VEHICLE FIRES

DESCRIPTION

This emission guidance report covers air emissions from accidental vehicle fires. Vehicles included are any commercial or private mode of transportation that is authorized for use on public roads.

POLLUTANTS

PM, CO, NO_x, Methane and Non-Methane TOC

AVAILABLE METHODS

Activity: Local data may be available from state or local fire marshals or public safety departments. Alternatively, use the national estimate of vehicle fires from *Fire in the United States* (which can be ordered from the Federal Emergency Management Agency at: http://www.usfa.fema.gov/usfapubs/index.cfm). The national total of transportation fires reported in the FEMA report must be corrected by subtracting the number of non-roadway fires reported such as rail, water, and air transportation fires. As an example, in 1994 the respective percentages of fires reported for these non-roadway transportation modes were 0.2, 0.5, and 0.1 (i.e., 99.2% of the fires were highway vehicle fires). Highway vehicle fires in 1994 are estimated to be 402,000 fires. The national estimate can be apportioned to the local level using state vehicle miles traveled (VMT). See the spatial apportioning section for available information sources.

Emission Factors: Emission factors are available for open burning of automobile components including upholstery, belts, hoses, and tires (AP-42, Section 2.5 Open Burning) (EPA, 1996). The amount of vehicle material burned (the fuel loading) in a vehicle fire must be estimated to use these factors. A conservative assumption is that an average vehicle has 500 pounds of components that can burn in a fire, based on a 3,700 pound average vehicle weight (CARB, 1995). The emission estimates from this source category can be improved if a more specific fuel loading factor can be used.

Emission factors (EPA, 1996):

Pollutant	Lbs/ton burned
PM	100
CO	125
Methane	10
Nonmethane TOC	32
NO_x	4

POINT SOURCE ADJUSTMENTS

No subtraction of emissions from point sources is necessary.

ADJUSTMENTS FOR CONTROLS

No controls are available for this category.

SPATIAL AND TEMPORAL ALLOCATIONS

Spatial: Vehicle miles traveled may be used to spatially apportion national fire activity to the state level. The Federal Highway Administration provides state level vehicle miles traveled (*http://www.fhwa.dot.gov/ohim/ohimstat.htm*). To apportion to the local level, local vehicle miles traveled may be obtained from the state department of transportation. Alternately, state level data may be apportioned to local areas based on vehicle registration information obtained from the state department of motor vehicles. Other surrogates such as population or roadway miles may be used to apportion the number of fires to the local level.

Temporal: Data for temporal allocations is not available for this source.

OTHER EMISSION CALCULATION ISSUES

None.

REFERENCES

CARB. 1995. Emission Inventory Procedural Manual, Vol. III: Methods for Assessing Area Source Emissions. California Environmental Protection Agency: Air Resources Board.

EPA. 1996. *Compilation of Air Pollutant Emission Factors--Volume I: Stationary Point and Area Sources. Fifth Edition, AP-42.* U. S. Environmental Protection Agency, Office of Air Quality Planning and Standards. (GPO 055-000-00251-7). Research Triangle Park, North Carolina.

FEMA. 1999. Fire in the United States 1987-1996, Eleventh Edition (FA-173/August 1999). Federal Emergency Management Agency, United States Fire Administration, National Fire Data Center. Emmitsburg, MD.