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Environmental Issues in Pakistan

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Environmental issues in Pakistan threaten the population's health and have been disturbing the balance between economic development and environmental protection. As a great problem for the nature and nation of Pakistan and as Pakistan is a large importer of both exhaustible and renewable natural resources and a large consumer of fossil fuel, the Ministry of Environment of Pakistan takes responsibility to conserve and protection of environment.

Current issues:
Water pollution from raw sewage, industrial wastes, and agricultural runoff; limited natural fresh water resources; a majority of the population does not have access to potable water; deforestation; soil erosion; desertification

Pollution
The National Conservation Strategy Report has documented how solid and liquid excreta are the major source of water pollution in the country and the cause of widespread waterborne disease. Because only just over half of urban residents have access to sanitation, the remaining urban excreta are deposited on roadsides, into waterways, or incorporated into solid waste. Additionally, only three major sewage treatment plants exist in the country; two of them operate intermittently. Much of the untreated sewage goes into irrigation systems, where the wastewater is reused, and into streams and rivers, which become sewage carriers at low-flow periods. Consequently, the vegetables grown from such wastewater have serious bacteriological contamination. Gastroenteritis, widely considered in medical circles to be the leading cause of death in Pakistan, is transmitted through waterborne pollutants.

Motor cycles and scooters are major polluters in the cities

National Conservation Strategy

The National Conservation Strategy Report recommends fourteen program areas for priority implementation, protecting watersheds, preventing or decreasing pollution, managing urban wastes.

International agreements

Pakistan is a party to several international agreements related to environment and climate, the most prominent among them is:

- Hazardous waste
- Indus water treaty

Environmental Problems

The Sahiwal City does not contain adequate infrastructure and urban facilities. Choking of sewerage and drainage is the major problem that is creating a health hazard and nuisance for the public. The dumps of solid waste have produced unhygienic conditions for the inhabitants. Tanneries, Automobile, Brick Kilns and other industrial units, located within or close to the city, are discharging dangerous fumes, gases and other pollutants that are injurious for the human beings.

The studies carried out in Sahiwal area indicated area different factors that are responsible for polluting air, atmosphere and subsurface strata, as under:

- Domestic Solid Waste
- Hospital Waste
- Industrial Waste
- Hazardous Waste
- Sewerage and Drainage Water
- Transport and Traffic

Domestic Solid Waste

Domestic Solid Waste is waste generated from households or residential units. They generally consist of wet or organic waste and inorganic waste portions. Wet waste is usually made up of food and kitchen waste and yard trimmings or other garden waste. Inorganic waste usually consists of paper**,** corrugated cardboard, plastic, glass, wood, ferrous and non-ferrous metals that are found in many household products. Most often these inorganic wastes can be recycled. The improper disposal by inhabitants and mismanagement of solid waste by the Municipal Corporation has created a lot of pollution in Sahiwal area. The present management of the solid waste is also quite insufficient, that results in the form of heaves of garbage scattered everywhere. This is the one of the most important factors of air pollution as well.

This situation may be controlled by the following remedial measures:

- Proper sweeping of streets, cleaning of drains and collection of solid waste to reduce the disease hazards.
- Improvement of the refuse collection and disposal arrangements.
- Special attention is recommended for Katchi Abbadies and slums areas of the city where very unhygienic condition are prevailing.
- Provision of Rubbish Bins of good design is increased to the places. Where they do not create ill-effects to their surroundings.
- The number of vehicles required for the collection and disposal of refuse is increased. The transportation of the refuse is done through the covered vehicles only.
- Ideally suitable localities for the refuse disposal are available all around city. The present practice of random solid waste dumping within the city is eliminated. Compact clay rich silt and exhausted clay pits are the most favorable sites for the waste disposal. The waste should be disposed off in the remote fields by making proper pits. So that they do not pollute the air and surface and subsurface water.

Domestic Solid Waste

Hospital waste

Hospital waste is generated during the diagnosis, treatment, or immunization of human beings or animals or in research activities in these fields or in the production or testing of biological. It may include wastes like sharps, soiled waste, disposables, anatomical waste, cultures, discarded medicines, chemical wastes, etc. These are in the form of disposable syringes, swabs, bandages, body fluids, human excreta, etc. This waste is highly infectious and can be a serious threat to human health if not managed in a

scientific and discriminate manner. It has been roughly estimated that of the 4 kg of waste generated in a hospital at least 1 kg would be infected.

Rationale of hospital waste management

Hospital waste management is a part of hospital hygiene and maintenance activities. In fact only 15% of hospital waste i.e. "Biomedical waste" is hazardous, not the complete. But when hazardous waste is not segregated at the source of generation and mixed with nonhazardous waste, then 100% waste becomes hazardous. The question then arises that what is the need or rationale for spending so much resource in terms of money, man power, material and machine for management of hospital waste? The reasons are:

- Injuries from sharps leading to infection to all categories of hospital personnel and waste handler.
- Nosocomial infections in patients from poor infection control practices and poor waste management.
- Risk of infection outside hospital for waste handlers and scavengers and at time general public living in the vicinity of hospitals.
- Risk associated with hazardous chemicals, drugs to persons handling wastes at all levels.
- "disposable" being repacked and sold by unscrupulous elements without even being washed.
- drugs which have been disposed of, being repacked and sold off to unsuspecting buyers.
- Risk of air, water and soil pollution directly due to waste, or due to defective incineration emissions and ash.

1. Segregation of waste

Segregation is the essence of waste management and should be done at the source of generation of Bio-medical waste e.g. all patient care activity areas, diagnostic services areas, operation theatres, labour rooms, treatment rooms etc. The responsibility of segregation should be with the generator of biomedical waste i.e. doctors, nurses, technicians etc. (medical and paramedical personnel). The biomedical waste should be segregated as per categories mentioned in the rules.

2. Collection of bio-medical waste

Collection of bio-medical waste should be done as per Bio-medical waste (Management and Handling) Rules. At ordinary room temperature the collected waste should not be stored for more than 24 hours.

Industrial Waste

Water pollution has many sources. The most polluting of them are the city sewage and industrial waste discharged into the rivers. Industrial waste is defined as waste generated by manufacturing or industrial processes. The types of industrial waste generated include cafeteria garbage, dirt and gravel, masonry and concrete, scrap metals, trash, oil, solvents, chemicals, weed grass and trees, wood and scrap lumber, and similar wastes. Industrial solid waste - which may be solid, liquid or gases held in containers - is divided into hazardous and non-hazardous waste. Hazardous waste may result from manufacturing or other industrial processes. Waste water from manufacturing or chemical processes in industries contributes to water pollution. Industrial waste water usually contains specific and readily identifiable chemical compounds. Water pollution is concentrated within a few subsectors, mainly in the form of toxic wastes and organic pollutants. Out of this a large portion can be traced to the processing of industrial

chemicals and to the food products industry. Most major industries have treatment facilities for industrial effluents but this is not the case with small-scale industries, which cannot afford enormous investments in pollution control equipment as their profit margin is very slender. The effects of water pollution are not only devastating to people but also to animals, fish, and birds. Polluted water is unsuitable for drinking, recreation, agriculture, and industry. It diminishes the aesthetic quality of lakes and rivers. More seriously, contaminated water destroys aquatic life and reduces its reproductive ability. Eventually, it is a hazard to human health. Nobody can escape the effects of water pollution.

Industrial Waste

Sewerage and Drainage Water

The presence of adequate disposal of sullage water is important, because it will provide protection against the epidemics and other environmental hazards. Sahiwal town lacks facility of such operation The old open channel system is dominant and only new settlements have the sewerage system. In most of the areas the waste water from the individual settlements is collected by the small pacca channels, mostly running along both sides of the streets. The small pacca channels are connected with collector drains and that are further connected with the Mains and finally disposal works.

The arrangements for the collection and disposal of sludge water in the Katchi Abadies are veryDepressing. The water is usually carried by Katcha Zigzag channels. At some places the water makes through these Katcha channels and as a result the street is flooded and becomes a great Cause of nuisance for the passersby and the adjoining dwellers. Such areas require immediate attention by the concerned authority.

The rapid pace and scale of urbanization demands the efficient delivery of essential water and sewerage services. Wade Adams is fully equipped to cater to this requirement including installation of pipelines, pumping stations and complete sewerage networks.

Distribution Networks – Installation of water, irrigation, sewerage and drainage networks including pipe installations that range from 100 mm to 2400 mm diameters of varied pipe types. The overall service comprises installing, testing and commissioning of complete networks including building and house connections.

Pumping Stations – Large-scale pumping stations for portable water, irrigation, sewerage, drainage and fire fighting inclusive of installation, testing and commissioning of all equipments, pumps (dry and submerged) as well as related equipment supply, instrumentation, automation, Remote Telemetry Units (RTU) and PLC systems.

Following are the recommendations to control this problem:

There is no signicant nullah in the district. However, Sukh Bias passes through the district lengthwise from East towords west. The river can be utilized for effluent disposal after permission from Irrigation and Power Department, Government of the Punjab.

The disposal station of Farid Town and District Hospital are at safe locations but the disposal plan of Ghala Mandy areas is being surrounded gradually by residential and other uses. Therefore, there is urgent need to shift it to some other suitable place outside the built up areas. Similarly the need to shift the disposal work of Bhutto Nagar will also be felt in the near future.

The leakage of sewerage, pipes at many places is polluting the water supply system of the area. Sewerage system of the city is playing a vital role in causing pollution. The potential problems with pollution of surface and groundwater are more severe. The leached water from the waste can move rapidly into the groundwater flow system through the permeable sand beds. This water can also move rapidly into surface streams because of slopes in drainage control structure. Control of groundwater pollution is important because the motor water pumps, hand pumps and tube wells are also used to supplement the government water supplies for the domestic usage.

- Immediate attention should be given to the areas with Katcha channels. They may be replaced by the pacca ones and be connected with the main drain system of the city/locality. All the future development is to be connected with the sewerage system.
- Adequate arrangement is suggested for the draining of surface water during rainy season and flooding period.

Sewerage and Drainage Water

Description of Study Area

Location and Accessibility

The Survey area lies in Bari Doab, the Land between Ravi and Sutlej Rivers. It falls in Survey of Pakistan's toposheet No.44F/2 between longitude 73°00' and 73°15' East and latitude 30°30' and 30°45' North, covering the area of 640 square kilometers. The District Headquarter is located at Sahiwal.

Sahiwal was a very small and unimportant village, about a century ago.The Sahiwal District, named as Montgomery, was established in 1849,as a part of Multan Division.Montgomery was named as a doubtful compliment to Sir Robert Montgomery, who was the Lieutenant Governor of the Provinceof Punjab in the year 1865 when the district headquarters were first moved from Gugera to the present site .It was re-named as District Sahiwal in November 1966,by the Deputy Commissioner, Mr.Muzaffer Qador(the late).

Sahiwal town is situated at a distance of about 30 kilometers from the left bank of the River in the south,165 kilometers in southwest of Lahore and 170 kilometers in northeast of Multan. The Grand Trunk Road and the main railway line connecting Peshawar-Lahore with Karachi are

Passing through the town. The Lower Bari Doab Canal separates the town into almost northern and southern parts. It is spread over an area of 3201 Square kilometers and comprises into two tehsils namely, Sahiwal and Chichawatni.

The Sahiwal district is separated from Faisalabad and Toba Tek Singh districts in the north and northwest, Okara district in the east and Pakpattan district in the southeast,Bahawalnagar district in the south(along Sutlej river)and Vehari district in the southwest and Khanewal district in the west. River Ravi flows in its north side.

The area is well connected by rail and road links. The district has a total metalled road length of 1036 kilometers. It is linked with Multan, Okara, Pakpattan, Khanewal, Vehari and Bahawalnagar district through metalled road. The main Karachi-Peshawar railway line runs through the entire length of the districts.Railways line passes through a number of towns that are connected by metalled roads.

Demography

- Total Population 3369196
- Total Area 5854 square kilometers
- Annual growth rate 2.0%
- Population density 518 persons per sq. km

Area-wise population

Area	Population	Percentage
Rural	2024235	85%
Urban	357765	15%

Source: Standard Demographic population groups based on DHIS

Gender-wise population

Gender	Population	Percentage
Male	1231970	52%
Female	1150267	48%

Source: Standard Demographic population groups based on DHIS

Population groups

Population Groups	Standard Demographic (%)	Estimated Population
Under 1 year of age	2.7	64314
Under 5 years	13.4	319188
Under 15 years	44	1048080
Women in child bearing age (15-49 years)	22	524040
Married Child Bearing age Women	16	381120
Expected pregnancies	3.4	80988

Standard Demographic population groups based on DHIS

Tehsil wise distribution

Tehsil	Number of UC	Population
Sahiwal	52	1429622
Chichawatni	37	952378

Ethnic groups and languages

The district is home to a variety of the tribes, the important ones being Sayed, Jat, Arain, Dogar, Johiya, Bodla, Bhatti, Hans, Khagga, Kharal, Wattu, Chishti, Bodla, Khagga and

Rajputs (including Ranghar) and Rehmani (Muslim Labana). mahar taroly. Punjabi and Urdu are the main languages spoken in the district.

Socio-Economic Indicators

Education and Literacy

Literacy rate	Male	Female
Urban	-	-
Rural	-	-
Overall District	54.7%	32.3%

Source: EDO Literacy and Formal Education Sahwal

Per capita income Rs=60,000/- per annum

Health Indicators

- Infant Mortality Rate 49/1000 live births
- Under 5 mortality Rate 112/1000 live births
- Maternal mortality Ratio 122/1,00,000*
- Malnutrition (women and children) 48%
- Life expectancy 64 years for Females and 62 years for Male
- Proportion of children under 1 years immunized against measles 92%

Source: MICS 2007-08

*Source: EDO (Health) Office Sahiwal

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