

SOURCE INVENTORY

CATEGORY # 744 - 748

CONSTRUCTION OPERATIONS

1999 EMISSIONS

Introduction

These categories account for fugitive dust emissions generated from construction activities while building residential, commercial, industrial, institutional structures, and roads (Categories # 744 - 748, respectively). The PM emissions result from construction operations such as digging, loading, scraping, grading, compacting, light duty vehicle traffic, etc. Revised emission factors were based on a study done by Midwest Research Institute. It is assumed that all the above mentioned construction operations have the same emission factor. Updated PM10 factors were provided by the California Air Resources Board. Activity data (throughputs) are expressed in terms of acre-months for the above categories.

Methodologies

Residential Construction (Category 744)

The number of new housing units (single and multi-family), provided by the California Department of Finance, is used to calculate the acreage disturbed. The affected construction area for a single family living unit is estimated at 1/7th of an acre for Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara counties; and 1/5th of an acre for Napa, Solano, and Sonoma counties. The affected construction area for multi-family living units is estimated to be 1/20th of an acre. The construction time for residential units is assumed to be 6 months. . The throughput, expressed in acre-months, is estimated by multiplying the appropriate area factors, construction time and number of new units for each county.

Commercial, Industrial, and Institutional Construction (Categories 745 -747)

The estimated construction acreage for these categories are based on project valuations supplied from the California Department of Finance. The valuations for commercial, industrial, and institutional construction are 3.7, 4.0, and 4.4 acres per million dollars of valuation, respectively. Since these factors are 1977 values, inflationary corrections are made by multiplying the 1999 valuations by the ratio of 1977 to 1999 Department of Commerce Implicit Price Deflator for Construction. The construction time for commercial, industrial, institutional buildings is assumed to be 11 months. The

throughput, expressed in acre-months, is found by multiplying the inflationary adjusted project valuation, the 1999 specific county's construction valuation, and construction time.

Road Construction (Category 748)

The road mileage constructed in 1999 was estimated by the difference in the total mileage between 1999 and 1998 data from California Statistical Abstract. The affected area per mile of road for freeways, highways, and county and city roads are 12.1, 9.2, and 7.8 acres/mile, respectively. The construction time for roads is assumed to be 18 months for the average project. The throughput, expressed in acre-months, is estimated by multiplying the road construction miles, affected area per mile of road factor, and project duration time.

The emission factor (which includes any controls) used for all categories mentioned above was estimated at 0.327 ton PM/acre-month, with the PM10 fraction at 0.52. The total emissions for these categories are determined by multiplying the throughput and emission factor.

Monthly Variation

Emissions were distributed as 70% in the months of April to September and 30% in the remaining months.

County Distribution

Distribution of emissions into counties was based on construction activity provided by the California Department of Finance.

TRENDS

History

These categories were created to account for the fugitive dust emissions from new construction and demolition operations since 1987 Base Year emission inventory. Construction activity data from 1987 to the present, provided by the California Department of Finance, was used in backcasting emissions. Prior to 1987, the growth profile followed construction employment activity created by ABAG. In 1996, a revised PM emission factor and PM10 fraction (as mentioned above) reduced the respective particulate emission.

Growth

Projections to 2030 were based on construction employment activity created by ABAG.