 were based on national production data from the Current Industrial Reports, Bureau of the Census. The growth factors are calculated as follows for OEM product and special purpose coatings.

a) OEM Product Coatings:

$$\frac{1983 \text{ national production } 331,083 \times 10^3 \text{ gal}}{1982 \text{ national production } 287,702 \times 10^3 \text{ gal}} = 1.1508 = \text{growth factor}$$

b) Special Purpose Coatings:

$$\frac{1983 \text{ national production } 129,026 \times 10^3 \text{ gal}}{1982 \text{ national production } 121,607 \times 10^3 \text{ gal}} = 1.0610 = \text{growth factor}$$

2. Usage Estimation

Metal furniture and fixtures coatings will be used as an example to estimate usage in CA and emissions for CA and Alameda County in 1983.

a) (1982 nationwide production of metal furniture & fixtures coatings in gallons) x (Growth Factor from 1982 to 1983) = (1983 nationwide production of metal furniture & fixtures coatings)

$$11.1 \text{ million gallons} \times 1.1508 = 12.8 \text{ million gallons}$$

b) Assume that production equals usage.

c) (1983 number of gallons of metal furniture & fixtures used in CA) =

$$12.8 \text{ million gal} \times (\% \text{ population of CA/USA})$$

$$(12.8 \text{ million gal}) \times (10.1\%) = 1.28 \text{ million gallons}$$

3. Emissions Estimate

Total TOG emissions in tons/yr from the use of metal parts & products coatings in Alameda Co. is estimated as follows:

$$\begin{aligned} & \text{(1983 usage of metal parts} & \times & \text{(\% used in} & \times & \text{(Emission} & \times & \text{(\underline{1 ton})} \\ & \text{and product coatings in CA)} & & \text{Alameda Co.} & & \text{Factor)} & & \text{(2000 lb)} \\ & & & \text{based on 1977} & & & & \\ & & & \text{ARB survey)} & & & & \end{aligned}$$

$$= (1.28 \text{ million gal}) \times (3.97\%) \times \frac{(6,240 \text{ lb})}{(1000 \text{ gal})} \times \frac{(1 \text{ ton})}{(2000 \text{ lb})}$$

$$= 158.5 \text{ tons emissions per year}$$

REFERENCES

1. Bureau of the Census, U.S. Department of Commerce. 1982 Census of Manufacturers, Paint and Allied Products (M7 7C-I 28E) (June 1984).
2. Air Resources Board, State of California. Methods for Assessing Area Source Emissions in California (December 1982).
3. Bureau of the Census, U.S. Department of Commerce. Current Industrial Reports - Paint, Varnish and Lacquer (M28F(84)-1) (Jan. 1984).
4. Air Resources Board, State of California. Consideration of a Proposed Model Rule For the Control of Volatile Organic Compounds From Marine Coating Operations (June 1978).
5. Air Resources Board, State of California. Consideration of a Proposed Model Rule for the Control of Volatile Organic Compounds From Paper and Fabric Coating Operations (August 1978).
6. Air Resources Board, State of California, Stationary Source Division. Survey of Paint and Other Manufacturers Industries (1977).
7. California Employment Development Department. Wages and Salary Employment, by Industry, California, 1972-1979.

PREPARED BY

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Table III
 1987 Area Source Emissions
 Activity: Manufacturing & Industrial
 Process: Surface Coating
 Entrainment: Coating Material-Evap
 Dimn: Industrial
 CES: 46748

Process Rate Unit: 1000 Gallons of Coating

AB	County	Process Rate	TOG Emis. (Tons / Year)	CO Emis. (Tons / Year)	NOX Emis. (Tons / Year)	SOX Emis. (Tons / Year)	PM Emis. (Tons / Year)
GBV	ALPINE	1	1467.26	0.00	0.00	0.00	0.00
	INYO	12	19.86	0.00	0.00	0.00	0.00
	MONO	9	14.21	0.00	0.00	0.00	0.00
LC	LAKE	31	50.77	0.00	0.00	0.00	0.00
LT	EL DORADO	20	33.12	0.00	0.00	0.00	0.00
	PLACER	10	12.66	0.00	0.00	0.00	0.00
MC	AMADOR	16	25.96	0.00	0.00	0.00	0.00
	CALAVERAS	19	30.81	0.00	0.00	0.00	0.00
	EL DORADO	48	77.09	0.00	0.00	0.00	0.00
	MARIPOSA	8	13.19	0.00	0.00	0.00	0.00
	NEVADA	51	83.80	0.00	0.00	0.00	0.00
	PLACER	15	24.28	0.00	0.00	0.00	0.00
	PLUMAS	13	23.04	0.00	0.00	0.00	0.00
	SIERRA	2	3.88	0.00	0.00	0.00	0.00
	TUOLUMNE	28	46.55	0.00	0.00	0.00	0.00
NC	DEL NORTE	14	21.93	0.00	0.00	0.00	0.00
	HUMBOLDT	81	131.42	0.00	0.00	0.00	0.00
	MENDOCINO	54	86.54	0.00	0.00	0.00	0.00
	SONOMA	40	65.57	0.00	0.00	0.00	0.00
	TRINITY	10	16.34	0.00	0.00	0.00	0.00
NCC	MONTEREY	208	335.23	0.00	0.00	0.00	0.00
	SAN BENITO	18	30.53	0.00	0.00	0.00	0.00
	SANTA CRUZ	182	292.24	0.00	0.00	0.00	0.00
NEP	LASSEN	17	27.75	0.00	0.00	0.00	0.00
	MODOC	7	11.31	0.00	0.00	0.00	0.00
	SISKIYOU	32	51.29	0.00	0.00	0.00	0.00
SC	LOS ANGELES	4329	6947.61	0.00	0.00	0.00	0.00
	ORANGE	1868	2997.73	0.00	0.00	0.00	0.00
	RIVERSIDE	379	607.72	0.00	0.00	0.00	0.00
	SAN BERNARDINO	581	932.46	0.00	0.00	0.00	0.00
CC	SAN LUIS OBISPO	129	206.65	0.00	0.00	0.00	0.00
	SANTA BARBARA	220	352.93	0.00	0.00	0.00	0.00
	VENTURA	487	781.82	0.00	0.00	0.00	0.00
SD	SAN DIEGO	1668	2677.83	0.00	0.00	0.00	0.00
SED	IMPERIAL	68	109.98	0.00	0.00	0.00	0.00
	KERN	40	65.71	0.00	0.00	0.00	0.00
	LOS ANGELES	153	246.00	0.00	0.00	0.00	0.00
	RIVERSIDE	147	235.28	0.00	0.00	0.00	0.00
	SAN BERNARDINO	138	222.71	0.00	0.00	0.00	0.00
SF	ALAMEDA	914	1283.00	0.00	0.00	0.00	0.00
	CONTRA COSTA	750	750.25	0.00	0.00	0.00	0.00
	MARIN	170	273.35	0.00	0.00	0.00	0.00
	NAPA	70	11.66	0.00	0.00	0.00	0.00
	SAN FRANCISCO	463	743.19	0.00	0.00	0.00	0.00
	SAN MATEO	428	687.28	0.00	0.00	0.00	0.00
	SANTA CLARA	1518	2436.96	0.00	0.00	0.00	0.00
	SOLANO	116	185.95	0.00	0.00	0.00	0.00
	SONOMA	216	346.76	0.00	0.00	0.00	0.00
SJV	FRESNO	368	592.28	0.00	0.00	0.00	0.00
	KERN	254	408.00	0.00	0.00	0.00	0.00
	KINGS	54	86.95	0.00	0.00	0.00	0.00
	MADERA	52	84.63	0.00	0.00	0.00	0.00
	MERCED	98	157.68	0.00	0.00	0.00	0.00
	SAN JOAQUIN	254	407.41	0.00	0.00	0.00	0.00
	STANISLAUS	194	312.95	0.00	0.00	0.00	0.00
	TULARE	194	311.32	0.00	0.00	0.00	0.00
SV	BUTTE	115	184.94	0.00	0.00	0.00	0.00
	COLUSA	8	14.02	0.00	0.00	0.00	0.00
	GLENN	15	24.86	0.00	0.00	0.00	0.00
	PLACER	112	181.20	0.00	0.00	0.00	0.00
	SACRAMENTO	568	912.91	0.00	0.00	0.00	0.00
	SHASTA	94	151.35	0.00	0.00	0.00	0.00
	SOLANO	42	67.90	0.00	0.00	0.00	0.00
	SUTTER	35	56.47	0.00	0.00	0.00	0.00
	TEHAMA	28	46.48	0.00	0.00	0.00	0.00
	YOLO	84	135.07	0.00	0.00	0.00	0.00
	YUBA	31	49.45	0.00	0.00	0.00	0.00
TOTAL		18398	30285.33	0.00	0.00	0.00	0.00

Fraction of Reactive Organic Gases (FROG): 1.0000
 (Reactive Organic Gases (ROG) Emissions = TOG X FROG)
 Fraction of PM10 (FRPM10): .9600
 (PM10 Emissions = PM X FRPM10)

Table IV
 1987 Area Source Emissions
 Activity: Transportation Equipment
 Process: Surface Coating
 Entrainment: Coating Material-Evap
 Dimn: Marine Vessels
 CES: 66613

Process Rate Unit: 1000 Gallons of Coating

AB	County	Process Rate	TOG Emis. (Tons / Year)	CO Emis. (Tons / Year)	NOX Emis. (Tons / Year)	SOX Emis. (Tons / Year)	PM Emis. (Tons / Year)
GBV	ALPINE	0	0.00	0.00	0.00	0.00	0.00
	INYO	0	0.00	0.00	0.00	0.00	0.00
	MONO	0	0.00	0.00	0.00	0.00	0.00
LC	LAKE	0	0.00	0.00	0.00	0.00	0.00
LT	EL DORADO	0	0.00	0.00	0.00	0.00	0.00
	PLACER	0	0.00	0.00	0.00	0.00	0.00
MC	AMADOR	0	0.00	0.00	0.00	0.00	0.00
	CALAVERAS	0	0.00	0.00	0.00	0.00	0.00
	EL DORADO	0	0.00	0.00	0.00	0.00	0.00
	MARIPOSA	0	0.00	0.00	0.00	0.00	0.00
	NEVADA	0	0.00	0.00	0.00	0.00	0.00
	PLACER	0	0.00	0.00	0.00	0.00	0.00
	PLUMAS	0	0.00	0.00	0.00	0.00	0.00
	SIERRA	0	0.00	0.00	0.00	0.00	0.00
	TUOLUMNE	0	0.00	0.00	0.00	0.00	0.00
NC	DEL NORTE	0	0.00	0.00	0.00	0.00	0.00
	HUMBOLDT	0	0.00	0.00	0.00	0.00	0.00
	MENDOCINO	0	0.00	0.00	0.00	0.00	0.00
	SONOMA	0	0.00	0.00	0.00	0.00	0.00
	TRINITY	0	0.00	0.00	0.00	0.00	0.00
NCC	MONTEREY	0	0.00	0.00	0.00	0.00	0.00
	SAN BENITO	0	0.00	0.00	0.00	0.00	0.00
	SANTA CRUZ	0	0.00	0.00	0.00	0.00	0.00
NEP	LASSEN	0	0.00	0.00	0.00	0.00	0.00
	MODOC	0	0.00	0.00	0.00	0.00	0.00
	SISKIYOU	0	0.00	0.00	0.00	0.00	0.00
SC	LOS ANGELES	896	1621.05	0.00	0.00	0.00	0.00
	ORANGE	0	0.00	0.00	0.00	0.00	0.00
	RIVERSIDE	0	0.00	0.00	0.00	0.00	0.00
	SAN BERNARDINO	0	0.00	0.00	0.00	0.00	0.00
SCC	SAN LUIS OBISPO	0	0.00	0.00	0.00	0.00	0.00
	SANTA BARBARA	0	0.00	0.00	0.00	0.00	0.00
SD	SAN DIEGO	770	1392.27	0.00	0.00	0.00	0.00
SED	IMPERIAL	0	0.00	0.00	0.00	0.00	0.00
	KERN	0	0.00	0.00	0.00	0.00	0.00
	LOS ANGELES	0	0.00	0.00	0.00	0.00	0.00
	RIVERSIDE	0	0.00	0.00	0.00	0.00	0.00
	SAN BERNARDINO	0	0.00	0.00	0.00	0.00	0.00
SF	ALAMEDA	244	440.79	0.00	0.00	0.00	0.00
	CONTRA COSTA	226	409.60	0.00	0.00	0.00	0.00
	MARIN	0	0.00	0.00	0.00	0.00	0.00
	NAPA	0	0.00	0.00	0.00	0.00	0.00
	SAN FRANCISCO	333	601.59	0.00	0.00	0.00	0.00
	SAN MATEO	00	0.00	0.00	0.00	0.00	0.00
	SANTA CLARA	0	0.00	0.00	0.00	0.00	0.00
	SOLANO	140	253.31	0.00	0.00	0.00	0.00
	SONOMA	0	0.00	0.00	0.00	0.00	0.00
SJV	FRESNO	0	0.00	0.00	0.00	0.00	0.00
	KERN	0	0.00	0.00	0.00	0.00	0.00
	KINGS	0	0.00	0.00	0.00	0.00	0.00
	MADERA	0	0.00	0.00	0.00	0.00	0.00
	MERCED	0	0.00	0.00	0.00	0.00	0.00
	SAN JOAQUIN	0	0.00	0.00	0.00	0.00	0.00
	STANISLAUS	0	0.00	0.00	0.00	0.00	0.00
	TULARE	0	0.00	0.00	0.00	0.00	0.00
SV	BUTTE	0	0.00	0.00	0.00	0.00	0.00
	COLUSA	0	0.00	0.00	0.00	0.00	0.00
	GLENN	0	0.00	0.00	0.00	0.00	0.00
	PLACER	0	0.00	0.00	0.00	0.00	0.00
	SACRAMENTO	0	0.00	0.00	0.00	0.00	0.00
	SHASTA	0	0.00	0.00	0.00	0.00	0.00
	SOLANO	51	93.10	0.00	0.00	0.00	0.00
	SUTTER	0	0.00	0.00	0.00	0.00	0.00
	TEHAMA	0	0.00	0.00	0.00	0.00	0.00
	YOLO	0	0.00	0.00	0.00	0.00	0.00
	YUBA	0	0.00	0.00	0.00	0.00	0.00
TOTAL		2660	4811.71	0.00	0.00	0.00	0.00

Fraction of Reactive Organic Gases (FROG): 1.000
 (Reactive Organic Gases (ROG) Emissions = TOG X FROG)
 Fraction of PM10 (FRPM10): .9600
 (PM10 Emissions = PM X FRPM10)

Table V
 1987 Area Source Emissions
 Activity: Paper & Allied
 Process: Surface Coating
 Entrainment: Coating Material-Evap
 Dimm: Paper
 CES: 66621

Process Rate Unit: 1000 Gallons of Coating

AB	County	Process Rate	Tons Emis. (Tons / Year)	CO Emis. (Tons / Year)	NOX Emis. (Tons / Year)	SOX Emis. (Tons / Year)	PM Emis. (Tons / Year)
NC	SONOMA	23	19.63	0.00	0.00	0.00	0.00
SC	LOS ANGELES	5777	4959.70	0.00	0.00	0.00	0.00
	ORANGE	1358	1166.27	0.00	0.00	0.00	0.00
	RIVERSIDE	112	98.24	0.00	0.00	0.00	0.00
	SAN BERNARDINO	209	179.66	0.00	0.00	0.00	0.00
CC	SAN LUIS OBISPO	102	87.40	0.00	0.00	0.00	0.00
	SANTA BARBARA	664	570.11	0.00	0.00	0.00	0.00
	VENTURA	995	854.29	0.00	0.00	0.00	0.00
SED	LOS ANGELES	166	142.26	0.00	0.00	0.00	0.00
	RIVERSIDE	46	40.16	0.00	0.00	0.00	0.00
	SAN BERNARDINO	50	42.94	0.00	0.00	0.00	0.00
SF	ALAMEDA	1	2.55	0.00	0.00	0.00	0.00
	CONTRA COSTA	0	1.46	0.00	0.00	0.00	0.00
	MARIN	0	0.36	0.00	0.00	0.00	0.00
	NAPA	0	0.36	0.00	0.00	0.00	0.00
	SAN FRANCISCO	0	1.46	0.00	0.00	0.00	0.00
	SAN MATEO	0	1.09	0.00	0.00	0.00	0.00
	SANTA CLARA	1	2.92	0.00	0.00	0.00	0.00
	SOLANO	0	0.36	0.00	0.00	0.00	0.00
	SONOMA	0	0.73	0.00	0.00	0.00	0.00
SV	SOLANO	10	9.60	0.00	0.00	0.00	0.00
TOTAL		9514	8181.55	0.00	0.00	0.00	0.00

Fraction of Reactive Organic Gases (FROG): 1.0000
 (Reactive Organic Gases (ROG) Emissions = TOG X FROG)
 Fraction of PM10 (FRPM10): .9600
 (PM10 Emissions = PM X FRPM10)

Table VI
 1987 Area Source Emissions
 Activity: Textiles & Apparel
 Process: Surface Coating
 Entrainment: Coating Material-Evap
 Dimn: Fabric - General
 CES: 66639
 Process Rate Unit: 1000 Gallons of Coating

AB	County	Process Rate	TOG Emis. (Tons / Year)	CO Emis. (Tons / Year)	NOX Emis. (Tons / Year)	SOX Emis. (Tons / Year)	PM Emis. (Tons / Year)
NC	SONOMA	2	5.98	0.00	0.00	0.00	0.00
SC	LOS ANGELES	491	1000.91	0.00	0.00	0.00	0.00
	ORANGE	119	243.46	0.00	0.00	0.00	0.00
	RIVERSIDE	11	21.45	0.00	0.00	0.00	0.00
	SAN BERNARDINO	0	0.00	0.00	0.00	0.00	0.00
SED	LOS ANGELES	14	28.70	0.00	0.00	0.00	0.00
	RIVERSIDE	4	8.30	0.00	0.00	0.00	0.00
	SAN BERNARDINO	5	9.00	0.00	0.00	0.00	0.00
SF	ALAMEDA	76	156.00	0.00	0.00	0.00	0.00
	CONTRA COSTA	22	45.61	0.00	0.00	0.00	0.00
	MARIN	11	22.19	0.00	0.00	0.00	0.00
	NAPA	4	8.26	0.00	0.00	0.00	0.00
	SAN FRANCISCO	54	110.85	0.00	0.00	0.00	0.00
	SAN MATEO	40	81.52	0.00	0.00	0.00	0.00
	SANTA CLARA	96	196.03	0.00	0.00	0.00	0.00
	SOLANO	4	8.36	0.00	0.00	0.00	0.00
	SONOMA	16	31.89	0.00	0.00	0.00	0.00
SV	SOLANO	1	3.10	0.00	0.00	0.00	0.00
TOTAL		970	1981.61	0.00	0.00	0.00	0.00

Fraction of Reactive Organic Gases (FROG): 1.0000
 (Reactive Organic Gases (ROG) Emissions = TOG X FROG)
 Fraction of PM10 (FRPM10): .9600
 (PM10 Emissions = PM X FRPM10)

Table VII
 1987 Area Source Emissions
 Activity: Furniture & Fixtures
 Process: Surface Coating
 Entrainment: Coating Material-Evap
 Dimn: Furnitures
 CES: 66647

Process Rate Unit: 1000 Gallons of Coating

AB	County	Process Rate	Tons Emis. (Tons / Year)	CO Emis. (Tons / Year)	NOX Emis. (Tons / Year)	SOX Emis. (Tons / Year)	PM Emis. (Tons/ Year)
GBV	ALPINE	0	0.00	0.00	0.00	0.00	0.00
	INYO	0	0.00	0.00	0.00	0.00	0.00
	MONO	0	0.00	0.00	0.00	0.00	0.00
LC	LAKE	0	0.00	0.00	0.00	0.00	0.00
LT	EL DORADO	0	0.00	0.00	0.00	0.00	0.00
	PLACER	0	0.00	0.00	0.00	0.00	0.00
MC	AMADOR	0	0.00	0.00	0.00	0.00	0.00
	CALAVERAS	0	0.00	0.00	0.00	0.00	0.00
	EL DORADO	0	0.00	0.00	0.00	0.00	0.00
	MARIPOSA	0	0.00	0.00	0.00	0.00	0.00
	NEVADA	0	0.00	0.00	0.00	0.00	0.00
	PLACER	0	0.00	0.00	0.00	0.00	0.00
	PLUMAS	0	0.00	0.00	0.00	0.00	0.00
	SIERRA	0	0.00	0.00	0.00	0.00	0.00
	TUOLUMNE	0	0.00	0.00	0.00	0.00	0.00
NC	DEL NORTE	0	0.00	0.00	0.00	0.00	0.00
	HUMBOLDT	0	0.00	0.00	0.00	0.00	0.00
	MENDOCINO	0	0.00	0.00	0.00	0.00	0.00
	SONOMA	0	0.00	0.00	0.00	0.00	0.00
	TRINITY	2	6.37	0.00	0.00	0.00	0.00
NCC	MONTEREY	0	0.00	0.00	0.00	0.00	0.00
	SAN BENITO	0	0.00	0.00	0.00	0.00	0.00
	SANTA CRUZ	0	0.00	0.00	0.00	0.00	0.00
NEP	LASSEN	0	0.00	0.00	0.00	0.00	0.00
	MODOC	0	0.00	0.00	0.00	0.00	0.00
	SISKIYOU	0	0.00	0.00	0.00	0.00	0.00
SC	LOS ANGELES	820	2559.62	0.00	0.00	0.00	0.00
	ORANGE	194	604.21	0.00	0.00	0.00	0.00
	RIVERSIDE	17	69.97	0.00	0.00	0.00	0.00
	SAN BERNARDINO	30	94.08	0.00	0.00	0.00	0.00
CC	SAN LUIS OBISPO	0	0.00	0.00	0.00	0.00	0.00
	SANTA BARBARA	0	0.00	0.00	0.00	0.00	0.00
SD	SAN DIEGO	52	160.83	0.00	0.00	0.00	0.00
SED	IMPERIAL	0	0.00	0.00	0.00	0.00	0.00
	KERN	0	0.00	0.00	0.00	0.00	0.00
	LOS ANGELES	23	71.23	0.00	0.00	0.00	0.00
	RIVERSIDE	6	21.09	0.00	0.00	0.00	0.00
	SAN BERNARDINO	6	22.02	0.00	0.00	0.00	0.00
SF	ALAMEDA	59	183.59	0.00	0.00	0.00	0.00
	CONTRA COSTA	16	50.40	0.00	0.00	0.00	0.00
	MARIN	8	25.81	0.00	0.00	0.00	0.00
	NAPA	3	10.12	0.00	0.00	0.00	0.00
	SAN FRANCISCO	12	38.41	0.00	0.00	0.00	0.00
	SAN MATEO	8	25.63	0.00	0.00	0.00	0.00
	SANTA CLARA	21	65.32	0.00	0.00	0.00	0.00
	SOLANO	1	2.56	0.00	0.00	0.00	0.00
	SONOMA	3	9.63	0.00	0.00	0.00	0.00
SJV	FRESNO	4	13.07	0.00	0.00	0.00	0.00
	KERN	0	0.00	0.00	0.00	0.00	0.00
	KINGS	0	0.00	0.00	0.00	0.00	0.00
	MADERA	0	0.00	0.00	0.00	0.00	0.00
	MERCED	0	0.00	0.00	0.00	0.00	0.00
	SAN JOAQUIN	13	41.07	0.00	0.00	0.00	0.00
	STANISLAUS	12	11.21	0.00	0.00	0.00	0.00
	TULARE	0	0.00	0.00	0.00	0.00	0.00
SV	BUTTE	0	0.00	0.00	0.00	0.00	0.00
	COLUSA	0	0.00	0.00	0.00	0.00	0.00
	GLENN	0	0.00	0.00	0.00	0.00	0.00
	PLACER	0	0.00	0.00	0.00	0.00	0.00
	SACRAMENTO	3	10.16	0.00	0.00	0.00	0.00
	SOLANO	1	1.00	0.00	0.00	0.00	0.00
	SUTTER	0	0.00	0.00	0.00	0.00	0.00
	TEHAMA	0	0.00	0.00	0.00	0.00	0.00
	YOLO	0	0.00	0.00	0.00	0.00	0.00
	YUBA	0	0.00	0.00	0.00	0.00	0.00
TOTAL		1314	4097.40	0.00	0.00	0.00	0.00

Fraction of Reactive Organic Gases (FROG): 1.0000
 (Reactive Organic Gases (ROG) Emissions = TOG X FROG)
 Fraction of PM10 (FRPM10): .9600
 (PM10 Emissions = PM X FRPM10)

Table VIII
 1987 Area Source Emissions
 Activity: Manufacturing & Industrial
 Process: Surface Coating
 Entrainment: Coating Material-Evap
 Dimn: Cans Coil
 CES: 66654
 Process Rate Unit: 1000 Gallons of Coating

AB	County	Process Rate	Tons Emis. (Tons / Year)	CO Emis. (Tons / Year)	NOX Emis. (Tons / Year)	SOX Emis. (Tons / Year)	PM Emis. (Tons / Year)
NC	SONOMA	20	38.22	0.00	0.00	0.00	0.00
SC	LOS ANGELES	4860	9172.83	0.00	0.00	0.00	0.00
	ORANGE	1330	2509.61	0.00	0.00	0.00	0.00
	RIVERSIDE	97	183.58	0.00	0.00	0.00	0.00
	SAN BERNARDINO	177	333.67	0.00	0.00	0.00	0.00
SD	SAN DIEGO	0	0.00	0.00	0.00	0.00	0.00
SED	LOS ANGELES	139	263.19	0.00	0.00	0.00	0.00
	RIVERSIDE	38	37.58	0.00	0.00	0.00	0.00
	SAN BERNARDINO	42	59.87	0.00	0.00	0.00	0.00
SF	ALAMEDA	591	1116.21	0.00	0.00	0.00	0.00
	CONTRA COSTA	143	269.61	0.00	0.00	0.00	0.00
	MARIN	82	154.87	0.00	0.00	0.00	0.00
	NAPA	28	52.73	0.00	0.00	0.00	0.00
	SAN FRANCISCO	447	843.92	0.00	0.00	0.00	0.00
	SAN MATEO	367	692.92	0.00	0.00	0.00	0.00
	SANTA CLARA	1032	692.92	0.00	0.00	0.00	0.00
	SOLANO	24	46.18	0.00	0.00	0.00	0.00
	SONOMA	105	202.00	0.00	0.00	0.00	0.00
SJV	SAN JOAQUIN	262	493.84	0.00	0.00	0.00	0.00
	STANISLAUS	247	467.00	0.00	0.00	0.00	0.00
SV	SACRAMENTO	167	315.23	0.00	0.00	0.00	0.00
	SOLANO	8	17.00	0.00	0.00	0.00	0.00
	YOLO	48	93.32	0.00	0.00	0.00	0.00
TOTAL		10254	18056.30	0.00	0.00	0.00	0.00

Fraction of Reactive Organic Gases (FROG): 1.0000
 (Reactive Organic Gases (ROG) Emissions = TOG X FROG)
 Fraction of PM10 (FRPM10): .9600
 (PM10 Emissions = PM X FRPM10)

Table IX
 1987 Area Source Emissions
 Activity: Manufacturing & Industrial
 Process: Surface Coating
 Entrainment: Coating Material-Evap
 Dimn: Metal Parts
 CES: 66662

Process Rate Unit: 1000 Gallons of Coating

AB	County	Process Rate	TOG Emis. (Tons / Year)	CO Emis. (Tons / Year)	NOX Emis. (Tons / Year)	SOX Emis. (Tons / Year)	PM Emis. (Tons / Year)
GBV	ALPINE	0	0.00	0.00	0.00	0.00	0.00
	INYO	0	0.00	0.00	0.00	0.00	0.00
	MONO	0	0.00	0.00	0.00	0.00	0.00
LC	LAKE	0	0.00	0.00	0.00	0.00	0.00
LT	EL DORADO	0	0.00	0.00	0.00	0.00	0.00
	PLACER	0	0.00	0.00	0.00	0.00	0.00
MC	AMADOR	0	0.00	0.00	0.00	0.00	0.00
	CALAVERAS	0	0.00	0.00	0.00	0.00	0.00
	EL DORADO	0	0.00	0.00	0.00	0.00	0.00
	MARIPOSA	0	0.00	0.00	0.00	0.00	0.00
	NEVADA	0	0.00	0.00	0.00	0.00	0.00
	PLACER	0	0.00	0.00	0.00	0.00	0.00
	PLUMAS	0	0.00	0.00	0.00	0.00	0.00
	SIERRA	0	0.00	0.00	0.00	0.00	0.00
	TUOLUMNE	0	0.00	0.00	0.00	0.00	0.00
NC	DEL NORTE	0	0.00	0.00	0.00	0.00	0.00
	HUMBOLDT	0	0.00	0.00	0.00	0.00	0.00
	MENDOCINO	0	0.00	0.00	0.00	0.00	0.00
	SONOMA	57	57.33	0.00	0.00	0.00	0.00
	TRINITY	0	0.00	0.00	0.00	0.00	0.00
NCC	MONTEREY	0	0.00	0.00	0.00	0.00	0.00
	SAN BENITO	0	0.00	0.00	0.00	0.00	0.00
	SANTA CRUZ	0	0.00	0.00	0.00	0.00	0.00
NEP	LASSEN	0	0.00	0.00	0.00	0.00	0.00
	MODOC	0	0.00	0.00	0.00	0.00	0.00
	SISKIYOU	0	0.00	0.00	0.00	0.00	0.00
SC	LOS ANGELES	11853	11852.93	0.00	0.00	0.00	0.00
	ORANGE	3246	3245.59	0.00	0.00	0.00	0.00
	RIVERSIDE	237	236.91	0.00	0.00	0.00	0.00
	SAN BERNARDINO	432	431.74	0.00	0.00	0.00	0.00
CC	SAN LUIS OBISPO	0	0.00	0.00	0.00	0.00	0.00
	SANTA BARBARA	0	0.00	0.00	0.00	0.00	0.00
SD	SAN DIEGO	611	611.42	0.00	0.00	0.00	0.00
SED	IMPERIAL	0	0.00	0.00	0.00	0.00	0.00
	KERN	4	4.18	0.00	0.00	0.00	0.00
	LOS ANGELES	340	340.09	0.00	0.00	0.00	0.00
	RIVERSIDE	96	95.87	0.00	0.00	0.00	0.00
	SAN BERNARDINO	103	103.31	0.00	0.00	0.00	0.00
SF	ALAMEDA	1673	1673.29	0.00	0.00	0.00	0.00
	CONTRA COSTA	404	404.47	0.00	0.00	0.00	0.00
	MARIN	2333	2333.04	0.00	0.00	0.00	0.00
	NAPA	78	78.26	0.00	0.00	0.00	0.00
	SAN FRANCISCO	1152	1151.64	0.00	0.00	0.00	0.00
	SAN MATEO	1039	1038.59	0.00	0.00	0.00	0.00
	SANTA CLARA	2919	2919.34	0.00	0.00	0.00	0.00
	SOLANO	70	70.13	0.00	0.00	0.00	0.00
	SONOMA	303	303.11	0.00	0.00	0.00	0.00
SJV	FRESNO	72	73.16	0.00	0.00	0.00	0.00
	KERN	25	26.05	0.00	0.00	0.00	0.00
	KINGS	0	0.00	0.00	0.00	0.00	0.00
	MADERA	0	0.00	0.00	0.00	0.00	0.00
	MERCED	0	0.00	0.00	0.00	0.00	0.00
	SAN JOAQUIN	65	65.06	0.00	0.00	0.00	0.00
	STANISLAUS	62	61.76	0.00	0.00	0.00	0.00
	TULARE	35	36.05	0.00	0.00	0.00	0.00
SV	BUTTE	36	36.48	0.00	0.00	0.00	0.00
	COLUSA	0	0.00	0.00	0.00	0.00	0.00
	GLENN	0	0.00	0.00	0.00	0.00	0.00
	PLACER	0	0.00	0.00	0.00	0.00	0.00
	SACRAMENTO	146	146.47	0.00	0.00	0.00	0.00
	SHASTA	45	45.25	0.00	0.00	0.00	0.00
	SOLANO	27	27.12	0.00	0.00	0.00	0.00
	SUTTER	0	0.00	0.00	0.00	0.00	0.00
	TEHAMA	0	0.00	0.00	0.00	0.00	0.00
	YOLO	44	44.50	0.00	0.00	0.00	0.00
	YUBA	0	0.00	0.00	0.00	0.00	0.00
TOTAL		27450	27455.81	0.00	0.00	0.00	0.00

Fraction of Reactive Organic Gases (FROG): 1.0000
 (Reactive Organic Gases (ROG) Emissions = TOG X FROG)
 Fraction of PM10 (FRPM10): .9600
 (PM10 Emissions = PM X FRPM10)

Table X
 1987 Area Source Emissions
 Activity: Furniture & Fixtures
 Process: Surface Coating
 Entrainment: Coating Material-Evap
 Dimn: Furnitures Wood
 CES: 66670

Process Rate Unit: 1000 Gallons of Coating

AB	County	Process Rate	TOG Emis. (Tons / Year)	CO Emis. (Tons / Year)	NOX Emis. (Tons / Year)	SOX Emis. (Tons / Year)	PM Emis. (Tons/ Year)
GBV	ALPINE	0	0.00	0.00	0.00	0.00	0.00
	INYO	0	0.00	0.00	0.00	0.00	0.00
	MONO	0	0.00	0.00	0.00	0.00	0.00
LC	LAKE	0	0.00	0.00	0.00	0.00	0.00
LT	EL DORADO	1	1.31	0.00	0.00	0.00	0.00
	PLACER	0	0.57	0.00	0.00	0.00	0.00
MC	AMADOR	2	3.53	0.00	0.00	0.00	0.00
	CALAVERAS	1	1.00	0.00	0.00	0.00	0.00
	EL DORADO	2	2.94	0.00	0.00	0.00	0.00
	MARIPOSA	0	0.00	0.00	0.00	0.00	0.00
	NEVADA	2	4.47	0.00	0.00	0.00	0.00
	PLACER	0	0.92	0.00	0.00	0.00	0.00
	PLUMAS	0	0.00	0.00	0.00	0.00	0.00
	SIERRA	0	0.00	0.00	0.00	0.00	0.00
	TUOLUMNE	0	0.00	0.00	0.00	0.00	0.00
NC	DEL NORTE	3	4.90	0.00	0.00	0.00	0.00
	HUMBOLDT	18	30.13	0.00	0.00	0.00	0.00
	MENDOCINO	12	19.18	0.00	0.00	0.00	0.00
	SONOMA	4	6.71	0.00	0.00	0.00	0.00
	TRINITY	0	0.00	0.00	0.00	0.00	0.00
NCC	MONTEREY	20	32.65	0.00	0.00	0.00	0.00
	SAN BENITO	3	5.60	0.00	0.00	0.00	0.00
	SANTA CRUZ	20	32.71	0.00	0.00	0.00	0.00
NEP	LASSEN	0	0.00	0.00	0.00	0.00	0.00
	MODOC	0	0.00	0.00	0.00	0.00	0.00
	SISKIYOU	5	8.40	0.00	0.00	0.00	0.00
SC	LOS ANGELES	1772	2843.61	0.00	0.00	0.00	0.00
	ORANGE	418	617.03	0.00	0.00	0.00	0.00
	RIVERSIDE	37	59.53	0.00	0.00	0.00	0.00
	SAN BERNARDINO	65	104.71	0.00	0.00	0.00	0.00
SCC	SAN LUIS OBISPO	5	9.04	0.00	0.00	0.00	0.00
	SANTA BARBARA	31	50.22	0.00	0.00	0.00	0.00
	VENTURA	43	68.42	0.00	0.00	0.00	0.00
SD	SAN DIEGO	174	279.13	0.00	0.00	0.00	0.00
SED	IMPERIAL	4	6.30	0.00	0.00	0.00	0.00
	KERN	3	4.41	0.00	0.00	0.00	0.00
	LOS ANGELES	25	29.90	0.00	0.00	0.00	0.00
	RIVERSIDE	14	17.89	0.00	0.00	0.00	0.00
	SAN BERNARDINO	15	18.53	0.00	0.00	0.00	0.00
SF	ALAMEDA	190	305.62	0.00	0.00	0.00	0.00
	CONTRA COSTA	60	97.09	0.00	0.00	0.00	0.00
	MARIN	8	12.29	0.00	0.00	0.00	0.00
	NAPA	8	12.29	0.00	0.00	0.00	0.00
	SAN FRANCISCO	96	153.65	0.00	0.00	0.00	0.00
	SAN MATEO	69	110.38	0.00	0.00	0.00	0.00
	SANTA CLARA	413	662.94	0.00	0.00	0.00	0.00
	SOLANO	9	13.66	0.00	0.00	0.00	0.00
	SONOMA	22	35.50	0.00	0.00	0.00	0.00
SJV	FRESNO	49	79.41	0.00	0.00	0.00	0.00
	KERN	17	27.57	0.00	0.00	0.00	0.00
	KINGS	6	9.80	0.00	0.00	0.00	0.00
	MADERA	5	8.10	0.00	0.00	0.00	0.00
	MERCED	11	18.78	0.00	0.00	0.00	0.00
	SAN JOAQUIN	10	16.62	0.00	0.00	0.00	0.00
	STANISLAUS	42	68.42	0.00	0.00	0.00	0.00
	TULARE	20	31.50	0.00	0.00	0.00	0.00
SV	BUTTE	0	8.97	0.00	0.00	0.00	0.00
	COLUSA	0	0.70	0.00	0.00	0.00	0.00
	GLENN	2	3.10	0.00	0.00	0.00	0.00
	PLACER	4	6.54	0.00	0.00	0.00	0.00
	SACRAMENTO	39	61.91	0.00	0.00	0.00	0.00
	SOLANO	3	5.00	0.00	0.00	0.00	0.00
	SUTTER	4	7.10	0.00	0.00	0.00	0.00
	TEHAMA	5	7.46	0.00	0.00	0.00	0.00
	YOLO	11	19.32	0.00	0.00	0.00	0.00
	YUBA	3	4.90	0.00	0.00	0.00	0.00
TOTAL		3805	6052.36	0.00	0.00	0.00	0.00

Fraction of Reactive Organic Gases (FROG): 1.0000
 (Reactive Organic Gases (ROG) Emissions = TOG X FROG)
 Fraction of PM10 (FRPM10): .96000
 (PM10 Emissions = PM X FRPM10)