

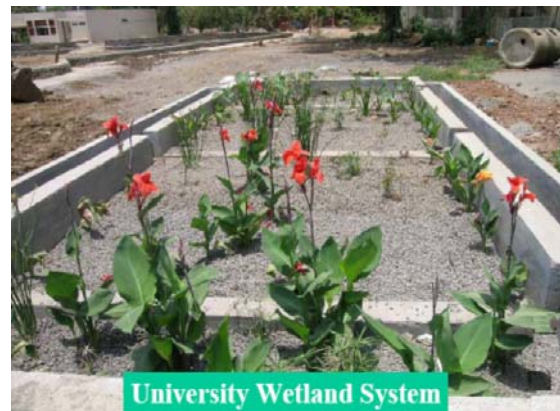
“Phytorid” Wastewater Treatment of NEERI

Salient features of Knowhow

- The knowhow involves a constructed wetland exclusively designed for the treatment of municipal, urban, agricultural and industrial wastewater.
- The system is based on the specific plants such as Elephant grass (*Pennisetum purpurem*), Cattails (*Typha* spp.), Reeds (*Phragmites* spp.), Cannas pp., Yellow flag iris (*Iris pseudocorus*) normally found in natural wetlands with filtration and treatment capability. Furthermore, some ornamental as well as flowering plants species such as Golden Dhuranda, Bamboo, Nerium, Colosia, etc. can be used for treatment as well as landscaping purposes.
- The Phytorid Technology can be constructed in series and parallel modules/cells depending on the land availability and quantity of wastewater to be treated.
- The Phytorid Technology treatment is a subsurface flow type in which wastewater is applied to cell/system filled with porous media such as crushed bricks, gravel and stones. The hydraulics is maintained in such a manner that wastewater does not rise to the surface retaining a free board at the top of the filled media.
- The system consists of three zones (i) inlet zone composed of crushed bricks and different sizes of stones (ii) Treatment zone consist of same media as in inlet zone with plant species and (iii) Outlet zone
- The reduction on the treated effluent for the Total suspended solids(TSS) varied from 70% to 80 %, BOD from 78% to 84%, Nitrogen from 70% to 75%, Phosphorus from 52% to 64% and Fecal Coliform from 90 % to 97%.
- The treated effluent shall be useful for municipal gardens, fountains and irrigation
- The know how is useful for the total area required for the system is approximately 35 sq. m. for 20 M³/Day and the construction cost of treatment system is approximately between Rs. 1.20 to 1.30 lakh.
- The demonstration plant was set up at CIDCO Panvel to treat the sewage flow of 20 M³/Day for period of two years and second plant at Mumbai University Campus, Kalina for capacity 25 M³/Day for one year and shown the envisaged results.
- Two international patents were granted for the Knowhow,
 - Australian Patent No. AU 2003223110 A1, 2005
 - European Patent No. WO2004/087584A1, 2005

Benefits of Knowhow

- No power requirement
- Low capital cost compared with standard sewage/effluent treatment systems
- Simple construction
- Low maintenance
- Low cost technology
- Useful for colonies, apartments, hotels , municipal councils, educational institutes, schools colleges, railway stations, public toilets and also for industrial wastewater treatment.



The Know-how transfer has been transferred to M/s General Techno Services, on March 9, 2009 on the following terms and conditions approved by DG, CSIR

1. The cost of the technology licensing will be **Rs.1.25 lakhs** (comprising one-time lump sum fee of Rs. 0.75 lakhs payable at the time of the transfer and royalty of Rs.0.5 lakhs over 5-years period) per license.
2. The technology license would be on **non-exclusive basis** and all IP rights related to the technology shall be reserve with CSIR/NEERI.
3. Service tax as per prevailing rates on each payment shall be charged.