

SOURCE-SPECIFIC CANCER RISK INFORMATION FROM THE EPA
OFFICE OF AIR AND RADIATION
AIR TOXICS EXPOSURE AND RISK INFORMATION SYSTEM (ATERIS)
PROVIDED TO REP. HENRY A. WAXMAN, MAY 26, 1989

The information in the attached tables has been extracted from an internal Agency data base known as the Air Toxics Exposure and Risk Information System (ATERIS). The ATERIS contains information generated from assessments of potentially toxic air pollutants performed by the Office of Air Quality Planning and Standards (OAQPS). The data are provided as disaggregated cancer risk estimates for individual facilities, however, the preliminary nature of many of the cancer risk estimates in this internal working data base must be stressed as well as the fact that these data are not relied on as credible estimates of risk for individual sources. Despite the inherent uncertainties in such assessments, the Environmental Protection Agency (EPA) does not take the estimation of cancer risk lightly. In addition to our own regulatory development activities, we have shared this information with our Regional Offices and State and local air agencies and are working together with these organizations to improve our estimates and identify further opportunities to reduce public health risks, in accordance with our air toxics strategy.

With respect to the estimates themselves, you should be aware that OAQPS employs a tiered approach in which preliminary assessments are replaced by assessments of increasing detail as a pollutant or source category moves through the process. In the initial tiers of these analyses, readily available information that may not be source specific is used to roughly estimate the potential magnitude of public health risk to aid in determining whether further assessment is warranted. Often, data on individual sources in a category may not be available and analytical assumptions are necessary to permit nationwide assessment of source categories. Such assumptions are generally of a conservative nature to reduce the likelihood of inadvertently omitting from further consideration sources that could pose public health risks. Preliminary assessment, then, while providing a useful first approximation of source category impacts, may be subject to significant error at both the individual source and source category levels. In the higher tiers of the assessment process, better information on specific sources is often collected under the authority of Section 114 of the Clean Air Act which results in more reliable estimates for individual sources.

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The ATERIS contains data from all stages of air toxics analyses from the very preliminary to the more detailed analyses. Often these data are not comparable because of differences in the quality of the data and method of assessment. The ATERIS was originally designed as an archive and retrieval system for use by EPA risk analysts to facilitate characterization studies and aggregate analyses. The data base also has been used as a means of identifying candidate sources for further assessment by EPA as well as State and local air pollution agencies. Because of the variable quality of the data, however, the ATERIS has not been used to rank individual sources for regulatory purposes, nor is it considered an authoritative source for verified estimates of risk attributable to individual point sources. While the data stored in ATERIS are periodically updated on a voluntary basis by program project officers, this year's data entry and update are not yet complete.

The question has been asked whether the number of "high-risk plants" identified from the ATERIS would increase if a more comprehensive data base were employed. While we are aware of several notable omissions from the current data base (e.g., benzene sources and coke ovens), a more complete data base would not necessarily increase the number of potential high risk facilities in ATERIS. It is likely that a more comprehensive data base would include better data on the facilities already identified in ATERIS. Currently, the Agency is not aware of other comparable sources of plant specific risk information. Although the universe of potential high risk point sources may be larger than the population presently identified in the ATERIS, based on information presently available, it is not possible to estimate with any certainty the total number of such sources that may exist or, more importantly, the associated health risks.

In addition, it is noteworthy that the data reported in ATERIS were gathered prior to the availability of the Superfund Section 313 air toxics emissions data. Subsequent to the release of the Section 313 emissions inventory, the OAQPS has initiated work to incorporate the SARA Section 313 data into the assessment program. Although we do not believe that health risks can be reliably estimated from the SARA Section 313 data alone, this information is expected to be of considerable value in the identification of emission sources and in setting priorities for further assessment.

Although, for the reasons stated above, we believe that the estimates in the ATERIS data base should not be relied upon as credible estimates of individual source cancer risks, the attached tables list the facilities in ATERIS with estimated maximum individual lifetime cancer risk (MIR) in the intervals of 1 in 10, 1 in 100, and 1 in 1,000. Tables 1 through 3 are broken out by pollutant and source category for each risk interval. Tables 4 through 6 report the same information sorted by State. Please note that the number of facilities in each risk category does not exactly match the number of facilities provided to you earlier. The differences reflect periodic data quality reviews and updates.

The facilities identified on Tables 1 through 6 are sorted by MIR. It is important to note that the MIR estimate associated with a particular facility does not provide information on the distribution of risk across the population residing in the vicinity of that facility. The MIR, particularly in preliminary risk assessments, is best characterized as a rough measure of the potential maximum individual lifetime cancer risk associated with exposure to the maximum modeled long-term concentration. The MIR is not an appropriate measure of the risk level affecting the entire population residing near a particular facility.

With regard to the high MIR facilities, as noted at the outset, the EPA is concerned about the potential health risks associated with the emissions from these facilities. Thus, the risk estimates, as well as other data pertinent to these facilities, were transmitted to the appropriate State and local agencies after these estimates were computed. In addition, OAQPS is presently conducting a study of the fugitive emission estimating techniques used in the derivation of these risk estimates. The Chemical Manufacturers Association is also studying the estimation of fugitive emissions from the butadiene, ethylene oxide, and phosgene production categories. Preliminary results from these studies indicate that the emissions estimates, specifically for fugitive releases, may have been significantly overstated in the original risk assessment. These findings may ultimately affect emission estimates for other fugitive emission sources. Although we have not yet revised our risk estimates for these facilities, it is likely that incorporation of this information would substantially reduce the risk estimates. Further, we have initiated regulatory development activities under Section 112 of the Clean Air Act for all of the facilities associated with MIR in the 1 in 10 and 1 in 100 ranges, and most of the facilities in the 1 in 1,000 range.

Again, it is important to stress the preliminary nature of many of the estimates stored in ATERIS. While we believe the ATERIS represents a useful tool for ranking source categories for further assessment and evaluating the distribution of estimated risks across emitting industries, the data on individual sources may be subject to significant error.

TABLE 1: Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 10 Sorted by Pollutant and Source Category

<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>	<u>State</u>
Butadiene	Butadiene Production	Texaco	Port Neches	TX

TABLE 2: Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 100 But Less Than 1 in 10 Sorted by Pollutant and Source Category

<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>	<u>State</u>
Butadiene	Neoprene	Dupont	LaPlace	LA
Butadiene	Polybutadiene	Arco Chemicals	Channelview	TX
Butadiene	Polybutadiene	Borg Warner	Ottawa	IL
Butadiene	Polybutadiene	Colorado Chemical	Golden	CO
Butadiene	Polybutadiene	Goodyear Tire	Beaumont	TX
Butadiene	Polybutadiene	Polysar	Orange	TX
Butadiene	Butadiene Producers	Arco	Channelview	TX
Butadiene	Butadiene Producers	El Paso	Corpus Christi	TX
Butadiene	Butadiene Producers	Exxon	Baton Rouge	LA
Butadiene	Butadiene Producers	Shell Oil	Deer Park	TX
Butadiene	Butadiene Producers	Texas Petrochem	Houston	TX
Butadiene	Styrene, Butadiene Resins	American Synthetic	Louisville	KY
Butadiene	Styrene, Butadiene Resins	B. F. Goodrich	Port Neches	TX
Butadiene	Styrene, Butadiene Resins	Borg-Warner	Washington	WV
Butadiene	Styrene, Butadiene Resins	Copolymer	Baton Rouge	LA
Butadiene	Styrene, Butadiene Resins	Dow	Dalton	GA
Butadiene	Styrene, Butadiene Resins	Gen Corp	Mogadore	OH
Butadiene	Styrene, Butadiene Resins	Gen Corp	Odessa	TX
Butadiene	Styrene, Butadiene Resins	Goodyear	Akron	OH
Butadiene	Styrene, Butadiene Resins	Goodyear	Calhoun	GA
Butadiene	Styrene, Butadiene Resins	Goodyear	Houston	TX
Butadiene	Styrene, Butadiene Resins	Polysar	Chattanooga #1	TN
Butadiene	Styrene, Butadiene Resins	Polysar	Chattanooga #2	TN
Butadiene	Styrene, Butadiene Resins	Polysar	Monaca	PA

TABLE 2: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 100 in 10 But Less Than 1 in 10 Sorted by Pollutant and Source Category

<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>	<u>State</u>
Butadiene	Styrene, Butadiene Resins	Reichhold	Cheswold	DE
Butadiene	Styrene, Butadiene Resins	Reichhold	Kensington	GA
Butadiene	Styrene, Butadiene Resins	Uniroyal	Port Neches	TX
Butadiene	Styrene, Butadiene Resins	Unocal	La Mirada	CA
Chloroform	Pulp and Paper	Potlach Corporation	Lewiston	ID
Chloroform	Pulp and Paper	Simpson Paper Co.	Fairhaven	CA
Chloroform	Pulp and Paper	Boise Cascade	St. Helens	OR
Chloroform	Pulp and Paper	Buckeye Cellulose	Foley	FL
Chloroform	Pulp and Paper	Champion International	Canton	NC
Chloroform	Pulp and Paper	Scott Paper	Mobile	AL
Chloroform	Pulp and Paper	Simpson Tacoma	Tacoma	WA
Chloroform	Pulp and Paper	Weyerhaeuser	Longview	WA
Chloroform	Pulp and Paper	Louisiana Pacific	Kethchikan	AK
Ethylene Dichloride	Production	Formosa	Baton Rouge	LA
Ethylene Oxide	Commercial Sterilization	Abbott Laboratories	Barceloneta	PR
Ethylene Oxide	Production	BASF Wyandotte	Geismar	LA
Ethylene Oxide	Production	ICI Americas	Bayport	TX
Ethylene Oxide	Production	Shell	Geismar	LA
Ethylene Oxide	Production	Texaco	Port Neches	TX
Ethylene Oxide	Production	Texas Eastman	Longview	TX
Ethylene Oxide	Production	Union Carbide	Taft	LA

TABLE 3: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 1000 But Less Than 1 in 100 Sorted by Pollutant and Source Category

<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>	<u>State</u>
Arsenic	Primary CU Smelters	Asarco	El Paso*	TX
Arsenic	Primary CU Smelters	Asarco	Hayden	AZ
Arsenic	Primary CU Smelters	Phelps Dodge	Douglas	AZ
Arsenic	Primary PB Smelters	Asarco	East Helena	MT
Arsenic	Zinc Oxide	New Jersey Zinc	Palmerton	PA
Butadiene	Neoprene	Denka	Houston	TX
Butadiene	Polybutadiene	American Synthetic	Louisville	KY
Butadiene	Polybutadiene	Firestone	Orange	TX
Butadiene	Polybutadiene	Phillips	Borger	TX
Butadiene	Butadiene Producers	Corpus Christi	Corpus Christi	TX
Butadiene	Butadiene Producers	Dow	Freeport	TX
Butadiene	Butadiene Producers	Exxon	Baytown	TX
Butadiene	Butadiene Producers	Mobil	Beaumont	TX
Butadiene	Butadiene Producers	Phillips	Borger	TX
Butadiene	Styrene, Butadiene Resins	Dow	Gales Ferry	CT
Butadiene	Styrene, Butadiene Resins	Dow	Midland	MI
Butadiene	Styrene, Butadiene Resins	Dow	Pittsburg	CA
Butadiene	Styrene, Butadiene Resins	Firestone	Lake Charles	LA
Butadiene	Styrene, Butadiene Resins	W. R. Grace	Owensboro	KY
Carbon Tetrachloride	Chlorinated Hydrocarbon Use	E. I. DuPont	Beaumont	TX
Carbon Tetrachloride	Chlorinated Hydrocarbon Production	Dow Chemical	Pittsburg	CA
Carbon Tetrachloride	Chlorinated Hydrocarbon Production	Dow Chemical 1	Plaquemine	LA
Carbon Tetrachloride	Chlorinated Hydrocarbon Production	DuPont	Corpus Christi	TX
Carbon Tetrachloride	Chlorinated Hydrocarbon Production	LCP Chemicals	Moundsville	WV

*Subject to arsenic NESHAP. NESHAP controls not reflected in risk estimates.

TABLE 3: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 1000 But Less Than 1 in 100 Sorted by Pollutant and Source Category

<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>	<u>State</u>
Carbon Tetrachloride	Chlorinated Hydrocarbon Production	Stauffer	Lemojne	AL
Carbon Tetrachloride	Chlorinated Hydrocarbon Production	Vulcan Chemical	Wichita	KS
Carbon Tetrachloride	Pesticide Production	SDS Biotech	Houston	TX
Carbon Tetrachloride	Pesticide Production	Velsicol	Memphis	TN
Chloroform	Pulp and Paper	Pope and Talbot	Halsey	OR
Chloroform	Pulp and Paper	Temple Eastex	Silsbee	TX
Chloroform	Chlorinated Hydrocarbon Use	E. I. Dup/Hypalon	Beaumont	TX
Chloroform	Chlorinated Hydrocarbon Production	Diamond Shamrock	Belle	WV
Chloroform	Chlorinated Hydrocarbon Production	Dow Chemical 2	Plaquemine	LA
Chloroform	Chlorinated Hydrocarbon Production	LCP Chemicals	Moundsville	WV
Chloroform	Chlorinated Hydrocarbon Production	Vulcan Chemical	Geismar	LA
Chloroform	Chlorinated Hydrocarbon Production	Vulcan Chemical	Wichita	KS
Chloroform	Pulp and Paper	Appleton Papers	West Carrollton	OH
Chloroform	Pulp and Paper	Marcal Paper Mills	Elmwood Park	NJ
Chloroform	Pulp and Paper	P. H. Glatfelter	Neenah	WI
Chloroform	Pulp and Paper	Pope and Talbot	Eau Claire	WI
Chloroform	Pulp and Paper	Publishers Paper	Oregon City	OR
Chloroform	Pulp and Paper	Brunswick Pulp	Brunswick	GA
Chloroform	Pulp and Paper	Consolidated Paper	Wisconsin Rapids	WI
Chloroform	Pulp and Paper	Hammermill	Selma	AL
Chloroform	Pulp and Paper	James River	Old Town	ME
Chloroform	Pulp and Paper	Louisiana Pacific	Samoa	CA
Chloroform	Pulp and Paper	Weyerhaeuser	Everett	WA
Chloroform	Pulp and Paper	Allied Paper	Jackson	AL
Chloroform	Pulp and Paper	Boise Cascade	Wallula	WA
Chloroform	Pulp and Paper	Bowater Southern	Calhoun	TN
Chloroform	Pulp and Paper	Champion International	Cantonment	FL
Chloroform	Pulp and Paper	Champion International	Houston	TX
Chloroform	Pulp and Paper	Champion International	Lufkin	TX
Chloroform	Pulp and Paper	Crown Zellerbach	Bogalusa	LA

TABLE 3: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 1000 But Less Than 1 in 100 Sorted by Pollutant and Source Category and Source Category

<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>	<u>State</u>
Chloroform	Pulp and Paper	Crown Zellerbach	Camas*	WA
Chloroform	Pulp and Paper	Crown Zellerbach	Clatskanie	OR
Chloroform	Pulp and Paper	Crown Zellerbach	St. Francisville	LA
Chloroform	Pulp and Paper	Georgia Pacific	Crossett	AR
Chloroform	Pulp and Paper	Georgia Pacific	Palatka	FL
Chloroform	Pulp and Paper	Georgia Pacific	Woodland	ME
Chloroform	Pulp and Paper	Gilmore Paper	St. Mary's	GA
Chloroform	Pulp and Paper	Hercules, Inc.	Hopewell	VA
Chloroform	Pulp and Paper	International Paper	Mobile	AL
Chloroform	Pulp and Paper	International Paper	Moss Point	MS
Chloroform	Pulp and Paper	ITT Rayonier	Jessup	GA
Chloroform	Pulp and Paper	Longview Fiber	Longview	WA
Chloroform	Pulp and Paper	Louisiana Pacific	Antioch	CA
Chloroform	Pulp and Paper	St. Joe Paper	Port St. Joe	FL
Chloroform	Pulp and Paper	SW Forest Industries	Panama City	FL
Chloroform	Pulp and Paper	SW Forest Industries	Snowflake	AZ
Chloroform	Pulp and Paper	Union Camp	Franklin	VA
Chloroform	Pulp and Paper	Westvaco	Covington	VA
Chloroform	Pulp and Paper	Weyerhaeuser	Plymouth	NC
Chloroform	Pulp and Paper	Crown Zellerbach	Camas*	WA
Chloroform	Pulp and Paper	Finch, Pruyn, & Co.	Glen Falls	NY
Chloroform	Pulp and Paper	Georgia Pacific	Bellingham	WA
Chloroform	Pulp and Paper	ITT Rayonier	Ferdandina Beach	FL
Chloroform	Pulp and Paper	ITT Rayonier	Hoquiam	WA
Chloroform	Pulp and Paper	ITT Rayonier	Port Angeles	WA
Chloroform	Pulp and Paper	Nekoosa	Port Edwards	WI
Chloroform	Pulp and Paper	Proctor & Gamble	Green Bay	WI
Chloroform	Pulp and Paper	Proctor & Gamble	Mehoopany	PA
Chloroform	Pulp and Paper	Weyerhaeuser	Cosmopolis	WA
Chloroform	Pharmaceutical	Hoffman Laroche	Belvidere	NJ
Chloroform	Pulp and Paper	Boise Cascade	Int'l Falls	MN
Chloroform	Pulp and Paper	Boise Cascade	Rumford	ME
Chloroform	Pulp and Paper	Hammermill	Erie	PA
Chloroform	Pulp and Paper	International Paper	Jay	ME
Chloroform	Pulp and Paper	Mead Corporation	Chillicothe	OH
Chloroform	Pulp and Paper	Mead Corporation	Escanaba	MI
Chloroform	Pulp and Paper	Nekoosa	Ashdown	AR
Chloroform	Pulp and Paper	P. H. Glatfelter	Spring Grove	PA
Chloroform	Pulp and Paper	Penntech	Johnsonburg	PA
Chloroform	Pulp and Paper	Simpson Paper	Anderson	CA

*Chloroform emissions from Crown Zellerbach, Camas, WA are listed twice for separate processes.

TABLE 3: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 1000 But Less Than 1 in 100 Sorted by Pollutant and Source Category and Source Category

<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>	<u>State</u>
Chloroform	Pulp and Paper	Westvaco	Luke	MD
Chromium	Chemicals Production	American Chrome	Corpus Christi	TX
Chromium	Chemicals Production	Diamond Shamrock	Castle Hayne	NC
Chromium	Cooling Towers	Amoco	Texas City	TX
Chromium	Cooling Towers	Shell/Carlson	Los Angeles	CA
Chromium	Ferrochrome Production	Macalloy Corp.	Charleston	SC
Ethylene Dichloride	EDC Production	B. F. Goodrich	Calvert City	KY
Ethylene Dichloride	EDC Production	Borden	Geismar	LA
Ethylene Dichloride	EDC Production	Diamond Shamrock	Convent	LA
Ethylene Dichloride	EDC Production	Diamond Shamrock	Deer Park	TX
Ethylene Dichloride	EDC Production	Dow Chemical 1	Plaquemine	LA
Ethylene Dichloride	EDC Production	Formosa	Point Comfort	TX
Ethylene Dichloride	EDC Production	Shell	Deer Park	TX
Ethylene Dichloride	Pesticide Production	Rhone-Poulenc	Mt. Pleasant	TN
Ethylene Oxide	Commercial Sterilizers	Abbott Laboratories	Laurinburg	NC
Ethylene Oxide	Commercial Sterilizers	Abbott Laboratories	Rocky Mount	NC
Ethylene Oxide	Commercial Sterilizers	American Pharmaceutical	Irwindale	CA
Ethylene Oxide	Commercial Sterilizers	American Pharmaceutical	Johnson City	TN
Ethylene Oxide	Commercial Sterilizers	Arrow International	Randleman	NC
Ethylene Oxide	Commercial Sterilizers	Bard-Parker	Hancock	NY
Ethylene Oxide	Commercial Sterilizers	Becton Dickinson	Holdrege	NE
Ethylene Oxide	Commercial Sterilizers	C. R. Bard, Inc.	Covington	GA
Ethylene Oxide	Commercial Sterilizers	C. R. Bard, Inc.	Cranston	RI
Ethylene Oxide	Commercial Sterilizers	Cal-Compack Food	Santa Ana	CA
Ethylene Oxide	Commercial Sterilizers	Chesebrough-Ponds	Sherburne	NY
Ethylene Oxide	Commercial Sterilizers	Cobe Laboratories	Lakewood	CO
Ethylene Oxide	Commercial Sterilizers	Concord Laboratories	Keene	NH
Ethylene Oxide	Commercial Sterilizers	Deseret Medical	Sandy	UT
Ethylene Oxide	Commercial Sterilizers	ETO Sterilization	Linden	NJ
Ethylene Oxide	Commercial Sterilizers	Gilroy Foods Inc	Gilroy	CA
Ethylene Oxide	Commercial Sterilizers	Johnson & Johnson	New Brunswick	NJ
Ethylene Oxide	Commercial Sterilizers	Johnson & Johnson	Sherman	TX
Ethylene Oxide	Commercial Sterilizers	Kendall Company	Augusta	GA
Ethylene Oxide	Commercial Sterilizers	Kendall Company	Bethune	SC
Ethylene Oxide	Commercial Sterilizers	McCormick & Co	Hunt Valley	MD
Ethylene Oxide	Commercial Sterilizers	McCormick & Co	Salinas	CA
Ethylene Oxide	Commercial Sterilizers	Medsteril Inc.	Mundelein	IL
Ethylene Oxide	Commercial Sterilizers	Micro-Biotrol	Boundbrook	NJ
Ethylene Oxide	Commercial Sterilizers	Micro-Biotrol	Levittown	PA

TABLE 3: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than and Equal to 1 in 1000 But Less Than 1 in 100 Sorted by Pollutant and Source Category

<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>	<u>State</u>
Ethylene Oxide	Commercial Sterilizers	Micro-Biotrol	Vernon	CA
Ethylene Oxide	Commercial Sterilizers	Santa Maria Child	Santa Maria	CA
Ethylene Oxide	Commercial Sterilizers	Seamless Hospital	Ocala	FL
Ethylene Oxide	Commercial Sterilizers	Sherwood Medical	Commerce	TX
Ethylene Oxide	Commercial Sterilizers	Sterilization Service	Atlanta	GA
Ethylene Oxide	Commercial Sterilizers	Sterilization Service	Memphis	TN
Ethylene Oxide	Commercial Sterilizers	The West Co. Jersey	Jersey Shore	PA
Ethylene Oxide	Commercial Sterilizers	Travenol Labs	Aibonito	PR
Ethylene Oxide	Commercial Sterilizers	Travenol Labs	Cleveland	MS
Ethylene Oxide	Commercial Sterilizers	Travenol Labs	Jayuya	PR
Ethylene Oxide	Commercial Sterilizers	Travenol Labs	Kingstree	SC
Ethylene Oxide	Commercial Sterilizers	United States Surgical	North haven	CT
Ethylene Oxide	Commercial Sterilizers	Valleylab, Inc.	Boulder	CO
Ethylene Oxide	Ethylene Oxide Production	Dow Chemical	Plaquemine	LA
Ethylene Oxide	Ethylene Oxide Production	PD Glycol	Beaumont	TX
Methylene Chloride	Chlorinated Hydrocarbon use	B. F. Goodrich	Avon Lake	OH
Methylene Chloride	Chlorinated Hydrocarbon use	Dow Chemical	Midland	MI
Methylene Chloride	Chlorinated Hydrocarbon use	G.E. (Bldg. 14/16)	Mt. Vernon	IN
Methylene Chloride	Chlorinated Hydrocarbon use	G.E. (Bldg. 15/31)	Mt. Vernon	IN
Methylene Chloride	Chlorinated Hydrocarbon Production	Dow Chemical 2	Plaquemine	LA
Methylene Chloride	Chlorinated Hydrocarbon Production	LCP Chemicals	Moundsville	WV
Methylene Chloride	Pesticide Production	DuPont	LaPorte	TX
Methylene Chloride	Pharmaceutical	Burroughs Wellcome	Greenville	NC
Methylene Chloride	Pharmaceutical	Merck	Albany	GA
Methylene Chloride	Pharmaceutical	Upjohn	Kalamazoo	MI
Vinylidene Chloride	VDC Polymer	Dow	Dalton	GA

TABLE 4: Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 10 Sorted by State

<u>State</u>	<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>
TX	Butadiene	Butadiene Production	Texaco	Port Neches

TABLE 5: Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 100 But Less Than 1 in 10 Sorted by State

<u>State</u>	<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>
AK	Chloroform	Pulp and Paper	Louisiana Pacific	Ketchikan
AL	Chloroform	Pulp and Paper	Scott Paper	Mobile
CA	Butadiene	Styrene, Butadiene Resins	Unocal	La Mirada
CA	Chloroform	Pulp and Paper	Simpson Paper Co.	Fairhaven
CO	Butadiene	Polybutadiene	Colorado Chemical	Golden
DE	Butadiene	Styrene, Butadiene Resins	Reichhold	Cheswold
FL	Chloroform	Pulp and Paper	Buckeye Cellulose	Foley
GA	Butadiene	Styrene, Butadiene Resins	Reichhold	Kensington
GA	Butadiene	Styrene, Butadiene Resins	Goodyear	Calhoun
GA	Butadiene	Styrene, Butadiene Resins	Dow	Dalton
ID	Chloroform	Pulp and Paper	Pottlach Corporation	Lewiston
IL	Butadiene	Polybutadiene	Borg Warner	Ottawa
KY	Butadiene	Styrene, Butadiene Resins	American Synthetic	Louisville
LA	Butadiene	Neoprene	Dupont	LaPlace
LA	Butadiene	Butadiene Producers	Exxon	Baton Rouge
LA	Butadiene	Styrene, Butadiene Resins	Copolymer	Baton Rouge
LA	Ethylene Dichloride	Production	Formosa	Baton Rouge
LA	Ethylene Oxide	Production	BASF Wyandotte	Geismar
LA	Ethylene Oxide	Production	Shell	Geismar
LA	Ethylene Oxide	Production	Union Carbide	Taft
NC	Chloroform	Pulp and Paper	Champion International	Canton
OH	Butadiene	Styrene, Butadiene Resins	Gen Corp	Mogadore
OH	Butadiene	Styrene, Butadiene Resins	Goodyear	Akron
OR	Chloroform	Pulp and Paper	Boise Cascade	St. Helens
PA	Butadiene	Styrene, Butadiene Resins	Polysar	Monaca
PR	Ethylene Oxide	Commercial Sterilization	Abbott Laboratories	Barceloneta
TN	Butadiene	Styrene, Butadiene Resins	Polysar	Chattanooga #1
TN	Butadiene	Styrene, Butadiene Resins	Polysar	Chattanooga #2
TX	Butadiene	Polybutadiene	Arco Chemicals	Channelview
TX	Butadiene	Polybutadiene	Goodyear Tire	Beaumont
TX	Butadiene	Polybutadiene	Polysar	Orange
TX	Butadiene	Butadiene Producers	Arco	Channelview

TABLE 5: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 100 But Less Than 1 in 10 Sorted by State

<u>State</u>	<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>
TX	Butadiene	Butadiene Producers	El Paso	Corpus Christi
TX	Butadiene	Butadiene Producers	Shell Oil	Deer Park
TX	Butadiene	Butadiene Producers	Texas Petrochem	Houston
TX	Butadiene	Styrene, Butadiene Resins	B. F. Goodrich	Port Neches
TX	Butadiene	Styrene, Butadiene Resins	Gen Corp	Odessa
TX	Butadiene	Styrene, Butadiene Resins	Goodyear	Houston
TX	Butadiene	Styrene, Butadiene Resins	Uniroyal	Port Neches
TX	Ethylene Oxide	Production	ICI Americas	Bayport
TX	Ethylene Oxide	Production	Texaco	Port Neches
TX	Ethylene Oxide	Production	Texas Eastman	Longview
WA	Chloroform	Pulp and Paper	Simpson Tacoma	Tacoma
WA	Chloroform	Pulp and Paper	Weyerhaeuser	Longview
WV	Butadiene	Styrene, Butadiene Resins	Borg-Warner	Washington

TABLE 6: Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 1000 But Less Than 1 in 100 Sorted by State

<u>State</u>	<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>
AL	Carbon Tetrachloride	Chlorinated Hydrocarbon Production	Stauffer	Lemoyne
AL	Chloroform	Pulp and Paper	Hammermill	Selma
AL	Chloroform	Pulp and Paper	Allied Paper	Jackson
AL	Chloroform	Pulp and Paper	International Paper	Mobile Point
AR	Chloroform	Pulp and Paper	Georgia Pacific	Crossett
AR	Chloroform	Pulp and Paper	Nekoosa	Ashdown
AZ	Chloroform	Pulp and Paper	SW Forest Industries	Snowflake
AZ	Arsenic	Primary CU Smelters	Asarco	Hayden
AZ	Arsenic	Primary CU Smelters	Phelps Dodge	Douglas
CA	Butadiene	Styrene, Butadiene Resins	Dow	Pittsburg
CA	Carbon Tetrachloride	Chlorinated Hydrocarbon Production	Dow Chemical	Pittsburg
CA	Chloroform	Pulp and Paper	Louisiana Pacific	Samoa
CA	Chloroform	Pulp and Paper	Louisiana Pacific	Antioch
CA	Chloroform	Pulp and Paper	Simpson Paper	Anderson
CA	Chromium	Cooling Towers	Shell/Carlson	Los Angeles
CA	Ethylene Oxide	Commercial Sterilizers	American Pharmaceutical	Irwindale
CA	Ethylene Oxide	Commercial Sterilizers	Cal-Compac Food	Santa Ana
CA	Ethylene Oxide	Commercial Sterilizers	Gilroy Foods Inc	Gilroy
CA	Ethylene Oxide	Commercial Sterilizers	McCormick & Co	Salinas
CA	Ethylene Oxide	Commercial Sterilizers	Micro-Blotrol	Vernon
CA	Ethylene Oxide	Commercial Sterilizers	Santa Maria Chili	Santa Maria
CO	Ethylene Oxide	Commercial Sterilizers	Valleylab, Inc.	Boulder
CO	Ethylene Oxide	Commercial Sterilizers	Cobe Laboratories	Lakewood
CT	Butadiene	Styrene, Butadiene Resins	Dow	Gales Ferry
CT	Ethylene Oxide	Commercial Sterilizers	United States Surgical	North Haven
FL	Chloroform	Pulp and Paper	Champion International	Cantonment
FL	Chloroform	Pulp and Paper	Georgia Pacific	Palatka
FL	Chloroform	Pulp and Paper	St. Joe Paper	Port St. Joe
FL	Chloroform	Pulp and Paper	SW Forest Industries	Panama City
FL	Chloroform	Pulp and Paper	ITT Rayonier	Ferdandina Beach
FL	Ethylene Oxide	Commercial Sterilizers	Seamless Hospital	Ocala
GA	Chloroform	Pulp and Paper	Brunswick Pulp	Brunswick
GA	Chloroform	Pulp and Paper	Gilmore Paper	St. Mary's

TABLE 6: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 1000 But Less Than 1 in 100 Sorted by State

<u>State</u>	<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>
GA	Chloroform	Pulp and Paper	ITT Rayonier	Jessup
GA	Ethylene Oxide	Commercial Sterilizers	C. R. Bard, Inc.	Covington
GA	Ethylene Oxide	Commercial Sterilizers	Kendall Company	Augusta
GA	Ethylene Oxide	Commercial Sterilizers	Sterilization Service	Atlanta
GA	Methylene Chloride	Pharmaceutical	Merck	Albany
GA	Vinylidene Chloride	VDC Polymer	Dow	Dalton
IL	Ethylene Oxide	Commercial Sterilizers	Medsteril Inc.	Mundelein
IN	Methylene Chloride	Chlorinated Hydrocarbon use	G.E. (Bldg. 14/16)	Mt. Vernon
IN	Methylene Chloride	Chlorinated Hydrocarbon use	G.E. (Bldg. 15/31)	Mt. Vernon
KA	Carbon Tetrachloride	Chlorinated Hydrocarbon Production	Vulcan Chemical	Wichita
KS	Chloroform	Chlorinated Hydrocarbon Production	Vulcan Chemical	Wichita
KY	Butadiene	Polybutadiene	American Synthetic	Louisville
KY	Butadiene	Styrene, Butadiene Resins	W. R. Grace	Owensboro
KY	Ethylene Dichloride	EDC Production	B. F. Goodrich	Calvert City
LA	Butadiene	Styrene, Butadiene Resins	Firestone	Lake Charles
LA	Carbon Tetrachloride	Chlorinated Hydrocarbon Production	Dow Chemical 1	Plaquemine
LA	Chloroform	Chlorinated Hydrocarbon Production	Dow Chemical 2	Plaquemine
LA	Chloroform	Chlorinated Hydrocarbon Production	Vulcan Chemical	Geismar
LA	Chloroform	Pulp and Paper	Crown Zellerbach	Bogalusa
LA	Chloroform	Pulp and Paper	Crown Zellerbach	St. Francisville
LA	Ethylene Dichloride	EDC Production	Borden	Geismar
LA	Ethylene Dichloride	EDC Production	Diamond Shamrock	Convent
LA	Ethylene Dichloride	EDC Production	Dow Chemical 1	Plaquemine
LA	Ethylene Oxide	Ethylene Oxide Production	Dow Chemical	Plaquemine
LA	Methylene Chloride	Chlorinated Hydrocarbon Production	Dow Chemical 2	Plaquemine

TABLE 6: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 1000 But Less Than 1 in 100 Sorted by State

<u>State</u>	<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>
MD	Chloroform	Pulp and Paper	Westvaco	Luke
MD	Ethylene Oxide	Commercial Sterilizers	McCormick & Co	Hunt Valley
ME	Chloroform	Pulp and Paper	James River	Old Town
ME	Chloroform	Pulp and Paper	Georgia Pacific	Woodland
ME	Chloroform	Pulp and Paper	Boise Cascade	Rumford
ME	Chloroform	Pulp and Paper	International Paper	Jay
MI	Butadiene	Styrene, Butadiene Resins	Dow	Midland
MI	Chloroform	Pulp and Paper	Mead Corporation	Escanaba
MI	Methylene Chloride	Chlorinated Hydrocarbon use	Dow Chemical	Midland
MI	Methylene Chloride	Pharmaceutical	Upjohn	Kalamazoo
MN	Chloroform	Pulp and Paper	Boise Cascade	Int'l Falls
MS	Chloroform	Pulp and Paper	International Paper	Moss Point
MS	Ethylene Oxide	Commercial Sterilizers	Travenol Labs	Cleveland
MT	Arsenic	Primary PB Smelters	Asarco	East Helena
NC	Chloroform	Pulp and Paper	Weyerhaeuser	Plymouth
NC	Chromium	Chemicals Production	Diamond Shamrock	Castle Hayne
NC	Ethylene Oxide	Commercial Sterilizers	Abbott Laboratories	Laurinburg
NC	Ethylene Oxide	Commercial Sterilizers	Abbott Laboratories	Rocky Mount
NC	Ethylene Oxide	Commercial Sterilizers	Arrow International	Randleman
NC	Methylene Chloride	Pharmaceutical	Burroughs Wellcome	Greenville
NE	Ethylene Oxide	Commercial Sterilizers	Becton Dickinson	Holdrege
NH	Ethylene Oxide	Commercial Sterilizers	Concord Laboratories	Keene
NJ	Ethylene Oxide	Commercial Sterilizers	ETO Sterilization	Linden
NJ	Ethylene Oxide	Commercial Sterilizers	Johnson & Johnson	New Brunswick
NJ	Ethylene Oxide	Commercial Sterilizers	Micro-Biotrol	Boundbrook
NJ	Chloroform	Pulp and Paper	Marcal Paper Mills	Elmwood Park
NJ	Chloroform	Pharmaceutical	Hoffman Laroche	Belvidere
NY	Ethylene Oxide	Commercial Sterilizers	Bard-Parker	Hancock
NY	Chloroform	Pulp and Paper	Finch, Pruyn, & Co.	Glen Falls
NY	Ethylene Oxide	Commercial Sterilizers	Chesebrough-Ponds	Sherburne
OH	Methylene Chloride	Chlorinated Hydrocarbon use	B. J. Goodrich	Avon Lake
OH	Chloroform	Pulp and Paper	Appleton Papers	West Carrollton

TABLE 6: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 1000 But Less Than 1 in 100 Sorted by State

<u>State</u>	<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>
OH	Chloroform	Pulp and Paper	Mead Corporation	Chillicothe
OR	Chloroform	Pulp and Paper	Pope and Talbot	Halsey
OR	Chloroform	Pulp and Paper	Publishers Paper	Oregon City
OR	Chloroform	Pulp and Paper	Crown Zellerbach	Clatskanie
PA	Arsenic	Zinc Oxide	New Jersey Zinc	Palmerton
PA	Chloroform	Pulp and Paper	Proctor & Gamble	Mehoopany
PA	Chloroform	Pulp and Paper	Hammermill	Erie
PA	Chloroform	Pulp and Paper	P. H. Glatfelter	Spring Grove
PA	Chloroform	Pulp and Paper	Penntech	Johnsonburg
PA	Ethylene Oxide	Commercial Sterilizers	Micro-Biotrol	Levittown
PA	Ethylene Oxide	Commercial Sterilizers	The West Co. Jersey	Jersey Shore
PR	Ethylene Oxide	Commercial Sterilizers	Travenol Labs	Aibonito
PR	Ethylene Oxide	Commercial Sterilizers	Travenol Labs	Jayuya
RI	Ethylene Oxide	Commercial Sterilizers	C. R. Bard, Inc.	Cranston
SC	Ethylene Oxide	Commercial Sterilizers	Kendall Company	Bethune
SC	Chromium	Ferrochrome Production	Macalloy Corp.	Charleston
SC	Ethylene Oxide	Commercial Sterilizers	Travenol Labs	Kingstree
TN	Carbon Tetrachloride	Pesticide Production	Velsicol	Memphis
TN	Chloroform	Pulp and Paper	Bowater Southern	Calhoun
TN	Ethylene Dichloride	Pesticide Production	Rhone-Poulenc	Mt. Pleasant
TN	Ethylene Oxide	Commercial Sterilizers	American Pharmaceutical	Johnson City
TN	Ethylene Oxide	Commercial Sterilizers	Sterilization Service	Memphis
TX	Arsenic	Primary CU Smelters	Asarco	El Paso*
TX	Butadiene	Neoprene	Denka	Houston
TX	Butadiene	Polybutadiene	Firestone	Orange
TX	Butadiene	Polybutadiene	Phillips	Borger
TX	Butadiene	Butadiene Producers	Corpus Christi	Corpus Christi
TX	Butadiene	Butadiene Producers	Dow	Freeport
TX	Butadiene	Butadiene Producers	Exxon	Baytown
TX	Butadiene	Butadiene Producers	Mobil	Beaumont
TX	Butadiene	Butadiene Producers	Phillips	Borger
TX	Carbon Tetrachloride	Chlorinated Hydrocarbon Use	E. I Dupont	Beaumont
TX	Carbon Tetrachloride	Chlorinated Hydrocarbon Production	DuPont	Corpus Christi
TX	Carbon Tetrachloride	Pesticide Production	SDS Biotech	Houston
TX	Chloroform	Pulp and Paper	Temple Eastex	Silsbee

*Subject to arsenic NESHAP. NESHAP controls not reflected in risk estimates.

TABLE 6: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 1000 But Less Than 1 in 100 Sorted by State

State	Pollutant	Source Category	Plant	City
TX	Chloroform	Chlorinated Hydrocarbon Use	E. I. Dup/Hypalon	Beaumont
TX	Chloroform	Pulp and Paper	Champion International	Houston
TX	Chloroform	Pulp and Paper	Champion International	Lufkin
TX	Chromium	Chemicals Production	American Chrome	Corpus Christi
TX	Chromium	Cooling Towers	Amoco	Texas City
TX	Ethylene Dichloride	EDC Production	Diamond Shamrock	Deer Park
TX	Ethylene Dichloride	EDC Production	Formosa	Point Comfort
TX	Ethylene Dichloride	EDC Production	Shell	Deer Park
TX	Ethylene Oxide	Commercial Sterilizers	Johnson & Johnson	Sherman
TX	Ethylene Oxide	Commercial Sterilizers	Sherwood Medical	Commerce
TX	Ethylene Oxide	Ethylene Oxide Production	PD Glycol	Beaumont
TX	Methylene Chloride	Pesticide Production	DuPont	LaPorte
UT	Ethylene Oxide	Commercial Sterilizers	Deseret Medical	Sandy
VA	Chloroform	Pulp and Paper	Hercules, Inc.	Hopewell
VA	Chloroform	Pulp and Paper	Union Camp	Franklin
VA	Chloroform	Pulp and Paper	Westvaco	Covington
WA	Chloroform	Pulp and Paper	Longview Fiber	Longview
WA	Chloroform	Pulp and Paper	Weyerhauser	Everett
WA	Chloroform	Pulp and Paper	Boise Cascade	Wallula
WA	Chloroform	Pulp and Paper	Crown Zellerbach	Camas*
WA	Chloroform	Pulp and Paper	Georgia Pacific	Bellingham
WA	Chloroform	Pulp and Paper	Crown Zellerbach	Camas*
WA	Chloroform	Pulp and Paper	ITT Rayonier	Hoquiam
WA	Chloroform	Pulp and Paper	ITT Rayonier	Port Angeles
WA	Chloroform	Pulp and Paper	Weyerhauser	Cosmopolis
WI	Chloroform	Pulp and Paper	P. H. Glatfelter	Neenah
WI	Chloroform	Pulp and Paper	Pope and Talbot	Eau Claire
WI	Chloroform	Pulp and Paper	Consolidated Paper	Wisconsin
WI	Chloroform	Pulp and Paper	Nekoosa	Port Edwards
WI	Chloroform	Pulp and Paper	Proctor & Gamble	Green Bay

*Chloroform emissions from Crown Zellerbach, Camas, VA are listed twice for separate processes.

TABLE 6: (Continued) Estimated Maximum Individual Lifetime Risk Greater Than or Equal to 1 in 1000 But Less Than 1 in 100 Sorted by State

<u>State</u>	<u>Pollutant</u>	<u>Source Category</u>	<u>Plant</u>	<u>City</u>
WV	Carbon Tetrachloride	Chlorinated Hydrocarbon Production	LCP Chemicals	Moundsville Rapids
WV	Chloroform	Chlorinated Hydrocarbon Production	Diamond Shamrock	Belle
WV	Chloroform	Chlorinated Hydrocarbon Production	LCP Chemicals	Moundsville
WV	Methylene Chloride	Chlorinated Hydrocarbon Production	LCP Chemicals	Moundsville