

Section XX: Miscellaneous Process — Cooking

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EMISSION INVENTORY SOURCE CATEGORY

Cooking

EMISSION INVENTORY CODES (CES CODES) AND DESCRIPTION

- 690-680-6000-0000 (60418) - Commercial Charbroiling
- 690-682-6000-0000 (66811) – Commercial Deep Fat Frying
- 690-684-6000-0000 (82180) – Other Commercial Cooking

METHOD SUMMARY

The methodology used is based on STI Area Source Contract – Attachment G: Commercial Cooking. The number of restaurants with cooking equipment (#restaurant = 1223499 * 0.35 * 0.0038 = 1627) is assumed to be 35% of the total food service facilities, which is estimated using equation, # food service facility = 0.0038 * population. The equation is based on data collected from CCOS II counties. The number of cooking units is estimated using the following distribution of cooking equipment types and average number of equipment per restaurant. The amount of food processed is estimated using average process rate from CARB sponsored study (Potepan, 2001).

Cooking Equipment	Percent of Restaurants with So Equipment	Average number of So Equipment per Facility	Number of Units	Average Process Rate (lbs food/unit wk)	Annual Process Rate (1000lbs food/yr)
Underfired Charbroilers	45%	1.3	952	490	24,256
Automated Charbroilers	8%	1.2	156	840	6,824
Clamshell Griddle	6%	2	195	1100	11,169
Flat Griddle	63%	1.8	1845	320	30,706
Deep-Fat Fryer	87%	1.9	2690	620	86,721

Using average emission factors from SCAQMD study (Welch and Norbeck, 1998), tabulated below, the emissions from commercial cooking are estimated.

Cooking Equipment	Emission Factors (lb/1000lb food cooked)	
	VOC	PM
Underfired Charbroilers	1.8	16
Automated Charbroilers	1.5	3.7
Clamshell Griddle	0	1
Flat Griddle	0.2	2.8
Deep-Fat Fryer	0.17	.03

The clamshell and flat griddles are inventories under other commercial cooking (CES 82180).

ACTIVITY DATA SOURCE:	Population.
EMISSION FACTOR SOURCE:	SCAQMD (Welch and Norbeck, 1998).
TEMPORAL INFORMATION:	Daily Activity: 24 hours/day Weekly Activity: 7 days/week Monthly Activity: 365 days/year
MOST RECENT UPDATE:	September 22, 1992
GROWTH PARAMETER:	Population

EMISSION SUMMARY (2000-ANNUAL AVERAGE TONS/DAY) UNRECONCILED

CES#	TOG	ROG	CO	NOX	SOX	PM	PM10
47167	0.10	0.05	0.27	1.09	0.01	0.15	0.15

NEEDED CLARIFICATIONS/CORRECTIONS TO CURRENT METHOD

None.

FUTURE PLANS FOR METHOD UPDATE/REVISION

None.