

SOURCE INVENTORY

CATEGORIES # 252-253, 256-281

OTHER ORGANIC COMPOUNDS EVAPORATION INDUSTRIAL/COMMERCIAL COATINGS

1999 EMISSIONS

Introduction

These following categories contain the inventory of organic gas emissions that result from the use of industrial coatings, special product coatings, and thinning and clean-up solvents:

- Can and Coil
- Wood Furniture and Cabinet
- Paper Coating
- Fabric and Film
- Plastic Parts and Product
- Magnet Wire
- Large Appliance and Metal Furniture
- Misc. Metal Parts and Small Appliance
- Flat Wood Paneling
- Motor Vehicle Assembly Plants
- Auto Refinishing
- Marine Coating
- Aerospace Assembly
- Other Coatings

These categories are composed of many types of coatings such as enamels, lacquers, varnishes, etc. Organic emissions occur from the evaporation of organic solvents, which result from the application and drying of coatings. In order to calculate emissions, the amount of coatings, the solvent fraction of the coatings, and the amount of thinning and cleanup solvent, should be known. The efficiency of control equipment, such as fume incinerators and condensers and the amount of solvent recycled are all useful variables in determining emissions.

Methodologies

For all permitted plant-sites, the yearly renewal of permits provides updated industrial usage of coatings and the effects of changes to control equipment. Emissions are calculated for each piece of equipment. All large equipment and control equipment are registered, unless exempt. For each category a coatings-usage balance is made between the coatings reported in the permit data bank and the coatings-usage estimated for the category. Coatings-usage not shown in the permit data bank is included in these categories and distributed as emissions from area sources. The area source emission factor and throughput for each relevant category are contained in the Data Section. For each category, there are many differing formulations used; hence, a single composite emission factor is determined for each industrial category. Sources of industrial coatings-shipments are conducted nationally by the U.S. Department of Commerce. An approximation of coating shipments (throughput) for the Bay Area in 1999 can be estimated by

applying the ratio of population for the Bay Area to the national population. This total District throughput value is subtracted from the corresponding point source throughput value to obtain a particular category's area source throughput. Organic emissions are calculated by multiplying the solvent throughput by emission and control factors. The exceptions to this method of area source calculations are as follows:

- Within the Wood Furniture and Cabinet Coating Categories (Cat. 256/257), area source emissions were calculated by estimating the coating usage per facility and determining the number of facilities from the 1998 County Business Pattern Count. The number of facilities were then updated to 1999 values using appropriate annual growth factors for this category.
- For Magnetic Wire Coatings Categories (Cat. 264/265), the District's total throughput was based on the ratio of the number of Bay Area employees versus national employees for this particular industry. The area source throughputs and emissions are calculated similarly to the primary method (as listed above).
- For Auto Refinishing Coating Categories (Cat. 274/275), area source emissions were based on the percentage of non-permitted sources in the Bay Area as provided by the District's Enforcement section. From this, it was (conservatively) estimated that 20% of the emissions were attributed to area sources.

Monthly Variation

Monthly variation in emissions was made proportional to the monthly sales of coatings as reported by the U.S. Department of Commerce in their Current Industrial reports, Paint, Varnish and Lacquer, M28F Series.

County Distribution

Solvent emissions for the Bay Area were apportioned into counties by one of the methods listed below for each industrial coatings category:

- (1) The county location of each company as reported in the District's permit data bank,
- (2) Employee (for a given industry) population distribution,
- (3) Establishment (for a given industry) population distribution.

TRENDS

History

Prior years' emissions for these various categories were estimated using modified Association of Bay Area Governments (ABAG) growth profiles. Depending on the category, the growth profiles were based either on ABAG's Manufacturing Employment or Service Employment. Depending on the category, modification was done to represent actual emissions data, primarily

between the years 1993 – 1999. (Although in some instances, actual emissions data went back to 1987.)

Growth

The projected growth in emissions to the year 2030 for these various categories is based on projected forecasts in growth developed by ABAG. As mentioned previously, depending on the category, the growth profiles were based either on ABAG's Manufacturing Employment or Service Employment.

Control

The control factor is an estimate of reduction of solvent emissions, which takes into account the various strategies used to comply with regulations that are designed to gain an overall reduction of emissions in a particular category. The control factor reflects the proportion of solvent emissions remaining as a result of Regulation 8 and the various rules. The rule effectiveness accounts for the amount of emissions achieved by compliance with the rule. Additional dates and changes in rule effectiveness are incorporated into the calculation as compliance with the rule progresses.