



SERI news

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*With you in Pursuit of Sustainable
Management of Finite Water Resources*

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Point for discussion this month **Eco-treatment zone in Open drains**

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Eternal Words

Water has become a highly precious resource. There are some places where a barrel of water costs more than a barrel of oil.

~ Lloyd Axworthy, Foreign Minister of Canada (1999 - News Conference)

The conservation of nature, the proper care for the human environment and a general concern for the long-term future of the whole of our planet are absolutely vital if future generations are to have a chance to enjoy their existence on this earth

- HRH Prince Philip

The biggest problem in the world could have been solved when it was small.

~ Lao-tzu

Dear Readers,

Government institutions including CSIR and regulatory agencies need to work solutions for ecological restoration of polluted rivers on war footing basis. The most infamous case is of Ichalkaranji's water supply from Panchganga polluted due to upstream discharges from urban and industrial sectors of Kolhapur city. All the politico-administrative-regulatory systems work hand in hand to eradicate the pollution of rivers – not only in Maharashtra state but all over India also. Because the story is the same everywhere: the insensitivity of regulatory agencies leads to inordinate delay of corrective measures and to spread of water borne diseases every time claiming the number of victims. Case study of Ichalkaranji is discussed in this issue. Government agencies are still striving for workable, sustainable solution of water emergency from last decade or so!! Will they succeed in next decade? Will they like to follow ecosystem approach? Will they take guidance from connoisseurs and specialists to resolve the complexity of river pollution, drinking water and public health?

One of the solutions to tackle the issue of polluted rivers is treatment zones in urban drains in addition to centralized wastewater treatment plants: this was the suggestion emerged from the round table organized in April 2014 on "Eco-treatment zones" by SESS, SEERAM and AILSG in Pune. The theme was based on the recommendations of Planning Commission, Government of India in 12th five year plan (2012 – 2017) report on Water and sanitation. Summarized report of roundtable will be available on SERI's website www.seriecotech.com. It is accepted that the "Eco-treatment zones" in polluted open drains in city will complement the existing or proposed engineering state-of-the-art treatment facilities. It is well said in the roundtable that eco-treatment zones can reduce the space footprint and energy footprint of conventional wastewater treatment facilities.

Natural form and rejuvenation is always useful for the riverine and riparian biodiversity and productivity. Whenever it rains heavily, the desert rivers like Zin get sparkling blue water and look beautiful in arid landscape. Nobody knows the surprises, magical and delightful expressions of nature, we have to just appreciate them the way they are.

The photograph of cover page is of eco treatment zone developed around one urban city drain in Pune city which has converted the sewage drain into free flowing natural water body with esthetic look.

Thank you,
Chief Editor

News views 1

High court directs NEERI to resubmit pollution Study Report of Panchaganaga River

Bombay High Court on April 25, 2014 directed Nagpur-based CSIR organisation National Environment Engineering Research Institute (NEERI) to resubmit with corrections in its study report on causes and mitigation measures for the Panchganga river pollution (Maharashtra, India), when it was pointed out that recommendations made by NEERI in the report were based on wrong facts.

Considering the serious impacts of Panchganga River pollution and its fatal impact on public health, in December 2013, the Bombay High Court appointed the NEERI to study and suggest corrective measures urgently. These directives were issued during hearing of PIL by social worker Dattatray Mane and four others from Ichalkaranji, Kolhapur district seeking stringent criminal action against the officials of municipal councils of Ichalkaranji and Kolhapur for discharging untreated sewage into Panchganga River. NEERI was also suggested to look into the performance of sewage treatment plant facilities as per the provisions and requirements laid down by the Maharashtra Pollution Control Board (MPCB).

According to the petition, pollution in Panchganga River ostensibly resulted in massive jaundice outbreak in May, 2013 in Ichalkaranji and the surrounding towns, infecting 5,354 persons with the Hepatitis virus and leading to 24 deaths. This was reported due to discharges of about 100 MLD of sewage – mostly untreated by KMC into the Panchganga River. In addition to that untreated discharge from hundreds of cloth bleaching units in Ichalkaranji and 8 major industries, including some sugar factories, industries making silver ornaments at Hupari village and by industrial areas such as Gokul Shirgaon, Kagal and Shirol and sewage from 174 villages find its way into the same river.

The petitioners allege that despite finding these anomalies no action is initiated by MPCB against the officials and office bearers of the two civic bodies. Petitioners suggested that NEERI has to consider other causes of the pollution such as industries and functioning of waste treatment plants in their premises which is lacking in the present report. The HC directed the committee to rework the study by incorporating other details suggested by the petitioners and other loopholes and then submit it along with the action plan to be undertaken by the civic bodies of Kolhapur and Ichalkaranji.

The court also directed the Maharashtra Industrial Development Corporation to make an affidavit regarding common effluent treatment plants (CETP), their efficiency and functional status in industrial areas along the river stretch.

City-based activist Madan Purekar also filed public interest litigation (PIL) against inadequate measures taken by the KMC and the MPCB to dispose garbage generated in the city. According to the petition, garbage is thrown in low-lying areas of the river causing its pollution. The HC clubbed the petition with those related to the Panchganga pollution case and reserved its order for the next hearing.

The Action plan suggested following points:

1. Irrigation department has to made time bound plan for maintaining the natural flow of Panchaganga River by releasing water from dams constructed on it.
2. Modification of existing KT weirs to alleviate the problems of garbage
3. Irrigation department should study the impacts of water stored on Krishna River on Terwad dam.
4. River cleaning programme through navigation to remove solid waste and water hyacinth.
5. Need to study of water supply to Ichalkaranji town from Panchaganga River and to shift Pumping station near Narsobawadi on Krishna River towards north
6. Existing Sewage treatment plans of KMC are inadequate to treat sewage generated. It is important to complete the STP under construction having 75 MLD and proposed STP on Dudhali Nullah Within stipulated time bound framework. And it's necessary to treat wastewater properly and reuse it.
7. Pollution control board must take a stringent action on Municipal corporations if they fail to adopt the suggestions immediately.
8. Quality of discharged treated water from STP should be maintained at norms so it can be recycled for gardening and reused for industrial activities
9. KMC and Ichalkaranji Corporation should follow Environment management strategy recommended by NEERI.
10. For approvals to the new development plans, STP /ETP should be mandatory
11. Decentralised wastewater drainage system should be adopted and natural or biological treatment processes would be implemented for treatment of waste water

MPCB, MIDC and NEERI – these government agencies need to guide the local administration on water emergency of Ichalkaranji. They need to develop a better coordinated and jointly monitored plan for improvement of water body. But despite of many remarks from various High Courts and Supreme Court of India, NEERI fails to improve on its scientific studies and solutions and Government System does approach again and again to NEERI for assessments, studies and guidance. From various court orders, it is now very clear that MPCB, MIDC, WRD and NEERI need to take the matter very seriously as they are accountable for the current status of Panchganga River and they cannot blame NGOs for fighting for welfare of citizens which is constitutional right. These government agencies are failing to serve the constitutional rights of people as per Article 21 and 48 A.

News views 2

Astonishing Desert Rivers



The river Zin is about 75 miles long and runs through the Negev Desert, in southern Israel, and finally merges into the Dead Sea. Due to the arid desert conditions the river rarely holds any water thus though it's referred to as a river, usually only the dry bed of the Zin can be seen which is also called the Nahal Zin.

On March 14, heavy rainfall on the mountains nearby brought the spectacular flash flood to this dusty River Zin. Fast-flowing waters filled in its channel gave rebirth to the river and it raced towards the Dead Sea. Bystanders watch as a large muddy wave marching slowly across the desert, filling up rivulets and void and surges forward across the Negev Desert.

These Desert Rivers remain dry and apparently lifeless through most of the year. Their dry, pebbly beds are troughs snaking through the desert landscape. And suddenly such large watercourse in an arid backdrop at point is one of the wonders for spectators.



Unlike perennial streams that run year-round owing to continuous water supply from one or more sources, seasonal rivers are entirely rain-dependent. There are two kinds of seasonal rivers -- intermittent streams and ephemeral streams. Intermittent streams might flow in bursts during a season, while ephemeral streams flow only for hours or days following rainfall.

These watercourses are known as Wadis (means 'valley' in Arabic), in the deserts of Arabia and West Asia, these desert rivers come alive and flow along their ancient beds during periods of heavy rain. One can observe the effect that Desert Rivers have on the terrain while traveling through arid deserts or salt marshes. Jordan's Wadi Rum is another example of a splendid landscape driven by Desert Rivers that come alive in the rain. It is also experienced particularly in the Rann of Kutch in Gujarat, India, that great seasonal river beds and 'dry waterfalls' marks the landscape.

These rivers gain their seasonal flow and for few days, the desert hears the roar of waterfalls, the gush and babble of stream. Thus the Risk of flash-flooding are real and present in such landscapes. Hence the people are advised to stay away from rivers that may surge with sudden, unpredictable currents.

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From SERI's Desk

Round table on "Eco treatment zones in open drains"

On the occasion of International Earth Day, a round table conference was organized in the premises of All India Institute of Local Self Government (AIILSG), Pune, on the topic of "Eco treatment zones in open drains" by some of the leading organizations in Pune, working in the field of environmental conservation namely Shrishti Environment and Sustainability Society (SESS), SEERAM and AIILSG. The theme of the conference was to discuss the feasibility of eco treatment of waste water in open drains in city with reference to the current status of waste water treatment in the city of Pune.

Dignitaries from various sections of the society were present at the conference and actively participated in the discussion. Various topics such as relevance of eco treatment in comparison with existing treatment systems, its merits and limitations, status of current treatment facilities, scope for improvement in the existing treatment facilities and general awareness among people were presented on the table for discussion and were constructively debated at length to evolve empirical nuances of considerations for adoption of recommended concept of treatment zone in open drains based on the field experiences of participants.

Agreeing upon the fact that formal textbook formulas can't always provide solution for the local problems the idea of target specific solutions was highlighted from the beginning. Realizing that the prevention of pollution in local water bodies is always better than any treatment system provided in the later stage, it was also agreed in the discussion that the awareness among people for the proper maintenance of public water bodies is of at most importance and social and cultural differences should not come in its way.

As for the existing treatment facility, the treatment process can be selected as per the output requirements but even with the most sophisticated treatment facility, a recycle and reuse of the treated water is must, as it will not only reduce the fresh water demand but also will reduce the sewage generation.

The role of the eco treatment in context with the existing treatment processes being the focal point of round table was discussed in detail with sharing of experiences by experts. After detailed discussion deriving conclusive inputs from the various viewpoints in the conference, it was mutually concurred that, the role of eco treatment is supplementary, complimentary for the existing or upcoming treatment facility; as it will enhance the efficiency as well as it will make the entire treatment process more eco-friendly by reducing energy footprint.

After discussing the exact role and significance of the eco treatment in context of existing treatment facilities, the ecosystem approach of using zero-electricity-zero-chemical-techniques was also discussed from regulatory requirements' point of

view. The statistics regarding the current water usage, its treatment and the amount of water remaining untreated due to lack of treatment facilities or due to inefficiency of current treatment facilities was tabled by various STP/ETP design experts. This not only underlined the need of improvement in the conventional treatment systems but also vehemently emphasized the need of eco treatment as a supplementary or separate treatment entity.

Various issues regarding the legislations and jurisdictions like tedious process for various permissions, ideal way to find solution on conflicting mandates in water governance, water jurisdiction between city corporation and irrigation department etc. are discussed in detailed to fix the accountability and responsibility. For water bodies like river, the legal aspects of decisions on specific river zone, and best way to treat the sewage in the river zone is also discussed and debated in detail. The scientific community talked about the practical problems encountered during the governmental approvals and actual implementation phase of the water treatment facilities. Representatives from the governmental regulatory bodies expressed inability to amend the governmental procedural part and stressed out that, even though it is not possible to alter the governmental norms and regulating process parameters easily, there is a tremendous scope for research and development in the existing treatment process and eco-treatment zone in the polluted open drains can be adopted.

While talking about the various process parameters for studying the quality of water, the significance of DO as indicator of quality of water was also discussed in detailed in the conference. Maintaining the proper level of DO in the local public water body not only signify the quality of water, but also plays a significant role in sustaining the entire food chain depending on the water body, which will also improve the overall aquatic ecosystem. This idea of considering DO as a process parameter for maintaining water quality was agreed unanimously.

After agreeing upon the DO as water quality parameters, the various treatment targets and standards are also discussed in the round table. During the course of discussion, nonconventional options like usage of bacteriophage to kill harmful bacteria present in the water body was presented and was discussed upon as a part of maintaining the quality of water.

After discussing in detail the overall performance and process parameters for maintaining the water quality using eco-treatment, issue of overall financing, the time span required for the decision making in the overall process was table for discussion. Concept of developing the decision making process for the various approvals and treatment work was discussed in detail and conclusively recommended the need seeking guidance and inputs at every level of project from concept to commissioning from specialist designer of eco-treatment systems.

As a related point, the exact responsibility of department of irrigation for maintaining the water quality of public water bodies was discussed between the research community and the representatives of the government. The need to develop the curative institutional mechanism was highlighted over the discussion on this point.

Towards the conclusion in the round table, it was mutually agreed that,

1. *General acceptance of supplementary &/or complimentary role of eco-treatment zone in open polluted drains in city in context with the existing treatment facility*
2. *Acknowledgement and encouragement of eco-treatment for city drains being zero energy footprint, negligible space footprint, eco-friendly process*
3. *Necessity of curative institutional mechanism empowered for environmental diagnostic and forensic analysis and timely corrective actions irrespective of cooperation from preventive institutional mechanism*
4. *Need of flexibility, sense of responsibility and accountability in overall governmental approach in the field of waste water treatment*
5. *Need of common minimum program among governmental departments for proper ordination and effective implementation of decisions.*
6. *Public participation for operation and feedback mechanism for the efficient functioning of eco-treatment facilities.*
7. *Sustainable finances, minimization of administrative delays, to be functioning on the basis of hospitals treating patient and not as conceptualization and completion of infrastructure projects*



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