



STATE BIOSOLIDS SURVEY

2018 data
conducted 2020-2021
biosolidsdata.org

Michigan

Infrastructure & Wastewater

	2004 Data	2018 Data	
Total Number of WWTPs:	214 (survey), 404 (CWNS)	198	
WWTP & Biosolids Infrastructure Totals			
Number of Separate Preparers (in- or out-of-state, receiving solids from your state):	0	0	-----
Total number of your state's WWTPs sending to those Separate Preparers:	0	0	-----
Number of operating sludge incinerators in your state (total):	6	9	-----
Fluidized bed:	0	1	-----
Multiple hearth:	5	8	-----
Number of Part 258 landfills in your state accepting sewage sludge:	data not requested for 2004	17	-----
Number of WWTPs in your state with industrial pre-treatment programs:	data not requested for 2004	95	-----
Number of WWTPs in your state with sludge lagoons:	data not requested for 2004	many	-----
Wastewater Flow Totals			
Total statewide average daily wastewater flow (MGD):	data not requested for 2004	no data	-----
Total statewide WWTP design capacity for wastewater flow (MGD):	data not requested for 2004	no data	-----
Total statewide average daily dry weather flow (MGD):	data not requested for 2004	no data	-----
Other Totals			
Number of documented odor & nuisance complaints received by state in 2018 related to biosolids transportation and use or disposal outside of the gates of the WWTP:	data not requested for 2004	7	-----
Number of WWTPs involved in those complaints:	data not requested for 2004	no data	-----
Percent of population served by on-site systems (e.g. septic systems):	35%	50%	-----

The 745 WWTPs on MI EGLEs WRRF list, and the 198 WRRFs reporting data annually to MI EGLE, are the numbers pulled from the "MieglerRawData-2018 BS AR..." spreadsheet with duplicate reports removed. • The 3 incineration facilities are GLWA (Detroit, 7 multiple hearth furnaces), YCUA (1 fluidized bed furnace), and Warren (1 multiple hearth furnace). The GLWA - Detroit - produced ~124,000 dry U. S. tons in 2018, 32% of which was incinerated, 6% was landfilled, and 63% of which was processed in the new heat-drying-pelletization system and land applied. • Data on the agricultural application of biosolids in Michigan is dominated by the GLWA EQ pellet fertilizer, including 673 dry U. S. tons applied to land in Michigan, 76,807 dry U. S. tons land applied in Canada, and 92 tons bagged in 2018. • Battle Creek, Genesee County, Grand Haven (Spring Lake), Lansing, Port Huron, Saginaw, Saginaw Township, and Wyoming (now part of the Grand Valley Biosolids Regional Authority) all land applied Class B biosolids they treated with alkaline stabilization. • Ishpeming is the one biosolids composter. • Grand Rapids and other WRRFs rely on landfill disposal. • There are many sludge lagoons in Michigan. Each year, a few are cleaned out, with the solids dewatered, and some were cleaned out and are accounted for in these 2018 data. • MI EGLE does not formally track odor complaints, but MI EGLE staff estimate an average of about 7 per year.

Biosolids Use and Disposal

UNITS:	Dry U.S. tons	Dry U.S tons	
BIOSOLIDS USED OR DISPOSED, 2018 (adjusted total): 283,000			
Summary			
	Number of Entities (WWTPs & Sep. Preparers) Going To...	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Going To... Quantity of Biosolids
Beneficial Use (applied to soils, not including ADC)	174	88,312	182 143,390
Disposal & Alternative Dispositions	40	285,204	53 139,506
Other	0	0	25
TOTAL	214	373,516	260 282,896
Beneficial Use			
	Number of Entities (WWTPs & Sep. Preparers) Going To...	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Going To... Quantity of Biosolids
Agricultural (EQ, Class A, & Class B)	170	87,186	176 142,340
Forestland (EQ, Class A, & Class B)	1	202	3 257
Reclamation (EQ, Class A, & Class B)	3	924	2 397
Class A EQ Distribution (bagged or bulk, public distribution, or unsure where it went)	0	0	1 396
Beneficial Use Subtotal	174	88,312	182 143,390
Long-term storage	0	0	no data
Number of acres to which biosolids were applied:	no data (available on paper from DEQ)	No data	No data
Disposal & Alternative Dispositions			
	Number of Entities (WWTPs & Sep. Preparers) Going To...	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Going To... Quantity of Biosolids

NOTE: Quantity of sewage sludge or biosolids used or disposed means the quantity that goes out the gate of the WWTPs. Use the units (the form of measurement) you chose above.

25 WWTPs hauled about 24,530 dry U. S. tons of solids to other WWTPs, and those solids became part of the tons generated at the receiving facilities. • Those that landfill or incinerate solids report to MI EGLE, even if the material is not land applied. • The total tonnage in 2018 reported here may be less than is typical in recent years. • The in-state land applied numbers are accurate; there is billing based on those numbers, and the numbers go thru two data reviews. The in-state land applied data included here are the two-reviewed data provided by MI EGLE (65,535 dry U. S. tons, to which out-of-state land applied Detroit GLWA EQ biosolids have been added). • Landfill & incineration numbers are less precise. The landfill and incineration data have been updated from a) reviewing MI EGLE data spreadsheet, including deleting duplicate reports, and b) independent data for GLWA provided by NEFCO.

MSW landfill (total)	34	109,333	50	82,328
Burial	data not requested for 2004	data not requested for 2004	50	82,328
Alternative daily (ADC), intermediate, or final cover	data not requested for 2004	data not requested for 2004	0	0
Surface Disposal	0	0	0	0
Incineration	6	175,871	3	50,703
Cement kiln or industrial furnace	data not requested for 2004	data not requested for 2004	0	0
Deep well injection	data not requested for 2004	data not requested for 2004	0	0
Gasification	data not requested for 2004	data not requested for 2004	0	0
Pyrolysis	data not requested for 2004	data not requested for 2004	0	0
Reported generated but unspecified disposition			no data	6,475
Disposal & Alternative Dispositions Subtotal	40	285,204	53	139,506
TOTAL	214	373,516	235	282,896

Total of 282,896 dry U. S. tons assumes that the 6,134 dry U. S. tons of unspecified solids were not transported to other WWTPs (and thus accounted for in those WWTP's solids data). • 1,036 dry tons of landfilled solids were reject from the GLWA drying and pelletizing facility; those dry tons may or may not be included in the 82,328 dry tons landfilled.

Biosolids Quality Summary

	Number of Entities (WWTPs & Sep. Preparers) Producing...	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Producing...	Quantity of Biosolids	
Class A EQ	3	1,359	6	79,434	NOTE: For "number of entities," the total may not match because some entities go to more than one use or disposal. EQ biosolids are from GLWA, Ishpeming, Delta Twnshp, Cadillac, Delhi. Data are from MI EGLE 2018 spreadsheet showing each WWTP.
Other Class A	0	0			
Class B	171	87,257	202	63,715	
Other (no data, etc.)	545	0	53	139,747	
TOTAL	719	88,616	261	282,896	

Biosolids Treatment Practices

	Estimated Number of WWTPs or Separate Preparers Using...	Estimated Quantity of Biosolids Produced Using...	Estimated Number of WWTPs or Separate Preparers Using...	Estimated Quantity of Biosolids Produced Using...
Stabilization				
Aerobic Digestion (total)	1	312	19	3,009
Class A (ATAD/Other)	data not requested for 2004	data not requested for 2004	0	0
Class B	data not requested for 2004	data not requested for 2004	19	3,009
Anaerobic digestion (AD) (total)	0	0		
Class A (e.g. thermophilic)	data not requested for 2004	data not requested for 2004		
Class B (mesophilic)	data not requested for 2004	data not requested for 2004	35	7,584
WWTPs co-digesting (FOG, food, glycol, etc.)	data not requested for 2004	data not requested for 2004		N/A
Biogas used (heating, electricity, fuel, etc./scf/year)	data not requested for 2004	data not requested for 2004		N/A
Lime/Alkaline (total)	14	43,340	14	22,339
Class A lime/alkaline	data not requested for 2004	data not requested for 2004		
Class B lime/alkaline	data not requested for 2004	data not requested for 2004		
Composting	1	200	1	304
Thermal (e.g. heat drying, not incineration/gasificatn/pyrol)	1	312	1	77,480
Gasification	data not requested for 2004	data not requested for 2004		
Pyrolysis	data not requested for 2004	data not requested for 2004		
Hydrolysis (thermal, chemical, etc.)	data not requested for 2004	data not requested for 2004		N/A
Long-term (lagoons, reed beds, etc.)	no data	no data		N/A
Oxidation ditch / extended aeration	data not requested for 2004	data not requested for 2004	13	N/A
Other stabilization technology	no data	no data		
Dewatering				
Belt Filter Press	no data	no data	no data	no data
Plate & Frame Press	no data	no data	no data	no data
Screw Press	no data	no data	no data	no data
Centrifuge	no data	no data	no data	no data
Vacuum Filter	no data	no data	no data	no data
Drying beds (open-air)	no data	no data	no data	no data
Solar drying (e.g. in greenhouse)	data not requested for 2004	data not requested for 2004	no data	no data
Other dewatering technology	no data	no data	no data	no data
Thickening				
Gravity thickener	data not requested for 2004	data not requested for 2004	no data	no data
Gravity belt thickener (GBT)	data not requested for 2004	data not requested for 2004	no data	no data
Centrifuge	data not requested for 2004	data not requested for 2004	no data	no data
Dissolved air flotation (DAF)	data not requested for 2004	data not requested for 2004	no data	no data
Other thickening technology	data not requested for 2004	data not requested for 2004	no data	no data
Other				
Biosolids sold in bags	data not requested for 2004	data not requested for 2004	1	92

Stabilization numbers are estimates based on certifications of methods, not indication of actual numbers of treatment processes. Example - many WWTPs have anaerobic digesters (AD) but use testing of fecal coliform as method of demonstrating PSRP and do not report their AD systems. • Data in columns B & C of this table are from 2006; data were unavailable for 2004 at that time. See 2007 national biosolids data report, Appendix D, for more info. • 18 or 19 WRRFs shown here with aerobic digestion is a minimum - there are probably more of them who indicated testing for PSRP rather than reporting their aerobic digestion system. Many smaller plants rely on aerobic Class B stabilization. • Another example: the 14 alkaline stabilization systems often report achieving PSRP by Class B alternative 1 under U. S. EPA Part 503. • GLWA (Detroit) bagged and sold 92 tons of their heat-dried pelletized biosolids product in 2018.

State Pollutant (trace metal, etc.) Concentration Limits in Biosolids Applied to Land, 2018

Enter numbers only where state limits differed in 2018 from U.S. EPA limits.

	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)
EPA Table 1 (mg/kg)	75	85		4300	840	57	75	420	100	7500
EPA Table 3 (mg/kg) & CPLR (kg/ha)	41	39		1500	300	17		420	36 (CPLR = 100)	2800
State ceiling limit (higher limit) (mg/kg)										
State high quality (lower number) limit (mg/kg)										
State CPLR (kg/ha)										
State APLR (kg/ha/365days)										

TESTING

	Is testing required for all sewage sludge or biosolids?	Or is testing required only for biosolids being beneficially used as fertilizers and soil amendments?	Frequency of testing (indicate how often testing must be done for each parameter):		If frequency depends on wastewater flow or amount of biosolids used or disposed of, please explain:
			In accordance with Part 503 requirements	In accordance with other frequency required by state (if applicable, please specify)	
Part 503 metals (As, Cu, Hg, etc.)	no	yes	yes		
Other metals (boron, silver...)	(please select)	(please select)	(please select)		
Dioxins/furans	(please select)	(please select)	(please select)		
PCBs	(please select)	(please select)	(please select)		
Priority pollutants (https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf)	(please select)	(please select)	(please select)		
Other organic compounds (e.g. PDBEs, pharmaceutical)	(please select)	(please select)	(please select)		
Radioactive isotopes (alpha, beta, Ra 226, etc.)	(please select)	(please select)	(please select)		
Nutrients (NPK)	(please select)	yes	(please select)		
Pathogen reduction (Class A or B)	(please select)	yes	(please select)		
Vector attraction reduction (VAR)	(please select)	yes	(please select)		
PFAS (as of 2018)	(please select)	(please select)	(please select)		
Microplastics (as of 2018)	(please select)	(please select)	(please select)		
TCLP (toxicity characteristic leaching procedure)	(please select)	(please select)	(please select)		
Paint Filter Liquids Test	(please select)	no	(please select)		

MI EGLE will require analysis for non-503 parameters on a case by case basis. The frequency of testing is generally the same as required by Part 503, but MI EGLE will increase the frequency for the purposes of representative sampling requirements, as in the case of a WWTP that land applies in both spring and fall but produces less tonnage than would trigger quarterly sampling; that WWTP would still need to test twice.

REPORTING

	Is reporting to the state required for these parameters?	Frequency of reporting (indicate how often testing must be done for each parameter):		How are these data stored by the state?	Are data compiled by the state in reports or summaries? Is so, please attach.
		In accordance with Part 503 requirements	In accordance with other frequency required (if applicable, please specify)		
The amounts of biosolids/ sewage sludge used or disposed	yes	yes		electronic	(please select)
Part 503 metals (As, Cu, Hg, etc.)	yes	yes		electronic	(please select)
Other metals (boron, silver...)	(please select)	(please select)		(please select)	(please select)
Dioxins/furans	(please select)	(please select)		(please select)	(please select)
PCBs	(please select)	(please select)		(please select)	(please select)
Priority pollutants	(please select)	(please select)		(please select)	(please select)
Other organic compounds (e.g. PDBEs, pharmaceutical)	(please select)	(please select)		(please select)	(please select)
Radioactive isotopes (alpha, beta, Ra 226, etc.)	(please select)	(please select)		(please select)	(please select)
Nutrients (NPK)	yes	yes		(please select)	(please select)
Cumulative Pollutant Loading Rates (CPLR)	(please select)	(please select)		(please select)	(please select)
How biosolids achieve Class A or Class B	(please select)	(please select)		(please select)	(please select)
How biosolids achieve vector attraction reduction (VAR)	(please select)	(please select)		(please select)	(please select)
Solids stabilization process(es) used	(please select)	(please select)		(please select)	(please select)
Other biosolids treatments	(please select)	(please select)		(please select)	(please select)
End use or disposal practice	(please select)	(please select)		(please select)	(please select)
PFAS (as of 2018)	(please select)	(please select)		(please select)	(please select)
Microplastics (as of 2018)	(please select)	(please select)		(please select)	(please select)
TCLP (toxicity characteristic leaching procedure)	(please select)	(please select)		(please select)	(please select)
Paint Filter Liquids Test	(please select)	(please select)		(please select)	(please select)