INTRODUCTORY REMARKS

By

Engr. Ghulam Hussain

President

PAKISTAN ENGINEERING CONGRESS

on

World Water Day, Commemoration of 25 March 2017

on the theme of "WASTE WATER"

Distinguished Guests,

Members of Pakistan Engineering Congress,

Fellow Engineers, Ladies and Gentlemen!

Assalam-o-Alaikum

It gives me immense pleasure to inform that Pakistan Engineering Congress has a unique distinction of commemorating World Water Day since 2005 based on universal themes. Not only this, but the papers presented / discussed and recommendations resulting from these events have been published and disseminated complimentarily by the Congress to all concerned, particularly Federal / Provincial Government Agencies.

Ladies and Gentlemen!

As you aware, the theme of this event is 'Waste Water'. This seems to be a very relevant topic for Pakistan, where per capita water availability is approaching the stage of 'acute water stress'.

Waste water is the one that has been adversely affected in quality by human influence. It can originate from a combination of domestic, industrial, commercial or agricultural activities, surface runoff or storm water and from sewerage effluents.

Since all natural waterways contain bacteria and nutrients, almost any waste compounds introduced in such bodies will initiate bio-chemical reactions. These bio-chemical reactions create what is measured in the laboratory as biochemical oxygen demand (BOD). Laboratory test procedures for determining BOD are detailed in many standards. American version includes "Standard Methods for Examination of Water and Waste Water".

World Health Organization (WHO) has also prescribed various parameters for determining quality of waste water. This, in turn, helps in adopting appropriate waste water treatment and management measures to enable its beneficial reuse or recycling.

For a holistic appreciation of waste water issue, it is important to gauge its harmful impacts, which are:

i. Water pollution: Freshwater bodies and marine waters receiving waste water may get polluted and rendered unsafe for human use.

ii. Water security: This is becoming a crucial issue particularly for water scarce countries like Pakistan. Waste water discharged on lands can seep into groundwater and contaminate, particularly fresh aquifers.

iii. Ecosystem services: All ecosystems are connected and ultimately depend on water. Similarly, surface and groundwater are connected. Therefore, careless waste water discharge can have serious ripple effects. If one part of an ecosystem chain is destroyed, it can upset its entire food chan.

iv. Agriculture / fisheries / tourism: Waste water for irrigation may contain unsuitable chemicals and result in delayed crop maturity and under yielding. Untreated waste water discharged into fresh water bodies or sea may contain pathogens and harmful dissolved chemicals, which can affect fishing in that area. Similarly, smell in those areas may discourage tourism.

v. Health of urban and rural populations: Wastewater is a big health issue as it carries and transports a myriad of diseases and illnesses. According to WHO, about 3 million people die annually due to diarrhoeal disease. At least another 2 million children under 5 years die every year due to water related diseases or one every 20 seconds.

Wastewater treatment for its beneficial reuse is a dire need of Pakistan with particular focus on municipal sewerage and industrial effluent. Waste water treatment methodologies can be broadly grouped as: -

i. Disposal or reuse

ii. Processes used

iii. Treatment plants

Since disposal or reuse are basic objectives of waste water treatment, these options provide basis for treatment decisions. Water bodies, entirely within national jurisdiction, should be subject to multiple regulations of local governments. Disposal into rivers crossing international boundaries or sea may be subject to bilateral or multilateral treaties. The options available in this case are evaporation ponds, infiltration basins or injection wells.

Basic processes used for waste water treatment are: sedimentation; filtration; and oxidation. Sedimentation process is generally used for gravity separation of solids. For sewerage treatment, primary settling tanks are used. This process is also widely used for treatment of other waste waters. Solids that are heavier that water will accumulate at the bottom of quiescent settling basins. Colloidal suspensions of fine solids are removed by filtration through fine physical barriers distinguished from coarser screens or sieves to particles smaller than openings through which the water passes. Oxidation reduces BOD of wastewater as well as toxicity of some impurities. Secondary treatment by biochemical oxidation of dissolved and colloidal organic compounds is widely used in sewerage treatment and is also applicable to some agricultural or industrial waste waters.

Ladies & Gentleman!

You will notice from the Programme that 13 technical papers are being presented through inaugural and two technical sessions. These, by and large, cover various facets of waste water issues highlighted by me. I am sure that these high quality presentations will: enhance our knowledge about waste water; create awareness about the issue among engineering fraternity; and generate useful discussions through active involvement of participants. This will enable us to formulate appropriate recommendations for dissemination among all concerned quarters for consideration, particularly by the policy decision makers and public sector entities.

I don't want to stand any longer between you and paper presenters and request the Stage Secretary for starting the technical proceedings. I also wish all present here to enjoy this day well spent in pursuit of enriching our professional knowledge.

Thank you for patient hearing of my introductory remarks.

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