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Point for discussion this month Pharma – a life saver or a killer of aquatic ecosystems?

Eternal Words

Alber A. Lehninger writes in his "Principles of Biochemistry" about living organisms –

Living organisms are endowed with a mysterious and divine life-force. They create and maintain their complex, orderly, purposeful structures at the expense of free energy from their environment, to which they return in less useful form for them. The energy needs of all organisms are provided, directly or indirectly, by solar energy. The plant and animals worlds – indeed are dependent on each other through exchanges of energy and matter via environment. They have the ability to extract, transform, convert and use energy from their environment. Living organisms are never at equilibrium within themselves and with their environment. (Finally) they are self regulating chemical engines, tuned to operate on the principles of maximum economy!!

Dear Readers,

22nd March is celebrated every year as "World Water Day" all over the world. Water can be the earnest reason for the next world war. Most of the countries are facing acute serious problems due to shortage of good quality of water. 80 to 90% of the fresh water bodies on this earth surface are polluted. Theme of this year's world water day is Transboundary Waters. There is need to resolve all sorts of issues, conflicts of sharing water, control of pollution, resources management. Ecological quality of freshwaters is an important issue for sustainability of the water bodies. If there is water, there will be ample of biodiversity shown in the cover photo. Pollution free water has become a natural human right of not only human beings but of flora and fauna of the ecosystems.

Celebrating world days with action will definitely increase the chances of survival of human being. But the way pharma industry – supposedly life savers – is giving horrified experience to the people by discharging untreated wastes into the sources of water. Antibiotics having wide spectrum activity against many deadliest disease causing organisms are discharged into the environment to such a concentration level pathogens can adapt them and increase their resistance power. If such germs enter the body of less immune person, then it will be very difficult to control the epidemics. Where health industry wants to lead to? It's very disturbing fact? Common man does not understand concerned agencies do not pay sincere attention to such deadliest problem. A brief on this has been given in this issue.

SERI is always come with solution if there is any problem. In this issue, from SERI's Desk has given an account on TransNVtech's conventional and SERI's Ecotechnological solutions to tackle the problems of pollution and make our water bodies having better ecological quality index.

Thank you,

Chief Editor

Newsviews

The Other Side of the Pharma Coin

The syringes, needles, vials which were used to cure many serious diseases are becoming agents of spreading more fatal diseases when they are discarded after use.

Nowadays, 'Bio medical waste' is becoming a major threat to country. This is the most toxic and hazardous waste produced in environment in abundant quantity. Bio medical waste includes syringes, needles, IV sets and vials. Usually such waste has to be segregated and destroyed in an incinerator. But the huge quantity of waste found in the warehouses are being probably repackaged and sold.

Recently in Ahmedabad , Gujarat Modasa's deadly hepatitis – B trail has led investigators to a major medical waste recycling racket in Ahmedabad's own backyard where a whopping 50 tonne biological waste was stored. This illegally procured waste stored in warehouses could expose the city and the whole state to threat of not just hepatitis – B but other deadly infections spread through intravenal treatments.

A scrap dealer nabbed by Food and Drug Control Administration Officials from Modasa, where hepatitis – B has already claimed 49 lives, led the deadly trail to Ahmedabad warehouses.

Warehouse owner was booked for negligent act likely to spread disease dangerous to life (Section 269) and making atmosphere noxious to health (Section 278) of the IPC.

Large Pharma and Killing Waters

Pharma industry has secured the distinction as one of the major world polluters. It's understood that it is now directly contributing to the mass chemical contamination of our planet. The devastating long-term effects of this chemical contamination of our world's waterways are not understood at all till date. The chemicals being dumped into our environment by Big Pharma units today may pollute our planet for hundreds of years, destroying aquatic ecosystems, killing fish

populations and causing widespread physical deformities across many species.

Municipal water or wastewater treatment facilities may not destroy pharmaceutical chemicals from the water! It is said that citizen's drinking public water supplies in India, the U.K., Canada and the United States may be undergoing mass medication pharmaceutical combinations in the water supply that's consumed downstream of pharma discharges.

Recently, one shocking news from Hyderabad did the rounds in print and electronic media that water bodies of Pattancheru are full of pharmaceutical wastes increasing resistance of nuisance biota and causing menace to the ecosystems and human beings. The vigilant citizens group noted that leaving the effluents along the Hyderabad – Pune highway was a common practice. The samples analysed by local groups matched with effluents from 10 units in nearby industrial area. The most preferred argument by the violators is that they cannot comply with the stringent norms laid down by regulatory authority. The issues of Pattancheru water bodies are summarized as –

1. Underutilization of CETPs even today, which are established decades ago
2. Increased quantum of effluents
3. Only tankers to transport effluents to CETPs, no other mechanism of conveyance
4. Frequent changes in products subsequently in wastewater generated
5. Authorities say that they mix sewage with industrial effluents to dilute them
6. APPCB gives affidavit in 2007 saying that biological systems used in CETPs were not designed to treat non-biodegradable and highly toxic waste
7. Running cost is very high Rs. 166/- per thousand litre for biological system and Rs.583/- for Multiple Effect Evaporators!!

- Priyamvada

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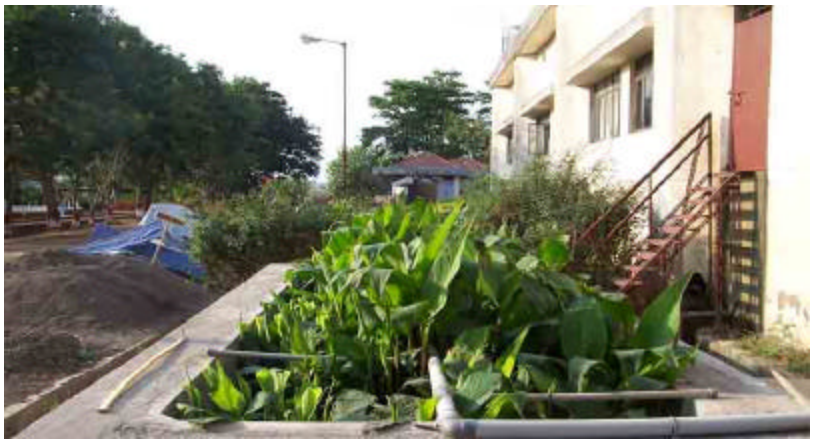
From SERI's Desk

Conventional and Ecotechnological Sewage Treatment Plants

We are proud to hand over recently completed sewage treatment plants to satisfied customers. Conventional STP with diffused aeration system of CAB technology is developed by TransNVtech under guidance of SERI in Hyderabad. It's a successful implementation of cost effective packaged STP for an army establishment premises. TransNVtech has innovated many things while developing this concept of packaged sewage treatment plant. Now this plant is ready for the construction industry which always has a crunch of space. This packaged sewage treatment plant can be installed even in basement in multi-storied.

This packaged STP by TransNVtech can be modified and employed to treat food and pharma industrial wastewater. The major advantage of these systems is the saving of space and can be accommodated anywhere in the available space.

Soil Scape Filter is developed to treat domestic wastewater in a factory near Pune at Shirwal. It needs two pumps – one pump to transfer overflow from septic tank and the other to use treated water for gardening. The treated water has BOD 8-10 mg/L and COD 34-40 mg/L. It is single stage filter but useful for treating septic overflow.



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Article

Environomics of Sewage Management

Environomics - environmental economics of sewage treatment with a changing urban scenario and pressure of clean technologies due to climate change, one is looking for the better option in sewage treatment technologies which are economic and eco-friendly. Based on the experience of huge spending in Ganga Action Plan NRCD (National River Conservation Directorate) has strongly recommended using energy less methods to treat sewage.

Various conventional, aerobic, anaerobic technologies, ecotechnologies available are in environment technology market considering the project lifecycle of 20 years. The ecotechnologies are much cheaper than energy intensive conventional mechanistic sewage technologies.

It is normally observed that conventional systems can not deliver as desired, if not properly maintained with designed electric supply and skilled man power. USEPA (United States Of Environment Protection Agency) has recommended non conventional constructed wetland systems for the community waste management which are very economical and comparatively very free systems. Conventional systems are also changing rapidly becoming user friendly. Upgraded versions of sewage system can be installed in basement of the building.

As per the experts' estimation about 1000 MLD partially treated sewage is being discharged into the river Mula – Mutha from Pune City. If this is treated using Brown Biodiversity Park concept then it may require 150–200 crores while conventional system will require huge investment of 2000 crores with electricity requirement of 2,00,000 kw-hr.

It has been estimated that for 50 cu m/day considering 20 years' project life, annualized expenditure is about 2.5 lakhs for ecotechnological treatment system, and while that of conventional systems is 7.4 lakhs. Though, one may find conventional sewage treatment systems very attractive but in the long run they are economically disastrous units and at the same time they require very skilled man-power to maintain them efficiently.

- Sandeep Joshi

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