

Sludge Management Problems in Egypt

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Site 9N for sludge treatment

Introduction

- Site 9N is the disposal facility for the scum and screenings generated at the west and east wastewater treatment plants in Alexandria, In addition to the activity of sludge treatment.
- 9N site of total area about 360 acre is located near King Maryout and it began operation in 1993.
- Monitoring wells (9 wells) were established in order to characterize the ground water quality and to determine if the activities at site 9N are impacting the groundwater.
- There are 2 lined evaporation ponds for the leachate which results from the scum and screenings trenches
- Forest (100 acre).

Site 9N Activities

1- Sludge treatment

- Aerobic composting of the dewatered sludge resulting from secondary treatment of wastewater at the east treatment plant and the primary treatment at the west treatment plant
- There are 2 composting areas (north and south composting areas and each is 170 acre).
- Dewatered sludge was spread in the operation area and the sludge was allowed to dry for about 2 months.



Operation areas





2- Disposal

- Disposal of the screenings and scum from the east and west wastewater treatment plants in lined trenches (6 trenches).
- Trenches are lined with concrete layer, PVC layer and gravel.
- The trenches is connected to the evaporation ponds through underground pipes network.



Disposal trenches





Evaporation ponds



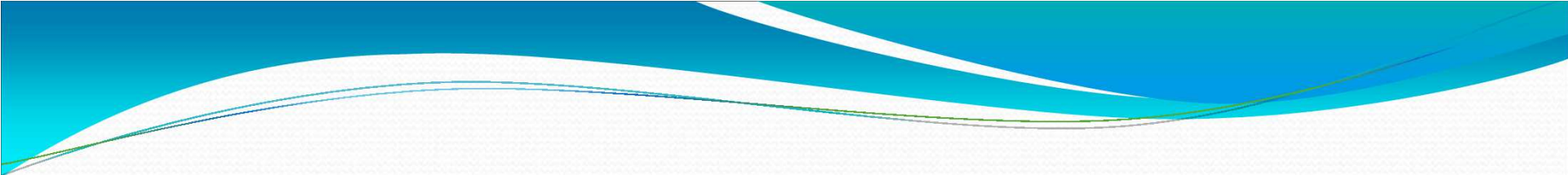


Forest





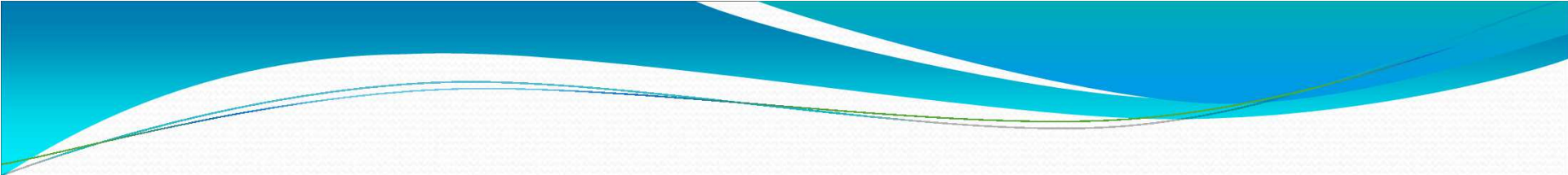
Sludge Management Problems in Egypt

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- In Egypt, there are only secondary treatment
 - we have no technology for compost production because of the equipments and shortage of uptrained workers, in addition to the need of wide areas for treatment

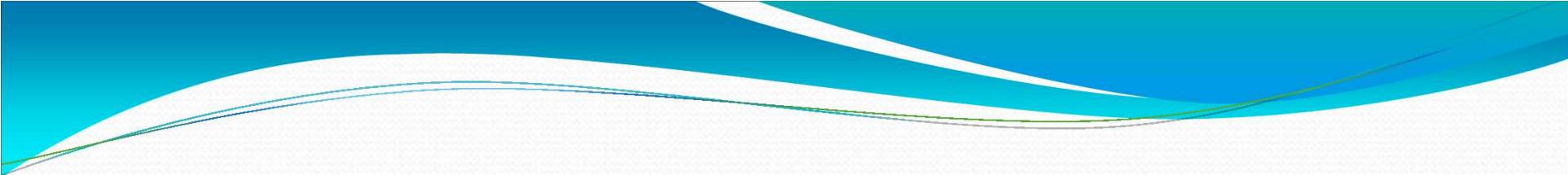


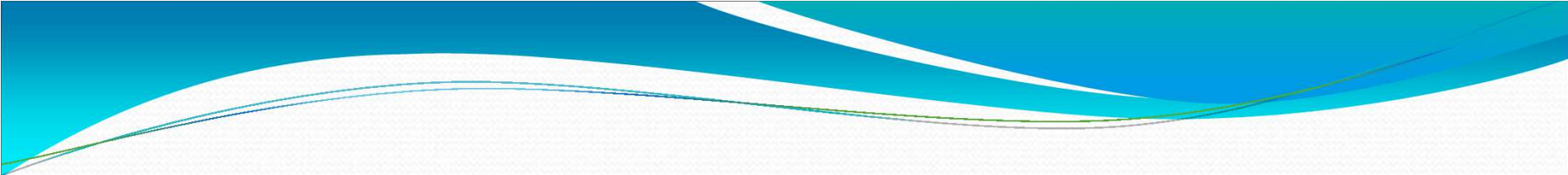
M. Ghazy, T. Dockhorn, and N. Dichtl (common research)

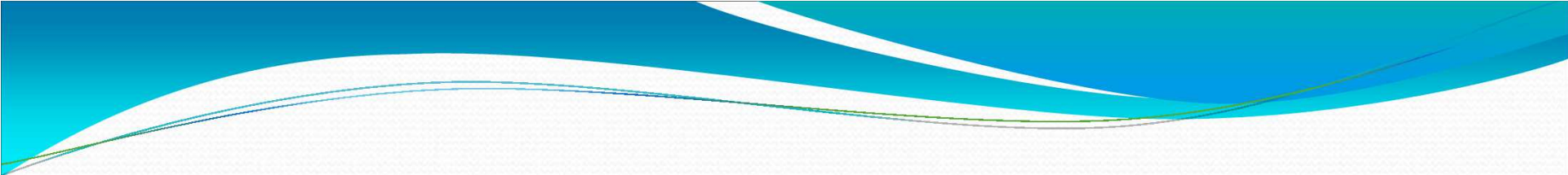
- Since a long period, Egypt has been concentrating its efforts on sanitation services mainly on wastewater treatment, while little priority has been given to sludge management in practice.

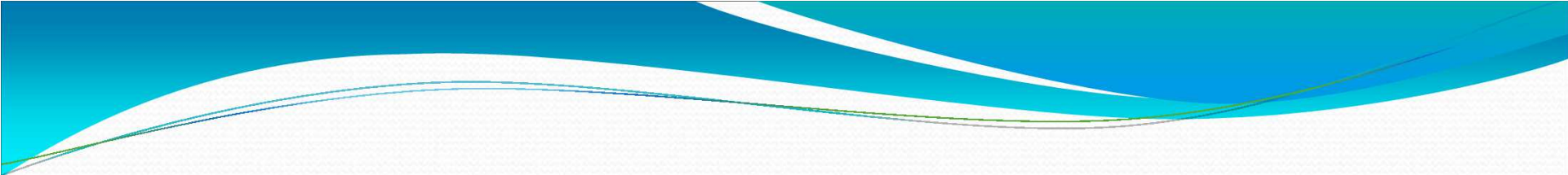


sewage sludge is a serious problem due to its high treatment costs and the risks to environment and human health. Although, the volume of the produced sewage sludge represents only 1 % to 2% of the treated wastewater volume, Due to the currently low capacities of wastewater treatment prevailing in many developing countries,

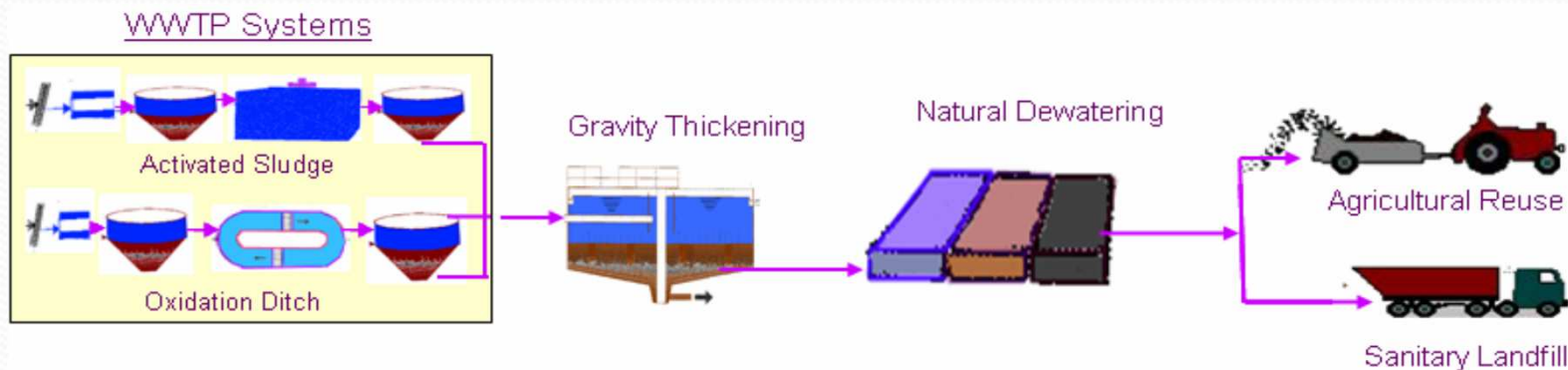
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- In 2008 The total number of WWTPs in Egypt was 303 treating 11.85×10^6 m³/day of wastewater.
 - a future increase in the number of wastewater treatment plants can be expected. As a consequence, the amount of produced sewage sludge is also expected to increase.
 - The produced sludge contains heavy metal and pathogens.


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- The Egyptian sanitation sector is facing many difficulties to manage this wastewater mainly due to financial problems, which require huge investments far above the presently available national resources. The Government of Egypt has invested billions in development of water and wastewater services

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- For many years, the methods and technologies for sewage sludge treatment, which are implemented in Egypt, were very limited. The main attention was devoted to the process of sludge drying, mainly through natural drying beds without any interest of the characteristics or quality of the produced sludge.
 - Recently, there is an interest in finding new techniques and methods for sewage sludge treatment.

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- The most common scenario for sewage sludge treatment and disposal that is applied in most of the existing WWTPs in
 - Egypt is presented in Fig. 1 where, the primary and secondary sewage sludge produced from the WWTPs is pumped to thickening facilities, where the solids are concentrated to 4-6% DS, then the thickened sludge is pumped to natural dewatering units, where it dried to concentrations of 40-60 % DS.
 - The dried sludge is mainly used for land application or it is rarely dumped into landfills.

- It is noted that, this scenario of sewage sludge treatment
- (Fig. 1) does not contain facilities for sludge stabilization processes.
- the quality of the produced sludge isn't compatible with law limits specially for pathogens limits. Therefore,
- additional alternative methods have to be developed to enhance sludge quality. & and our government prevent using it even if landed 6 months by contractor, although unfruitful plants



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- Nowadays, We started to activate the biogas technology but it needs to fund because it is very expensive
 - Also as activated in Alexandria water and wastewater treatment plant the using of sludge in portland cement industry from few months.
 - Mixing wastewaters is considered the big problem and we can not separate kitchen drain from that of toilet.
 - we need to know how to benefit from the treated sludge and what is the perfect uses of sewage sludge, is it to be used as alternative fuel, as compost in agriculture of non edible plants or the use of sludge to generate energy.....etc