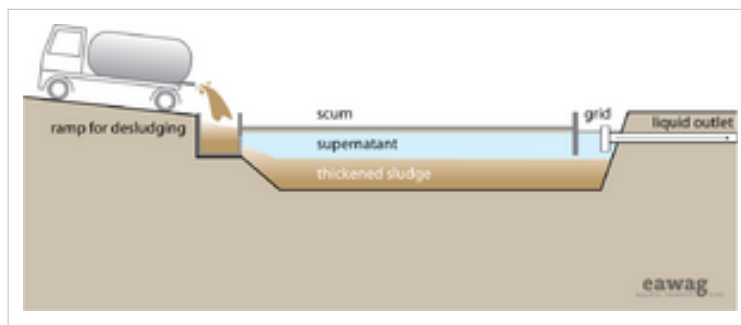


# Sedimentation\_-\_Thickening\_Ponds

Application level		Management level	
Household		Household	
Neighbourhood	X	Shared	
City	XX	Public	XX



Applicable to systems:	Languages / langues / idiomas		
1, 5, 6, 7, 8			

Inputs: Faecal Sludge

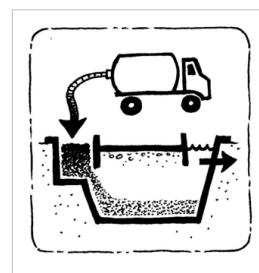
Outputs: Effluent, Faecal Sludge

**Sedimentation or Thickening Ponds are simple settling ponds that allow the sludge to thicken and dewater. The effluent is removed and treated, while the thickened sludge can be treated in a subsequent technology.**

Faecal sludge is not a uniform product and therefore, its treatment must be specific to the characteristics of the specific sludge. In general, there are two types of faecal sludges: high strength (originating from latrines and unsewered public toilets) and low strength (originating from Septic Tanks. High strength sludge is still rich in organics and has not undergone significant degradation, which makes it difficult to dewater. Low strength sludge has undergone significant anaerobic degradation and is more easily dewatered.

In order to be properly dried, high strength sludges must first be stabilized. Allowing the high strength sludge to degrade anaerobically in Settling/Thickening Ponds can do this. The same type of pond can be used to thicken low strength sludge, although it undergoes less degradation and requires more time to settle. The degradation process may actually hinder the settling of low strength sludge because the gases produced bubble up and re-suspend the solids. To achieve maximum efficiency, the loading and resting period should not exceed 4 to 5 weeks, although much longer cycles are common. When a 4-week loading, and 4-week resting cycle is used, total solids (TS) can be increased to 14% (depending on the initial concentration).

As the sludge settles and digests, the supernatant must be decanted and treated separately. The thickened sludge can then go on to be dried or composted further.



Advantages	Disadvantages/limitations
<ul style="list-style-type: none"> <li>- Can be built and repaired with locally available materials.</li> <li>- Low capital cost; low operating cost.</li> <li>- Potential for local job creation and income generation.</li> <li>- No electrical energy required.</li> </ul>	<ul style="list-style-type: none"> <li>- Requires large land area</li> <li>- Odours and flies are normally noticeable.</li> <li>- Long storage times.</li> <li>- Requires front-end loader for monthly desludging.</li> <li>- Requires expert design and operation.</li> </ul>

## Adequacy

Settling/Thickening Ponds are appropriate where there is inexpensive, available space that is far from homes and businesses; it should be on the edge of the community.

The sludge is not hygienized and requires further treatment before disposal. Ideally this technology should be coupled with an onsite Drying or Co-composting facility to generate a hygienic product. Trained staff for operation and maintenance is required to ensure proper functioning.

This is a low-cost option that can be installed in most hot and temperate climates. Excessive rain may prevent the sludge from properly settling and thickening.

## Health Aspects/Acceptance

The incoming sludge is pathogenic, so workers should be equipped with proper protection (boots, gloves, and clothing). The thickened sludge is also infectious, although it is easier to handle and less prone to splashing and spraying. The pond may cause a nuisance for nearby residents due to bad odours and the presence of flies. Therefore, the pond should be located sufficiently away from urban centres.

## Maintenance

Maintenance is an important aspect of a well-functioning pond, although it is not intensive. The discharging area must be maintained and kept clean to reduce the potential for disease transmission and nuisance (flies and odours). Grit, sand, and solid waste that are discharged along with the sludge must be removed.

The thickened sludge must be removed mechanically (front end loader or specialized equipment) when the sludge has thickened sufficiently.

## Acknowledgements

The material on this page was adapted from: Tilley, E. et al. (2008). Compendium of Sanitation Systems and Technologies <sup>[2]</sup>, published by Sandec <sup>[3]</sup>, the Department of Water and Sanitation in Developing Countries of Eawag <sup>[4]</sup>, the Swiss Federal Institute of Aquatic Science and Technology, Dübendorf, Switzerland. The publication is available in English, French, and will be made available in Spanish. Available in the IRC Digital Library <sup>[5]</sup>

## References and external links

- Heinss, U., Larmie, SA. and Strauss, M. (1999). Characteristics of Faecal Sludges and their Solids-Liquid Separation. Eawag/Sandec Report, Dübendorf, Switzerland. Available: <http://www.sandec.ch>
- Heinss, U., Larmie, SA. and Strauss, M. (1998). Solids Separation and Pond Systems for the Treatment of Faecal Sludges in the Tropics-Lessons Learnt and Recommendations for Preliminary Design. Second Edition. Eawag/Sandec Report 05/98, Dübendorf, Switzerland. Available: <http://www.sandec.ch>
- Montangero, A. and Strauss, M. (2002). Faecal Sludge Treatment. Lecture Notes, IHE Delft. Available: <http://www.sandec.ch>



## References

- [1] [http://www.eawag.ch/organisation/abteilungen/sandec/publikationen/compendium\\_e/index\\_EN](http://www.eawag.ch/organisation/abteilungen/sandec/publikationen/compendium_e/index_EN)
  - [2] [http://www.eawag.ch/organisation/abteilungen/sandec/publikationen/publications\\_sesp/downloads\\_sesp/compendium\\_high.pdf](http://www.eawag.ch/organisation/abteilungen/sandec/publikationen/publications_sesp/downloads_sesp/compendium_high.pdf)
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  - [5] <http://www.irc.nl/docsearch/title/163208>
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# Article Sources and Contributors

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