# WASTE PIT

| Input materials | Pre-condition/Pre-treatment | Operation & maintenance | Objectives / Key features | Key technical parameters |
|---|---|---|---|---|
| **Suitable waste:**<br>– Inert waste<br><br>**Unsuitable waste:**<br>– Organic waste<br>– Recyclables<br>– Hazardous waste | Waste separation | Low operation & maintenance required | Safely dispose of solid waste | Space required depends on the waste generation rate & pit lifetime (usually 5 years) |
| **Outputs / products** | **Technical complexity** | **Maturity level** | **Educational aspect** | |
| Safe waste disposal | Limited infrastructure required (pit)<br>Low-level skill required for construction<br>Low-level skills required for appropriate O&M | Widespread practice | **Topics:** waste degradation rate; environmental pollution<br><br>**Practical exercises:** Calculating waste pit size | |


**When plastic or other non-organic "inert" waste cannot be recycled, burying waste can be the easiest and safest option. However burying or dumping organic and hazardous/ contaminated waste poses a threat to the environment and should be avoided.**

Practically, waste is dumped into a hole and then covered with a layer of soil. When the hole is full of waste a final soil cover is added to build a slightly elevated hill. Once full, a new hole is dug and the cycle starts over.

**Applicability:** Waste pits can range between houshold small pits to medium sized community or school waste pits depending on the amount of waste to be safely disposed of. At larger scale, it is often referred to as landfill.

**Technical design considerations:** A hole is dug and surrounded by a small berm and ditch to avoid rainwater flowing into the hole. The required size is determined by how much waste will require disposal over at least the next 5 years [1]. The bottom of the hole should be well above (>2m)

the highest groundwater level. If possible, a clay layer at the bottom and covering the walls can avoid further water leaching into the surrounding [2].

The following formula can be used to determine the pit volume:

$$\text{Pit volume } m^3 = \frac{\text{Daily waste generated } (\frac{L}{day}) * 365 * 5 \text{ years (or more)}}{2 * 1000\ (Lm^3)}$$

Criterias for identifying the location of the pit are [2]:

- Close to an empty area to allow for site expansion
- Highest groundwater lever should be >2m lower than the bottom of the pit
- At least 200m away from the nearest residential area
- Far from main school activities

**Materials needed:** The pit can be dug manually with shovel or mechanically with excavator depending on the size required and the available resources. A shovel is used to regularly cover the pit with cover material (soil or low-quality compost).

**Technical operation & maintenance:** A layer of soil is regularly added onto the waste in the pit to avoid wind transport of waste and to hinder access to waste by birds and vermin. Burning waste in the waste pit is not allowed as this releases harmful gases and pollutants into the environment and endangers health.

**Health and safety:** While dumping waste in pit is not an inherently dangerous activity, precautions are necessary to protect against injury, especially in presence of sharps.

**Costs:** Waste pit is a low-cost disposal method.

**Social, legal and environmental considerations:** Social acceptance for waste pits is usually quite low. The major environmental burden results from waste burning in the pit (release of harmful gases and pollutants), which is not allowed, or elseby leachate contaminating groundwater if the distance between waste pit and groundwater is too small.

**Strengths and weaknesses:**

- ⊕ Easy and safe disposal method
- ⊕ Avoids waste burning and wind blowing waste around
- ⊖ Damages landscape
- ⊖ Possible soil contamination
- ⊖ Not sustainable solution (no resource recovery)

**> References and further reading**


1. Lenkiewicz, Z. and M. Webster, Making Waste Work: A toolkit - How to design and operate a basic waste disposal site, wasteaid, Editor. 2017.
2. Leclert, L., et al., Blue Schools - Linking WASH in schools with environmental education and practice, Catalogue of Technologies. 2018.


*MOOC Youtube videos:*

*MOOC Mod. 1.9 Upgrading a Dump Sit*