UK and International Landfills: case study comparisons

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Introduction

- Who we are
- Acknowledgements
- Objective of the presentation
- What we will cover:
  - Section 1: Site selection/landfill construction
  - Section 2: Landfill operation
  - Section 3: Socio-economic issues
  - Section 4: Health and safety for site visits
Section 1: Site Selection/ Landfill Construction

- It is imperative to design the landfill correctly to allow environmentally sound operation and restoration.
- Site selection and design takes into account many factors including geology, hydrogeology, topography, noise, wind direction etc.
- Only some of the many aspects in relation to site selection and design are discussed.
Site selection - topography

- Topography can be challenging, even in the UK, but consideration is given during the design process with respect to safe operation, capping, restoration and settlement
Site selection and design can leave significant challenges if topographic factors cannot be overcome by engineering and operation.....
If landfill sites are constructed below the water table, there are increased risks of non-compliance with the Environmental Permitting Regulations.
Site selection – groundwater ingress

In Kosovo, the groundwater controls failed within 1 year resulting in a new lake....
Site selection – expansion options

It is always wise to consider expansion options otherwise you can have problems when the site fills up……
UK: as part of the Permit Application a Stability Risk Assessment is undertaken to establish that the structural and physical stability (including the basal material, side slopes, liner, waste mass and capping) over entire lifecycle of the landfill.
In Indonesia, tipping has resulted in very steep slopes.
In Macedonia there is toe collapse, poor design.
Seismic risks at both sites.
Section 2: Landfill Operation

If Operations cannot be managed well, there can be a host of problems....
Landfill Operation – controls on incoming waste

- UK sites use digital weighbridges, consignment notes, inspections etc.
- This is for multiple reasons including Landfill Tax and no co-disposal/ multi-disposal
Controls on incoming waste range from none (Turkey) to basic (Indonesia) to digital weighbridges.

Risks relate waste volumes and waste types.
Landfill Operation – Tipping sequence and limits of landfill extent

Tipping plans are designed and adhered to in order to ensure operational control and management.
Landfill Operation – Tipping sequence and limits of landfill extent

No tipping plan, limited experience of site operators, some ‘difficult’ wastes tipped outside cells/site boundary
Landfill Operation – emissions

- In the UK as part of the design and permitting process monitoring plans, compliance/ action levels and management plans are defined to treat and manage emissions (to land, air and water)
Landfill Operation – emissions
In the UK, there are numerous controls including the use of daily cover, an approved capping design and CQA during capping.
Limited or no daily cover, inadequate capping – leads to significant risks associated with emissions, fire, birds etc.
Landfill Operation – Fire

UK - Assessment of accidents and failure scenarios in accordance with the EA’s Hydrogeological Risk Assessment for Landfills (LFTGN01) and Horizontal guidance Note H1- Annex J3.
Fires (above ground waste and below ground) are not uncommon
Landfill Operation – Limitations of overseas landfills

International capital investment but constant challenges based on lack of operational funding……
In the UK there is no sorting on the landfill itself – done pre-landfill by segregation at source or MRFs (clean or dirty)
Socio-economic – Scavengers - organised

Employed by site operators, run by organised groups
Socio-economic – Scavengers – ad hoc

Scavenging prior to collection, families living at the sites
Socio-economic – Scavengers - grazing

Sheep, cows, dogs, rats, birds – remove organic fraction, undesignated nature reserves…..
Socio-economic – Neighbours

A UK site…..

Our general impression was that at international landfill sites, the neighbours were a lot more accepting!
Health and Safety for site visits

- Pre-visit Health and Safety Risk Assessment
- Personal Protective Equipment
- Sign in at site
- Inductions/Site briefing
- Permit to Work
- UXO risk assessments
Health and safety for site visits

- Shelling across border – Akcakale 4 Oct 2012, MM visit 7 Nov 2012 less than 5km from the Syrian border in Turkey
- Rabies
- Aggressive scavengers
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