Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

AP42 Section: 9.5.2

Background Chapter 4

Reference: 3

Title: Report on Diagnostic Testing, Oscar Mayer Foods Corporation, Madison, WI

January 13, 1994.

Section 4 Reference 3
AP-42 Reference __

Emission Test Report Review Checklist--Short Form

Reviewer: BRIAN SHRAGER
Review Date: 7/7/94

A. Background Information

1. Facility name: Oscar Mayer Foods Corporation
   Location: Madison, Wisconsin
2. Source category: Meat Smokehouses
3. Test date: December 1993
4. Test sponsor: Oscar Mayer
5. Testing contractor: CAE
6. Purpose of test: Compliance
7. Pollutants measured (include test method and indicate if valid): Filterable PM - EPA Method 5
   Condensible Organic PM - M5 Back Half Analysis
   Condensible Inorganic PM - M5 Back Half Analysis
   Total Hydrocarbons - EPA Method 25A
8. Process overview: Attach a process description and a block diagram. Identify processes tested with letters from the beginning of the alphabet (A, B, C, etc...) and APC systems with letters from the end of the alphabet (V, W, X, etc...). Also identify test locations with Arabic numerals (1,2,3, ...). Using the ID symbols from the diagram, complete the table below.

Test ID	Process	Process ID	Emissions tested		APCD (controlled emissions only)
			Uncontrolled	Controlled	
1	[redacted] (CONTINUOUS) SMOKEHOUSE		✓		ID: Type: Model #:
2	[redacted] SMOKEHOUSE (CONTINUOUS)		✓		ID: Type: Model #:
3	[redacted] SMOKEHOUSE (BATCH)		✓		ID: Type: Model #:
4	[redacted] SMOKEHOUSE (CONTINUOUS)		✓		ID: Type: Model #:

B. Process Information

1. Provide a brief narrative description of the process and attach process flow diagram. (Note: If the process description provided in the test report is adequate, attach a copy here.)

PROCESS	TYPE	PRODUCT	DESCRIPTION
[redacted] SMOKEHOUSE	CONTINUOUS	~~[illegible]~~ WIENERS	
[redacted] SMOKEHOUSE	CONTINUOUS	WIENERS	
[redacted] SMOKEHOUSE	BATCH	SAUSAGE	
[redacted] SMOKEHOUSE	CONTINUOUS	BOLOGNA	

MIDWEST RESEARCH INSTITUTE CALCULATION SHEET

TEST DATA FROM OSCAR MAYER FOODS CORPORATION 12/93 EMISSION TEST
FILENAME: F:\PRIVATE\BRI\AP42\SMOKEHSE\REF3DATA.WQ1

D. Emission Data/Mass Flux Rates/Emission Factors

Test ID	Parameter	Units	Values reported			
			Run 1	Run 2	Run 3	Run 4
1	Stack temperature	Deg F	125	126	126	
CONTINUOUS SMOKEHOUSE	Moisture	%	13.62	13.99	13.66	
	Oxygen	%	20.3	20.2	20.3	
	Volumetric flow, actual	acfm	12700	12450	13040	
	Volumetric flow, standard	dscfm	9439	9192	9657	
	Isokinetic variation	%	101.7	101.9	101.4	
Sawdust use rate		TPH	0.0244	0.0203	0.0240	
	Pollutant concentrations:					
	Filterable PM	gr/dscf	0.026	0.025	0.042	
	Condensible organic PM**	gr/dscf	0.013	0.015	0.009	
	Condensible inorganic PM	gr/dscf	0.011	0.009	0.008	
	TOC as propane	ppmdv	28.2	10.4	16.1	
	**Includes back half acetone PM, assumed = acetone wash of back half lines					
	Pollutant mass flux rates:					
	Filterable PM	lb/hr	2.10	1.97	3.48	
	Condensible organic PM**	lb/hr	1.05	1.18	0.74	
	Condensible inorganic PM	lb/hr	0.890	0.709	0.662	
	TOC as propane	lb/hr	1.82	0.655	1.07	

lb/ton of sawdust used

TEST 1 EMISSION FACTORS BASED ON SAWDUST USAGE--ENGLISH UNITS					AVERAGE
Filterable PM	lb/ton	86.3	97.0	145	109
Condensible organic PM**	lb/ton	43.1	58.2	31.0	44.1
Condensible inorganic PM	lb/ton	36.5	34.9	27.6	33.0
TOC as propane	lb/ton	74.8	32.3	44.4	50.5
TOC as methane	lb/ton	27.2	11.7	16.1	18.4

kg/Mg of sawdust used

TEST 1 EMISSION FACTORS BASED ON SAWDUST USAGE--METRIC UNITS					AVERAGE
Filterable PM	kg/Mg	43.1	48.5	72.4	54.7
Condensible organic PM**	kg/Mg	21.6	29.1	15.5	22.1
Condensible inorganic PM	kg/Mg	18.3	17.5	13.8	16.5
TOC as propane	kg/Mg	37.4	16.1	22.2	25.2
TOC as methane	kg/Mg	13.6	5.86	8.07	9.18

MIDWEST RESEARCH INSTITUTE CALCULATION SHEET

Test ID	Parameter	Units	Values reported			
			Run 1	Run 3	Run 4	Run 2
2	Stack temperature	Deg F	169	166	171	not reported
CONTINUOUS SMOKEHOUSE	Moisture	%	6.24	6.19	5.96	
	Oxygen	%	20	19.7	18.9	
	Volumetric flow, actual	acfm	4546	4453	4130	
	Volumetric flow, standard	dscfm	3441	3387	3137	
	Isokinetic variation	%	94.4	101.1	99.4	
Sawdust use rate:		TPH	0.0567	0.0548	0.0544	
	Pollutant concentrations:					
	Filterable PM	gr/dscf	0.172	0.144	0.166	
	Condensible organic PM**	gr/dscf	0.087	0.084	0.076	
	Condensible inorganic PM	gr/dscf	0.073	0.115	0.054	
	TOC as propane	ppmdv	159.8	216	253.9	
	**Includes back half acetone PM, assumed = acetone wash of back half lines					
	Pollutant mass flux rates:					
	Filterable PM	lb/hr	5.07	4.18	4.46	
	Condensible organic PM**	lb/hr	2.57	2.44	2.04	
	Condensible inorganic PM	lb/hr	2.15	3.34	1.45	
	TOC as propane	lb/hr	3.77	5.01	5.46	

lb/ton of sawdust used

TEST 2 EMISSION FACTORS BASED ON SAWDUST USAGE--ENGLISH UNITS					AVERAGE
Filterable PM	lb/ton	89.4	76.3	82.1	82.6
Condensible organic PM**	lb/ton	45.2	44.5	37.6	42.5
Condensible inorganic PM	lb/ton	38.0	61.0	26.7	41.9
TOC as propane	lb/ton	66.4	91.5	100	86.1
TOC as methane	lb/ton	24.2	33.3	36.5	31.3

kg/Mg of sawdust used

TEST 2 EMISSION FACTORS BASED ON SAWDUST USAGE--METRIC UNITS					AVERAGE
Filterable PM	kg/Mg	44.7	38.2	41.0	41.3
Condensible organic PM**	kg/Mg	22.6	22.3	18.8	21.2
Condensible inorganic PM	kg/Mg	19.0	30.5	13.4	20.9
TOC as propane	kg/Mg	33.2	45.8	50.2	43.1
TOC as methane	kg/Mg	12.1	16.6	18.2	15.7

MIDWEST RESEARCH INSTITUTE CALCULATION SHEET

Test ID	Parameter	Units	Values reported			
			Run 1	Run 2	Run 3	Run 4
3	Stack temperature	Deg F	77	79	80	
BATCH SMOKEHOUSE	Moisture	%	2.46	2.79	3.57	
	Oxygen	%	20	20.1	20.1	
	Volumetric flow, actual	acfm	1358	1352	1405	
	Volumetric flow, standard	dscfm	1257	1243	1278	
	Isokinetic variation	%	101.1	101.3	101.1	
Sawdust use rate:		TPH	0.0118	0.0117	0.0090	
	Pollutant concentrations:					
	Filterable PM	gr/dscf	0.042	0.019	0.011	
	Condensible organic PM**	gr/dscf	0.024	0.016	0.018	
	Condensible inorganic PM	gr/dscf	0.011	0.016	0.007	
	TOC as propane	ppmdv	138.5	144.3	160.7	
	**Includes back half acetone PM, assumed = acetone wash of back half lines					
	Pollutant mass flux rates:					
	Filterable PM	lb/hr	0.453	0.202	0.120	
	Condensible organic PM**	lb/hr	0.259	0.170	0.197	
	Condensible inorganic PM	lb/hr	0.119	0.170	0.077	
	TOC as propane	lb/hr	1.19	1.23	1.41	

lb/ton of sawdust used

TEST 3 EMISSION FACTORS BASED ON SAWDUST USAGE--ENGLISH UNITS					AVERAGE
Filterable PM	lb/ton	38.3	17.3	13.3	23.0
Condensible organic PM**	lb/ton	21.9	14.5	21.8	19.4
Condensible inorganic PM	lb/ton	10.0	14.5	8.48	11.0
TOC as propane	lb/ton	101	105	156	120
TOC as methane	lb/ton	36.7	38.1	56.6	43.8

kg/Mg of sawdust used

TEST 3 EMISSION FACTORS BASED ON SAWDUST USAGE--METRIC UNITS					AVERAGE
Filterable PM	kg/Mg	19.1	8.64	6.66	11.5
Condensible organic PM**	kg/Mg	10.9	7.27	10.9	9.70
Condensible inorganic PM	kg/Mg	5.01	7.27	4.24	5.51
TOC as propane	kg/Mg	50.5	52.4	77.8	60.2
TOC as methane	kg/Mg	18.4	19.1	28.3	21.9

MIDWEST RESEARCH INSTITUTE CALCULATION SHEET

Test ID	Parameter	Units	Values reported			
			Run 1	Run 2	Run 3	Run 4
4	Stack temperature	Deg F	128	122	122	
CONTINUOUS SMOKEHOUSE	Moisture	%	5.56	7.29	7.2	
	Oxygen	%	20.8	20.8	20.8	
	Volumetric flow, actual	acfm	1218	1216	1257	
	Volumetric flow, standard	dscfm	989	977	1010	
	Isokinetic variation	%	94.5	100.2	98.7	
Sawdust use rate:		TPH	0.0066	0.0082	0.0089	
	Pollutant concentrations:					
	Filterable PM	gr/dscf	0.018	0.027	0.022	
	Condensible organic PM**	gr/dscf	0.023	0.025	0.029	
	Condensible inorganic PM	gr/dscf	0.015	0.031	0.024	
	TOC as propane	ppmdv	76.3	62.2	50.8	
	**Includes back half acetone PM, assumed = acetone wash of back half lines					
	Pollutant mass flux rates:					
	Filterable PM	lb/hr	0.153	0.226	0.190	
	Condensible organic PM**	lb/hr	0.195	0.209	0.251	
	Condensible inorganic PM	lb/hr	0.127	0.260	0.208	
	TOC as propane	lb/hr	0.517	0.416	0.352	

lb/ton of sawdust used

TEST 4 EMISSION FACTORS BASED ON SAWDUST USAGE--ENGLISH UNITS					AVERAGE
Filterable PM	lb/ton	23.3	27.5	21.4	24.0
Condensible organic PM**	lb/ton	29.7	25.5	28.2	27.8
Condensible inorganic PM	lb/ton	19.4	31.6	23.3	24.8
TOC as propane	lb/ton	78.8	50.6	39.5	56.3
TOC as methane	lb/ton	28.6	18.4	14.4	20.5

kg/Mg of sawdust used

TEST 4 EMISSION FACTORS BASED ON SAWDUST USAGE--METRIC UNITS					AVERAGE
Filterable PM	kg/Mg	11.6	13.7	10.7	12.0
Condensible organic PM**	kg/Mg	14.9	12.7	14.1	13.9
Condensible inorganic PM	kg/Mg	9.69	15.8	11.7	12.4
TOC as propane	kg/Mg	39.4	25.3	19.7	28.1
TOC as methane	kg/Mg	14.3	9.20	7.18	10.2

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

George E. Meyer
Secretary

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6/13/94

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Enclosed is stack emission test information on VOC's and PM performed at Oscar Mayer Foods, Smokehouses last fall.

Thank you for your interest in Wisconsin's Air Management Program. I have enclosed the information you requested. I hope this information is useful to you. If we can help you further, please let us know.

Sincerely, Susan Linden.
608-267-0567