

DASHBOARD

Massachusetts State Biosolids Statistics

Data Quality & Methods	2018	explanations & sources
<p>Quality & Confidence in this state's data:</p> <p>Data sources & methods:</p> <p>State biosolids included in 2018 EPA ECHO data</p>	<p>HIGH</p> <p>The MA Clean Energy Center's Mass Sludge Survey (NEBRA, 2020) provided detailed 2018 data.</p> <p>84% % in ECHO vs. the total presented here...</p>	<p>ranking by survey team based on information provided in survey (options: High, Moderate, Low, None)</p> <p>https://echo.epa.gov/facilities/facility-...</p>
<p>Demographics & Wastewater</p> <p>State population:</p> <p>Total land area in state (acres):</p> <p>Population density (persons/square mile):</p> <p>Total number of WRRFs reported in state survey:</p> <p>total number of WRRFs permitted/reported elsewhere:</p> <p>number of WRRFs in EPA ECHO reports for 2018:</p> <p>Average population served per WRRF:</p> <p>Average wastewater flow statewide (MGD, NBDP):</p> <p>avg.wastewater flow statewide (MGD, Seiple):</p> <p>Number of WRRFs that treat >75% of state flow:</p> <p>% of population served by on-site (septic) systems:</p> <p>Biosolids used or disposed / person in 2018 (lbs):</p>	<p>6,902,149</p> <p>4,992,000</p> <p>885</p> <p>122</p> <p>119</p> <p>66</p> <p>40,734</p> <p>823</p> <p>748</p> <p>19</p> <p>28%</p> <p>52</p>	<p>U. S. Census estimate for July 1, 2018 https://www.census.gov/newroom/press-kits/2018/pop-estimates-national-state.html</p> <p>calculated survey response by state expert Seiple et al., 2020; state experts, etc. https://echo.epa.gov/facilities/facility-search?mediaSelected=bioAnnual</p> <p>calculated survey response by state expert</p> <p>Seiple et al., 2020 https://doi.org/10.1016/j.jenvman.2020.110852</p> <p>Seiple et al., 2020 https://doi.org/10.1016/j.jenvman.2020.110853</p> <p>survey response by state expert</p> <p>calculated</p>
<p>Biosolids Application</p> <p>Agricultural land cropland (acres):</p> <p>% of state area in cropland:</p> <p>Number of farms with that cropland:</p> <p>% cropland to which biosolids were applied:</p> <p>Application rate if all state biosolids were applied to cropland (dry U.S. tons/ac.):</p> <p>% cropland needed if all state biosolids were applied at typical rate (~3 dt/ac):</p>	<p>171,496</p> <p>3%</p> <p>5,117</p> <p>likely <2%</p> <p>1.1</p> <p>35%</p>	<p>https://quickstats.nass.usda.gov/results/0C8BAD84-6032-3276-4F8B-624DB8825822</p> <p>calculated</p> <p>https://quickstats.nass.usda.gov/results/E56563D1-C9CD-30FE-9274-2E91CC0640EC</p> <p>calculated</p> <p>calculated</p> <p>calculated</p>
<p>Nutrient Sources - Comparison</p> <p>Nitrogen (N) in all this state's biosolids (metric tonnes, 2018):</p> <p>N in this state's animal manures (metric tonnes):</p> <p>N in this state's purchased fertilizer (metric tonnes, 2011):</p> <p>If all state's biosolids applied, what % of state's applied N would come from biosolids?</p> <p>Phosphorus (P) in this state's biosolids (metric tonnes, 2018):</p> <p>P in this state's animal manures (metric tonnes):</p> <p>P in this state's purchased fertilizer (metric tonnes, 2011):</p>	<p>7,870</p> <p>3,672</p> <p>13,599</p> <p>31%</p> <p>3,279</p> <p>818</p> <p>1,198</p>	<p>calculated assuming avg. 4.8% biosolids N https://www.epa.gov/nutrient-policy-data/estimated-animal-agriculture-nitrogen-and-phosphorus-manure</p> <p>https://www.epa.gov/nutrient-policy-data/commercial-fertilizer-purchased</p> <p>calculated</p> <p>calculated assuming avg. 2% biosolids P https://www.epa.gov/nutrient-policy-data/estimated-animal-agriculture-nitrogen-and-phosphorus-manure</p> <p>https://www.epa.gov/nutrient-policy-data/commercial-fertilizer-purchased</p>

<p>If all state's biosolids applied, what % of state's applied P would come from biosolids?</p>	<p>62%</p>	<p>calculated</p>
<p>State Regulatory Involvement Biosolids oversight agency / division: Permitting... of biosolids programs: ...of land application sites: FTEs: state biosolids regulatory program: Biosolids program FTEs per million population: Enforcement: Inspections of biosolids facilities & field sites in 2018: Formal violations issued: Amount of state regulations beyond Part 503: Amount of state regulation of nutrient management & phosphorus: Accessibility of biosolids data to public: State encouragement of biosolids recycling to soils: Voluntary additional protections by land appliers known & reported by state coordinator:</p>	<p>Environment agency - water / wastewater program Approval of Suitability (AOS) Approval of Suitability (AOS) 2.5 0.4 0 0 Moderate Low Moderate Low None</p>	<p>Environment agency - water / wastewater program survey response by state expert calculated survey response by state expert survey response by state expert rankings by survey team based on information provided in survey (options: High, Moderate, Low, None)</p>
<p>Trends New land application activity, 2018 - new permits & acreage, acres applied: acres applied in 2018: Local regulations & their impacts?: details... Legislative & state regulatory actions in 2018 & their impacts?: details... Biosolids beneficial use increasing... ..in 2018?: in 2020?: details...</p>	<p>Moderate likely less than 200 acres, Class A EQ & Class B Some some local towns have ordinances & increasing recent concerns None No No Beginning in 2019, PFAS became a significant issue, creating uncertainty around biosolids management.</p>	<p>rankings by survey team based on information provided in survey (options: High, Moderate, Low, None)... With quotes of survey responses by state expert(s) survey response by state expert survey response by state expert</p>
<p>Changes in Biosolids Use & Disposal Change* in solids reported used or disposed (in units used by state): Beneficial Use - percentage point increase or decrease (-): Landfill & surface disposal - % point increase or decrease (-): Incineration - percentage point increase or decrease (-): Class A - percentage point increase or decrease (-): Class B - percentage point increase or decrease (-): No class or not known - percentage point increase or decrease (-):</p>	<p>27,540 dry U.S. tons 3% -8% 6% -9% 18% -9%</p>	<p>*Change may be due to population increase/decrease, change in treatment at a large WWTP, and/or different systems of data tracking and reporting. calculated comparing these 2018 data to 2004 data compiled by the same survey team (NEBRA, 2007)</p>