Landfill Gas Management System

Engineered Landfills – Key Components

- Gas Collection System
- Final Cap
- Liner and Leachate Collection System (LCS)
- Surface Water Management System
Landfill Gas Constituents

- CH₄
- CO₂
- SO₂
- H₂S
- Mercury (Hg)
- VOCs
- ?

Landfill Gas Regulations

- Explosive Gas Concentration at property boundary shall be < 5%
- Non Methanogenic Organic Compounds (NMOCs) shall be destroyed by 99.9% or more before releasing into the atmosphere
- These regulations only apply to medium or large size landfills
- Small landfills (< 2.5 Million Metric tons total capacity) are exempt from gas collection regulations. However, if neighbors complain about odors, small landfill owners need to collect and manage gas to mitigate odor problems.
Landfill Gas Management System - Functions

- Collect and Remove Gas from the landfill for treatment and flaring or gas to energy conversion
- Reduces the risk of explosion of landfill
- Reduces the risk of ground water and air pollution from leakage or diffusion of landfill gas
- Odor Control

Essential Components of Landfill Gas Management System

- Vertical Wells or Horizontal Gas Collection Trenches
- Gas Header Pipe
- Gas Blower
- Condensate Trap
- Flare (to burn methane and other non-methanogenic organic compounds- NMOCs)
- Gas to Energy Generator – not essential
Basic Types of Gas Management Systems

- Passive Venting
- Active collection and treatment/flaring

Passive Venting

- In passive venting, gas is released to the atmosphere without treatment.
- Gas comes out its own pressure without the need to apply suction to pull the gas out.
Active Gas Collection – Vertical Wells

- In passive venting, gas is collected and treated or flared.
- Gas comes out under the action of a small amount of suction applied in the common leachate header pipe.
Active Gas Collection – Trenches

4 to 6” dia. PVC Conduit
Suction (to blower)

~MSW~

Landfill Gas Well and Header Pipe
Landfill Gas Wells and Header Pipe

To Blower

Landfill Gas Well and Header Pipe
Landfill Gas Manifold

Landfill Gas Condensate Trap
Landfill Gas Flare

Landfill Gas to Electrical Energy Generator
Leachate Evaporator Using Gas Energy

Puente Hills Panorama - 4 (middle right)

Note: Greenwaste area, industrial waste tipface, cover stockpile, high standard of cover in general and odour dispersal fan (middle foreground)
Puente Hills Panorama
– 3 (middle)

Note: LFG pipework and main active face (centre)