



STATE BIOSOLIDS SURVEY

2018 data
conducted 2020-2021
biosolidsdata.org

Pennsylvania

Infrastructure & Wastewater

	2004 Data	2018 Data	
Total Number of WWTPs:	640 (survey), 856 CWNS	672	
WWTP & Biosolids Infrastructure Totals			
Number of Separate Preparers (in- or out-of-state, receiving solids from your state):	no data	6	-----
Total number of your state's WWTPs sending to those Separate Preparers:	no data	~35	-----
Number of operating sludge incinerators in your state (total):	8	6 WRRFs, 9 SSIs	-----
Fluidized bed:	no data	2+	-----
Multiple hearth:	no data	4+	-----
Number of Part 258 landfills in your state accepting sewage sludge:	data not requested for 2004	48	-----
Number of WWTPs in your state with industrial pre-treatment programs:	data not requested for 2004	295	-----
Number of WWTPs in your state with <i>sludge</i> lagoons:	data not requested for 2004	several	-----
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	2,331	-----
Total statewide average daily <i>dry weather</i> 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	no data	-----
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):	no data	20%	-----

There are six separate preparers, all in eastern PA. Some of them take in a lot of out-of-state solids from the New York City area and NJ. They include Good Spring composting, A & M compost, Mascaro Composting (Mannheim), Blackwood (lime stabilization), Natural Soils Products (composting), and the WOF NE Blackwood Project. In 2018, there were 9 operating SSIs at 6 facilities - ALCOSAN (2 FBIs), DELCORA (2 MHIs), Erie (2 MHIs), Hatfield Township Municipal Authority, Wyoming Valley Sanitary Authority, Upper Moreland-Hatboro Joint Sewer Authority (SSI types unknown). Prior to 2018, several shut down due to new, stricter EPA air rules: East Norriton, Plymouth, and Swaterra. In 2020, a new FBI SSI became operational at the Greater Hazleton Joint Sewer Authority, managing almost all of that WRRF's solids as of 2021 and taking in outside WRRF solids, septage, etc. NBDP used its default estimate that 20% of the state relies on onsite septic systems.

Biosolids Use and Disposal

UNITS:	Dry U.S. tons	Dry U.S. tons	
BIOSOLIDS USED OR DISPOSED, 2018 (adjusted total):		301,000	
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)	159	116,736	152
Disposal & Alternative Dispositions	481	187,264	520
Other	0	0	0
TOTAL	640	304,000	672
			301,324
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	134	106,736	128
Forestland	0	0	0
Reclamation	15	7,000	12
Class A EQ Distribution	10	3,000	12
Beneficial Use Subtotal	159	116,736	152
Long-term storage	0	0	0
Number of acres to which biosolids were applied:	data not provided		1878
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. Quantities are measured in the units (the form of measurement) indicated above.

Data presented here are compiled by NBDP from a mix of sources: U.S. EPA ECHO data submitted by 155 PA water resource recovery facilities (WRRFs) for 2018, data from PA DEP, and data provided by 20 PA WRRFs in the NBDP survey. Details on data sources are provided in notes below.

Land application on agricultural lands is common, led by Philadelphia, which, in 2018, produced heat-dried Class A (likely EQ) biosolids that were mostly used in agriculture. Some ALCOSAN (Pittsburgh) biosolids were land applied. Harrisburg land applied Class B biosolids; Lancaster's WRRFs produced both Class A and Class B biosolids that went to agricultural sites. Mine/land reclamation has been ongoing in PA for decades, with larger amounts used in this way in some past years. PA DEP provided estimates for agricultural land application (81,857 dry U.S. tons), reclamation (1,581 dt), and Class A EQ Distribution (6,462 dt). NBDP analysis of EPA ECHO data shows a minimum of 139,481 dt beneficially used, and this total is shown here. NBDP assumed that 95% of the beneficially used biosolids went to agriculture and 5% were distributed Class A EQ, based on the pattern for PA in the NBDP WWTP survey. The PA DEP estimate for reclamation was left in place here, subtracted from the land application total. The PA DEP estimate for Class A EQ distribution was 6,462 dt, which is pretty close to the 6,974 shown here. The total beneficial use shown here is likely a low-end estimate; the statewide total may be 5%+ higher (e.g. as much as 146,500 dry U.S. tons).

MSW landfill (total)	473	141,056	501	93,490	
Burial	data not requested for 2004	data not requested for 2004	500	92,557	
Alternative daily (ADC), intermediate, or final cover	data not requested for 2004	data not requested for 2004	1	933	
Surface Disposal	0	0	10	2,046	
Incineration	8	46,208	9	66,307	
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	
Disposal & Alternative Dispositions Subtotal	481	187,264	520	161,843	
TOTAL	640	304,000	672	301,324	

Landfills in PA received a 424,957 wet U.S. tons of wastewater solids/sewage sludge from WRRFs in PA in 2018, according to a PA DEP solid waste report. NBDP assumed an average of 22% solids to reach 93,490 dry U.S. tons (the landfilled total presented here). PA landfills received an additional 35,158 dry tons (159,807 wet tons) of wastewater solids generated out-of-state (in NY, NJ, MD, DE, WV, VA, OH, CT), for a total of 128,648 dry tons (584,764 wet tons) of wastewater solids buried in PA landfills in 2018. (The out-of-state solids are not included in the data in this spreadsheet.) Reading, Scranton, and Hazleton sent the largest amounts of wastewater solids to landfills in 2018. Most smaller PA WRRFs landfill their solids. • Cranberry Township produced Class B biosolids used for alternative daily cover (ADC); there may be other landfilled biosolids so used, but, if so, here they are part of the landfill burial total. • Surface disposal data are from the EPA ECHO data for 2018. • Incineration data are also from EPA ECHO data. No data existed for Erie, so that WRRF's solids production (9,625 dmt) was estimated based on 35 MGD avg flow x 275 dmt/MGD (which is typical for PA WRRFs). Given the limited number of incinerators, for all of which data were available, the incineration totals here are likely complete and accurate. Thus, the quality of the "disposal & alternative dispositions" data is moderately high.

Biosolids Quality Summary

	Number of Entities (WWTPs & Sep. Preparers) Producing...	Quantity of Biosolids	Number of Entities (WWTPs & Sep. Preparers) Producing...	Quantity of Biosolids	NOTE: For "number of entities," the total may not match because some entities go to more than one use or disposal.
Class A EQ	16	25,000	85	94,258	PA DEP provided estimates of the number of WRRFs producing each class of biosolids: 79 Class A EQ (compared to 85 shown here), 0 Class A, and 248 Class B (compared to the 55 shown here, which is a low estimate based on the incomplete ECHO data). • NBDP relied here on U.S. EPA ECHO data, which are incomplete, but certainly representative. Note that the ECHO data show Philadelphia as Class A biosolids, which is where they are included here, although they are likely Class A EQ. • PA DEP did not estimate quantities of biosolids in this quality summary; the estimates here are by NBDP, assuming that 2/3 of biosolids used in agriculture were Class A and/or EQ and 1/3 were Class B, and all reclamation biosolids were Class B. The "other (no data, etc.)" are the solids that were landfilled or incinerated, some of which may have been treated to Class B or A standards (but most not).
Other Class A	0	0			
Class B	143	91,736	55	45,223	
Other (no data, etc.)	481	187,264	520	161,843	
TOTAL	640	304,000	660	301,324	

Biosolids Treatment Practices - No data available

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

Numbers entered 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

For each of the following constituents, indicate if testing is required by your state, as of 2018.	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...)	no	no	no		
Dioxins/furans	no	no	no		
PCBs	(please select)	yes	not applicable (N/A)	Same as 503 frequency	
Priority pollutants (https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf)	no	no	no		
Other organic compounds (e.g., PDBEs, pharmaceutical)	no	no	no		
Radioactive isotopes (alpha, beta, Ra 226, etc.)	no	no	no		
Nutrients (NPK)	no	yes	yes		
Pathogen reduction (Class A or B)	no	yes	yes		
Vector attraction reduction (VAR)	no	yes	yes		
PFAS (as of 2018)	no	no	no		
Microplastics (as of 2018)	no	no	no		
TCLP (toxicity characteristic leaching procedure)	no	yes	yes		
Paint Filter Liquids Test	no	no	no		

REPORTING

For each of the following, indicate what WWTPs and/or biosolids preparers must report to the state:	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		paper	no
Part 503 metals (As, Cu, Hg, etc.)	yes	yes		paper	no
Other metals (boron, silver...)	no	not applicable (N/A)		not applicable (N/A)	
Dioxins/furans	no	not applicable (N/A)		not applicable (N/A)	
PCBs	yes	yes		paper	no

Priority pollutants (https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf)	yes	not applicable (N/A)	permit renewal	paper	no
Other organic compounds (e.g. PDBEs, pharmaceutical)	no	not applicable (N/A)		not applicable (N/A)	
Radioactive isotopes (alpha, beta, Ra 226, etc.)	no	not applicable (N/A)		not applicable (N/A)	
Nutrients (NPK)	yes	yes		paper	no
Cumulative Pollutant Loading Rates (CPLR)	yes	yes		paper	no
How biosolids achieve Class A or Class B	yes	yes		paper	no
How biosolids achieve vector attraction reduction (VAR)	yes	yes		paper	no
Solids stabilization process(es) used	yes	yes		paper	no
Other biosolids treatments	yes	yes		paper	no
End use or disposal practice	yes	yes		paper	no
PFAS (as of 2018)	no	not applicable (N/A)		not applicable (N/A)	
Microplastics (as of 2018)	no	not applicable (N/A)		not applicable (N/A)	
TCLP (toxicity characteristic leaching procedure)	yes	yes	permit renewal	paper	no
Paint Filter Liquids Test	no	not applicable (N/A)		not applicable (N/A)	

