

MICHIGAN WORKFORCE, 2020:

**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. Similar information on exposures to isocyanates, maleic anhydride and methyl methacrylate can be found in the 2019 Annual Report: Tracking Work Related Asthma in Michigan, Tables 22 and 23 (www.oem.msu.edu).

In addition, 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. Companies reporting to EGLE must meet a threshold quantity of 25,000 pounds manufactured or 10,000 pounds otherwise used in company activities.

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 (<http://milmi.org>). Percentages of potentially exposed workers by county were calculated.

In 2020, there were five companies that reported use of acrylic acid with 713 potentially exposed workers (Table A). One hundred sixty-eight facilities reported usage of chromium or chromium compounds with 58,146 employees potentially exposed (Table B). Number of facilities are reported for Table B as some companies have multiple facilities in different counties. Eighteen companies reported diethanolamine use with 2,582 potentially exposed workers (Table C). Six companies reported ethylene oxide use with 2,627 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). Company information from EGLE did not exactly match the companies reported in the EPA TRI data. The EGLE, unlike EPA TRI data, lists all companies that meet threshold amounts regardless of employee size or facility type. However, a greater number of companies were reported through the EPA TRI database, likely related to the threshold amount for reporting, which is lower than that for the EGLE. 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. The EGLE data also share the potential for under-estimation of risk for companies that do not meet the threshold for reporting. In addition, over-estimates for both EPA and EGLE data were generated because total employee counts included all 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 12-1-2021.
- Manta.com, accessed 12-1-2021.
- Dun & Bradstreet www.dnb.com, accessed 12-1-2021
- Michigan Labor Market Information, Unemployment Statistics (LAUS): 2020 Data Explorer, accessed 12-1-2021 at: <http://milmi.org>.
- Toxic Release Inventory (TRI) Explorer, Releases: Facility Report, 2020 for select chemicals, accessed 12-1-2021 at: https://enviro.epa.gov/triexplorer/tri_release.chemical.
- SARA Title III-Toxic Chemical Release Inventory. Michigan Department of Environment, Great Lakes, and Energy, FOIA request for calendar year 2020 data obtained 11-29-2021.

Table A—Michigan Workers Employed in Facilities that Use or Manufacture Acrylic Acid, by County: 2020

TRI	EGLE	County	Company Name	# Workers Employed in Acrylic Acid Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Acrylic Acid
1	1	INGHAM	AURORA SPECIALTY CHEMISTRIES	32	136006	<0.1
1		JACKSON	ROYAL ADHESIVES & SEALANTS/H.B. FULLER	300	67407	0.4
1	1	MIDLAND	TRINSEO – MI OPERATIONS	36	36742	0.1
1	1	WAYNE	BASF CORP	300	686888	<0.1
1			EQ DETROIT INC	45		
TOTAL				713	927043	<0.1

Table B—Michigan Workers Employed in Facilities that Use or Manufacture Chromium or Chromium Compounds, by County: 2020

TRI	EGLE	County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
1		ALLEGAN	L & W	375	57710	1.0
1			TRANS-MATIC MFG	180		
1		ALPENA	LAFARGE MIDWEST	375	12224	3.1
1		ANTRIM	ANCHOR LAMINA AMERICA	175	9213	5.7
1			EAST JORDAN FOUNDRY	350		
1		BARRY	HASTINGS MFG	260	29033	1.8
1			MIDDLEVILLE TOOL & DIE	260		
1		BAY	BAY CAST – CENTER ST & WEBSTER ST PLANTS	200	45009	0.5
1			STRAITS WOOD TREATING	30		
1		BERRIEN	GAST MFG	367	66476	0.8
1			NCP COATINGS	125		
1			NILES STEEL TANK	35		
1		BRANCH	ARCOSA SHORING – MENDON	150	18148	4.7
1			ASAMA COLDWATER MFG	340		
1			BLUEWATER THERMAL – COLDWATER	300		
1			HC STARCK	64		
1		CALHOUN	ARCOSA SHORING – M-60	75	55844	3.2
1			BREMBO HOMER FOUNDRY	300		
1			CLARIANT PLASTICS & COATINGS – ALBION FACILITY	300		

TRI	EGLE	County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
1		CALHOUN, continued	KNAUF INSULATION	130		
1	MUSASHI AUTO PARTS		500			
1	OMEGA CASTINGS		55			
1	STELMI AMERICA		55			
1	TENNECO AUTOMOTIVE		375			
1		CASS	MIDWEST TIMBER	55	22327	0.2
1		CHARLEVOIX	ST MARYS CEMENT	300	11405	0.3
1		CLINTON	MAHLE ENGINE COMPONENTS	300	37463	0.8
1		DICKINSON	BOSS PRODUCTS/TORO CO	300	11347	7.1
1			GREDE – IRON MOUNTAIN	500		
1		EATON	LINN PRODUCTS	300	51803	0.6
1		GRAND TRAVERSE	CENTURY SPECIALTIES	175	44869	0.4
1		GRATIOT	AIRCRAFT PRECISION	60	16497	0.4
1		HILLSDALE	TENNECO AUTOMOTIVE	375	18261	2.1
1		HURON	BLUE DIAMOND STEEL CASTING	200	14231	8.8
1			HURON CASTING	300		
1			TOWER AUTOMOTIVE TOOL	750		
1		INGHAM	ARCOSA SHORING/ EFFICIENCY PRODUCTION	300	136006	1.2
1			ORCHID ORTHOPEDIC SOLUTIONS	615		
1	1		SYMMETRY MED/TECOMET – AURELIUS & ENTERPRISE	375		
1			TENNECO AUTOMOTIVE	300		
1		IONIA	THK RHYTHM AUTOMOTIVE	300	28000	3.2
1			VENTRA IONIA MAIN	585		
1		ISABELLA	MORBARK	750	30354	6.6
1			THE DELFIELD CO	875		
1			UNIFIED BRANDS – RANDELL	375		
1		JACKSON	CHEMETALL	55	67407	2.3
1			ELM PLATING	300		
1			GERDAU SPECIAL STEEL NA	1200		
1		KALAMAZOO	FLOWSERVE CORP	1100	122130	3.9
1			KAISER ALUMINUM FABRICATED PRODUCTS	200		
1			PHARMACIA & UPJOHN/PFIZER	3500		

TRI	EGLE	County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
1		KENT	ALLIED FINISHING – BROADMOOR SE	300	330032	1.1
1			AUTOCAM CORP	300		
1			BENTELER AUTO – HAGEN	375		
1			BETZ INDUSTRIES	300		
1			ELECTRO CHEMICAL FINISHING	175		
1			GM COMPONENTS HOLDINGS	500		
1			HAVILAND ENTERPRISES	225		
1			KNAPE & VOGT MFG	591		
1			LACKS ENTERPRISES – AIRLINE	166		
1			LACKS ENTERPRISES – BARDEN	175		
1			PHILLIPS & JOHNSTON ROCK RIVER FABRICATIONS	75		
1			PLASTIC PLATE – KRAFT	7		
1			RAPID ENGINEERING	75		
1			STEELTECH	70		
1		VI-CHEM CORP	300			
1		LAPEER	KAMAX	175	35123	1.4
1			LAPEER PLATING & PLASTICS	300		
1		LENAWEE	ERVIN TECHNOLOGIES	55	41492	0.1
1	1	LIVINGSTON	COR-MET	35	90819	1.0
1			DIAMOND CHROME PLATING	75		
1			EBERSPAECHER NA	400		
1			PRECISION STAMPING	55		
1			PROGRESSIVE METAL FORMING	35		
1			WYMAN-GORDON	294		
1		MACOMB	AG SIMPSON USA	35	386942	0.4
1			BEACON PARK FINISHING	14		
1			FRASER MFG	75		
1			HENKEL CORP	300		
1			INTERNATIONAL CASTING	55		
1			INVECAST CORP	25		
1			MB AEROSPACE WARREN	218		
1			SAS GLOBAL	250		
1			SMS GROUP TECHNICAL SERVICES – WARREN DIV	55		
1			TOWER AUTO – CLINTON	375		
1		WOLVERINE PLATING	55			

TRI	EGLE	County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
1		MANISTEE	PACKAGING CORP	55	9164	0.6
1		MECOSTA	SIMONDS INTERNATIONAL	75	16740	0.4
1		MENOMINEE	LE JONES	390	10008	3.9
1		MIDLAND	DDP SPECIALTY ELECTRONIC MATERIALS	740	36742	7.9
1			DOW CHEMICAL	2155		
1		MISSAUKEE	HYDROLAKE	55	6291	<1.0
1			LC MFG	55		
1		MONROE	DTE ELECTRIC – MONROE	400	67764	1.9
1			GERDAU MACSTEEL – MONROE	375		
1			JAYTEC	55		
1			TAILOR WELDED BLANKS	430		
1		MONTCALM	MARVEL REFRIGERATION	300	25578	1.2
1		MUSKEGON	CANNON – MUSKEGON	300	68681	5.3
1			CWC TEXTRON	300		
1			EAGLE ALLOY	375		
1			HOWMET CORP – PLANT 1 & 3	175		
1	1		HOWMET CORP – PLANT 4	125		
1			HOWMET CORP – PLANT 10	2091		
1			TRAMEC SLOAN – FLEET ENGINEERS	300		
1		OAKLAND	ADEPT PLASTIC FINISHING – PLANT 4	150	588572	1.1
1			ADEPT PLASTIC FINISHING – PLANT 5	55		
1			AMERICAN AXLE & MFG – ROYAL OAK	3000		
1			COSMA BODY ASSEMBLY/MAGNA	750		
1			EBERSPAECHER NA	300		
1			EMERALD STEEL PROCESSING – MADISON HEIGHTS	55		
1			GIFFIN	300		
1			HENROB CORP	86		
1			MACDERMID	38		
1			MACLEAN-FOGG	300		
1			MICHIGAN SEAMLESS TUBE	375		
1			MOELLER MFG	500		
1			MSP INDUSTRIES	300		
	1		OERLIKON/METCO – PLYMOUTH	1		

TRI	EGL	County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
1	1	OAKLAND, continued	OERLIKON/SULZER METCO	55		
1	PECO CARWASH SYSTEMS		55			
1	SHANNON PRECISION FASTENER		55			
1		OGEMAW	HYPERION MATERIALS & TECH	202	7167	2.8
1		OTTAWA	EVOQUA WATER TECH	300	148077	0.5
1			FOGG FILLER	75		
1			JH CAMPBELL GENERATING PLANT	5		
1			LEGGETT & PLATT	35		
1			METAL FLOW CORP	230		
1			SUPREME MACHINED PRODUCTS	40		
1		SAGINAW	NEXTEER AUTO – PLANT 1	252	76397	0.6
1			ORCHID ORTHOPEDIC SOLUTIONS	175		
1		SANILAC	ASCO NUMATICS	195	17641	1.1
1		SHIAWASSEE	CIE NEWCOR MTG – OWOSSO	2	29839	<0.1
1		ST CLAIR	DTE ELECTRIC – BELLE RIVER POWER PLANT	10	65042	0.1
1			MICHIGAN METAL COATINGS	55		
1		ST JOSEPH	AMERICAN AXLE & MFG	600	26418	13.6
1			ARMSTRONG INTERNATIONAL	3000		
1		WASHTENAW	DEXTER FASTENER TECH	300	181294	0.2
1		WAYNE	AJAX METAL PROCESSING	300	686888	1.6
1			AK STEEL (CLEVELAND CLIFFS)	55		
1			DETROIT DIESEL – REDFORD	6660		
1			DIPSOL OF AMERICA	55		
1			EDW C LEVY CO – PLANT 3	2		
1			EDW C LEVY CO – PLANT 6	371		
1			EES COKE BATTERY	7		
1			EQ DETROIT/US ECOLOGY	300		
1			EUCLID MFG CO	12		
1			FINTEX	55		
1			FMC LIVONIA TRANSMISSION PLANT	55		
1			FMC WOODHAVEN FORGING PLANT	16		
1			HOOVER TREATED WOOD PRODUCTS	55		

TRI	EGLE	County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
1		WAYNE, continued	L & W – 6771 & 6201 HAGGERTY	350		
1			MAGNI INDUSTRIES	170		
1			MCGEAN-ROHCO	55		
1			NSS TECHNOLOGIES	140		
1			OAKLAND STAMPING	7		
	1		OERLIKON METCO	1		
1			ST MARYS CEMENT	55		
1			STEEL INDUSTRIES – PLANT 1	175		
1			STEEL INDUSTRIES – PLANT 4	2		
1			TAILOR WELDED BLANKS	375		
1			UNISTRUT INTERNATIONAL	300		
1			US ECOLOGY MI (DYNECOL)	55		
1			US STEEL – GREAT LAKES WORKS	1500		
1			WAYNE DISPOSAL	50		
1			W.S. MOLNAR CO	30		
			TOTAL			

Table C—Michigan Workers Employed in Facilities that Use or Manufacture Diethanolamine, by County: 2020

TRI	EGLE	County	Company Name	# Workers Employed in Diethanolamine Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Diethanolamine
1	1	CLARE	RENOSOL SEATING (LEAR) – FARWELL PLANT	375	10440	3.6
	1	INGHAM	UNIVAR SOLUTIONS	15	136006	<0.1
1	1	JACKSON	CHEMETALL	55	67407	<0.1
	1	KALKASKA	MAGNUM SOLVENT	16	7029	0.2
1	1	LIVINGSTON	AMERICAN CHEMICAL TECH (SHELL – FOWLerville)	55	90819	<0.1
1		MACOMB	AXALTA COATING SYSTEMS – MT CLEMENS PLANT	750	386942	0.2
1	1	MUSKEGON	WEBB CHEMICAL SERVICE	55	68681	<0.1
	1	OAKLAND	HUNTSMAN	175	588572	<0.1
	1		RECTICEL NORTH AMERICA	132		
1	1	WAYNE	BASF CORP	175	686888	0.1
	1		BAY LOGISTICS	4		

TRI	EGLE	County	Company Name	# Workers Employed in Diethanola-mine Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Diethanola-mine
1		WAYNE, continued	CADILLAC OIL	55		
1			HOUGHTON INTL/QUAKER	55		
	1		LABTECH	55		
1			MARATHON PETROLEUM – MI REFINING DIV	375		
	1		PROGRESSIVE DISTRIBUTION	5		
1			PVS NOLWOOD CHEM	55		
1	1		WOODBRIIDGE CORP	175		
			TOTAL			

Table D—Michigan Workers Employed in Facilities that Use or Manufacture Ethylene Oxide, by County: 2020

TRI	EGLE	County	Company Name	# Workers Employed in Ethylene Oxide Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Ethylene Oxide
	1	JACKSON	CHEMETALL	55	67407	<0.1
1		KENT	VIANT MEDICAL	55	330032	<0.1
1	1	LIVINGSTON	CENTURION MEDICAL PRODUCTS	7	90819	<0.1
	1	MIDLAND	DUPONT – MI OPERATIONS	2155	36742	5.9
	1	MONTCALM	WILBUR-ELLIS – EDMORE	55	25578	0.2
1	1	WAYNE	BASF CORP	300	686888	<0.1
		TOTAL		2627	1237466	0.2