

# **MICHIGAN WORKFORCE, 2018:**

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**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](http://www.oem.msu.edu)**.

## Michigan Workforce, 2018: Potential Exposure to Acrylic Acid, Chromium or Chromium Compounds, Diethanolamine & Ethylene Oxide

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. Chemical 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 2017 Annual Report: Tracking Work Related Asthma in Michigan, Tables 22 and 23 ([www.oem.msu.edu](http://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 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 2018, there were five companies that reported use of acrylic acid with 795 potentially exposed workers (Table A). One hundred sixty-two companies reported usage of chromium or chromium compounds with 89,461 employees potentially exposed (Table B). Twenty companies reported diethanolamine use with 10,954 potentially exposed workers (Table C). Four companies reported ethylene oxide use with 2,890 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 the 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](http://www.careeronestop.org), accessed 4-21-2020.
- Manta.com, accessed 4-22-2020.
- Michigan Labor Market Information, Unemployment Statistics (LAUS): 2018 Data Explorer, accessed 4-21-2020 at: <http://milmi.org>.
- Toxic Release Inventory (TRI) Explorer, Releases: Facility Report, 2018 for select chemicals, accessed 4-21-2020 at: <http://iaspub.epa.gov/triexplorer>.
- SARA Title III-Toxic Chemical Release Inventory. Michigan Department of Environment, Great Lakes, and Energy, FOIA request for calendar year 2018 data obtained 10-14-2019.

Table A—Michigan Workers Employed in Facilities that Use or Manufacture Acrylic Acid, by County: 2018

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		INGHAM	AURORA SPECIALTY CHEMISTRIES	30	144991	<0.1
1		JACKSON	ROYAL ADHESIVES & SEALANTS/H.B. FULLER	300	71351	0.4
	1	KENT	ARKEMA INC	35	348246	<0.1
1	1	MIDLAND	TRINSEO – MI OPERATIONS	55	38993	0.1
1	1	WAYNE	BASF CORP	375	752926	<0.1
		<b>TOTAL</b>		<b>795</b>	<b>1356507</b>	<b>0.1</b>

Table B—Michigan Workers Employed in Facilities that Use or Manufacture Chromium or Chromium Compounds, by County: 2018

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	TRANS-MATIC MFG	255	60206	0.7
1			UNIFORM COLOR	175		
1		ALPENA	LAFARGE MIDWEST	375	12775	2.9
1		ANTRIM	ANCHOR LAMINA AMERICA	175	9543	1.8
1		BARRY	HASTINGS MFG	99	30585	0.6
1			MIDDLEVILLE TOOL & DIE	70		
1		BAY	BAY CAST – CENTER ST & WEBSTER ST PLANTS	75	47942	0.3
1			STRAITS WOOD TREATING	55		
1		BERRIEN	DW NATIONAL STD – NILES	135	70176	0.8
1			GAST MFG	367		
1			NCP COATINGS	55		
1			PRIMETALS TECHNOLOGIES	7		
1		BRANCH	ASAMA COLDWATER MFG	340	18921	2.0
1			HC STARCK	43		
1		CALHOUN	BREMBO HOMER FOUNDRY	300	60219	2.8
1			CLARIANT PLASTICS & COATINGS – ALBION FACILITY	175		
1			KNAUF INSULATION (GUARDIAN INSULATION)	300		
1			MUSASHI AUTO PARTS	500		
1			OMEGA CASTINGS	15		

TRI	EGL	County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
1		CALHOUN, continued	STELMI AMERICA	35		
1			TENNECO AUTOMOTIVE	375		
1		CASS	MIDWEST TIMBER	50	23386	0.2
1		CHARLEVOIX	ST MARYS CEMENT	175	12506	1.4
1		CLINTON	MAHLE ENGINE COMPONENTS	375	39744	0.9
1		DICKINSON	BOSS PRODUCTS/TORO CO	375	11970	9.4
1			GREDE	750		
1		EATON	LINN PRODUCTS	175	55009	0.3
1		GENESEE	RING SCREW – FENTON OP	300	172887	0.2
1		HILLSDALE	TENNECO AUTOMOTIVE	375	19904	1.9
1		HURON	BLUE DIAMOND STEEL CASTING	209	15097	8.8
1			HURON CASTING	375		
1			TOWER AUTOMOTIVE TOOL	750		
1		INGHAM	ARCOSA SHORING/ EFFICIENCY PRODUCTION	300	144991	1.0
1			ORCHID ORTHOPEDIC SOLUTIONS	750		
1	1		SYMMETRY MED/TECOMET	375		
1			TENNECO AUTOMOTIVE	55		
1		IONIA	THK RHYTHM AUTOMOTIVE	250	29082	2.9
1			VENTRA IONIA MAIN	585		
1		ISABELLA	THE DELFIELD CO	875	33454	3.7
1			UNIFIED BRANDS	375		
1		JACKSON	CHEMETALL	35	71351	2.0
1			ELM PLATING	300		
1			GERDAU SPECIAL STEEL	375		
1			TAC MFG	600		
1			WORTHINGTON SPECIALTY PROCESSING	120		
1		KALAMAZOO	FLOWSERVE CORP	1100	128349	2.3
1			KAISER ALUMINUM FABRICATED PRODUCTS	199		
1			PHARMACIA & UPJOHN/PFIZER	1679		
1		KENT	ALLIED FINISHING – BROADMOOR SE	145	348246	0.9
	1		ARCANUM ALLOYS	7		
1			AUTOCAM CORP	175		
1			BENTELER AUTO – HAGEN	375		
1			BETZ INDUSTRIES	90		

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, continued	ELECTRO CHEMICAL FINISHING	175		
1			GM COMPONENTS HOLDINGS	500		
1			HAVILAND ENTERPRISES	225		
1			KNAPE & VOGT MFG	640		
1			KNOLL	375		
1			LACKS ENTERPRISES – AIRLINE	175		
1			LACKS ENTERPRISES – BARDEN	175		
1			MIDWEST PLATING CO	25		
1			PLASTIC PLATE – KRAFT	55		
1			RAPID ENGINEERING	75		
1			STEELTECH	70		
1			LAPEER	KAMAX		
1		LAPEER PLATING & PLASTICS		300		
1		LENAWEE	ERVIN TECHNOLOGIES	35	45038	0.1
1	1	LIVINGSTON	COR-MET	35	99402	0.3
1			DIAMOND CHROME PLATING	60		
1			PRECISION STAMPING	50		
1			PROGRESSIVE METAL FORMING	55		
1			WYMAN-GORDON	75		
1		MACOMB	AG SIMPSON	35	427445	1.0
1			BEACON PARK FINISHING	13		
1			GM POWERTRAIN WARREN TRANSMISSION	2797		
1			HENKEL CORP	175		
1			INALFA ROOF SYSTEMS	100		
1			INTERNATIONAL CASTING	20		
1			INVECAST CORP	40		
1			MB AEROSPACE WARREN	217		
1			SAS GLOBAL	250		
1			SMS GROUP TECHNICAL SERVICES – WARREN DIV	80		
1			TOWER AUTO – CLINTON	375		
1			WOLVERINE PLATING	50		
1		MECOSTA	SIMONDS INTERNATIONAL	73	17642	0.4
1		MENOMINEE	LE JONES	390	10573	3.7
1		MIDLAND	DOW CHEMICAL	2155	38993	5.5
1		MISSAUKEE	HYDROLAKE	35	6712	1.3
1			LC MFG	55		

TRI	EGL	County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
1		MONROE	DTE ELECTRIC – MONROE	7647	72596	12.6
1			GERDAU MACSTEEL – MONROE	375		
1			GUARDIAN INDUSTRIES – CARLETON	750		
1			TAILOR WELDED BLANKS	375		
1		MONTCALM	MARVEL REFRIGERATION	175	27270	0.6
1		MUSKEGON	CANNON – MUSKEGON	175	74639	20.6
1			CWC TEXTRON	375		
1			EAGLE ALLOY	375		
1			FLEET ENGINEERS	122		
1			HOWMET CORP – PLANT 1 & 3	10000		
1	1		HOWMET CORP – PLANT 4	61		
1	1		HOWMET CORP – PLANT 5	2152		
1			HOWMET CORP – PLANT 10	2091		
1		OAKLAND	ADEPT PLASTIC FINISHING – PLANT 4	55	648277	0.5
1			ADEPT PLASTIC FINISHING – PLANT 5	55		
1			COSMA BODY ASSEMBLY/MAGNA	129		
1			EMERALD STEEL PROCESSING	35		
1			GIFFIN	750		
1			HHI-FORMTECH – ROYAL OAK	500		
1			MACDERMID	25		
1			MACLEAN-FOGG	300		
1			MICHIGAN SEAMLESS TUBE	375		
1			MOELLER MFG	375		
1			MSP INDUSTRIES	250		
1	1		OERLIKON/SULZER METCO	55		
1			OXFORD FORGE	114		
1			SHANNON PRECISION FASTENER	55		
1		OGEMAW	HYPERION MATERIALS & TECH	300	7567	4.0
1		OTTAWA	BUSCHE ALUMINUM TECH	385	155593	0.5
1			JH CAMPBELL GENERATING PLANT	5		
1			LEGGETT & PLATT	23		
1			METAL FLOW CORP	230		
1			SUPREME MACHINED PRODUCTS	175		

TRI	EGLE	County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
1		SAGINAW	NEXTEER AUTOMOTIVE	7500	82697	9.3
1			ORCHID ORTHOPEDIC SOLUTIONS	175		
1		SANILAC	ASCO NUMATICS	300	18575	1.6
1		SHIAWASSEE	CIE NEWCOR MTG – CORUNNA	500	31719	1.6
1			CIE NEWCOR MTG – OWOSSO	8		
1		ST CLAIR	DTE ELECTRIC – BELLE RIVER POWER PLANT	35	72183	0.1
1			MICHIGAN METAL COATINGS	55		
1		ST JOSEPH	AMERICAN AXLE & MFG	3000	27213	29.4
1			ARMSTRONG INTERNATIONAL	3000		
1			IAC MENDON	907		
1			MORGAN OLSON	1100		
1		WASHTENAW	DEXTER FASTENER TECH	300	188693	0.2
1		WAYNE	AJAX METAL PROCESSING	300	752926	2.2
1			AK STEEL WORKS (SEVERSTAL)	1120		
1			DETROIT DIESEL – REDFORD	6660		
1			DIPSOL OF AMERICA	55		
1			EDW C LEVY CO – PLANT 3	1		
1			EDW C LEVY CO – PLANT 6	371		
1			EES COKE BATTERY	98		
1			EQ DETROIT/US ECOLOGY	55		
1			FAURECIA EMISSIONS CONTROL TECH	86		
1			FINTEX	55		
1			FMC WOODHAVEN FORGING PLANT	451		
1			GM – ROMULUS ENGINE OP	3000		
1			HOOVER TREATED WOOD PRODUCTS	55		
1			MAGNI INDUSTRIES	170		
1			MCGEAN-ROHCO	35		
1			NSS TECHNOLOGIES	140		
1			ST MARYS CEMENT	55		
1			STEEL INDUSTRIES – PLANT 1	175		
1			STEEL INDUSTRIES – PLANT 4	175		
1			TOWER AUTOMOTIVE – PLYMOUTH	375		
1		UNISTRUIT INTERNATIONAL	75			
1		US ECOLOGY MICHIGAN (DYNECOL)	75			



TRI	EGL	County	Company Name	# Workers Employed in Chromium Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Chromium
1		WAYNE, continued	US STEEL – GREAT LAKES WORKS	3000		
1			WAYNE DISPOSAL	100		
1			WORTHINGTON SPECIALTY PROCESSING – CANTON	175		
<b>TOTAL</b>				<b>89461</b>	<b>4261328</b>	<b>2.1</b>

Table C—Michigan Workers Employed in Facilities that Use or Manufacture Diethanolamine, by County: 2018

TRI	EGL	County	Company Name	# Workers Employed in Diethanolamine Using Facilities	Total # Workers in the County	% of County Workforce Potentially Exposed to Diethanolamine
1		ALLEGAN	MOTUS INTEGRATED TECH – MAPLEWOOD FACILITY	760	60206	1.3
1	1	CLARE	RENOSOL SEATING (LEAR)	375	11122	3.4
1	1	GENESEE	RING SCREW – FENTON OP	300	172887	0.2
	1	INGHAM	UNIVAR/NEXEO SOLUTIONS	15	144991	<0.1
1	1	JACKSON	CHEMETALL	35	71351	<0.1
1		KENT	ACCESS BUSINESS GROUP	7500	348246	2.2
1		MACOMB	AXALTA COATING SYSTEMS – MT CLEMENS PLANT	750	427445	0.2
1	1	MUSKEGON	WEBB CHEMICAL SERVICE	50	74639	0.1
	1	OAKLAND	HUNTSMAN	55	648277	<0.1
1	1		RECTICEL NORTH AMERICA	132		
1	1	WAYNE	BASF CORP	175	752926	0.1
	1		BAY LOGISTICS	4		
1	1		CADILLAC OIL	55		
1			EQ DETROIT/US ECOLOGY	55		
	1		LABTECH	55		
1			MARATHON PETROLEUM – MI REFINING DIV	375		
	1		MATERIALS PROCESSING – RIVERVIEW PLANT	80		
1	1		PVS NOLWOOD CHEMICALS	4		
1	1		QUAKER CHEMICAL	4		
1	1		WOODBIDGE CORP	175		
<b>TOTAL</b>				<b>10954</b>	<b>2712090</b>	<b>0.4</b>

Table D—Michigan Workers Employed in Facilities that Use or Manufacture Ethylene Oxide, by County: 2018

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	1	KENT	VIANT MEDICAL	55	348246	<0.1
1	1	LIVINGSTON	CENTURION MEDICAL PRODUCTS	305	99402	0.3
	1	MIDLAND	DOW CHEMICAL – MI OP	2155	38993	5.5
1	1	WAYNE	BASF CORP	375	752926	<0.1
		<b>TOTAL</b>		<b>2890</b>	<b>1239567</b>	<b>0.2</b>