

Source Category:	Residential Yard Waste Burning - Leaves
SCC Code:	2610000100
Pollutants of Concern:	PM-10, PM-2.5
How is the National Emission Inventory developed for this category?	
Current Methodology (see also the link to the NEI Methodology Description):	
<ul style="list-style-type: none"> • EPA reports an average daily waste generation rate of 0.57 lbs yard waste/person/day. • Of the total amount of yard waste generated, EPA assumed the yard waste composition to be 25 percent leaves, 25 percent brush, and 50 percent grass by weight. Open burning of grass clippings is not typically practiced by homeowners, and as such EPA developed only estimates for leaf burning and brush burning. EPA calculated emissions for leaves and residential brush separately, since emission factors vary by yard waste type. • EPA assumed that 28 percent of the total yard waste generated is burned and that burning occurs primarily in rural areas. • To account for variations in vegetation, EPA adjusted the county-level yard waste generation rate. For counties with <10% forestation, the yard waste was adjusted to 0%. For counties with forestation percentage $\geq 10\%$ and <50%, the yard waste was adjusted by multiplying by 50%. For counties with >50% forestation, 100%. EPA determined the percent forestation by using version 3.1 of the Biogenic Emissions Landcover Database (BELD3) within EPA's Biogenic Emission Inventory System (BEIS). For the purposes of this methodology, forestation includes rural forest and urban forest, but excludes agricultural lands. • EPA used the adjusted waste generation rate, the rural population in the county and the emission factor to determine county emissions. • Emission factors for PM are taken from <i>Evaluation of Emissions from the Open Burning of Household Waste in Barrels</i>, U.S. EPA, Office of Research and Development, November 1997; all other pollutants, AP-42, Section 2.5, Table 2.5-1 • EPA accounted for burning bans by zeroing out emissions where the urban population exceeds 80 percent of the total population (i.e., urban plus rural). 	
Current Variables/Assumptions Used:	
<ul style="list-style-type: none"> • National average per capita waste generation factor [<i>EPA's Office of Solid Waste</i>] applied to the portion of each county considered to be rural. [<i>Census</i>] • Adjustment for variations in vegetation. [<i>Engineering judgment</i>] • Estimate the fraction amount of leaves that are burned (0.28). [<i>Characterization</i>] 	

of Municipal Solid Waste in the United States: 1998 Update (EPA, 1999)]

Uncertainties / Shortcomings of Current Methods:

- Average values for the amount of waste generated and the amount of waste burned are based on limited studies in specific areas.
- Leaf burning would be more prominent in the fall months, but temporal variation of emissions from residential yard waste burning are typically allocated using default temporal allocation factors in the NEL.

How can State, Local, and Tribal agencies improve upon this methodology?

- Since different areas of the country use open-burning to different degrees, local surveys could improve the methodology used to estimate emissions. These surveys could be used to develop estimates of quantities burned in rural areas and to determine locally which specific counties have burning bans, yardwaste pickup/landfill, or composting programs. Some of this data may be available from local Solid Waste Management Agencies.
- State or local estimates of the months when yard wastes are burned. This information may be available from local Solid Waste Management Agencies or could be obtained via survey.

Where can I find Additional Information and Guidance?

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AP-42, Section 2.5	http://www.epa.gov/ttn/chief/ap42/ch02/final/c02s05.pdf
Area Source Emissions Model	http://www.epa.gov/ttn/chief/software/asem/index.html
Biogenic Emissions Inventory System	http://www.epa.gov/ttnchie1/emch/models/beis/index.html
Characterization of Municipal Solid Waste in the U.S.	http://www.epa.gov/epaoswer/non-hw/muncpl/msw99.htm
County Level Emission Density Maps for this Source Category	http://www.epa.gov/ttn/chief/eiip/pm25inventory/densitymaps.pdf

EIIP Document on Conducting Surveys	http://www.epa.gov/ttn/chief/eiip/techreport/volume03/iii24.pdf
EIIP Document on Open Burning	http://www.epa.gov/ttn/chief/eiip/techreport/volume03/iii16_apr2001.pdf
MARAMA Open Burning Survey	http://www.marama.org/visibility/TechMemoDraft.pdf
NEI Inventory Methodology Description	ftp://ftp.epa.gov/EmisInventory/finalnei99ver2/criteria/ or http://www.epa.gov/ttn/chief/eidocs/partsec5_opbrn.pdf