

## **CESENVISION**

**CENTRE FOR ENVIRONMENTAL STUDIES, ANNA UNIVERSITY  
CHENNAI 600 0025 INDIA  
BIODEGRADATION OF WASTES  
AND  
ENVIRONMENTAL IMPACT ASSESSMENT**

**Voll.1 No.1**

**July 2002**

**AU/CES/NL-01**

**Work Bank Aided: Environmental Management Capacity Building  
Technical Assistance Project (ENVIS-EMCBTAP)**

### **PROFILE OF EMCB- ENVIS NODE**

The Environmental Information System (ENVIS) is a project funded by the Ministry of Environment & Forests of Government of India to facilitate generation and dissemination of information on various facets of Environment. Several ENVIS Centres have been established all over India and each centre has been allotted specific subject areas. Our ENVIS Centre (05) located at the Centre for Environmental Studies, Anna University focuses on the subject areas of "Biodegradation of Wastes and Environmental Impact Assessment". Activities of our Centre include collection, classification, retrieval and dissemination of information in the subject areas allotted. Listing of current technical papers and thesis titles followed by abstracts of the papers are published once in six months. Yet another important activity of our centre is answering queries from users.

Our ENVIS Centre has been, now, identified by MoEF as EMCB- ENVIS Node under World Bank aided Environmental Management Capacity Building Technical Assistance Project (EMCBTAP) to enhance our activities. Activities of ENVIS-EMCB Node include publishing Newsletter every month, launching website in the subject areas allotted with regional language interface, creation of database, collection of monthly news items, answering queries and establishing linkage with users/organizations. This issue is the first newsletter under ENVIS-EMCBTAP project.

### **Environmental Impacts Of Construction Of Sewage Treatment Plant- Part-I**

#### **1.0 Introduction**

In sewage treatment, the microorganisms present in the wastewater decompose the complex organic solids into simpler products like water, gases, biological cells etc. The organic solids present in the wastewater serve as food for the aerobic microorganisms. In the biological treatment processes the oxygen is supplied either through nature means or by mechanical means of treatment are: activated sludge process (ASP), trickling filter aerated lagoon, oxidation ditch, waste stabilisation ponds etc, are examples of aerobic treatment process.

In anaerobic treatment organisms multiply in the absence of dissolved oxygen and do decomposition, and the end products are gases like CH<sub>4</sub> H<sub>2</sub>S etc., septic tanks, Up flow Anaerobic Sludge Blanket (UASB), anaerobic sludge digesters etc, are examples of anaerobic treatment processes.

The selection of suitable method for sewage treatment for a given situation depends up on the following factors: volume of daily flow to be treated, area of land required for the installation of the plant, the method of supply of oxygen to the microorganisms, mechanical equipment involved in the method, ease of operation and maintenance, capital cost for the installation of the plant, and annual operation and maintenance cost etc.

In this paper, the environmental impacts of a typical sewage treatment plant based on the most popular process namely activated sludge process are discussed.

## **2.0 Environmental Issues**

Environmental and Social issues associated with the construction and operation of sewage treatment plant are discussed here under.

The main issues arising during the construction phase are generation of noise and dust, loss of vegetation, traffic diversions especially during laying of sewers, and accumulation of debris near the construction areas etc. Some of the issues common to most of the construction sites are the depletion of resources (construction materials), increased congestion and impact on air quality and noise levels as well as stress on local utilities.

The assessment of construction phase impacts of the project indicates that all these impacts are only short term and possible to be contained near the sites of construction. These can be further mitigated by proper planning and good construction practices.

### **2.1 Positive Impacts:**

The positive impacts shall be a follows:

- Discharge of sewage and sullage water into the storm water drains which leads to unsightly conditions will be avoided (improved aesthetics)
- Mosquito breeding due to stagnation of sewage and sullage water will be avoided.
- Health of the people would be improved.
- Stray cattle problem pigs etc. will be reduced. Fly nuisance will be reduced
- Pollution of wells adjacent to the stagnated water will be avoided.
- Marshy land can be reclaimed and utilised better.
- Foul smell near the stagnant pools and drains will be avoided.

## **2.2 Negative Impacts**

- The negative impacts shall be as follows: During laying of sewers traffic is disturbed
- Dust problem during construction
- Communication facilities may get affected Noise near pumping station
- Ground water table variation at the STP site
- Quality of soil and ground water affected at the STP site
- Foul smell and disturbance to flow of traffic during removal of blocks in sewers.
- Residents near sewage pumping station and STP affected psychologically smell, noise, ground water pollution etc.
- Health of operating and maintenance staff may be affected if adequate precautions are

## **2.3 Mitigation Plan:**

- The various mitigation measures to be adopted are as follows
- Adequate safety signals to be provided etc., and traffic to be effectively diverted.
- Dust can be reduced by sprinkling water.
- Adequate care to be taken not to disturb the communication systems by identifying the locations in consultation with the respective departments.
- Noise can be reduced by proper design and maintenance and planting of trees around pump houses. If required, glass partitions can be provided as sound barriers.
- Afforestation will help in the reduction of ground water table variation.
- Proper operation of STP to attain maximum efficiency in reduction of BOD, and SS would reduce the effects on soil and ground water.
- Carry out repairs wherever possible when traffic is minimum.
- Maintain good house keeping in the pump house Plant trees in the pump house area.
- Take adequate safety precautions wearing gloves, helmet, earplug, goggles, safety shoes etc. as required. Enter sewer only after taking all precautions.

## **3.0 Resettlement And Rehabilitation Issues**

During the implementation of projects such as, sewerage systems and sewage treatment plants, it may be necessary to disturb some habitations or assets in the form of buildings, cultivable lands and the like. The projects may affect the ecosystem for which remedial measures will have to be taken.

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### **3.1 Land**

For the implementation of the project, land belonging to private parties may have to be acquired. For this purpose procedures like notification etc will have to be followed. Adequate

compensation is to be given to the affected parties and alternate sites made available to them for building their houses with infrastructure facilities like roads. If cultivable land is acquired, suitable compensation is to be given in the form of money. If some buildings or structures are located in the land, which may have to be displaced or dismantled, the same is to be compensated. In some cases right of way may be given by the owners of the land for taking the pumping main through their land or underground. If during the implementation of the project, foundations of structures are affected or walls are damaged, suitable compensation is to be given.

Acquisition of land or formation of road for the project may cause damage to the roads or canals. In such cases, compensation will have to be given for linking the roads or canals. The telephone/electrical cables/water supply/drainage lines damaged or diverted during the implementation of the project are to be compensated.

### **3.2 Resettlement And Rehabilitation**

The responsibility for resettlement rests with the Municipality I Corporation who is the owner of the system. The owner should have adequate resources to manage the resettlement. The extent to which groups will lose assets and the value should be correctly assessed. Most displaced persons prefer to move as part of an already existing community, neighborhood or group. Moving people in groups can increase the chances for acceptance, and sustain existing patterns of group organization. Community involvement in planning enhances cooperation. The host communities where the displaced persons are to be rehabilitated should be informed and consulted and measures should be taken to improve the conditions in the host communities.

A clear understanding of the law issues involved in resettlement is needed to design a feasible resettlement plan. Laws relating to land compensation, land use, environment, water use, social welfare etc. should be understood. The displaced persons should be given some

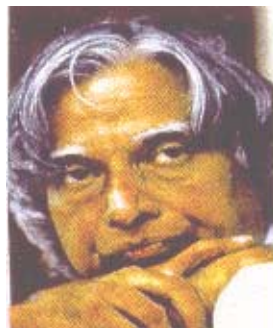
alternate locations to choose from. The new site's potential and advantages should be at least equivalent to those of the old site. The new site should ensure comparable access to employment, infrastructure, services and production opportunities not to mention proximity to schools, hospitals etc. Valuation of lost assets should be made at their replacement cost. Loss of access to public services (bus stand railway station, post office etc.) clientele, common natural resources etc. are difficult to be valued. Attempts should be made to reduce the inconvenience and provide certain additional facilities as incentive. Plans may be evolved for providing supplementary income to the displaced persons like transportation to jobs, employment in the main investment project, establishment 'of industries, preferences to resettle in public sector employment, credit and extension of small businesses etc.

While planning resettlement area, population growth should be taken into consideration. Soil erosion, sanitation and pollution are likely adverse environmental impacts of resettlement in rural areas. Transport capacity, access to potable water, sanitation systems, health facilities, schools etc. are common concerns in urban area. If the likely consequences on the environment are unacceptable, alternative and / or additional relocation sites must be found.

All resettlement plans should include an implementation schedule including a target date when expected benefits to settlers will be achieved. Arrangements for monitoring resettlement implementation should be developed during project preparation.

(To be concluded; next part of the paper will be published in the next publication)

### SONG OF YOUTH



As a young citizen of India, armed with technology, knowledge and love for my nation, I realize, small aim is a crime I will work and sweat for great vision, the vision of transforming India into a developed nation powered by economic strength will value system I am one of the citizens of the billion, Only the vision will ignite the billion souls. It has entered into me, the ignited soul compared to any soul compared to any resource is the most powerful resource on the earth, above the earth and under the earth I will keep the lamp of knowledge burning to achieve the vision Developed India

**Dr.A.P.J. Abdul Kalam**  
**(Courtesy: Science City Newsletter Vol.1 issue2,**  
**July-sep.2002)**

## **Workshop to the Trainers in Profitable Cleaner Production**

The workshop to "Train the Trainers in Profitable Cleaner Production" was organised by Centre for Environmental Studies (CES); Anna University and German Technical Cooperation (GTZ) during 3-5, October 2001 at CES, Anna University.

Cleaner production and waste minimization are becoming more important in the international competitive market. Profitable Cleaner Production gives direct return on investment.



The objective of the workshop was to educate/train the employees of the textile industries in Profitable Cleaner Production. The following themes on Profitable Cleaner Production (PCP) was covered during -the workshop "Environmental Management, Concept-of Profitable Cleaner Production, Principles of Profitable Cleaner Production Barriers against change, Assessment of methodology and Good Housekeeping".

The same workshop was also conducted at Tirupur for employees of textile industry on 14th December 2001. During the workshop, the participants were taken to the textile dyeing industries at Tirupur and they were given practical training in 'PCP' in the industries itself.



## **Excellence Plus Credit For Anna University**

Anna University quest to achieve further recognition at the international level has received a boost, with the University Grants Commission (UGC) offering it an 'Excellence Plus' credit for creating a Centre of Excellence in Environmental Sciences'. The UGC would provide upto Rs.30 crores in a five-year period. The Anna University has received the initial sanction of Rs.5 crores. The acquisition of the new status was a signal credit to- the university. It is proposed to institute B.Tech (Environmental Information Technology), B.Tech

(Environmental Biotechnology) and B.E. in Civil Engineering with diversification in Environmental Engineering. As for PG courses, special integrated M.Sc programmes in Environmental Sciences with diversification in areas such as biomedical waste management environmental chemistry an environmental health could be designed as also integrated M.S. in Natural Resources Management and Coastal Environmental Management. New M.E. M.Tech programme in Environmental Management, Solid and Hazardous wastes management, Industrial Pollution Prevention and Control, Air Pollution Control, Industrial Ecology, Natural Resources Management, Rainwater Harvesting, Geo-Informatics, Environmental IT, Environmental Biotechnology or Aquaculture Engineering could also be considered.

### **Editorial Board of ENVIS Centre**

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