

**SOURCE INVENTORY**  
**CATEGORY # 711**  
**AGRICULTURAL AIRCRAFT**

**1999 EMISSIONS**

*Introduction*

Considered in this category are emissions from agricultural aircraft during spraying operations on agricultural crops. This does not include emissions from materials sprayed, which are inventoried under pesticide category. The aircraft involved are usually piston engines, and at times, small helicopters. In the aircraft piston engine, mixture of fuel and air are burned from which energy is extracted by a piston and crank mechanism driving a propeller. Combustion products from the aircraft during spraying are estimated in this category.

*Methodology*

The number of acres sprayed by agricultural aircraft were estimated based on each counties' "Agricultural Crop Report, 1996." Total acreage for field crops, vegetable crops, fruit and nut crops, nursery products, and cut flowers were used in estimating a District total of 178,705 acres sprayed.

An average fuel consumption of 0.1053 gal per acre sprayed was used based on an ARB report on the total number of acreage sprayed and total statewide fuel usage. From this, an estimated total fuel usage of 18,828 gallons was derived.

Emission factors were derived based on AP-42, Table II-1-7 for an 0-320 Lycoming and 0-200 Continental aircraft engines. Only the takeoff mode was considered, assuming the aircraft would be at a similar power mode during spraying operations.

Calculations:

$$\begin{aligned} \text{Em} &= 18,828 \text{ gal/yr.} \times 76.979 \text{ lbs TOG/thou.gal} / 365 \text{ days/yr.} / 2000 \text{ lbs/ton} \\ &= 0.002 \text{ ton/day of total organics} \end{aligned}$$

### *Monthly Variation*

Monthly distribution was estimated based on assumption that spraying operations occurred heavily during the summer months, and less during the other months.

### *County Distribution*

Rather than using specific airports of origin, the area where agricultural aircraft operate were considered. County distribution was therefore estimated based on assumption that agricultural aircraft spray operations occurred at the reported acreage in the Agricultural Crop Report of each county.

## **TRENDS**

### *History*

Emission throughout the years were estimated based on ARB's growth profile on the dollar output of agricultural products.

### *Growth*

Projection to year 2010 was also based on ARB's growth on Agriculture activities.