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Impact on Ground Water Contamination by Storage of Municipal Solid Waste Under Open Sky

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ABSTRACT

The conventional India is facing very big problem of Municipal Solid Waste. It is discharge daily in very heavy quantity and to store or dissolve are the major problem in our country.

Governments doing the efforts but those are very small action against the quantity of Waste discharge. The Waste Management Plant is running low capacity due to daily quantity increase & Furness goes slowly down by dumpage of Waste on incinerators.

Dry Waste polluted air environment and wet waste polluted Ground water. Ground water contamination is the biggest problem in those areas where waste is stored in heavy quantity, under open sky & without any concrete + rubber platform.

Keywords: *Municipal Solid Waste; Solid Waste Management; Groundwater Contamination; Storage of Waste Under Open Sky.*

1.0 Introduction

The importance of ground water for the existence of human society cannot be overstated. Groundwater is the main source of drinking water in both urban and rural India. In addition, an important source of water for agricultural and industrial sectors. Water consumption forecasts for 2000 put the use of groundwater about 50%. As an integral and important part of the cycle, availability depending on rainfall and load conditions. Until recently, was considered a reliable source of clean water.

Water demand has increased over the years and this has led to water shortages in many parts of the world. The situation is compounded by the problem of water pollution or contamination. India is moving towards a freshwater crisis, mainly because of poor water resources management and environmental degradation that has led to a lack of access to safe drinking water for millions of people. The freshwater crisis is already visible in many parts of India, varying in size and intensity depends mainly on the time of year.

Groundwater crisis is not the result of natural factors; It is caused by human activity. Over the past two decades is the level of water in

different parts of the earth rapidly decreases due to an increase of the extraction. The number of wells drilled for irrigation of food and cash crops are fast and increased indiscriminately. The rapid increase in population and the changing lifestyle of India also needs domestic water. The water required for the industry also shows an overall increase. Intense competition between users-agriculture, industry and domestic sectors - is the engine of the water table below. The quality of groundwater is being hit hard because of the widespread pollution of surface waters.

In addition, the discharge of untreated wastewater from drilling and leachate disposal of non-scientific solid waste also pollutes the groundwater, reducing the quality of freshwater resources.

2.0 Importance of Ground Water

Our land appears to be unique among the other known celestial bodies. It has water, covering three quarters of the surface and forms 60-70% by weight of the living world. The water regenerates and is distributed by evaporation, which seems without continually renewable In fact, only 1% of water conflict is useful

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for us. About 97% is salt water, and 2% is frozen in glaciers and ice caps. While, 1% of the world water is a precious commodity that is necessary for survival. Dehydration (lack of water) will kill us faster than starvation (lack of food). Because plants and animals we eat also depend on water, lack of it can cause both dehydration and starvation. The scenario is worse. Drinking water is harmful elements that can cause illness or death, if swallowed contains looks.

3.0 Ground Water

In rural India, ground water provides about 85% of the water for domestic use, and over 50% of which is used for irrigation. These statistics, but underestimated the increased role of groundwater in the natural resources and socio-economic frameworks. Access to groundwater means reduced agricultural risks and means for economic development. Meanwhile the increasing use of groundwater has resulted in various environmental considerations; the most important are the depletion of groundwater resources and the basic rate reduced to streams and rivers.

4.0 Data from Government Authorities Regarding Municipal Solid Waste (MSW):

Solid waste comprises of all the wastes arising from human and animal activities that are normally solid and that are discarded as useless or unwanted. Solid waste consists of highly heterogeneous mass of discarded materials from commercial, industrial, agricultural and mining activities.

Municipal solid waste (MSW) is generally consist of non-hazardous components but sometimes hazardous too such as product packaging, waste cloths, glass and bottles, newspapers, paints, batteries, industrial dust, ash, tyres, metal cans and containers, dead animals, medical waste, abandoned vehicles, insulations, conduits and including sewage and sludge comprising all toxic wastewater and night soils etc. The present generation of Indian MSW is ranged from 100-500g/person respectively in small and large town. Among it only 13-20% is recyclable content [1].

5.0 Status Of Municipal Solid Waste Management In India

Central Pollution Control Board has carried out an inventory of municipal solid wastes generation, collection, transportation and disposal in Class –I cities and Class II towns in the country and published status reports under Control of Urban Pollution Series (CUPS). The reports revealed following facts:

Class- I Cities

- The total Population of 299 Class-I cities (including 23 metro cities) is 13,99,66,369. The Maharashtra state and Ganga river basin have the highest population of Class-I cities.
- Out of 299 Class-I cities, 210 cities have responded to EPTRI's queries. This works out to 75% of the total cities. 45% of the total cities have physical characteristics data.
- The municipal Solid Waste Generated in 299 Class-I cities is 48,134 MT/day for the year 1994-95 and 59349 MT/day for the year 1999 (projected).
- Bombay which has the highest population, also generates the maximum quantity of solid waste i.e. 5,355 MT/ day.
- About 37% of the total municipal solid waste generated is from the cities located in Ganga basin and 18% is Maharashtra state.
- The average per capita generation of solid waste for Class-I cities works out to 0.376 kg/person/day. The per capita generation of solid waste ranges from 0.1 kg/day for Junagadh to 0.929 kg/day Jalgaon city.
- Mode of collection by manual methods accounts for 51% and by trucks, 48%.
- The compostable matter is the major component of MSW composition in India. This ranges from 24% to 58%, with an average of 35% by weight for Class-I cities.
- The content of paper and paper board varies from 3% to 10%, by weight and average before disposal.
- Out of 48,134 MT/ day of solid waste generated, only 2786 MT/ day receives treatment before disposal.
- The major mode of disposal of solid waste is by land-dumping and composting. The disposal by land-dumping and composting in

- respect of Class-I cities works out to 94% and 5% respectively.
- With concentration of industrial and commercial activities around the city nodes, rapid urbanization attracted by large scale migration of rural population. The Industrial Development Areas created in and around the urban center do not cater to the needs of basic civic amenities for the migratory population.
 - The migrated rural Population has not been able to easily adapt to the social change and to urban living conditions. This has to a great extent contributed to the deteriorating sanitary, conditions and solid waste generation problems.
 - The other aspect which contributed to the generation of solid waste is the economic growth in the urban pockets and the consequent increase in consumerism and package disposals.
 - The collection, transportation and disposal of loose garbage in bulk quantities by manual methods are unhygienic for the carriers.
 - The dumping areas, have become serious health hazards to the people living the neighborhood. The ground water in the area is also liable for contamination.
 - Basic care and precautions are not being taken in handling and safe disposal bio-medical waste, which is being treated as domestic garbage in majority of the cases.
 - Enough care and attention are not being paid for the safe disposal of Industrial Hazardous wastes.
 - Local Governments are legally bound to provide efficient and effective solid waste services. With increased population and economic activities and changing urban lifestyles, local Governments are unable to cope with the mounting solid wastes in cities.
 - As we witnessed after the plague scare at Surat in the year 1994, local communities and people themselves were involved in cleaning up the city. The awareness generated during the plague scare and the motivation of the people, however, could not be sustained for long.
 - In large cities, the composition of wastes is changing with rapid increase in Paper, Plastic, Metal and Hazardous materials components.
 - Many cities in India have turned to private contractors for transportation of garbage to disposal sites. Class – II Towns
 - As per 1991 census, the total population of 345 class-II towns is 2,36,45,614. The Uttar Pradesh state and Ganga river basin have the highest population of class-II towns.
 - Average population density for class-II towns works out to 3,695 persons /sq.km.
 - Out of 345 class-II towns, 113 towns have provided information on solid waste status. This worked out to 33% of the total towns.
 - Municipal solid waste generated in 345 class-II towns works out to 3,401 MT /day. The projected solid waste generation for 1999 based on average growth of population and average MSW generation from each of the towns is 4217 MT/day.
 - About 30% of the total municipal solid waste generated is from Ganga river basin.
 - The Virar of Maharashtra state, which generates the maximum quantity of solid waste, 43 MT/day and Puliyangudi of Tamil Nadu state generates least, 1 MT/ day.
 - The average per capita contribution of solid waste for class-II towns works out to 0.152 kg / person / day. The per capita generation of solid waste ranges from 0.019 kg/day for Puliyangudi of Tamil Nadu state to 0.747 kg/day for Virar of Maharashtra state.
 - The mode of collection is 78% by manual methods and 21% by trucks.
 - As per the information made available from the 113 municipalities, the solid waste collection in all class-II towns is hundred percent.
 - Out of 1,454 MT/day of solid waste generated from 113 numbers of towns, only 46 MT / day receives treatment before disposal.
 - The major mode of disposal of solid waste is by land-filling. The disposal by land-filling and composting in respect of class-II towns works out to 93% and 6%, respectively –

6.0 The Causes of Groundwater Contamination

Groundwater is an integral part of the environment, therefore not to each view separately. There was a lack of sufficient attention to water conservation, the efficient use of water, water

reuse, ground water and ecosystem sustainability. The uncontrolled use of technology bore well led to the extraction of groundwater at a high pace that often inadequate. The causes of low water availability in many areas are directly related to the reduction of forest cover and land degradation.

Contamination of groundwater resources is today grown into a big problem. Pollution of air, water and land influences the contamination and pollution of groundwater. Solids, liquids and gases generated, if not handled properly, causing environmental pollution, this due to the impact of groundwater on the hydraulic connectivity in the hydrological cycle. For example, when the air is polluted, it will precipitate a lot of harmful substances into the ground, which can then seep into and pollute groundwater resources to resolve. Extracting water without proper load and leaching of pollutants from pesticides and fertilizers into aquifers contaminated the groundwater supplies. Moreover, the leachate from agriculture, industrial waste and municipal solid waste has polluted surface water, groundwater. About 45 million people are affected worldwide in water characterized by an excess of fluoride, arsenic, iron or saltwater intrusion

7.0 Conclusions

It is important to realize that without groundwater resources that could be easily used

without attention because it is abundant. The problems and issues, such as floods, salinity, organic toxins and industrial waste water, all should be well documented.

Unlike the legislation and controls to maintain and improve the quality of groundwater, the company itself plays a very important role. During the last decade, there has been a growing awareness among ordinary people of the need for the preservation and development of groundwater. The water must be effectively integrated in the regeneration of water, as in many traditional technologies.

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