**City of Cape Town’s wastewater sludge quality and quantity**

**GreenCape is undertaking a project, funded by the City of Cape Town, to identify potential landfill diversion of primary sludge and beneficiation solutions to the management of the City’s dewatered wastewater sludges and future digestate cake.**

Two key regulatory changes have driven the need for the beneficiation of wastewater sludges:

1. As of August 2019, the nationwide ban of liquid waste disposal to landfill came into effect
2. Furthermore, the Western Cape Provincial Government has implemented an organic waste strategy that seeks to phase in organic waste landfill restrictions. In effect, all local municipalities within the Western Cape are required to reduce the landfilling of organics by 50% by 2022, and 100% by 2027.

This data is being published as part of a request for information from organisations that are interested in this opportunity and would like to make the City aware of their possible solutions. Organisations that are interested in this opportunity, are invited to submit information on their solutions to GreenCape by the end of 16 November 2020. To submit information, please [**click on this link**](https://forms.gle/oV8SNhfrDh4xeCeF7). Please note that this is not part of a formal procurement process, but rather an opportunity for GreenCape and the City of Cape Town to gain insights into potential circular economy solutions for the management and final beneficiation or disposal of the City’s dewatered sludges and future digestate cake.

While every effort has been taken to ensure the data herein is correct, neither GreenCape nor the City of Cape Town can be held accountable for any errors.

For more information and any queries, please contact rudi@green-cape.co.za

**Sludge quantity**

Table 1: Total dewatered sludge disposed by the City of Cape Town in 2019 (actual hauled values for 12 of the 17 wastewater treatment works that produce sludge, with theoretical values for remaining 5 works)

|  |  |
| --- | --- |
| Sludge type (all dewatered) | Disposed quantity (dry ton / day) |
| Primary Sludge | 43.9 |
| Waste Activated Sludge | 97.1 |
| Blend | 58.06 |
| **Total** | **199.06** |

|  |  |  |  |
| --- | --- | --- | --- |
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|  |  |  |
| --- | --- | --- |
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**Sludge quality**

Table 2: Dewatered sludge constituents from 12 of the 17 wastewater treatment works that produce sludge in the City of Cape Town, 2016- 2019

|  |  |  |  |
| --- | --- | --- | --- |
| Category | Constituent (unit) | Primary sludge | Waste activated sludge |
| **Min** | **Median** | **Max** | **Mean** | **Min** | **Median** | **Max** | **Mean** |
| Classification | Microbiological Class | C | B | B | B | C | B | A | B |
| Stability Class | 1 | 2 | 2 | 1.8 | 1 | 2 | 2 | 1.6 |
| Pollutant Class | a | a | a | a | a | a | a | a |
| Physical Characteristics | pH | 5.74 | 6.12 | 7.01 | 6.3 | 5.09 | 5.89 | 6.79 | 5.9 |
| Total Solids (%) | 8.3 | 16.85 | 22.2 | 16.7 | 8.4 | 14.05 | 41.6 | 17.7 |
| Volatile Solids (%) | 6.8 | 13.8 | 19.9 | 14.0 | 6.9 | 11.85 | 27 | 13.2 |
| Volatile Fraction (%) | 76.3 | 82.7 | 92.1 | 83.7 | 49.1 | 79.9 | 92.5 | 77.8 |
| Volatile Fatty Acids (%) | 0.01 | 0.02 | 0.02 | 0.018 | 0.01 | 0.02 | 0.02 | 0.018 |
| Nutrients | TKN (mg/kg as N) | 4 550 | 8 904.5 | 27 796 | 10 309 | 3 821 | 8 578.5 | 26 037 | 9 904 |
| TP (mg/kg as P) | 35 | 250.5 | 845 | 330.3 | 236 | 707 | 12 339 | 1 742.7 |
| Potassium (mg/kg as K) | 2 650 | 7 297.5 | 32 679 | 9 082.9 | 958 | 6 489 | 59 172 | 10 256.5 |
| Metals and Micro elements | Arsenic (mg/kg as As) | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Cadmium (mg/kg as Cd) | 0.42 | 1.55 | 7 | 2.8 | <1 | <1 | 61.3 | 3.7 |
| Chromium (mg/kg as Cr) | 4 | 51.6 | 180 | 73.3 | <1 | 47.1 | 820 | 114.6 |
| Copper (mg/kg as Cu) | 21 | 111.5 | 363 | 120.8 | 38.3 | 129.5 | 790 | 175.7 |
| Lead (mg/kg as Pb) | 1 | 25.1 | 102 | 33.3 | <1 | 15.15 | 95.9 | 18.7 |
| Mercury (mg/kg as Hg) | 0.005 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Nickel (mg/kg as Ni) | 3.9 | 33 | 61.3 | 31.3 | <1 | 11 | 293 | 29.4 |
| Zinc (mg/kg as Zn) | 173 | 632.5 | 2 409 | 990.3 | 125 | 494.5 | 3 762 | 718.3 |
| Microbiological Quality | Faecal Coliforms (organisms per g) | 2 400 | 3 334 500 | 8 063 000 | 3 799 117 | 57 | 10 200 | 8 063 000 | 1 267 887 |
| Total Viable Helminth Ova (ova/g) | 0 | 1.5 | 5 | 2 | 0 | 4 | 25 | 5.3 |
| Stability (O'Shaunessy's formula) | Class | 1 | 2 | 2 | 1.8 | 1 | 2 | 2 | 1.5 |
| Volatile solids reduction (%) | 0 | 6.9 | 14.3 | 6.5 | 0 | 23.8 | 81.6 | 29.5 |