

Wastewater Production, Treatment, and Use inLesotho

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Wastewater production and treatment

- The estimated volume of combined domestic and industrial wastewater received by the capital Maseru Municipality's treatment facility (capacity 10 Mega litres/day) on a daily basis is 9.2 Mega litres. Figures for the other nine districts are not available.
- Municipalities in all ten districts of the country utilise oxidation ponds for wastewater treatment. In the capital Maseru, the ponds are used in conjunction with the activated sludge treatment to enhance effectiveness.
- Industrial effluents with their heavy metal constituents present a serious constraint to effective municipal wastewater treatment and hence, were not permitted connection to public sewer lines.
- Wastewater from animal dipping centres are discharged onto the open environment (mostly rural surface water reservoirs) without any treatment.

Wastewater use and/or disposal

Regulations and implementation of guidelines

- Ministry of Natural Resources (MNR)– administers the Water Resources Act and is responsible for implementing the Water Resources Management Policy.
- Commissioner of Water (within MNR) – responsible for policy and planning functions for both water resources management as well as water and wastewater services.
- Department of Water Affairs (within MNR) – custodian of water rights and is responsible for the monitoring, evaluation and analysis of water resources as well as the enforcement of legislation and the implementation of national water and wastewater policies and guidelines.
- Water and Sewerage Company (parastatal under MNR) – operational authority for managing potable water supply and wastewater collection, conveyance and treatment. It is also the custodian of the Lesotho Water and Sewerage Authority Order and the Lesotho Water and Sewerage Authority Regulations.
- Department of Environment (within Ministry of Tourism, Environment and Culture) – responsible for formulation of environmental policies, legislation and guidelines as well as monitoring the state of the environment.

Regulations and implementation of guidelines cont.

EFFLUENT QUALITY STANDARD FOR DISCHARGE TO A PUBLIC SEWER

The minimum requirements with which industrial effluent in Lesotho must comply in order to allow it to be discharged with a public sewer are presented below.

Parameter	Daily Average
pH value	Not < 6.0 nor >10
Temperature	Not > 35 ° C
Biochemical Oxygen Demand (BOD ₅)	400 mg/l
Chemical Oxygen Demand (COD)	600 mg/l
Suspended Solids	1 000 mg/l
Cyanogens compounds (Expressed as HCN)	20 mg/l
Sulphides, hydrosulphides and polysulphides (expressed as S)	50 mg/l
A-oils, greases or waxes of mineral origin	20 mg/l
B-vegetable oils, fats, greases or waxes	250 mg/l
Tar and tar products, bitumen, asphalt and distillates thereof	60 mg/l
Sugars (Total sugars and starch expressed as glucose)	1 500 mg/l
Sulphates SO ₄	600 mg/l
Chlorides (Expressed as Cl)	No limit
Copper (Expressed as Cu)	2 mg/l
Nickel (Expressed as Ni)	3 mg/l
Zinc (Expressed as Zn)	5 mg/l
Cadmium (Expressed as Cd)	0.5 mg/l
Total Chromium (Expressed as Cr ₂ O ₃)	3 mg/l
Additional:	
Total lead (Expressed as Pb)	2 mg/l
Mercury (Expressed as Hg)	0.1 mg/l

Regulations and implementation of guidelines cont.

The effluent shall not contain any substances which, either alone or in combination with any matter in any sewer, pumping station or sewage stabilisation pond or sewage treatment works would give rise to poisonous inflammable or obnoxious gases in such sewers or pumping stations or would be deleterious either to the fabric or working of the sewage treatment works.

- a) The pH value of the effluent shall not be less than 6,5 nor more than 10 and the average pH value therefore over any period of twenty four hours shall not be less than 6,5 nor more than subject to the water received by the industry from the public water supply having a maximum pH value of eight.
- b) The solids in suspension in the effluent shall not exceed 1000 mg/l.

Challenges

- Although the Department of Agricultural Research under the Ministry of Agriculture and Food Security carries a mandate whose mission states that National agricultural research organization is committed to the application of agricultural science and developing, adapting, and transferring environmentally safe and economic agro-technologies to the farming community and agro-industry through strong linkages with education, extension and industry, there are currently no irrigation schemes deploying the utilisation of the existing vast amounts of wastewater emanating from industrial or agricultural activity.

Government's approach to wastewater management

- In recent times, a policy has been developed that requires industries to pre-treat their effluents prior to discharge into municipal sewers or the environment. This has prompted the industrial companies to recycle the pre-treated effluents back into their production cycle thus, reducing quantities of wastewater discharged into the municipal sewerage system or open environment for disposal/treatment.

Possible solutions

- Capacity building (human resource, infrastructure) in agricultural research
- Research in innovative technologies that utilise wastewater in agricultural irrigation schemes
- Development of legislative framework for promotion of wastewater use in agriculture