

MICHIGAN WORKFORCE, 2021:

Potential Exposure to Acrylic Acid,
Chromium or Chromium Compounds,
Diethanolamine & Ethylene Oxide



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There are many resources available to help employers, employees, health care professionals and others understand more about work-related asthma. Links to these resources can be found at: **www.oem.msu.edu**.

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Michigan companies using select chemicals capable of causing asthma were identified through the United States Environmental Protection Agency (EPA) Toxic Release Inventory (TRI) to characterize potential exposure among workers. Companies are required to report select chemicals, including some that cause asthma, if usage exceeds 10,000 pounds per year and the company has a minimum of 10 employees. Chemicals used among Michigan workers reviewed in this report include: acrylic acid, chromium or chromium compounds, diethanolamine and ethylene oxide. These chemicals are part of the 650 substances whose usage requires reporting to the EPA. The chemicals reported to the EPA can be found at www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals. To determine the chemicals reported by specific companies go to www.epa.gov/toxics-release-inventory-tri-program/tri-data-and-tools#tridata-facilities. Similar information on exposures to isocyanates, maleic anhydride and methyl methacrylate can be found in the 2021 Annual Report: Tracking Work Related Asthma in Michigan, Tables 22 and 23 (www.oem.msu.edu/).

In past reports, the Michigan Department of Environment, Great Lakes, and Energy (EGLE, formerly the Department of Environmental Quality, DEQ) provided the names of companies that used the same select chemicals capable of causing asthma, listed in the Michigan Facilities' Guide to SARA Title III, Emergency Planning and Release Report. The criteria for reporting to EGLE differ from EPA. Companies are required to report to EGLE if a chemical used by the company is known to cause cancer or other chronic human health effects, significant adverse acute human health effects, and/or significant adverse environmental effects. As of 2021, overall data reported to EGLE are no longer available due to a change in EGLE's Freedom of Information Act (FOIA) procedures. Data can only be requested one company at a time.

Data on the total number of employees working in the facilities identified were gathered from online searches using Manta, Dun and Bradstreet, and CareerOneStop.org business finder. The total number of workers in Michigan counties was obtained from the Michigan Labor Market Information, Data Explorer (www.milmi.org/). Percentages of potentially exposed workers by county were calculated.

In 2021, there were four companies that reported use of acrylic acid with 489 potentially exposed workers (Table A). One hundred sixty-six facilities reported usage of chromium or chromium compounds with 62,949 employees potentially exposed (Table B). Number of facilities are reported for Table B as some companies have multiple facilities in different counties. Twelve companies reported diethanolamine use with 2,139 potentially exposed workers (Table C). Two companies reported ethylene oxide use with 382 potentially exposed workers (Table D). Percentages of the workforce potentially exposed to these chemicals in each county were calculated and are listed in their respective tables.

All the chemicals analyzed in this report have been reported in the medical literature to cause asthma as respiratory sensitizers except for ethylene oxide, which is capable of causing Reactive Airways Dysfunction Syndrome (RADS). Health care providers can use this table as an initial step in evaluating possible exposure for their patients if they work at one of the facilities listed. Additional information on the chemicals used at a patient's company may be obtained by using the state's online portal for the EGLE FOIA Request Center at: www.michigan.gov/egle/contact/foia.

Limitations of the data reported are: there was underestimation of employees at risk because non-manufacturing companies are not required by law to report chemical use to the EPA, as well as companies using or manufacturing less than the specified amounts that trigger reporting. In addition, over-estimates of the number of individuals exposed for the EPA data were generated because total employee counts included all the individuals working for a company, even though it is likely that not all workers in a company would have jobs assignments that would cause them to have a potential exposure to the reported chemical.

Sources:

- Business Finder at: www.careeronestop.org, accessed 8-31-2023.
- Manta.com, accessed 8-31-2023.
- Dun & Bradstreet Hoovers www.dnbhoovers.com, accessed 8-31-2023.
- Michigan Labor Market Information, Unemployment Statistics (LAUS): 2021 Data Explorer, accessed 8-31-2023 at: <http://milmi.org>.
- Toxic Release Inventory (TRI) Explorer, Releases: Facility Report, 2021 for select chemicals, accessed 8-29-2023 at: https://enviro.epa.gov/triexplorer/tri_release.chemical.

Table A—Michigan Workers Employed in Facilities that Use or Manufacture Acrylic Acid, by County: 2021

County	Company Name	# Workers Employed in Acrylic Acid Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Acrylic Acid
INGHAM	AURORA SPECIALTY CHEMISTRIES	32	134011	<0.1
MIDLAND	TRINSEO – MI OPERATIONS	40	36711	0.1
WAYNE	BASF CORP	375	733422	<0.1
	EQ DETROIT INC	42		
TOTAL		489	904144	<0.1

Table B—Michigan Workers Employed in Facilities that Use or Manufacture Chromium or Chromium Compounds, by County: 2021

County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
ALLEGAN	L & W	375	57775	1.0
	TRANS-MATIC MFG	225		
ALPENA	LAFARGE MIDWEST	375	12434	3.0
ANTRIM	ANCHOR LAMINA AMERICA	175	9204	7.3
	EAST JORDAN FOUNDRY	500		
BARRY	HASTINGS MFG	413	29487	2.4
	MIDDLEVILLE TOOL & DIE	300		
BAY	BAY CAST – CENTER ST & WEBSTER ST PLANTS	375	45168	1.0
	STRAITS WOOD TREATING	55		
BERRIEN	GAST MFG	320	65936	0.7
	NCP COATINGS	95		
	NILES STEEL TANK	42		
BRANCH	ARCOSA SHORING – MENDON	150	18294	6.0
	ASAMA COLDWATER MFG	340		
	BLUEWATER THERMAL – COLDWATER	300		
	HC STARCK	300		
CALHOUN	ARCOSA SHORING – M-60	26	55512	3.9
	AVIENT COLORANTS – ALBION	419		
	BREMBO HOMER FOUNDRY	300		
	KNAUF INSULATION	420		
	MUSASHI AUTO PARTS	500		
	OMEGA CASTINGS	55		
	STELMI AMERICA	55		
	TENNECO AUTOMOTIVE	375		

County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
CASS	MIDWEST TIMBER	50	21996	0.2
CLINTON	MAHLE ENGINE COMPONENTS	300	37246	0.8
DICKINSON	BOSS PRODUCTS/TORO CO	300	11624	6.9
	GREDE – IRON MOUNTAIN	500		
EATON	LINN PRODUCTS	300	51306	0.6
GRAND TRAVERSE	CENTURY SPECIALTIES	75	45701	0.2
HILLSDALE	TENNECO AUTOMOTIVE	375	18703	2.0
HURON	BLUE DIAMOND STEEL CASTING	200	14043	4.6
	HURON CASTING	184		
	TOWER AUTOMOTIVE	265		
INGHAM	ARCOSA SHORING PRODUCTS	300	134011	0.5
	ORCHID ORTHOPEDIC SOLUTIONS	119		
	SYMMETRY MED – AURELIUS	232		
	TENNECO AUTOMOTIVE	50		
IONIA	THK RHYTHM AUTOMOTIVE	291	28294	2.3
	VENTRA IONIA MAIN	349		
ISABELLA	MORBARK	413	30166	4.1
	THE DELFIELD CO	650		
	UNIFIED BRANDS – RANDELL	174		
JACKSON	CHEMETALL	42	67825	1.1
	ELM PLATING	300		
	GERDAU SPECIAL STEEL NA	300		
	WORTHINGTON SPECIALTY PROCESSING	72		
KALAMAZOO	FLOWSERVE CORP	1100	121925	4.0
	KAISER ALUMINUM FABRICATED PRODUCTS	300		
	PHARMACIA & UPJOHN/PFIZER	3500		
KENT	ALLIED FINISHING – BROADMOOR	145	333242	1.3
	AUTOCAM PRECISION	175		
	BENTELER AUTO – HAGEN	530		
	BETZ INDUSTRIES	90		
	ELECTRO CHEMICAL FINISHING	175		
	GM COMPONENTS HOLDINGS	500		
	HAVILAND ENTERPRISES	145		
	KNAPE & VOGT MFG	582		
	LACKS ENTERPRISES – 52 ND ST	1000		
	LACKS ENTERPRISES – AIRLINE	175		
	LACKS ENTERPRISES – BARDEN	175		
	PHILLIPS & JOSHSTON ROCK RIVER FAB	55		
	PLASTIC PLATE – KRAFT	7		
RAPID ENGINEERING	47			

County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
KENT, continued	STEELTECH	66		
	VI-CHEM CORP	300		
LAPEER	KAMAX	460	37743	1.8
	LAPEER PLATING & PLASTICS	225		
LENAWEE	ERVIN TECHNOLOGIES	55	42137	0.1
LIVINGSTON	COR-MET	35	97724	0.9
	DIAMOND CHROME PLATING	60		
	EBERSPAECHER NA	400		
	PRECISION STAMPING CO	50		
	PROGRESSIVE METAL FORMING	38		
	WYMAN-GORDON	294		
MACOMB	AG SIMPSON USA	30	414146	0.3
	BEACON PARK FINISHING	12		
	FRASER MFG	150		
	HENKEL CORP	125		
	INTERNATIONAL CASTING	17		
	INVECAST CORP	25		
	MB AEROSPACE WARREN	210		
	SAS GLOBAL	110		
	SMS TECHNICAL SERVICES – WARREN DIV	55		
	TOWER AUTO – CLINTON	266		
	WOLVERINE PLATING	50		
MANISTEE	PACKAGING CORP	3000	8993	33.4
MECOSTA	SIMONDS INTERNATIONAL	26	16708	0.2
MENOMINEE	LE JONES	390	10030	3.9
MIDLAND	DDP SPECIALTY ELECTRONIC MATERIALS	740	36711	4.9
	DOW CHEMICAL	1063		
MISSAUKEE	HYDROLAKE	55	6464	3.5
	LC MFG	170		
MONROE	DTE ELECTRIC – MONROE	85	67771	2.3
	GERDAU MACSTEEL – MONROE	536		
	GUARDIAN INDUSTRIES – CARLETON	500		
	JAYTEC	10		
	TAILOR WELDED BLANKS	430		
MONTCALM	MARVEL REFRIGERATION	300	25599	1.2
MUSKEGON	CANNON – MUSKEGON	158	69977	6.3
	CWC TEXTRON	275		
	EAGLE ALLOY	175		
	HOWMET CORP – PLANT 1 & 3	53		
	HOWMET CORP – PLANT 4	1384		
	HOWMET CORP – PLANT 10	2091		

County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
MUSKEGON, continued	TRAMEC SLOAN – FLEET ENGINEERS	300		
OAKLAND	AMERICAN AXLE & MFG – ROYAL OAK	300	630128	0.5
	COSMA BODY ASSEMBLY/MAGNA	750		
	EBERSPAECHER NA	300		
	EMERALD STEEL PROCESSING – MADISON HEIGHTS	71		
	GIFFIN INC	100		
	HENROB CORP	80		
	MACDERMID INC	58		
	MACLEAN-FOGG	300		
	MICHIGAN SEAMLESS TUBE	280		
	MOELLER MFG	200		
	MSP INDUSTRIES	250		
	PECO CARWASH SYSTEMS	55		
	SHANNON PRECISION FASTENER	32		
OGEMAW	HYPERION MATERIALS & TECH	68	7338	1.0
OTTAWA	EVOQUA WATER TECH	100	150580	0.5
	JH CAMPBELL GENERATING PLANT	306		
	LEGGETT & PLATT	55		
	METALFLOW CORP	192		
	MOBEX GLOBAL	7		
	SUPREME MACHINED PRODUCTS	138		
SAGINAW	ORCHID ORTHOPEDIC SOLUTIONS	400	75966	0.5
SANILAC	ASCO NUMATICS	195	17808	1.1
SHIAWASSEE	CIE NEWCOR MTG – OWOSSO	211	29961	1.0
ST CLAIR	DTE ELECTRIC – BELLE RIVER POWER PLANT	3	69936	0.1
	MICHIGAN METAL COATINGS	55		
ST JOSEPH	AMERICAN AXLE & MFG	500	26387	13.3
	ARMSTRONG INTERNATIONAL	3000		
WASHTENAW	DEXTER FASTENER TECH	224	180627	0.1
WAYNE	AJAX METAL PROCESSING	300	733422	2.6
	AK STEEL (CLEVELAND CLIFFS)	1600		
	DETROIT DIESEL – REDFORD	10000		
	DIPSOL OF AMERICA	26		
	EDW C LEVY CO – PLANT 1	300		
	EDW C LEVY CO – PLANT 3	4		
	EDW C LEVY CO – PLANT 6	4		
	EES COKE BATTERY	7		
	EQ DETROIT/US ECOLOGY	42		
	EUCLID MFG CO	20		

County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
WAYNE, continued	FINTEX	18	3966048	1.6
	FMC LIVONIA TRANSMISSION PLANT	242		
	FMC WOODHAVEN FORGING PLANT	1250		
	GM – ROMULUS ENGINE OPS	3000		
	HOOVER TREATED WOOD PRODUCTS	55		
	HOUGHTON INTERNATIONAL INC	47		
	L & W – 6771 & 6201 HAGGERTY	350		
	MAGNI INDUSTRIES	38		
	MCGEAN-ROHCO	45		
	NSS TECHNOLOGIES	40		
	OAKLAND STAMPING	250		
	ST MARYS CEMENT	90		
	STEEL INDUSTRIES – PLANT 1	367		
	STEEL INDUSTRIES – PLANT 4	2		
	TAILOR WELDED BLANKS	375		
	UNISTRUT INTERNATIONAL	250		
	US ECOLOGY MI (DYNECOL)	22		
	WAYNE DISPOSAL	50		
	WINDSOR MACHINE & STAMPING	75		
W.S. MOLNAR CO	44			
TOTAL		62949	3966048	1.6

Table C—Michigan Workers Employed in Facilities that Use or Manufacture Diethanolamine, by County: 2021

County	Company Name	# Workers Employed in Diethanolamine Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Diethanolamine
CLARE	LEAR (RENOSOL SEATING) – FARWELL	375	10282	3.6
JACKSON	CHEMETALL	42	67825	<0.1
LIVINGSTON	AMERICAN CHEMICAL TECH (SHELL – FOWLerville)	28	97724	<0.1
MACOMB	AXALTA COATING SYSTEMS – MT CLEMENS	750	414146	0.2
MUSKEGON	WEBB CHEMICAL SERVICE	55	69977	<0.1
OAKLAND	ASCORIUM (RECTICEL NA)	132	630128	<0.1
WAYNE	BASF CORP	55	733422	0.1
	CADILLAC OIL	55		
	EQ DETROIT/US ECOLOGY	42		
	MARATHON PETRO – MI REFINING DIV	375		

County	Company Name	# Workers Employed in Diethanamine Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Diethanamine
WAYNE, continued	PVS NOLWOOD CHEM	55		
	WOODBRIIDGE CORP	175		
TOTAL		2139	2023504	0.1

Table D—Michigan Workers Employed in Facilities that Use or Manufacture Ethylene Oxide, by County: 2021

County	Company Name	# Workers Employed in Ethylene Oxide Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Ethylene Oxide
LIVINGSTON	CENTURION MEDICAL PRODUCTS	7	97724	<0.1
WAYNE	BASF CORP	375	733422	<0.1
TOTAL		382	897728	<0.1