NATIONAL BIOSOLIDS DATA PROJECT

STATE BIOSOLIDS SURVEY

2018 data
conducted 2020-2021
biosolidsdata.org

Oklahoma

Infrastructure & Wastewater

	2004 Data	2018 Data	
Total Number of WWTPs:	**59 (survey), 493 CWNS**	**65 (survey), 488 (CWNS)**	
WWTP & Biosolids Infrastructure Totals			
Number of Separate Preparers (in- or out-of-state, receiving solids from your state):	no data	0	----------
Total number of your state's WWTPs sending to those Separate Preparers:	no data	0	----------
Number of operating sludge incinerators in your state (total):	0	0	----------
Fluidized bed:	0	0	----------
Multiple hearth:	0	0	----------
Number of Part 258 landfills in your state accepting sewage sludge:	data not requested for 2004	36	----------
Number of WWTPs in your state with industrial pre-treatment programs:	data not requested for 2004	27	----------
Number of WWTPs in your state with *sludge* lagoons:	data not requested for 2004	0	----------
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	5	----------
Number of WWTPs involved in those complaints:	data not requested for 2004	2	----------
Percent of population served by on-site systems (e.g. septic systems):	30%	10%	----------

There are no separate preparers managing OK wastewater solids. Most WRRFs (e.g. Tulsa) manage their solids themselves. Okahoma City (OKC) is an exception; it has a contractor (formerly Veolia, currently Synagro) that manages some testing, all land application, and reporting. • The 10% of the state that uses onsite systems is an estimate based on the fact that Oklahoma City (OKC), Tulsa, and other communities have long had prohibitions on new development that are not connected to sewers. So the populations of all the larger municipalities rely almost exclusively on centralized wastewater treatment. • The large majority of odor and nuisance complaints are from OKC land application sites; a few are related to Tulsa's land application sites. In 2019, the Edmonds lagoon-cleanout land application program generated a local odor complaint.

Biosolids Use and Disposal

UNITS: Dry metric tons | **Dry metric tons**

BIOSOLIDS USED OR DISPOSED, 2018 (adjusted total): 50,900

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)	35	40,043	39	41,987
Disposal & Alternative Dispositions	24	12,710	26	8,853
Other	0	0	>200	no data
TOTAL	**59**	**52,753**	**65**	**50,840**

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.

Data only available for WWTPs w/ flow >1 MGD (majors). The hundreds of minor facilities mostly dispose of biosolids in landfills. However, more are considering or doing land application because it is becoming cheaper than landfill disposal as landfill tipping fees increase. • There are hundreds of lagoons that store wastewater solids for years and are occasionally cleaned out (as is true across the country); ODEQ estimates that there are 3 - 4 cleanouts each year that contribute < 100 dry tons of solids production; we have included 3 lagoon clean-outs and 75 dry tons in the agricultural beneficial use numbers below.

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)	33	36,282	36	40,787
Forestland (EQ, Class A, & Class B)	0	0	0	0
Reclamation (EQ, Class A, & Class B)	0	0	0	0
Class A EQ Distribution (bagged or bulk, public distribution, or unsure where it went)	2	3,761	3	1,200
Beneficial Use Subtotal	**35**	**40,043**	**39**	**41,987**
Long-term storage	0	0	many small WRRFs	
Number of *acres* to which biosolids were applied:		no data provided		no data

OKC, Tulsa, and Norman have large wastewater treatment facilities and produce a large percentage of OK biosolids, all of which are land applied for agriculture. • We have included 3 lagoon clean-outs and 75 dry tons in the agricultural beneficial use numbers here. • The 3 facilities producing EQ biosolids are Midwest City (~500 dmt), Ardmore, and Tahlequah. Only Midwest City distributes their biosolids to the general public; the other two use them on parks, etc.

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

Landfill (total)	24	12,710	26	8,853	
Burial	data not requested for 2004	data not requested for 2004	26	8,853	
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	Data only available for WWTPs w/ flow >1 MGD (majors). However, in any one year (e.g. 2018), the amount of sludge/solids produced separately by the many small facilities is minimal, because much of these facilities production goes to a larger WRRF or storage lagoon. Edmondis an example of a sludge lagoon operation with lagoons cleaned out every few years and the solids land applied - as injected liquid, in this case.
Incineration	0	0	0	0	
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	**24**	**12,710**	**26**	**8,853**	
TOTAL	**59**	**52,753**	**65**	**50,840**	

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	2	3,761	3	1,200	
Other Class A	0	0	0	0	
Class B	33	36,282	68	49,768	OK DEQ does not maintain biosolids management records for WWTPs w/ flow<1 MGD.
Other (no data, etc.)	24	12,710			
TOTAL	**59**	**52,753**	**71**	**50,968**	

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)	no data	no data	40	28,439	
Class A (ATAD/Other)	data not requested for 2004	data not requested for 2004	1	500	
Class B	data not requested for 2004	data not requested for 2004	39	27,939	
Anaerobic digestion (AD) (total)	no data	no data	29	21,329	
Class A (e.g. thermophilic)	data not requested for 2004	data not requested for 2004	0	0	
Class B (mesophilic)	data not requested for 2004	data not requested for 2004	29	21,329	
WWTPs co-digesting (FOG, food, glycol, etc.)	data not requested for 2004	data not requested for 2004	0	N/A	
Biogas used (heating, electicity, fuel, etc.;scf/year)	data not requested for 2004	data not requested for 2004	0	N/A	
Lime/Alkaline (total)	no data	no data	1	15,876	
Class A lime/alkaline	data not requested for 2004	data not requested for 2004	0	0	
Class B lime/alkaline	data not requested for 2004	data not requested for 2004	1	15,876	
Composting	2	no data	3	500	
Thermal (e.g. heat drying, not incineration/gasificatn/pyrol)	no data	no data	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	
Hydrolysis (thermal, chemical, etc.)	data not requested for 2004	data not requested for 2004	0	N/A	
Long-term (lagoons, reed beds, etc.)	no data	no data	0	N/A	
Oxidation ditch / extended aeration	data not requested for 2004	data not requested for 2004	20	N/A	
Other stabilization technology	no data	no data	0	0	Oklahoma DEQ provided thorough data on biosolids treatment technologies. The biosolids program staff also work closely with and monitor WRRFs and keep records of technologies used. The data here are estimated, only for facilities >1 MGD. Several facilities that utilize composting did not dispose of sludge in 2018. With how the DEQ data is maintained, the numbers of facilities are accurate, but quantities of solids/sludges are estimated based on total.
Dewatering					
Belt Filter Press	no data	no data	50	35,549	
Plate & Frame Press	no data	no data	0	0	
Screw Press	no data	no data	4	2,844	
Centrifuge	no data	no data	3	2,133	
Vaccuum Filter	no data	no data	0	0	
Drying beds (open-air)	no data	no data	40	28,439	
Solar drying (e.g. in greenhouse)	data not requested for 2004	data not requested for 2004	0	0	
Other dewatering technology	no data	no data	0	0	
Thickening					
Gravity thickener	data not requested for 2004	data not requested for 2004	15	10,665	
Gravity belt thickener (GBT)	data not requested for 2004	data not requested for 2004	0	0	
Centrifuge	data not requested for 2004	data not requested for 2004	0	0	
Dissolved air flotation (DAF)	data not requested for 2004	data not requested for 2004	0	0	
Other thickening technology	data not requested for 2004	data not requested for 2004	0	0	
Other					
Biosolids sold in bags (explain at right what size bags)	data not requested for 2004	data not requested for 2004	0	0	

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

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.)	yes	(please select)	yes		
Other metals (boron, silver…)	no	(please select)	not applicable (N/A)		
Dioxins/furans	no	(please select)	not applicable (N/A)		
PCBs	yes	(please select)	yes		
Priority pollutants (https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf))	no	(please select)	not applicable (N/A)		
Other organic compounds (e.g. PDBEs, pharmaceutical)	no	(please select)	not applicable (N/A)		
Radioactive isotopes (alpha, beta, Ra 226, etc.)	no	(please select)	not applicable (N/A)		
Nutrients (NPK)	yes	(please select)	yes		
Pathogen reduction (Class A or B)	yes	(please select)	yes		
Vector attraction reduction (VAR)	yes	(please select)	yes		
PFAS (as of 2018)	no	(please select)	not applicable (N/A)		
Microplastics (as of 2018)	no	(please select)	not applicable (N/A)		
TCLP (toxicity characteristic leaching procedure)	yes	(please select)	yes		
Paint Filter Liquids Test	no	(please select)	not applicable (N/A)		

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		electronic	no
Part 503 metals (As, Cu, Hg, etc.)	yes	yes		electronic	no
Other metals (boron, silver…)	no	not applicable (N/A)		not applicable (N/A)	no
Dioxins/furans	no	not applicable (N/A)		not applicable (N/A)	no
PCBs	yes	yes		electronic	no
Priority pollutants (https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf)	no	not applicable (N/A)		not applicable (N/A)	no
Other organic compounds (e.g. PDBEs, pharmaceutical)	no	not applicable (N/A)		not applicable (N/A)	no
Radioactive isotopes (alpha, beta, Ra 226, etc.)	no	not applicable (N/A)		not applicable (N/A)	no
Nutrients (NPK)	yes	yes		electronic	no
Cumulative Pollutant Loading Rates (CPLR)	yes	yes		electronic	no
How biosolids achieve Class A or Class B	yes	yes		electronic	no
How biosolids achieve vector attraction reduction (VAR)	yes	yes		electronic	no
Solids stabilization process(es) used	no	not applicable (N/A)		not applicable (N/A)	no
Other biosolids treatments	no	not applicable (N/A)		not applicable (N/A)	no
End use or disposal practice	yes	yes		electronic	no
PFAS (as of 2018)	no	not applicable (N/A)		not applicable (N/A)	no
Microplastics (as of 2018)	no	not applicable (N/A)		not applicable (N/A)	no
TCLP (toxicity characteristic leaching procedure)	yes	yes		electronic	no
Paint Filter Liquids Test	yes	yes		electronic	no

Only WWTPs with flow>1 MGD are required to submit annual biosolids DMRs/reports. Minor facilities are required to test and maintain records, but not submit reports.