

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

5.1 PRODUCTION

U.S. manufacturers had an estimated annual production capacity of 18 billion pounds of mixed xylene in 2006 (SRI 2006). This figure is based on maximum plant production volumes. Table 5-1 lists producers of mixed xylene and their estimated annual capacities. In 1990 and 1991, U.S. production of xylene totaled 6.2 and 6.1 billion pounds, respectively (Reisch 1992). These figures represent the total amount of mixed xylene actually produced by U.S. manufacturers based on data from trade associations and industry sources. The production of mixed xylene during the year 1995 was reported to be 9.5 billion pounds (Cannella 1998). According to data collected under the Toxic Substances Control Act Inventory Update Rule, the total production volume of mixed xylene reported by U.S. manufacturers has remained above 1 billion pounds during each reporting year (1986, 1990, 1994, 1998, and 2002) (EPA 2002a).

Table 5-2 summarizes the number of facilities in each state that manufactured or processed mixed xylene in 2004, the ranges of maximum amounts on site, if reported, and the activities and uses as reported in the Toxics Release Inventory (TRI) (TRI04 2006). The data listed in this table should be used with caution since only certain types of facilities are required to report. This is not an exhaustive list.

The 2006 estimated U.S. annual production capacities of *o*- and *p*-xylene were 1 and 11 billion pounds, respectively (SRI 2006). These figures are based on maximum plant production volumes. Table 5-1 lists producers of *o*- and *p*-xylene and their estimated annual capacities. Production capacity data for *m*-xylene were not reported.

According to estimates, over 943 million and 5.2 billion pounds of *o*- and *p*-xylene, respectively, were produced in the United States in 1990 (Reisch 1992; USITC 1991). The production volumes of *o*-xylene reported by United States manufacturers during 1986, 1990, 1994, 1998, and 2002 were within the ranges of >500 million pounds–1 billion pounds, >1 billion pounds, >500 million pounds–1 billion pounds, >1 billion pounds, and >500 million pounds–1 billion pounds, respectively (EPA 2002a). The ranges of production volumes reported during these years have remained unchanged for both *m*-xylene (>100–500 million pounds) and *p*-xylene (>1 billion pounds).

It is not clear whether there is any relationship between the amounts of xylene isomers produced at an individual facility and the total amount of mixed xylenes produced at the same facility. Sources reporting production and capacity data do not specify whether companies that report amounts of both mixed

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

Table 5-1. Producers of Xylene and Estimated Annual Capacities^a

Producers	Location(s)	Annual capacity (millions of pounds)			
		Mixed xylene	<i>m</i> -Xylene	<i>o</i> -Xylene	<i>p</i> -Xylene
BP America, Inc.	Texas City, Texas	2,215	NR	—	2,693
	Whiting, Indiana	1,735	—	—	—
	Decatur, Alabama	—	—	—	2,420
Chevron Phillips Chemical Company LP Olefins and Polyolefins Business Unit	Pascagoula, Mississippi	1,025	—	—	1,001
Chevron Phillips Chemical Puerto Rico Core Inc.	Guayama, Puerto Rico	639	—	150	727
CITGO Petroleum Corporation	Corpus Christi, Texas	538	—	—	—
ConocoPhillips Refining, Marketing & Transportation Division	Alliance, Louisiana	432	—	—	—
	Sweeny, Texas	1,049	—	—	—
	Baytown, Texas	1,710	—	280	1,316
ExxonMobil Chemical Company	Beaumont, Texas	705	—	—	606
	Chalmette, Louisiana	505	—	150	419
Flint Hills Resources L.P.	Corpus Christi, Texas	397	NR	397	1,322
	Corpus Christi, Texas	1,677	—	—	—
HOVENSA, L.L.C.	St. Croix, Virgin Islands	833	—	—	—
Lyondell-Citgo Refining LP	Houston, Texas	765	—	—	399
Marathon Petroleum LLC	Catlettsburg, Kentucky	183	—	—	—
	Texas City, Texas	73	—	—	—
Shell Chemical Company	Deer Park, Texas	355	—	—	—
Sunoco, Inc.	Marcus Hook, Pennsylvania	187	—	—	—
	Toledo, Ohio	377	—	—	—
	Westville, New Jersey	441	—	—	—
Total Petrochemicals USA, Inc.	Port Arthur, Texas	855	—	—	—
Valero Energy Corporation	Corpus Christi, Texas	500	—	—	—
	Corpus Christi, Texas	652	—	—	—
	Three Rivers, Texas	361	—	—	—
Totals		18,209	NR	976	10,903

^aDerived from SRI 2006

— = not produced; NR = the xylene was produced, but the amount was not reported

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

Table 5-2. Facilities that Produce, Process, or Use Xylene (Mixed)

State ^a	Number of facilities	Minimum amount on site in pounds ^b	Maximum amount on site in pounds ^b	Activities and uses ^c
AK	26	10,000	499,999,999	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12
AL	181	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
AR	97	0	9,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
AS	2	1,000	9,999,999	9, 11
AZ	64	0	9,999,999	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13
CA	307	0	999,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
CO	65	100	49,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
CT	73	0	49,999,999	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13
DE	29	0	99,999,999	1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13
FL	99	0	999,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
GA	140	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
GU	4	1,000,000	9,999,999	2, 3, 4, 7, 9, 12, 13
HI	20	100	49,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14
IA	121	0	49,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
ID	21	100	9,999,999	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12
IL	255	0	10,000,000,000	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
IN	234	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
KS	158	0	999,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
KY	135	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
LA	253	0	999,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
MA	95	0	49,999,999	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
MD	69	0	49,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
ME	30	100	49,999,999	2, 3, 4, 6, 7, 8, 9, 10, 11, 12
MI	289	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
MN	117	0	99,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
MO	147	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
MP	6	100	999,999	2, 3, 4, 7, 9
MS	135	0	49,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
MT	32	100	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
NC	140	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
ND	26	100	49,999,999	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12
NE	67	0	9,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
NH	41	0	999,999	2, 3, 6, 7, 8, 9, 10, 11, 12, 13
NJ	199	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
NM	35	100	9,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
NV	27	100	9,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
NY	161	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
OH	300	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

Table 5-2. Facilities that Produce, Process, or Use Xylene (Mixed)

State ^a	Number of facilities	Minimum amount on site in pounds ^b	Maximum amount on site in pounds ^b	Activities and uses ^c
OK	107	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
OR	73	0	49,999,999	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13
PA	224	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
PR	89	0	10,000,000,000	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
RI	48	0	49,999,999	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12
SC	100	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
SD	35	0	99,999,999	2, 3, 7, 8, 10, 11, 12
TN	166	0	99,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
TX	535	0	10,000,000,000	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
UT	87	0	49,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
VA	125	0	99,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
VI	11	100,000	10,000,000,000	1, 2, 3, 4, 5, 6, 7, 8, 9, 12
VT	12	100	999,999	5, 7, 10, 11, 12
WA	121	0	10,000,000,000	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
WI	170	0	99,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
WV	85	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
WY	42	100	49,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

^aPost office state abbreviations used^bAmounts on site reported by facilities in each state^cActivities/Uses:

- | | | |
|--------------------------|--------------------------|-----------------------------|
| 1. Produce | 6. Impurity | 11. Chemical Processing Aid |
| 2. Import | 7. Reactant | 12. Manufacturing Aid |
| 3. Onsite use/processing | 8. Formulation Component | 13. Ancillary/Other Uses |
| 4. Sale/Distribution | 9. Article Component | 14. Process Impurity |
| 5. Byproduct | 10. Repackaging | |

Source: TRI04 2006 (Data are from 2004)

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

xylenes and the individual isomers have separated the amounts of the isomers from the mixed xylenes (in which case, they would be counting these amounts twice) or whether they are reporting total amounts of mixed xylenes and xylene isomers separately that are finished and ready for use.

Tables 5-3, 5-4, and 5-5 list the U.S. facilities that manufacture or process *m*-, *o*-, and *p*-xylene, respectively, with their corresponding location, range of amounts on site, and activities and uses. This information is based on the release data reported to the TRI for 2004 (TRI04 2006). The data listed in these tables should be used with caution since only certain types of facilities are required to report and the actual figures may be higher.

Mixed xylene consists of a mixture of ethylbenzene and the *m*-, *o*-, and *p*-isomers of xylene; *m*-xylene predominates. In addition to ethylbenzene, mixed xylene may contain nonxylene hydrocarbons, such as benzene, toluene, trimethylbenzene, phenol, thiophene, and pyridine; the combined volume of these nonxylene hydrocarbons is only a fraction of a percentage point of the composition of mixed xylene (Gerarde 1960; Riihimaki and Hanninen 1987; Sandmeyer 1981). Current formulations of mixed xylene are relatively free (<0.001%) of benzene contamination (Gosselin et al. 1984; Riihimaki and Hanninen 1987). The exact composition of mixed xylene depends on the manufacturing method used. Currently, nearly all mixed xylene is produced as a catalytic reformat of petroleum and consists of approximately 44% *m*-xylene, 20% *o*-xylene, 20% *p*-xylene, and 15% ethylbenzene (HSDB 2007; NIOSH 1975). Mixed xylene may also be manufactured from coal tar, yielding a mixture of approximately 45–70% *m*-xylene, 23% *p*-xylene, 10–15% *o*-xylene, and 6–10% ethylbenzene (HSDB 2007). Other production processes include gasoline pyrolysis and disproportionation of toluene, both of which produce a mixture free of ethylbenzene, and recovery from coke-oven light oil (HSDB 2007; NIOSH 1975; Ransley 1984).

The xylene isomers are produced from mixed xylene. *m*-Xylene is obtained from mixed xylene via crystallization to remove *p*-xylene and fractionation to remove *o*-xylene and ethylbenzene, or via complexing with hydrofluoric acid and boron trifluoride (HSDB 2007). *o*-Xylene is isolated from mixed xylene via distillation but can also be produced by the isomerization of *m*-xylene (HSDB 2007). *p*-Xylene is derived from mixed xylene by crystallization, solvent extraction, or adsorption (HSDB 2007; Lewis 2001).

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

Table 5-3. Facilities that Produce, Process, or Use *m*-Xylene

State ^a	Number of facilities	Minimum amount on site in pounds ^b	Maximum amount on site in pounds ^b	Activities and uses ^c
AL	16	1,000	499,999,999	1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13
AR	10	100	9,999,999	7, 8, 9, 11, 12
AZ	2	10,000	99,999	10, 12
CA	35	0	99,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
CO	1	1,000,000	9,999,999	1, 4
CT	2	10,000	99,999	10
DE	1	10,000	99,999	7, 12
FL	7	1,000	9,999,999	2, 3, 10, 11, 12
GA	7	100	999,999	1, 4, 7, 10, 11, 13
GU	2	0	9,999	9
HI	7	1,000,000	9,999,999	1, 2, 5, 7, 10, 12, 13, 14
IA	8	100	99,999	8, 9, 10, 11, 12
IL	21	100	49,999,999	1, 2, 3, 5, 6, 7, 9, 11, 12
IN	7	100	9,999,999	6, 7, 8, 11, 12
KS	10	100	999,999	5, 6, 7, 9, 10, 12
KY	9	1,000	99,999	1, 4, 5, 10, 11, 12
LA	17	1,000	49,999,999	1, 2, 3, 4, 5, 6, 7, 9, 12, 13, 14
MA	2	0	99,999	2, 3, 7, 10
MD	2	10,000	99,999	3, 4, 5, 11
MI	5	100	99,999	7, 8, 10, 11, 12
MN	3	1,000	99,999	7, 10
MO	10	1,000	999,999	2, 7, 9, 10, 11, 12
MS	21	1,000	99,999,999	1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14
MT	1	10,000	99,999	2, 4
NC	9	0	999,999	1, 3, 5, 6, 7, 8, 10, 12
NE	9	100	999,999	2, 3, 7, 11, 12
NH	3	0	99,999	7, 11, 12
NJ	10	1,000	49,999,999	2, 3, 6, 7, 10, 11, 12
NM	6	100,000	9,999,999	1, 2, 3, 4, 7, 9, 12
NV	1	100,000	999,999	9
NY	8	0	99,999	2, 3, 6, 7, 9, 10, 11
OH	7	1,000	999,999	6, 7, 8, 9, 10, 11, 12
OK	3	1,000	9,999,999	4, 7, 9, 12
OR	3	1,000	99,999	7, 10, 12
PA	20	100	49,999,999	1, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13
PR	18	1,000	10,000,000,000	1, 2, 3, 4, 5, 6, 7, 9, 10, 12, 13
SC	9	1,000	999,999	6, 7, 10, 11, 12
TN	20	100	49,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
TX	71	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

Table 5-3. Facilities that Produce, Process, or Use *m*-Xylene

State ^a	Number of facilities	Minimum amount on site in pounds ^b	Maximum amount on site in pounds ^b	Activities and uses ^c
UT	5	1,000	9,999,999	1, 4, 9, 10
VA	6	1,000	9,999,999	1, 2, 4, 9, 10, 11, 12
WA	1	100	999	12
WI	6	0	99,999	6, 7, 8, 10, 11, 12, 13
WV	3	10,000	9,999,999	1, 4, 6, 7, 8

^aPost office state abbreviations used

^bAmounts on site reported by facilities in each state

^cActivities/Uses:

- | | | |
|--------------------------|--------------------------|-----------------------------|
| 1. Produce | 6. Impurity | 11. Chemical Processing Aid |
| 2. Import | 7. Reactant | 12. Manufacturing Aid |
| 3. Onsite use/processing | 8. Formulation Component | 13. Ancillary/Other Uses |
| 4. Sale/Distribution | 9. Article Component | 14. Process Impurity |
| 5. Byproduct | 10. Repackaging | |

Source: TRI04 2006 (Data are from 2004)

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

Table 5-4. Facilities that Produce, Process, or Use o-Xylene

State ^a	Number of facilities	Minimum amount on site in pounds ^b	Maximum amount on site in pounds ^b	Activities and uses ^c
AL	25	0	99,999,999	1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13
AR	9	0	9,999,999	2, 3, 7, 9, 10, 12
AZ	3	1,000	99,999	3, 7, 10, 12
CA	46	0	99,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13
CO	2	10,000	9,999,999	1, 4, 12
CT	4	0	999,999	7, 10, 11, 12
DE	2	100,000	999,999	7, 10, 11
FL	2	1,000	9,999,999	7, 12
GA	15	0	999,999	7, 10, 11, 12
GU	2	0	9,999	9
HI	7	1,000,000	9,999,999	1, 2, 5, 7, 10, 12, 13, 14
IA	7	0	99,999	8, 10, 11, 12
IL	19	0	49,999,999	2, 3, 6, 7, 10, 11, 12
IN	5	100	99,999	7, 10, 11, 12
KS	11	1,000	9,999,999	1, 2, 3, 4, 6, 7, 9, 10, 12
KY	1	10,000	99,999	10
LA	24	0	10,000,000,000	1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13
MA	6	0	99,999	2, 3, 7, 9, 10, 12
MD	3	1,000	99,999	2, 3, 4, 5, 6, 10, 11
MI	7	0	99,999	1, 5, 6, 7, 9, 10, 11, 12, 13
MN	1	0	99	2, 3, 12
MO	14	0	49,999,999	2, 3, 6, 7, 9, 10, 12
MS	17	1,000	99,999,999	1, 2, 3, 4, 5, 6, 7, 10, 12, 13, 14
MT	1	10,000	99,999	2, 4
NC	12	0	999,999	1, 2, 3, 5, 7, 10, 11, 12, 13
NE	8	100	99,999	2, 3, 7, 11, 12
NH	2	0	99	11, 12
NJ	24	0	99,999,999	2, 3, 4, 6, 7, 9, 10, 11, 12
NM	2	100,000	9,999,999	1, 2, 3, 4, 7, 12
NY	6	0	99,999	2, 3, 9, 10, 11, 12
OH	11	0	99,999	2, 3, 7, 8, 9, 10, 11, 12
OK	1	0	0	7, 10, 12
PA	26	0	9,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
PR	25	1,000	10,000,000,000	1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13
RI	4	10,000	999,999	7, 10, 12
SC	10	1,000	9,999,999	6, 10, 11, 12, 14
TN	22	0	49,999,999	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13
TX	76	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
UT	5	10,000	9,999,999	1, 3, 4, 9

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

Table 5-4. Facilities that Produce, Process, or Use o-Xylene

State ^a	Number of facilities	Minimum amount on site in pounds ^b	Maximum amount on site in pounds ^b	Activities and uses ^c
VA	2	10,000	9,999,999	1, 2, 4, 9, 12
WA	4	100	9,999,999	6, 7, 8, 12, 13
WI	6	1,000	999,999	10, 12
WV	7	100	9,999,999	1, 2, 3, 4, 6, 7, 8, 10

^aPost office state abbreviations used

^bAmounts on site reported by facilities in each state

^cActivities/Uses:

- | | | |
|--------------------------|--------------------------|-----------------------------|
| 1. Produce | 6. Impurity | 11. Chemical Processing Aid |
| 2. Import | 7. Reactant | 12. Manufacturing Aid |
| 3. Onsite use/processing | 8. Formulation Component | 13. Ancillary/Other Uses |
| 4. Sale/Distribution | 9. Article Component | 14. Process Impurity |
| 5. Byproduct | 10. Repackaging | |

Source: TRI04 2006 (Data are from 2004)

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

Table 5-5. Facilities that Produce, Process, or Use *p*-Xylene

State ^a	Number of facilities	Minimum amount on site in pounds ^b	Maximum amount on site in pounds ^b	Activities and uses ^c
AL	14	1,000	499,999,999	1, 2, 3, 4, 5, 6, 7, 11, 12, 13
AR	6	1,000	9,999,999	7, 9, 10
AZ	1	10,000	99,999	12
CA	33	0	49,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13
CO	2	100,000	9,999,999	1, 4
DE	1	10,000	99,999	7, 12
FL	1	1,000	9,999	10
GA	6	100	99,999	2, 3, 7, 10, 11, 12
HI	7	1,000,000	9,999,999	1, 2, 5, 7, 10, 12, 13, 14
IA	6	0	99,999	8, 10, 11
IL	7	0	999,999	1, 6, 7, 10, 11, 13
IN	1	10,000	99,999	7
KS	4	1,000	99,999	7, 10, 12
KY	1	1,000	9,999	12
LA	11	0	49,999,999	1, 3, 4, 6, 7, 13
MA	3	1,000	99,999	7, 9, 10
MD	1	10,000	99,999	3, 4, 5
MI	2	1,000	99,999	7, 9
MN	1	1,000	9,999	11
MO	2	1,000	9,999	10, 12
MS	9	1,000	99,999,999	1, 2, 3, 4, 5, 7, 12, 13, 14
MT	1	10,000	99,999	2, 4
NC	12	0	499,999,999	1, 2, 3, 5, 6, 9, 10
NE	9	100	99,999	2, 3, 7, 11, 12
NH	1	0	99	12
NJ	6	100	9,999,999	3, 6, 7, 9, 10, 11, 12
NM	2	100,000	999,999	1, 2, 3, 4, 7, 12
NY	7	100	999,999	6, 7, 9, 10, 11
OH	2	1,000	99,999	8, 11, 12
PA	17	100	49,999,999	1, 3, 4, 5, 7, 8, 9, 12, 13
PR	10	10,000	10,000,000,000	1, 2, 3, 4, 6, 10
SC	6	10,000	499,999,999	6, 12, 14
TN	20	0	49,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
TX	61	0	499,999,999	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
UT	5	10,000	9,999,999	1, 3, 4, 9, 10
VA	1	1,000,000	9,999,999	1, 4, 12
VI	6	100,000	10,000,000,000	1, 2, 3, 4, 6, 7
WA	1	100	999	12

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

Table 5-5. Facilities that Produce, Process, or Use *p*-Xylene

State ^a	Number of facilities	Minimum amount on site in pounds ^b	Maximum amount on site in pounds ^b	Activities and uses ^c
WI	4	1,000	99,999	7, 11, 12
WV	5	1,000	9,999,999	1, 4, 6, 7, 8, 10

^aPost office state abbreviations used

^bAmounts on site reported by facilities in each state

^cActivities/Uses:

- | | | |
|--------------------------|--------------------------|-----------------------------|
| 1. Produce | 6. Impurity | 11. Chemical Processing Aid |
| 2. Import | 7. Reactant | 12. Manufacturing Aid |
| 3. Onsite use/processing | 8. Formulation Component | 13. Ancillary/Other Uses |
| 4. Sale/Distribution | 9. Article Component | 14. Process Impurity |
| 5. Byproduct | 10. Repackaging | |

Source: TRI04 2006 (Data are from 2004)

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

5.2 IMPORT/EXPORT

Available import and export data for mixed, *o*-, *m*-, and *p*-xylene are shown in Table 5-6. Amounts of U.S. imports and exports reported for mixed xylenes appear to be independent of the amounts reported for the individual xylene isomers. U.S. imports and exports of total xylenes during 2005 were approximately 1.3 billion liters and 280 million liters, respectively (USDOD 2005).

5.3 USE

Approximately 70% of mixed xylene is used in the production of ethylbenzene and the *m*-, *o*-, and *p*-isomers. The remaining mixed xylene is used as a solvent, in products such as paints and coatings, or blended into gasoline (Fishbein 1988; HSDB 2007; NCI 1985; Riihimaki and Hanninen 1987).

The xylene isomers are used primarily for internal industrial operations as solvents and intermediates in synthetic reactions. *m*-Xylene is a chemical intermediate in the production of isophthalic acid and isophthalonitrile; isophthalic acid, in turn, is used in the manufacture of polyesters. *o*-Xylene is a chemical intermediate in the synthesis of phthalic anhydride (for plasticizers), phthalonitrile, 4,4-(trifluoro-1-(trifluoromethyl) ethylidene) dipthalic anhydride (for polyimide polymers), *o*-toluic acid, vitamins, and pharmaceuticals. *p*-Xylene is a chemical intermediate for the synthesis of dimethyl terephthalate, terephthalic acid (for polyesters), dimethyl tetrachloroterephthalate, vitamins, and pharmaceuticals. Both *o*-xylene and *p*-xylene are used as components of insecticides (HSDB 2007; Lewis 2001).

5.4 DISPOSAL

Various methods of incineration are used in the disposal of xylene isomers, such as fluidized bed rotary kiln and liquid injection incinerator methods (EPA 1981a; HSDB 2007). The addition of a more flammable solvent has been suggested to make the process easier (HSDB 2007).

Criteria for the disposal of xylenes are currently subject to significant revision. Under the Resource Conservation and Recovery Act, waste product, off-specification batches, and spill residues of xylenes >1,000 pounds are subject to handling, reporting, and recordkeeping requirements. This applies also to spent xylene solvents and still bottoms from the refining of these solvents (EPA 1980b, 1981b).

5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

Table 5-6. U.S. Import and Export Data on Xylenes^a

Year	Import				Export			Reference	
	Mixed	<i>o</i> -Xylene	<i>m</i> -Xylene	<i>p</i> -Xylene	Mixed	<i>o</i> -Xylene	<i>m</i> -Xylene		<i>p</i> -Xylene
1986	284	3	NA	141	NA	NA	NA	NA	HSDB 2007
1995	713	47	6	343	713	90	37	713	Canella 1998
2000	1,302 ^b	3	51	189	141 ^c	50	NA	152	USDOC 2005
2005	1,303 ^b	0	11	0	263 ^c	10	NA	12	USDOC 2005

^aValues reported in millions of liters

^bReported as "Other Xylenes NESOI"

^cReported as "Other Xylenes NESOI (except *o*- or *p*-Xylene)"

NA = data not available