

Scientific Way of Disposing Municipal Solid Waste

by A M M Hebrul Anam

MUNICIPAL solid waste in Bangladesh is dumped almost anywhere with least consideration of its impact on the environment. The introduction and the implementation of the concept of landfills is already overdue. We must not waste any further time before we start using landfills for the disposal of municipal solid waste.

A landfill is a man-made pit specifically designed for the disposal of different types of solid wastes. Both hazardous and non-hazardous solid waste can be disposed off in a landfill depending upon its design and the suitability of the landfill material.

Why Dhaka should use a landfill

Dhaka generates a huge amount of solid municipal waste everyday. None of them are disposed off scientifically at the landfills. Rather, they are dumped almost anywhere without any consideration to the environment. For quite a few years municipal solid waste is being used to fill lowlands for different human uses, e.g. Gabtali bus terminal, Jatrabari dump site etc. Many of these lowlands are potential sites for groundwater recharge. As a result, leachets generated from the waste trickles down the earth, reaches the aquifer and contaminates the ground water. The groundwater, carrying the pollutants travels through the porous media at different velocities and spreads over a wide area with time, eventually polluting the whole region. This water pumped out of the aquifer could be used as potable water, damaging human health.

There are several examples in the United States where people living near an army, air or naval base started having more deadly diseases than people in other regions. After a careful investigation it was found that the drinking water had significant amounts of chemicals or radioactive isotopes that leaked to the aquifer from irresponsible dumping by the bases several years ago when there was no or little restrictions on dumping hazardous wastes. In Bangladesh many chemical companies dispose their chemical wastes directly into the river which is causing irreversible harm to our aquatic life, ecology and human health.

Rough Diagram Showing the Basic Components of a Landfill.

city, nor far away from the city. The prime waste generating source areas in the city have to be identified so that the site can be selected near the source.

Traffic condition plays an important role in choosing the site. The site must be easily accessible throughout the year. The road condition has to be good and the route should not be too crowded with heavy traffic. There should not be too many schools and residential areas on the route. A good example of selecting a wrong waste hauling route is the Nababpur Road, which is al-

ways congested with unusually heavy traffic. The hauling trucks should not haul the waste during school hours or busy traffic hours. Early morning and late night is a good time for waste hauling.

The geologic condition of the site must be favorable for building the landfill. There should not be any active faults going through the site area. There has to be an appropriate soil type (rock type in geologic term) underneath the landfill. The landfill can't be built in a place where the underlying bed rock is graveliferous, because gravel beds are very porous. The hydraulic conductivity (the ability of the media to let the fluid pass through it) should be very low. Thick dispersed clay is the most favorable bedrock component, because water can hardly travel through dispersed clay. The clay should not be a fat clay, which expands when wet and shrinks when dry. A landfill should not be built in an area where there is an aquifer near the surface.

Types of landfills

There are mainly three types of landfills: a) Landfills

with only clay liners, b) With clay and geosynthetic liners, c) With only geosynthetic liners

A liner is a natural/artificial layer used at the bottom of the landfill as a sealant to retard and/or stop the water, produced from the waste (leachets), from leaking, thus protecting the underground aquifer from contamination. It is impossible to totally stop the leachets from leaking. However, with suitable liners, the movement of the leachets can be reduced to less than 2 inches/year. Different materials take different periods of time to disintegrate depending

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