NATIONAL BIOSOLIDS DATA PROJECT

biosolidsdata.org

OKLAHOMA

BIOSOLIDS MANAGEMENT 2018 - STATE SUMMARY

This summary, a dashboard of state statistics & further data are at www.biosolidsdata.org

In Oklahoma...

- *Because of the state's abundant ranching and farming, with high demand for fertilizers and soil amendments, Oklahoma's biosolids management is dominated by land application of bulk, Class B biosolids.*
- *Biosolids land application in Oklahoma is relatively low cost - in the $25/wet ton range - compared to most solids management programs around the U. S.*
- *Oklahoma City produces half of the solids in the state, and its large Class B land application program faces some challenges with malodors and public acceptance.*

Biosolids Management in Oklahoma

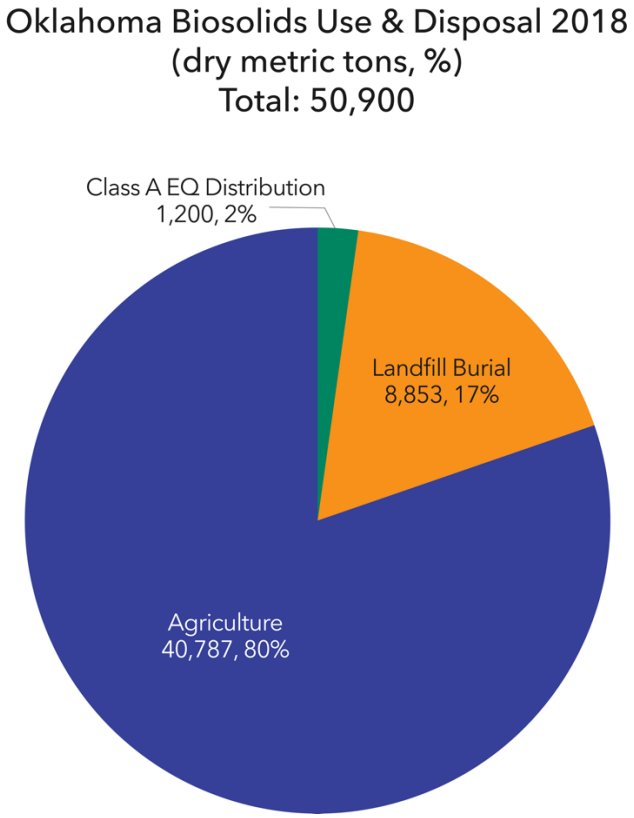
Oklahoma is a largely rural state with significant cropland and rangeland. Most of the population lives within a few major metropolitan areas. The state has received full delegation from U.S. EPA to administer the federal biosolids rule, 40 CFR Part 503.

In Oklahoma in 2018, 69 major water resource recovery facilities (WRRFs treating >1 MGD) generated 50,765 dry metric tons (dmt) of biosolids, the vast majority of which were treated to Class B quality and applied on agricultural lands. Oklahoma City (OKC), Tulsa, and Norman house the state's largest wastewater treatment systems and send all of their biosolids for land application.

Only three facilities in OK produce Class A EQ biosolids: Midwest City, Ardmore, and Tahlequah. Most of those biosolids are used on city parks and properties, but Midwest City also distributes their Class A EQ biosolids to the general public. Ardmore is permitted for public distribution, but hasn't yet rolled out a distribution program. In 2018, the Class A EQ biosolids produced by these three cities totaled about 1200 dmt.

The remainder of OK's biosolids is landfilled. As in other states, most of the WRRFs in Oklahoma are small facilities that rely more heavily on landfills for solids disposal. It's estimated that <20% of OK's minor (<1 MGD) WRRFs land apply, due to lack of equipment, systems, sites, etc. But as landfill costs rise, more of these facilities are turning to land application as a lower-cost option. Some small WRRFs have sludge lagoons that are cleaned out only occasionally; others haul to a centralized facility under the same permit authority (i.e. within the same metropolitan district). Only a handful of small facilities haul solids for treatment at a facility outside their district.

Most WRRFs in Oklahoma manage their own solids. OKC is an exception: it has a contractor (formerly Veolia, currently Synagro) that manages land application, reporting, and some testing. Small facilities may contract for occasional land application when lagoons are cleaned out. In OK, any solids that leave the grounds of a WRRF must be at least Class B.



Agency/Department Oversight

Biosolids in Oklahoma are regulated and permitted by the Department of Environmental Quality (ODEQ). Within ODEQ, the Municipal Wastewater Engineering and Enforcement Section oversees permitting, compliance, and construction for wastewater treatment plants, sludge treatment, land application, and more – in five regions defined by ODEQ. Enforcement engineers routinely visit WRRFs, so they have a great understanding of the technologies and systems in use. This understanding is reflected in the data provided here by ODEQ staff.

State Regulations and Permitting

As the environmental agency in a state delegated for Part 503, ODEQ has primacy for regulating biosolids. It regulates biosolids through NPDES-type permits issued to WRRFs. Oklahoma follows Part 503 exactly, with few additional rules for testing, reporting, or management practices. Oklahoma's biosolids rules were last updated in 2014, but there were no substantive changes then, only

streamlining. ODEQ requires some additional monitoring on an as-needed basis for Class B land application sites. For example, one municipality recently land applied at the ceiling concentration for one metal and is now required to sample soils regularly and monitor cumulative loadings.

Nitrogen, phosphorus, and potassium (NPK) are all tested for and monitored in soils to which biosolids are applied. Nitrogen is usually the limiting factor and basis for a site's agronomic loading rate. Phosphorus (P) is occasionally more limiting, often due to previous industrial land application of waste (e.g. of chicken manure by a chicken plant). If P is to determine the agronomic rate, then that is done through use of a P site index.

The ODEQ requires annual reporting only from major WRRFs (treating >1 MGD). Minor WRRFs are required to test and maintain records, but not submit reports. Reporting and registration/permitting are required for any EQ biosolids entering the state.

Pressures on Biosolids Management and Land Application

Pressures on biosolids in OK as of 2018, as identified by the state biosolids coordinator, include…

1. PUBLIC INVOLVEMENT – concerns of neighbors, environmental groups, and others
2. NUISANCE ISSUES – odors, truck traffic, dust, etc.
3. COST – rising costs generally
4. MANAGEMENT ISSUES – hauling distances
5. REGULATIONS ON BENEFICIAL USE – lack of regulatory support for beneficial use

In Oklahoma, 2020 saw an increase in local actions to limit Class B land application or prohibit land application within some city limits. Oklahoma City (OKC) is by far the largest producer of biosolids in the state and also the main source of biosolids-related odor complaints. In 2018, 50 of the 65 new biosolids land application site permits issued were for OKC. The city has started letting land sites rest for a few years between applications to try to reduce odor impacts on neighbors, and this practice has created a need for additional land sites - hence the flurry of new permits. OKC biosolids are malodorous partly due to the lime treatment used, which area farmers appreciate for the beneficial alkalinity it adds to soils. OKC has looked into other treatment technologies, but the financial impact would be large, and there are no plans at this time to make a major change.

Septage Management

Septage in Oklahoma is managed by the Local Services Division of the ODEQ. Septage can be land applied if it is lime stabilized prior to spreading. An estimated 10% of OK's population is served by on-site septic systems. This is a relatively low percentage, mostly due to the fact that OKC, Tulsa, and most other large cities have prohibitions on new development not connected to sewers.

Oklahoma Septage Management

Quality of state septage data	Low
Septage haulers based in state:	256
In-state separate preparers (not WRRFs) taking septage:	no data
WRRFs required to take septage?	No, the choice to accept septage is left to the facility.
WRRFs that accept septage:	no data
Septage received at WRRFs in 2018 (gallons):	no data
Other outside wastes accepted at WRRFs:	no data
Is fats/oil/grease (FOG) a significant issue?	no data
Is it regulated?	no data
How?	no data
Is there a proactive program to collect FOG?	no data
Can septage be land applied in state?	Yes
If yes, what treatment is required?	lime stabilization prior to application
Most recent septage regulations update:	2010
Full-time equivalent (FTE) at state agency for septage:	8
Notes: NBD Project Team estimates 4.5 million gallons of septage were generated in OK, assuming 5% of the 10% of households pump their septic tanks each year.	

Major WRRFs, Separate Preparers, and Notable Projects

- Tulsa Metropolitan Utility Authority operates four major water resource recovery facilities. The two largest WRRFs use anaerobic digestion to treat biosolids before land application. All four facilities rely on stabilization in sludge lagoons to reach Class B quality. TMUA manages all biosolids in-house, land applying about 6,100 dry tons per year on surrounding agricultural fields.

- Midwest City has a compost facility that mixes yard waste with biosolids, producing a Class A EQ biosolids compost that is available to the public for $20 per cubic yard.

- The City of Norman Water Reclamation Facility (WRF) manages all biosolids in-house, using anaerobic digestion to produce Class B biosolids for land application on fields where mostly

native grasses and Bermuda grass are grown. Biosolids are stored in tanks during periods of wet weather.

- Oklahoma City Water Utilities Trust (OKWUT) operates four wastewater treatment plants. OKWUT contracts with Synagro to manage land application, reporting, and some testing of the city's biosolids. Solids from all the plants are lime-stabilized and dewatered prior to land application, producing about 25,000 dry tons per year. The OKWUT land application program has operated in similar fashion since the 1990s and has had nearly 20,000 acres permitted, all of which are used to grow crops for non-direct-human consumption: mostly animal feed (corn, hay). It is a daily activity pretty much year-round, involving an average of 30 truckloads per day. OKWUT has taken various steps to try to mitigate odors associated with these Class B biosolids, including applying biosolids to any particular site only every few years, always incorporating the biosolids into the soil immediately after they are applied, sometimes applying odor neutralizing compounds to the biosolids or at land application sites when needed, and having an external review of biosolids management practices. A rigorous industrial pretreatment program monitors influent and helps ensure the quality of the biosolids product. The demand and participation level from area farmers is high. Nonetheless, over the past decade, there have been occasional public debates regarding malodors and other nuisances and the safety of biosolids use in and around OKC, leading to a couple of communities restricting local land application and discussions in the OKC City Council and local media. In 2020, the town of Luther banned land application, responding to ongoing pressure by several concerned citizens. The debate around the OKC biosolids land application program is similar to debates in a few other places around the country. In response to the increasing concern, in 2019, OKWUT hired a contractor to conduct a thorough odor assessment study and recommend additional mitigation measures.

- The city of Tahlequah in northeastern OK sits within the Illinois River watershed, which straddles the Oklahoma/Arkansas border. Histories of manufacturing and agriculture in the region led to increased concerns about water pollution in the last few decades. For instance, Tyson spread wastes from its regional chicken plants on land sites in the watershed for many years, resulting in high levels of phosphorus. (That practice has decreased, a result of a prominent lawsuit.) When Tahlequah built a composting facility and began producing Class A EQ biosolids by mixing in yard waste, there was lots of early concern from environmental groups. But the composting program has been largely successful, with compost available in bulk for delivery or pickup at the compost facility. Tahlequah "Tiger Dirt" provides an example of biosolids compost pricing:

Compost Pricing

Tahlequah Tiger Dirt may be purchased at the Utilities Office located at 710 W. Choctaw between 8 a.m. to 4.pm. Please present a current Tax Exempt Card at time of purchase, if applicable. Tax (9.5%) will be added to all purchases without a Tax Exempt Card.

Receipt must be presented to the personnel at the Wastewater Treatment Plant located at 1410 E. Powell Road prior to loading. For same day delivery (depending on weather), receipt must be presented no later than 3:30 p.m.

****A fuel surcharged of $2.00 per mile will be assessed after the first five (5) miles from the Wastewater Treatment Plant on delivered loads**.

Pickup Truck

Picked up at WWTP	
Screened	$8.00
Unscreened	$5.00

10 Wheel Dump Truck

Picked up at WWTP	
Screened	$25.00
Unscreened	$20.00

Delivered**	
Screened	$50.00
Unscreened	$45.00

18 Wheel Dump Truck

Picked up at WWTP	
Screened	$45.00
Unscreened	$35.00

Delivered**	
Screened	$90.00
Unscreened	$80.00

Tahlequah, OK compost prices, April 2021. https://www.tahlequahpwa.com/compost.html

References

The state biosolids coordinator and other state biosolids experts provided most of the information in this summary report. Additional information was obtained from:

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