Environmental Management

0103-001. Abdul Razak M, Ravindra Nath M J (Dept Urban Plnng Architecture, I.P. Estate, New Delhi 110002). **Major trends in institutionalizing environmental education in India.** *Environ Issues Manag,* Nature Conservators Publication -6 (2000), 217-224.

Environmental education as a thrust area in schools aims at developing in children the requisite awareness, knowledge, attitudes and values, and encouraging them to take an active role in the resolution of environmental problems. While an effective institutionalization of environmental education requires development of curricular materials and training of teachers and resource persons for its utilization it also require an understanding and evolving of effective communication and dissemination strategies.

0103-002. Agrawal Madhoolika (Dept Bot, Banaras Hindu Univ, Varanasi 221005, UP). **Researches on air pollution effects on vegetation in India: a review.** *The Botanica,* **50** (2000), 75-83 [62 Ref].

The significant contribution of air pollution to the problems of ill health of human being, loss of agricultural productivity and forest decline has been a cause of increasing scientific and public concern throughout the world. The air quality standards are largely set on the basis of human health alone. Effect of air pollution on vegetation is found to be significantly negative at present levels of pollutants in many areas. Vegetation is a major sink of air pollutants. . Resistant plant can be used for developing green belt in different areas. The potential of plants as environmental modifiers needs to be explored in relation to air pollution in the different regions of the country.

0103-003. Ahmad Tasneem (Forest Dev Corp Maharashtra Ltd, Nagpur, Maharashtra). **Village forests : a solution to the legal problems involved in joint forest management.** (*The) Indian Forester,* **127**(6) (2001), 650–652 [8 Ref].

With the object of resolving legal conflicts being faced in day to day implementation of the Joint Forest Management programme, it has been suggested to invoke the provisions contained in Chapter III of Indian Forest Act, 1927 regarding

formation of Village Forests. Such a measure would not only provide sound legal basis to the entire programme, but would also solve the problems related to the conflict arising out of the exercise of numerous adverse rights of the people already existing in these forests.

0103-004. Arceivala Soli J. **The many lives of treated wastewater! The need to look beyond traditional reuse.** *J Indian Assoc Environ Manag,* **28**(1) (2001), 53-55 [2 Ref].

Wastewater can also be harvested on reused in different ways to add to our fast depleting water resources. A few non-traditional options for reuse of wastewater that are relevance to India are discussed. Reuse will not solve the whole problem of water shortage but will help relieve it to some extent.

0103-005. Azad MRH, Tabassum J (Dept Zoo, Gauhati Univ, Guwahati 781014). **A faunal survey of Rajapara, Kamrup district, Assam.** *Env Eco,* **19**(2) (2001), 327-330 [14 Ref].

Rajapara under the jurisdiction of Kamrup district, Assam, comprises of two reserve forests, namely, the Mayang and Bordwar. The conventional categorization into reserve, protected and village forests has not yet been done in this area. Unauthorized human settlement has encroached the forest area to a large extent. Animals like *Elephas maximus* and *Sus scrofa* have been found to visit the crop field regularly. Population of *Panthera tigris tigris*, *Panthera pardus*. *Cuon alpines*, and *Hylobates hoolock* which were once abundantly found have been reduced. Forest coverage in many places can be seen as fragmented patches only.

0103-006. Banerjee SK, Srivastava KK, Chakraborty MK (Centl Mining Res Inst, Barwa Rd, Dhanbad 826001). **SPM is the major pollution in open cast mining – a case study.** *J Scient Indl Res,* **60**(5) (2001), 416-420 [18 Ref].

Paper presents the emission factors of the twelve open cast mining activities, identified as the most significant sources of air pollution in and around the mining areas. The Pasquil and Gifford formula has been used to compute the emission rates for the ground level emissions. The findings of the study reveal that haul roads and transport roads are contributing maximum of SPM concentration among all other mining activities

and it can be controlled through immediate short-term and long-term biological control measures.

0103-007. Chaudhari US, Johari Seema, Chaudhari PR (PG Dept Bot, Amravati Univ, Amravati). **Trophic status of Chatri lake in the vicinity of Amravati.** *Indian J Environ Hlth,* **43**(3) (2001), 135-137 [8 Ref].

The Chatri lake can be developed as an ecological spot and will be a place of attraction for the people. The lake is very fastly receding and becoming shallow due to heavy sedimentation. The low sodium and potassium content and reduction of photic zone due to high turbidity resulted in low phytoplankton density in the lake.

0103-008. Chanlya SK, Chakraborty MK, Singh RS (Centl Mining Res Inst, Barwa Rd, Dhanbad 826001). **Air pollution modelling for a proposed limestone quarry.** *Water Air Soil Poll,* **126**(1-2) 171-191 [29 Ref].

Predictions of the air pollution impact of a proposed opencast limestone quarry have been made using meteorological data, information on various quarrying activities and their associated emission factors, baseline air quality and a validated model conditions. Results have indicated that the haul routes and ore processing plant are the major sources of suspended particulate matter (SPM) emissions. The effectiveness of the green belt around the quarry site has been assessed and a sensitivity analysis has been carried out for different parameters. The technique for designing a green belt around a quarry site has also been described.

0103-009. Chawla JK, Khepar SD, Siag M, Kumar Dinesh* (*Dept Soil Water Engng, Punjab Argicl Univ, Ludhiana). **Quality status and optimum utilization of village pond water - a case study.** *Indian J Environ Hlth,* **43**(3) (2001), 114-118 [2 Ref].

The comparative study of the quality of village pond water vis-à-vis, quality standards for irrigation and rearing of fish has revealed that the quality of pond water is not only suitable for irrigation and development of fisheries, but also rich in nutrients, which is an added advantage. The study has reveled that the renovation of village ponds will have positive effect on environment, rural economy and ground water regime in declining water table areas.

0103-010. Das Mahadev Chandra, Konar Sushil Kanta (Fisheries Lab, Dept Zoo, Kalyani Univ, Kalyani 741235). **Conservation of biodiversity of the river Mathabhanga–Churni in the district Nadia, West Bengal.** *Env Eco,* **19**(2) (2001), 288-295 [19 Ref].

Paper assesses the effect of physico-chemical parameters of water on the biodiversity of fishes in the river Mathabhanga-Churni in West Bengal. Before 10-20 years back there were fifty five species of fishes in the river but at present eight species of fishes vanished from the river and some species were rarely found in the river. Indiscriminate use of the river caused the deterioration of water quality parameters.

0103-011. Datar MT, Dubey DR, Singh AN (Ujjain Engng Coll, Ujjain). **Quick start up and quick steady state techniques for UAFFB reactor.** *Indian J Environ Hlth,* **43**(3) (2001), 92-103 [23 Ref].

The studies emphasized on initial creation of slime layer on the surfaces of fixed bed media followed by introduction of acclimated anaerobic biomass in bulk, which was expected to get attached to the slime layer, produce biofilm and in turn reduce start-up time. The results are very encouraging and Start up Technique finalized during these is found to be very effective in reducing the start up period of laboratory scale UAFFB reactor to as low as 15 days even at high organic loading of 5.95 kg COD/day/cum of reactor.

0103-012. Dubey Brij Kumar (53, Zero Road, Opp Bagga Petrol Pump, Allahabad). **RBRC for wastewater treatment.** *J Indian Assoc Environ Manag,* **27**(3) (2000), 210-212.

A hydraulically operated Rotating Biological Rope Contractor is discussed. The system is efficient, cost –effective and does not require extra power for operation.

0103-013. Dutta MK (Mathura Refinery, Mathura UP). **Environmental management at Mathura Refinery.** *J Indian Assoc Environ Manag,* **27**(3) (2000), 224-226.

Paper described briefly the measures adopted by Mathura Refinery ever since its commissioning in 1982 to meet national and international standards s achieving

recognition for its excellence in environmental management, safety, energy conservation, and total quality management.

0103-014. Garg A, Shukla PR, Bhattacharya S*, Dadhwal VK (Natl Phyl Lab, KS Krishnan New Marg, New Delhi 110012). **Sub-region (district) and sector level SO2 and NOx emissions for India: assessment of inventories and mitigation flexibility.** *Atmos Env,* **35**(4) (2000), 703-713 [60 Ref].

Sub-regional and sector level distribution of SO2 and NOx emissions inventories for India have been estimated for all the 466 Indian districts using base data for year 1990 and 1995. Although, national level emissions provide general guidelines for assessing mitigation alternatives, but significant regional and sectoral variability exist in Indian emissions. The district level analysis indicates diverse spatial distribution with the top 5% emitting districts contributing 46.5 and 33.3% of total national SO2 and NOx emissions, respectively.

0103-015. Ghose M K (Cent Mining Env, Indian Sch Mines, Dhanbad 826004). **Design of cost-effective coal washery effluent treatment plant for clean environment.** *J Scient Indl Res,* **60**(1) (2001), 40-47 [18 Ref].

One large coal washery has been surveyed and the characteristics of the effluent have been evaluated. Studies also involved the identification of a suitable flocculent and to develop a methodology for the effective removal of suspended solid from the effluent. A treatment scheme has been suggested which will make is feasible to design a cost-effective treatment plant for coal washery and the supernatant liquid can be recycled or safely discharged without causing surface water pollution.

0103-016. Ghosh R, Sinha TK, Saxena NC (Cent Mining Env, Indian Sch Mines, Dhanbad 826006). **Bulk utilisation of fly-ash.** *J Indian Assoc Environ Manag,* **27**(3) (2000), 252-254.

The bottom ash and flyash from huge waste dumps and creates serious environmental problems. Their accumulation has already reached an alarming stage. The bulk untilisation of fly-ash for soil amendment to raise food crops, vegetables, and useful greenery, without any risk of trace element pollution, has been described.

0103-017. Ghosh Santanu, Chattopadhyay GN, Garg SK (Lab Aquatic Manag, Dept Zoo, CCS Haryana Agricl Univ, Hisar 125004). **Environmental impact assessment (EIA) in riverine ecosystem with special reference to Ganges.** *Environ Issues Manag,* Nature Conservators Publication – 6 (2000), 271-289 [100 Ref].

Review examines the pollution status of riverine ecosystem with special reference to Ganges. Environmental impact assessment studies indicate that accumulation of heavy metals and other pollutants in the river waters have been attributed to urbanization and industrial developments. Heavy metals not only affects the various systems including the physiology of the aquatic organisms but also the very existence of planktons, benthos and fishes. These pollutants/toxicants find their way in the food chain and adversely affect human beings directly though drinking water or indirectly through fish consumption.

0103-018. Karhadkar Pramod P (Green Earth Consultants, 12-Aniket, Pandurang Wadi, Goregaon (East), Mumbai 400063). **Environmental management in industry in the next millennium.** *J Indian Assoc Environ Manag,* **27**(3) (2000), 227-232.

The environmental management in the next millenium, the role of environmental expert in the future scenario, and desirable qualities in him/her for an effective discharge of the responsibilities are discussed.

0103-019. Kaul SN, Nandy Tapas, Vyas RD, Szpyrkowicz L (Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). **Waste management in tanneries : experience and outlook.** *Indian Assoc Environ Manag,* **28**(1) (2001), 56-76 [3 Ref.]

Paper overviews the tanning industry with special reference to waste treatment, including its characteristics along with quantum of waste generated, the present state of pollution control and abatement in the tanning industry and also various disposal techniques. It also deals with the cost consideration of the treatment techniques. Cleaner technology and waste minimization are also discussed to elaborate how to reduce end-of-the pipe treatment to be given to combined tannery wastewater.

0103-020. Kaushik RD, Singh Dheer (Dept Chem, Gurukula Kangri Univ, Haridwar 249404). **Kinetic-spectrophotometric determination of p-ethyl aniline in micrograms in water.** *J Env Polln,* **8**(2) (2001), 209-212 [19 Ref].

Water Pollution

0103-074. Abraham Beena T, Anirudhan TS (Dept Chem, Univ Kerala, Kariavattam, Trivandrum 695581). **Effect of NTA and pH and lead (II) adsorption by the hydrous oxides of Mn, Fe, and Al.** *J Scient Indl Res,* **60**(2) (2001), 145-150 [19 Ref].

Paper studies the influence of nitrilotriacetic acid (NTA) on Pb (II) adsorption by different hydrous oxide gels (MnOOH, FeOOH and AlOOH) at different pH levels. The surface charge density as a function of pH in aqueous solution of NaNO3, NTA and Pb-NTA has been determined. The adsorption of Pb(II) in presence of NTA was greater than NTA adsorption in presence of Pb(II). The maximum adsorption of Pb (II) in presence of NTA occur at a pH range of 3.0-4.0.

0103-075. Anila Kumary KS, Abdul Azis PK, Natarajan P (Sch Appl Life Sci, Mahatma Gandhi Univ Regl Cent, Pathanamthitta 689645, Kerala). **Sediment characteristics of Poonthura estuary (southwest coast of India) in relation to pollution.** *Indian J Marine Sci,* **30**(2) (2001), 75-80 [20 Ref].

Texture, redox potential and organic carbon of sediments in Poonthura estuary, Thiruvanathapuram, presently exposed to sewage pollution were evaluated over a period of one year. Textural study revealed the presence of highest percentage of finer particles at the sheltered upstream stations. Organic carbon content was more than the prescribed limit for unpolluted estuaries at some stations and reflects the level of pollution in the estuary. Significant variation in organic carbon and redox potential during the monsoon season shows that better dilution can diminish the high organic load to a great extent.

0103-076. Chatterjee Chinmoy, Raziuddin M (Dept Zoo, Raniganj Girls' Coll, Raniganj 713347, Dist Burdwan, West Bengal). **Bacteriological status of river water in Asansol town in West Bengal.** *J Env Polln,* **8**(2) (2001), 217-219 [8 Ref].

Studies were conducted with an objective of assessing the bacterial density in water of the river Nunia, polluted with industrial and domestic wastes of Asansol coal and industrial belt. All the samples contained total coliform and faecal coliform bacteria above the safe limits for drinking water standards. Seasonal variations in bacterial density were recorded with maximum density in summer and monsoon seasons and minimum density in winter season. Contaminated water of this river in not suitable for human use.

0103-077. Chopra AK, Patrick Nirmal J (Dept Zoo, Environ Sci, Gurukul Kangra Univ, Haridwar 249404). **Effect of domestic sewage on self purification of Ganga water at Rishikesh. II Microbiological parameters.** *Environ Issues Manag,* Nature Conservators Publications-6 (2000), 81-86 [20 Ref].

The study on the effluent of domestic sewage coming from Rishikesh town indicated a considerable change in microbiological characteristics of Ganga river water at its confluence point near Triveni ghat Rishikesh. The recovery had started in the river due to its self-purification nature. Though algal pollution index reported upto 1.00 km. downstream from the confluence point, bacterial counts could not be stored.

0103-078. Dasgupta Adak M, Purohit KM (Dept Chem, Regl Engng Coll, Rourkela 769008 Orissa). **Status of surface and ground water quality of Mandiakudar-Part I : physico-chemical parameters.** *Polln Res,* **20**(1) (2001), 103-110 [15 Ref].

Qualities of tap-, tubewell-, openwell- and pond –water around the industrial area of Mandiakudar (Kansbahal, Orissa) are carried out to assess the suitability of the water for drinking purposes. The study covering two each of tap-, tubewell-, openwell- and pond-waters used by the residents near the mini cement plants of Mandiakudar are studied and the values obtained were compared with standards prescribed by Bureau of Indian Standards (BIS), Indian Council of Medical Research (ICMR), and World Health Organisation (WHO). Analysis of results showed that the experimental waters are suitable for drinking purpose except pond water.

0103-079. Dasgupta Adak Mahuya, Purohit KM* (*Dept Chem, Regl Engng Coll, Rourkela 769008, Orissa). **Status of surface and ground water quality of Mandiakudar - Part II : agricultural utilities.** *Polln Res,* **20**(2) (2001), 219-225 [16 Ref].

Evaluation of different physico-chemical parameters of surface and ground water samples, covering the entire industrial area of Mandiakudar (Kansbahal, Orissa), are carried out to assess the suitability of the water for irrigation purposes. Results of the present investigation are compared with the Wilcox standard value, the Ayers and Westcott standard value. It is observed that all water samples under study can safely be used for irrigation purposes.

0103-080. Dasgupta Adak Mahuya, Purohit KM* (*Dept Chem, Regl Engng Coll, Rourkela 769008 Orissa). **Status of surfaces and ground water quality of Mandiakudar - Part III : correlation coefficient and regression equations.** *Polln Res,* **20**(2) (2001), 227-232 [9 Ref].

Evaluation of different physico-chemical parameters, of surface water and ground water samples of Mandiakudar, Orissa, are reported. A systematic calculation is also made for evaluating the correlation coefficient ‘r’ amongst the parameters. Significant linear relationships among some water quality parameters are also carried out. Experimental results are compared with the calculated values using equation Y = AX + B. These regression equation are obtained from the best-fit curves using the software package EXCEL.

0103-081. Gaur Rajeev K, Khan Assif A, Praveen Sultanate, Untoo Syeed A (Limno Res Lab, Dept Zoo, Aligarh Muslim Univ, Aligarh 202002, UP). **Sediment quality characteristics of a leachate reservoir receiving effluents from a thermal power plant.** *J Ecophysio Occupl Hlth,* **1**(1&2) (2001), 161-178 [48 Ref].

Paper incorprates the results of studies conducted on the sediment quality of leachate reservoir receiving effluents from a Thermal Power Plant near Aligarh. Benthos density was highest during summer and low during winter months, and found to be positively correlated with sediment temperature and negatively correlated with organic

matter content in the sediments. Bethos were represented by insects, gastropods, oligochaetes, ostracods, rotifers and miscellaneous organisms.

0103-082. Gomathinayagam P, John Annie, Valli S (Dept Microbio, Maharaja Coll Women, Perundurai 638001). **High incidence of plasmid borne enterotoxin producing *Escherichia coli* in Bhavani river, Tamil Nadu.** *Indian J Environ Sci,* **5**(2) (2001), 63-67 [12 Ref].

High incidence of enterotoxin producing *Escherichia coli* (65%) was found in water and sediments samples of Bhavani river. Most of enterotoxin producer were found to be highly resistant and they showed resistance to more that two tested antibiotics. Prevailing high percent of multiple antibiotic resistant, enterotoxic producers in river in a high risk source of contamination. It has high potential to cause public health problem. Hence, necessary precaution measure should be taken before using this source for drinking purpose.

0103-083. Govil Pradip K (Natl Geophysical Res Inst, Hyderabad 500007). **Distribution and characterization of heavy metals in Jeedimetla industrial area, Andhra Pradesh, India.** *Polln Res,* **20**(2) (2001), 245-255 [38 Ref].

Detailed studies have been carried out in and around Jeedimetla Industrial Development Area, Andhra Pradesh to determine the extent of heavy metal contamination in soil and water. Distribution maps for different heavy/trace metals in the study area have been prepared. Soil, surface water and ground water samples were studied during one hydrological cycle. It was observed that the area has a high contamination of Pb, Ni, Cu, Mn, Zn in soil and As, Ni, Cr, Sr, Zn, Cd, V and Ba in the water. The concentration levels of these elements were found to be far above the normal distribution of these elements in nature or the permissible limits of these elements in water .

0103-084. Gurunadha Rao VVS, Dhar RL, Subramanyam K (Natl Geophyl Res Inst, CSIR, Hyderabad 500007). **Assessment of contaminant migration in groundwater from an industrial development area, Medak district, Andhra Pradesh, India.** *Water Air Soil Polln,* **128**(3-4) (2001), 369-389 [16 Ref].

The industrial effluents from Patancheru Indus trial development area near Hyderabad city in two streams : Nakkavagu and Peddavagu are being discharged. The Nakkavagu is acting as a diffuse source of contaminants all along its course. Groundwater flow and mass transport models were prepared using visual MODFLOW software. The extent of migration of contaminants from the Nakkavagu and other streams has been assessed. The stream-aquifer interaction was found to be responsible for faster migration of contaminants in the over-exploited area east of the Nakkavagu.

0103-085. Hemlatha KA, Geetha P, Yasmin SH, Premalatha VK, Balasubramanian S (Dept Environ Sci, Bharathiar Univ, Coimbatore). **A two parameters Weibull distribution method for predicting cations in the ground water of Cauvery delta of Tamil Nadu.** *India J Environ Hlth,* **43**(3) (2001), 83-91 [12 Ref].

A two parameter Weibull distribution model was applied to evaluate the quality of ground water collected from 50 wells in four regions of Thanjavur district. The data of the cations (Ca, Mg, K, Na) and EC were used to predict the ground water quality. The shape and scale along with mean and percentile were zoned. From the study the cationic parameters in the wells were not uniform which may be attributed to contamination either by surface flow or seawater.

0103-086. Joseph Kurian, Jaiprakash Narain GB (Dept Environ Engng, Cent Environ Std, Anna Univ, Chennai 600025). **An integrated approach for management of total dissolved solids in hosiery dyeing effluents.** *J Indian Assoc Environ Manag,* **27**(3) (2000), 203-207 [7 Ref].

The hosiery textile wet processing sector use a large quantity of water and chemicals and generate equal amount of wastewater. In response to the environmental legislation and pubic pressure, the industries have recently set up common/ individual effluent treatment plants. These treatment plants do not provide for control to total dissolved solids in the effluent. This paper discusses an approach integrating cleaner production and waste treatment as a solution to the problem.

0103-087. Kaur H, Syal J, Dhillon SS (Dept Zoo, Punjabi Univ, Patiala 147002). **Water quality index of the river Satluj.** *Polln Res,* **20**(2) (2001), 199-204 [12 Ref].

A mathematical formula based on nine physico-chemical characteristics has been designed to assess the pollution level and quality of water of the river Satluj in term of its being unpolluted, slightly polluted, moderately polluted, excessively polluted and severely polluted. In all, three classes of water have been identified in the river. These are designated as class I (WQI between 80-100) representing clean to slightly polluted water, class II (WQI between 60-80) representing moderately polluted water and class III (WQI between 0-60) representing excessively and severely polluted water.

0103-088. Khwaja AR, Singh Rashmi, Tandon SN (Dept Chem, Univ Roorkee, Roorkee 247667). **Monitoring of Ganga water and sediments vis-à-vis tannery pollution at Kanpur (India): a case study.** *Environ Monit Assess,* **68**(1) (2001), 19-35 [17 Ref].

Article discusses the influence of the wastes on the physicochemical characteristics of the Ganga water and sediments. Two sampling sites have been choosen at Kanpur, one before and the other after the point where tanneries are located. The results reveal that most parameters increase as the river traverses between these two points. The increase in values of parameters could be due to the domestic wastes just as much as to the tannery wastes. The speciation of the sediments form chromium reveals that the leakage of chromium into the Ganga is taking place at the second site.

0103-089. Kumari Anupma, Sinha Ravindra Kumari (Environ Bio Lab, Dept Zoo, Patna Univ, Patna 800005). **Concentration of organochlorine pesticide residues in Ganga water in Bihar, India.** *Env Eco,* **19**(2) (2001), 351-356 [11 Ref].

Water sample from the Ganga River between Buxar and Rajmahal in Bihar, India were analyzed to estimate the presence of HCHs. DDTs, aldrin and endosulfan. The concentrations of DDTs. HCHs, aldrin and endosulfan in the river water were found between 0.019 and 1.663

Noise Pollution

0103-106. Naik Ashrikanta, Purohit KM (Dept Chem, Regl Engng Coll, Rourkela 769008). **Status of noise pollution level at Bondamunda of Rourkela industrial complex.** *Polln Res,* **20**(1) (2001), 41-46 [8 Ref].

Noise level were measured at eight specific locations of Bondamunda and varied from 47.8 to 103.6 dB(A). The average Leq values of individual location varies from 66.22 to 93.67B(A). While other parameters like L10, L50, L90, Lnp and TNI were also computed for that hour during daytime.

0103-107. Pandya GH (Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). **Urban noise- a need for acoustic plannig.** *Environ Monit Assess,* **67**(3) (2001), 379-388 [5 Ref].

The noise status of growing urban centres of the country are very much required to develop acoustic design and planning guidelines for various land use classifications. An attempt is made by measuring noise equivalent levels for cities like Delhi, Jamshedpur, Dehradun, Nagpur. It has been observed that maximum percentage of areas in Delhi and Jamshedpur fall under moderately severe to very severe noisy conditions as compared to Dehradun and Nagpur on the noise rating scale. Ways and means are also considered for mitigation of noise.

0103-108. Pandya GH, Kondawar VK* (*Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). **Real time sound intensity measurements in an industrial complex.** *Indian J Environ Hlth,* **43**(3) (2001), 104-107 [2 Ref].

Paper reports the results of real time sound intensity measurement carried out in an industrial complex with a portable sound intensity analyzer equipped with 1/3 octave filters and dual microphone remote control probe for real time analysis. Extensive sound intensity measurement in the power plant ammonia compressor house and urea compressor house have been carried out. The results are useful for sound power determination of various sources.

0103-109. Ravi Kumar R, Shadakshraswamy N, Somasekhar RK (Dept Geo, Bangalore Univ, Bangalore 560056). **Status of noise level in Bangalore city.** *J Env Polln,* **8**(2) (2001), 197-199 [7 Ref].

A study was carried out to know the levels of noise in the sensitive areas of Bangalore city. The noise level ranged from 71-111 dB (A) in traffic zone, 51-69 dB (A) in residential area, 72-98 dB (A) in industrial zone and 86-102 dB(A) in air port. The maximum noise is mainly due to vehicular movement in the high traffic zones followed by airwa

Ecology

0103-110. Ayyappan S (Centl Inst Freshwater Aquacult (CIFA), Kausalyaganga, Bhubaneshwar 751002). **Freshwater aquaculture for eco conservation and nutrition.** *Environ Issues Manag,* Nature Conservator Publication -6, (2000), 49-54.

New technologies and packages of practices have provided for intensification and diversification of aquaculture practices. Apart from nutrition, freshwater aquaculture practices also provide for waste treatment and recycling and eco-conservation of threatened species. The paper presents measures for enhanced productivity in freshwater aquaculture system.

0103-111. Baruah BK, Das M (Eco Lab, Dept Zoo, Cotton Coll, Guwahati 781001). **Study on plankton as indicator and index of pollution in aquatic ecosystem receiving paper mill effluent.** *Indian J Environ Sci,* **5**(1) (2001), 41-46 [27 Ref].

The Elenge beel (wetland) in Morigaon District of Central Assam receives effluent of Nagaon paper mill at a rate of 2100 M3/h. The study was carried out on the density and diversity of surface plankton populations in four sectors, from confluence point to downstream areas, in premonsoon, postmonsoon and winter seasons for consecutive three years. Certain plankton species found to be the indicators of pollution.

0103-112. Bhadran Geetha (Dept Zoo, St Gregorios Coll, Kottarakara, Kollam, Kerala 691 506). **The plankton population of Asramam creek of Ashtamudi lake in Kerala South India.** *J Ecobio,* **13**(2) (2001), 123-129 [14 Ref].

Asramam creek is the most prominent creek of Ashtamudi lake, the second largest lake of Kerala. A comparative study of the plankton population of this creek portion of the lake and the open lake revealed that in the creek portion the plankton density reached upto 273.0ml/litre where as in the open lake it was only upto 50.0 ml/litre Comparison of the two sites revealed that the Asramam creek of Ashtamudi lake is an area of good plankton production and can be utilised for back water aquaculture programme.

0103-113. Bhave SK, Borse PV (Dept Zoo, Art Sci Comm Coll, Chopda 425107). **Seasonal variation in temperature, dissolved oxygen, pH and salinity and their influence on planktons in Aner river water, Jalgaon, Maharashtra.** *Polln Res,* **20**(1) (2001), 79-82 [22 Ref].

Paper deals with ecological investigations on Aner river situated at the boundary of Jalgaon and Dhulia districts, Maharashtra. Thermal fluctuations were wide so the plankton and animal movements were greatly affected. Water was alkaline and hard. Dissolved oxygen content showed an inverse relationship with temperature and a positive relationship with plankton populations. Salinity showed inverse relationship with plankton population.

0103-114. Choudhary Shilpa, Singh Devendra Kumar (Dept Zoo, Jeewachh Coll, Motipur 843111). **Phyto plankton populations of Boosra Lake (Gaighat block, Muzaffarpur, Bihar).** *Env Eco,* **19**(1) (2001), 171-174 [17 Ref].

Paper deals with the phytoplankton populations of Boosra lake of Gaighat block of Muzaffarpur district (North Bihar). Chlorophyceae constituted the major group of the lake, followed by Bacillanophyceae and Cyanophyceae. Each group of phytoplankton showed different peak periods; the summer months produced relatively more phytoplankton than the rainy and winter months. The variation in physico-chemicals and meteorological parameters are responsible for the fluctuations in the quality and quantity of the phytoplankton.

0103-115. Dhargalkar VK, Untawale AG, Jagtap TG (Natl Inst Oceanogr, Dona Paula, Goa 403004). **Marine marcoalgal diversity along the Maharashtra coast: Past and present status.** *Indian J Marine Sci,* **30**(1) (2001), 18-24 [33 Ref].

A comparative study on distribution and abundance of marine macroalgae was carried out at six sites along the Maharashtra coast with the available data. A typical cyclic change in their distribution, abundance and the reproductive features were observed in these algal forms. Although, northern part of Maharashtra is subjected to increasing industrial pollution and habitat destruction, there are some pockets wherein high macroalgal diversity occurs.

0103-116. Hussain SM, Mohan SP (Dept Geo, Univ Madras, AC Coll Compus, Chennai 600025, Tamil Nadu). **Distribution of recent benthic ostracoda in Adyar river estuary, east coast of India.** *Indian J Marine Sci,* **30**(1) (2001), 53-56 [17 Ref].

Fifteen surface sediment and bottom water samples were collected from the Adyar river estuary, Chennai, starting from the mouth of the river upstream. Twenty-six species belonging to 23 genera have been encountered, of which *Caudites javana* and *Tanella gracilis* were abundant and widespread in the study area. The distribution of the species in each sample is given. The distribution of ostracods in the Adyar river estuary seems to be controlled by salinity and substrate.

0103-117. Kar Devashish, Barbhiya Monjural Hoque (Dept Life Sci, Assam Univ, Silchar 788011). **Ecology of aquatic macrophytes of Chatla Haor, a floodplain wetland in Cachar district of Assam.** *Env Eco,* **19**(1) (2001), 231-233 [9 Ref].

Ecological studies conducted at Chatlas Haor, a seasonal floodplain wetland in Cachar district of Assam revealed the occurrence of 23 different species of aquatic macrophytes belonging to five free floating, four rooted floating, two submerged and 12 emergent categories. Of these, six macrophytic species were found to occur throughout the year.

0103-118. Khanna DR, Malik DS, Badola SP (Dept Zoo Environ Sci, Gurukul Kangri Univ, Hardwar 249404). **Impact of aquatic environmental changes on plankton diversity in river Ganga at Hardwar.** *Environ Issues Manag,* Nature Conservators Publication –6, (2000) 133-140 [22 Ref].

Paper deals with the seasonal periodicity of plankton in relation to limnological factors of river Ganga at Hardwar. The physico-chemical factors showed negligible to highly significant fluctuations. Phytoplankton constitute the major portion of the total plankton. The quantitative analysis of plankton revealed that the total planktonic concentration was highest in the month of January from where onwards it decrease continuously up to July.

0103-119. Kotia Amit, Kumar Ashwani (Dept Bot, Univ Rajasthan, Jaipur 302004). **Characterization of biomass during wasteland development in semiarid regions.** *J Env Polln,* **8**(2) (2001), 213-216 [10 Ref].

Two different areas measuring 10 ha. and 15 ha. in the University of Rajasthan campus were selected for the study. They were fenced and attempts were made to regenerate the vegetation in this wasteland. The biomass potential of some plant species and their potential use as renewable sources of energy has also been studied.

0103-120. Kumar Pramod, Sharma RS (Dept Zoo, DAV (PG) Coll, Muzaffarnagar 251001). **Physico-chemical characteristics of Kohala fish pond, Deoband, Saharanpur.** *Aquacult,* **2**(1) (2001), 9-13 [14 Ref].

The physico-chemical characteristics of the water of a fish pond "Kohala" have been studied. The amplitude of variations are not too high and are only due to seasonal variations. It is clear from the data that this pond is suitable for fish culture but requires proper management as regards to the physico-chemical characteristics are concerned.

0103-121. Kumar V, Priya R (Dept Geo, Natl Coll, Tiruchirapalli 620001). **Epiphytic foraminifera and relation to algae in the Palk Bay off Rameswaram, Tamil Nadu.** *J Nature Conserv,* **12**(2) (2000), 245-253 [8 Ref].

For the study of benthic foraminiferal ecology, 52 sediment samples were collected from 13 stations during four seasons of a year. In the shallow surf beaten area

108 foraminiferal species and 27 algal species have been noticed. The study revealed that most of the foraminifera are epiphytic and thrived on these algae. In the present area, the arenaceous foraminifera do not show any affinity on these algae but other forms especially attached ones seem to have a clear cut relationship.

0103-122. Malu RA (PG Dept Zoo, RA Arts, MK Comm, SR Rathi Sci Coll, Washim 444505). **Phytoplankton diversity in Lonar Lake.** *Env Eco,* **19**(1) (2001), 244-246 [5 Ref].

The district Buldhana, Maharashtra state (India) provides geological interest for unique occurrence of pictureque lonar crater. Although the crater in itself is of immense interest as a natural phenomenon, what makes it still more unique is its salinity, alkalinity and five or six micro-ecosystems evolved inside the interior of crater. Planktons, especially phytoplankton are the bioindicators of the water quality. Many of them are photosynthetic and are grazed upon by zooplankton and other aquatic organisms.

0103-123. Mandal TN, Jha PK, Yadav SN, Sinha AK (Bot Teaching Point, Anant Mandal Bhawan, Teengachhia Rd, Naya Tola, Katihar 854105). **A survey of water birds of a wetland of north Bihar (India).** *Eco Env Conserv,* **7**(1) (2001), 97-100 [9 Ref].

A survey of biotic fauna especially water-birds of North-Bihar wetland were studied. The total 40 sps. of 9 order of the migratory and residential birds were recorded. In addition to physico-chemical parameters, biotic factors are the major regulating sources and force for wetland-birds. Interaction of flora with biotic community of the system has been described.

0103-124. Misra SM, Pani S, Bajpai A, Bajpai AK (Environ Res Lab, Bhoj Wetland Proj, Environ Planng Coordination Orgn, Paryavaran Parisar, E/5, Arera Colony, Bhopal –16). **Assessment of trophic status by using Nygaard Index with special reference to Bhoj wetland.** *Polln Res,* **20**(2) (2001), 147-153 [15 Ref].

An approach has been taken for the assessment of trophic status of Upper and Lower lakes by using Nygaard index. The values suggest an advanced stage of eutrophy. Lower lake is categorized as eutrophic.

0103-125. Modi Sangeeta, Saxena MM (Lab Environ Bio, Dept Zoo, Dungar Coll, Bikaner 334001). **Planktonic productivity in the water sheets of the Indian desert: a review.** *Eco Env Conserv,* **7**(1) (2001), 35-40 [30 Ref].

Paper reviews the status of planktonic productivity in the bodies of water falling in the Indian desert region. The productivity is found to be rich, comparable to benign regions of the country, sometimes exceedingly high. Per hour gross primary production is recorded to range from 0.375 to 0.876 gC/m3 and net production from 0.111 to 0.701gC/m3. Results of gross and net primary productivity are compared within the region and from other parts of the country for a number of water bodies.

0103-126. Mukhopadhya SK, Biswas H, Das KL, De TK, Jana TK. (Dept marine Sci, Univ Calcutta, 35 BC Rd, Calcutta 700019). **Diurnal variation of carbon dioxide and methane exchange above Sundarbans mangrove forest, in NW coast of India.** *Indian J Marine Sci,* **30**(2) (2001), 70-74 [9 Ref].

A micrometeorological method was used to measure the diurnal exchange of carbon dioxide and methane over Sundarbans mangrove forest at Lothian island under lapse and inversion micrometerological conditions. Concentration of CO2 and CH4 in the air were found to be 587.9± 51.5 and 0.903± 0.318 mg/m3 and both vertical and lateral transport could cause their variation in the atmosphere.

0103-127. Nanda Kumar NV, Saritha K, Rajasekhar M, Ameer Basha S (Div Environ Bio, Dept Zoo, SV Univ, Tirupati 517502, AP). **Aquaculture effluent effect on physico chemical characteristics and zoo plankton of Pulicat lake bird sanctuary.** *Eco Env Conserv,* **7**(1) (2001), 25-29 [9 Ref].

The Pulicat lake water physicochemical and hydro biological characteristics were analysed at different depths in a year. The aquaculture effluent was found to affect significantly BOD, carbonates, inorganic phosphates and plankton population density. The studies revealed that the release of aquaculture effluent would drastically affect the primary consumers and thus indirectly pose a threat to plankton feeders on which the migratory birds survive.

0103-128. Noor Alam MD (Dept Zoo, Giridih Coll, Giridih 815301, Bihar). **Studies on variations in the physico-chemical parameters of a pond Hathwa (Bihar).** *J Env Polln,* **8**(2) (2001), 179–181 [18 Ref].

The paper investigate a freshwater pond for some physico- chemical parameters like temperature pH, dissolved oxygen, free CO2 and alkalinity. A significant level of variation was found in respect to these parameters throughout the study period. Measures have been suggested to protect it from deterioration.

0103–129. Pradhan Sunita, Saha Gautom K, Khan Jamal A (Forum Himalayan Std Res, PB No. 111, P.O. Darjeeling, 734101). **Ecology of the red panda *Ailurus fulgens* in the Singhalila National Park, Darjeeling, India.** *Biol Conserv*, **98**(1) (2001), 11-18 [30 Ref].

Red panda, *Ailurus fulgens* is a poorly known Himalayan member of Carnivora which has adapted to a herbivorous diet. The study conducted in the Singhalila National Park in the eastern Himalayas was initiated to gain information on the ecology and conservation problems of the red panda. Indirect and direct evidence was used to assess its distribution, relative abundance, habitat use and food habits in the National Park. Red panda was relatively more abundant within an altitudinal range of 2800-3600 m.

0103-130. Purohit KK, Mukherjee PK, Khanna PP, Saini NK, Rathi MS (Wadia Inst Himalayan Geo, 33, Gen Mahadeo Singh Rd, Dehra Dun 248001). **Heavy metal distribution and environmental status of Doon Valley soils, outer Himalaya, India.** *Environ Geo*, **40**(6) (2001), 716-724 [44 Ref].

The background concentration of Pb is low (22 mg kg-1) in Doon Valley soils; however, signs of gradual Pb contamination are palpable in and around the centre of the Dehra Dun city and along the highways. Aluminium normalized heavy metal ratios were found to exhibit narrow variability in the case of Cu, Ni and Cr and had good correlation with Al, indicating their affinity and association with the clay minerals.

0103-131. Ratna Bharathi V, Kalavati C, Raman AV (Dept Zoo, Andhra Univ, Waltair, Visakhapatnam 530003, AP). **Planktonic flagellates in relation to pollution in Visakhapatanam harbour, east coast of India.** *India J Marine Sci*, **30**(1) (2001), 25-32 [25 Ref].

One year study on planktonic flagellates at four selected stations along a decreasing gradient of pollution in the North Arm of Visakhapatnam harbour revealed as many as 17 species. *Dinematomonas littorale*, *Dunaliella* sp., *Spumella* sp., and *Chromulina* sp. were predominant. Based on Principal Component Analysis, it was possible to distinguish the flagellate populations into two distinct assemblages. Of these, *Spumella-Peridinium* assemblage was characteristic of polluted conditions at the outfall and the *Chromulina-Sphenomonas* assemblage was noticed with improved quality.

0103-132. Sahat T, Manna NK, Som Majumdar S, Bhattacharya IN (Inst Wetland Manag Ecol Design, B4, LA Block, Sec-III, Calcutta 700091). **Primary productivity of the Subhas Sarobar lake in east Calcutta in relation to some selected physico-chemical parameters.** *Polln Res*, **20**(1) (2001), 47-52 [25 Ref].

A year round study of primary productivity in Subhas Sarobar lake, East Calcutta has been conducted. Mean values of gross productivity, net primary productivity and community respiration ranged from 510-1016 mg C/m3/hr, 270-921 mg C/m3/hr and 95-377 mg C/m3/hr respectively. Correlation coefficients were computed between GPP, NPP and CR and physico-chemical parameters studied. Water temperature and total alkalinity showed significant direct correlation with GPP and NPP of the lake. The primary productivity values revealed that the lake water was mesotrophic.

0103-133. Sarojini Y, Sarma Nittala S (Dept Bot, Andhra Univ, Visakhapatnam 530003). **Vertical distribution of phytoplankton around Andaman and Nicobar Islands, Bay of Bengal.** *Indian J Marine Sci*, **30**(2) (2001), 65-69 [18 Ref].

Vertical distribution of phytoplankton in the upper 200 m water column was studied at five stations around the Andaman Islands. About 143 species, belonging to 8 classes of algae were identified. Cyanophyta, particularly *Trichodesmium erythreae*, contributed most to the biomass but the species diversity was maximum for Bacillariophyceae and Pyrrophyceae. Dense maxima were noted at 25m depth in waters

of the Bay of Bengal side and less dense maximum at surface in waters of the Andaman Sea side.

0103-134. Saxena Shumali, Saxena RC (Dept Zoo, SSL Jain Coll, Vidisha 464001). **Effect of biocidal compounds of *Mesocyclops leuckarti*.** *Nature Biosphere*, **5**(1&2) (2000), 51-53 [6 Ref].

Two non-insecticidal chemical of plant origin have been used for controlling cyclops. The results showed sesquiterpene lactone to be more effective below 100 ppm concentration whereas the neem seed kernel hexane extract showed 100% mortality on 4th day only at 200 ppm concentration. The insect which died showed darkening of cuticle and failure of ecdysis against the *Mesocyclops leuckarti* a vector of guinea worm disease.

0103–135. Sath TR, Khanna DR, Gautam Ashutosh, Chugh Tarun, Sarkar Praveen (Dept Zoo Environ Sci, Gurukul Kangri Univ, Haridwar 249404). **Temporal trends of phytoplanktonic diversity in the river Ganga at Haridwar.** *Himalayan J Env Zoo*, **14**(2) (2000), 129–134 [15 Ref].

Paper deals with phytoplanktonic population of River Ganga at Haridwar. Plankton concentration was highest in the month of Dec-Jan and lowest recorded in the month of June-July. Bacillariophyceae was dominating with annual mean (353 unit/l) and least was Cyanophyceae (24. 67 unit/l).

0103–136. Singaravelu G, Anbu S, Mahalingam S (Univ Madras, Dept Zoo, PG Extn Cent, Fort Campus, Vellore 632004). **Investigation on the population changes of larvivorous fish, *Gambusia affinis* in Vellore – A biochemical approach.** *Indian J Environ Prot,* **21**(1) (2000), 33-37 [19 Ref].

Investigation on the survivability of larvivorous fish, *Gambusia affinis* indicates that there is a variation in certain areas of Vellore. The role of physicochemical properties of water in the survivability of *Gambusia affinis* have been studied. Further, the effect of physicochemical factors on the enzyme succinate dehydrogenase and lactate dehydrogenase contents have been estimated. The results were critically analyzed and discussed.

0103–137. Singh TN, Singh SN (UP Polln Contl Bd, Avas Vikas Office - Commercial Complex, Jawaharnagar, Bhelupur, Varanasi 221010). **Statistical treatment of data on river Varuna at Varanasi with special emphasis on chromium and cadmium.** *J Env Polln,* **8**(2) (2001), 149-153 [9 Ref].

Twenty seven parameters have been measured at each point throughout the investigation period but special emphasis has been given to two important heavy metals viz. chromium and cadmium. The data obtained were subjected to multiple regression analysis with respect to each of the heavy metals as the dependent variable, and out of twenty seven observed parameters, six important parameters, which have a marked effect on the concentration of these metals, as the independent variables were developed.

0103-138. Sukumaran PK (Reservoir Div, Centl Inland Capture Fisheries Res Inst, Bangalore 560010). **Water transparency and its impact on plankton production in a lentic habitat.** *Env Eco,* **19**(2) (2001), 449-453 [16 Ref].

A hyperbolic relation was found to exist between Secchi disc transparency and the average extinction coefficient in Lalbagh tank in Bangalore. Transparency of the water in the water body was influenced by many factors such as plankton abundance, thick blooms of *Microcystis* affected the transparency in the absence of horizontal or vertical currents, with mixing not talking place.

0103-139. Tewari A, Joshi HV, Trivedi RH, Sravankumar VG, Raghunathan C, Khambhaty Y, Kotiwar OS, Mandal SK (Centl Salt Marine Cheml Res Inst, Gijubhai Badheka Marg, Bhavnagar 364002). **The effect of ship scrapping industry and its associated water on the biomass production and biodiversity of biota in *in situ* conditions at Alang.** *Marine Polln Bull,* **42**(6) (2001), 462-469 [41 Ref].

The main pollutants for the ship scrapping industry and its associated wastes at Alang are heavy metals, petroleum hydrocarbon and bacterial contaminations. Bacteria in sediment also showed the same pattern of variation. Phytoplankton counts at the nearshore station and 10 km away from Alang were only slightly raised. In contrast to phytoplankton, the zoo-plankton showed considerable reduction of growth. ys, industrial and residential areas.

Nature and Natural Resources Conservation

0103-140. Borad CH, Mukherjee Aeshita, Parasharya BM (Natl Tree Growers Cooperative Federation Ltd, NDDB Campus PB No 156, Opp IRMA Gate, Anand 388110, Gujrat). **Nest site selection by the Indian sarus crane in the paddy crop agroecosystem**. *Biol Conserv*, **98**(1) (2001), 89-96 [41 Ref].

The Indian sarus crane *Grus antigone antigone* (Linn.) is a globally threatened species and occupation of agricultural landscape has led to a hidden conflict with the farmers in the Kheda district of Gujarat, India. It is important to understand the nest site selection to design management strategy for the conservation of the species. Nesting sites on paddy field bunds and marshy wasteland has a common feature in that they were on elevated land within an inundated area.

0103-141. Dhal NK, Rout NC (Regl Res Lab, Bhubaneswar 751013). **Few rare, endangered vulnerable and threatened mangals from Orissa coast worth conserving**. *Eco Env Conserv*, **7**(1) (2001), 67-70 [12 Ref].

The mangrove vegetation in Orissa is noteworthy owing to its diversity of mangals which is about 65t/a. The forest area has remarkably shrunk and ecological balance has been shattered to an alarming state due to shrimp culture, cultivation, human habitation, timber and charcoal collection. The Super Cyclone has inflicted irreparable damage to the vegetation and ecology of this area. The distributional pattern, ecological notes, and appropriate conservation measurers required to be taken up are discussed.

0103-142. Ilyas Orus, Khan Jamal A, Khan Afifullah (Conserv Eco Res Gr, Dept Wildlife Sci, Aligarh Muslim Univ, Aligarh 202002). **Threats to biodiversity conservation of Binsar Wildlife sanctuary in Kumaon Himalaya, UP**. *Indian J Nature Conserv*, **12**(2) (2000), 237-244 [3 Ref].

Threats to biodiversity in Binsar Wildlife Sanctuary (Binsar) were evaluated through field data collection and questionnaire survey. Fire caused heavy mortality in

trees and saplings. Most affected tree species due to the fire was *Quercus leucotricophora* . Villagers living in and around BWLS are almost totally dependent on the resources of the sanctuary for their fuel wood, fodder and timber requirements. The extraction of medicinal plants, *Arundinaria*, *Pinus* seeds and *Rhododendron* flowers are adversely affecting the floral diversity of the sanctuary. Poaching and unregulated tourism seem to be the major threats to the ungulate populations.

0103-143. Jha Radha Krisha (PG Dept Bot, Ranchi Univ, Ranchi 8). **Ethnobotanical plants used against 'asthma' at Chhotanagpur, Jharkhand, India.** *Adv Plant Sci,* **14**(1) (2001), 95-97 [7 Ref].

An ethnobotanical study of Chhotanagpur have been carried out by the tribal, who live in dense forest far away from the hospitals. The local inhabitants have developed and preserved a very old and strong tradition for folk medicine. This paper brings out 19 medicinal plants species used specially for the treatment of "asthma".

0103-144. Mahanta PC (North Eastern Coun, Shillong 793001). ***In-situ* conservation of threatened fish species – its relevance in Northeastern region.** *J Nature Conserv*, **17**(2) (2000), 271-276 [9 Ref].

The North Eastern Region is identified as one of the Hot Spots of Biodiversity including that of fresh water fishes in India. An extensive and effective *in-situ* conservation programme is required to be implemented covering the entire region collaboratively is felt. Conventionally backward areas have great relevance to the conservation programme in nature.

0103-145. Malik Davendre S, Khanna DR, Raina HS, Sehgal KL (Dept Zoo Environ Sci, Gurukul Kangri Univ, Haridwar 249404). **Conservation of mahseer, *Tor putitora* in Kumaon Lakes***. Environ Issues Management*, Nature Conservation Publications –6, (2000), 35-40 [8 Ref].

In Himalyan region, commercial exploitation of piscine resources have been made in casual manner it being a subsistence fishery. During past two decades, Kumaon lakes were badly exploited for increasing fish yield. Disregarding their ecology, exotic fauna like Indian major carps and common carps were introduced leading to

overlap on the population of endemic fish, mahseer. The mahseer occur in extinct phase, so the mahseer species are recognised as threatened species.

0103-146. Mitaliya KD, Bhall DC, Patel DM, Joshi PN (Dept Marine Sci, Bhavnagar Univ, Bhavnager 364002). **Medicinal values of some selected stembark used by tribals and rural folk in Gujarat.** *Adv Plant Sci*, **14**(1) (2001), 191-195 [16 Ref].

Paper enumerated 21 plant species which have medicinal value for bark. Each species has got a typical stembark and is used in medicine, due to present of certain phytochemicals. Each individual bark is specially characterized with special characters and medicinal value also.

0103-147. Sankaran R (Salim Ali Cent Ornithology Natural Hist, Anaikatty, Coimbatore 641108). **The status and conservation of the edible-nest Swiftlet (*Collocalia fuciphaga*) in the Andaman and Nicobar Islands.** *Biol Conserv,* **97**(3) (2001), 283-294 [37 Ref].

The nests of the edible-nest Swiftlet (*Collocalia fuciphaga*) rank amongst the world's most expensive animal products, which has resulted in high levels of exploitation of is nests in the Andaman and Nicobar Islands, India. The population of the edible-nest Swiftlet was assessed through nest counts, and declines in population were estimated through changes in nest yields. The edible-nest Swiftlet is critically threatened in the Andaman and Nicobar Islands, as it has undergone a reduction in numbers greater than 80% over the last 10 years. To arrest continuing declines, protective measures need to be urgently implemented.

0103-148. Shukla KML, Khan AA, Khan Shabina, Verma Ashok Kumar (Pandit SNS Govt (Antonomous) PG Coll, Shahdol 484001, MP). **An ethnobotanical survey for certain wild edible plants of district Bilaspur (MP), India.** *Adv Plant Sci*, **14**(1) (2001), 57-60 [8 Ref].

The biosphere of Bilaspur represents a diversity of ecosystem, communities and species. The inhabitants has much percentage of tribals. They have been collecting various type of plant for food, fodder, fuel, medicine etc. It is interesting to note that much of folk knowledge is endemic. The paper focuses about 51 wild plants species

which provide food and vegetables to inhabiting tribals. The data gathered have been pooled and present in tabular form.

0103-149. Singh JS (Dept Bot, Banaras Hindu Univ, Varanasi 221005,UP). **Conservation of endangered species and ecosystems.** *The Botanica*, **50** (2000), 17-22 [35 Ref].

Quantification, testing and conservation of biodiversity resources are indeed important to humankind. Biodiversity provides enormous direct economic benefits in the form of food, medicine, industrial products, and has the potential for providing many more yet unknown benefits. There is little doubt that much of the species extinction is human-induced and is related to habitat loss. It is being increasingly realized that restoring species and rehabilitating degraded ecosystems will play an important role in maintaining and enhancing biodiversity. Demographic studies and knowledge on autecology, including reproductive biology of endangered species, are pre-requisites for a restoration plan.

0103-150. Soni AK (Central Mining Res Inst, Regl Cent, Roorkee 247667). **Environmental degradation index for application in fragile areas of Himalaya.** *J Env Polln,* **8**(2) (2001), 137-147 [18 Ref].

Environmental deterioration in ecologically fragile areas caused by mineral exploitation has been quantified. A degradation index on a scale ranging from 0-1 is developed utilizing air and water field data, remotely sensed land data for assessing the quality of mine environment. The calculated values closer to 0 were considered as environmentally safe. A suitable correlation was also established between degradation index and environmental protection cost which may be used as regulating measures for preserving Himalayan environment and ecology which are sensitive and fragile.

Health and Toxicology

0103-151. Ananthan VS, Anbarasan Philip, Logamurthy (Occupl Diseases Cent, ESIC Hosp, KK Nagar, Chennai 600078). **Morbidity profile among the cotton mill workers in Coimbatore, Tamil Nadu with emphasis on byssinosis.** *Indian J Occupl Environ Med,* **5**(1) (2001), 5-7 [7 Ref].

A study was undertaken by the Occupational Diseases Centre (ODC) team of Employees State Insurance Corporation (ESIC) Hospital, K.K. Nagar, Chennai among the cotton mill workers in Coimbatore to find out the general morbidity pattern particularly to find out the prevalence of chronic byssinosis. The study indicated that apart from occupation related problem (byssinosis) prevalence of other morbid conditions like diabetes, cardiovascular problem were high.

0103-152. Banerji R, Dixit BS (Lipid Chem, Natl Botl Res Inst, Lucknow). **Residue level of monocrotophos in water chestnut.** *Polln Res,* **20**(2) (2001), 205-206 [8 Ref].

Monocrotophos, an organophosphorous insecticide is used to control insect infestation in water chestnut by spraying the insecticide at fortnightly intervals and monitoring the residues in fruits. The results of the analysis indicated initial residue of 12.24 ppm in the plants after first spray which dissipated to 0.08 ppm within a fortnight after final spray. The residue of monocrotophos could not be detected in the fruits.

0103-153. Bansal Geeta, Mittal Surbhi, Sharma SK, Jindal S, Sharma S, Bhartiya N, Gupta MM (Dept Zoo, DN (DG) Coll, Meerut 250002). **Effect of some pesticides in occupational workers (a clinico pathological investigation).** *Environ Issue Manag,* Nature Conservators Publications-6, (2000), 147-149 [11 Ref].

A clinico pathological study was conducted in workers engaged in pesticide units manufacturing DDT, benzene- hexacholoride, phosalone, chlorophyriphos and elsan and workers spraying these pesticides in agriculture fields. It was observed that these workers were suffering from some skin diseases, however these dermal manifestations were severe in workers, engaged in formulation and pulverization of these pesticides.

0103-154. Barathi S, Vasudevan N* (*Cent Environ Std, Anna Univ, Chennai 600025). **Utilization of petroleum hydrocarbons by *Pseudomonas fluorescens*, isolated from a petroleum- contaminated soil.** *Env Int,* **26**(5-6) (2001), 413-416 [9 Ref].

A strain of *Pseudomonas fluorescens*, isolated from petroleum hydrocarbon-contaminated soil was examined for its ability to utilize variety of hydrocarbon substrates. Surface tension measurements indicated the production of biosurfactant during the microbial degradation of hydrocarbon. The organism utilized both short and long chain n-alkanes. It emulsified a number of aliphatic and aromatic hydrocarbons.

0103-155. Basu Chandreyi, Ray Manas Ranjan, Lahiri Twisha* (*Dept Neuroendocronology, Chittaranjan Natl Cancer Inst, 37, SP Mukherjee Rd, Calcutta 700026). **Traffic related air pollution in Calcutta associated with increased respiratory symptoms and impaired alveolar macrophage activity.** *J Env Polln,* **8**(2) (2001), 187-195 [24 Ref].

Lung response to vehicular pollution in Calcutta has been investigated. Respiratory symptoms were found in about 78% of exposed group in Calcutta 9 traffic-policemen and street-hawkers) compared to 24% in rural controls. A 6.5-fold rise in the number of alveolar macrophages (AM) was found in sputum of urban group and the AM were highly active with respect to synthesis and release of hydrolytic enzymes, acid phosphatase and elastase. The results indicate that chronic exposure to traffic-related air pollution in Calcutta cause high incidence of respiratory illness and impaired macrophage activity.

0103-156. Bhamra PR, Desai AE, Deoray BM (PG Dept Zoo, KTHM Coll, Nasik 422002, Maharashtra). **Effect of mercuric chloride on glycogen content of the freshwater mussel *Parreysia favidens*.** *Polln Res,* **20**(1) (2001), 13-15 [7 Ref].

Parreysia favidens were exposed to 3.24 mg/l mercuric chloride for 72 hours as acute treatment and 1.89 mg/l mercuric chloride for 20 days as chronic treatment. The changes in glycogen content of whole body, foot, digestive gland and mantle was observed at various exposure periods. Significant glycogen decrease was found in digestive gland followed by foot and mantle.

0103-157. Bharathi CH, Sandeep BV, Subba Rao BVSSR (Dept Zoo, Andhra Univ, Visakhapatnam 530003). **The effect of mercuric chloride on the respiration of marine intertidal bivalve *Donax cuneata*.** *Polln Res,* **20**(1) (2001) 5-7 [12 Ref].

Experimental studies to find out the effect of mercuric chloride (HgCl2) on the oxygen consumption of *Donax cuneata* showed that the rate of oxygen consumption decreased with increase in the test concentrations from 0.01 to 7.00 ppm. The metabolic rates ranged from 0.52 to DDE was major constituent.

0103-178. Lata S, Gopal K, Singh Narendra N (Aquatic Toxico Div, Indl Toxico Res Cent, PB No. 80, MG Marg, Lucknow 226001, UP). **Toxicological evaluations and morphological studies in a catfish *Clarias batrachus* exposed to carbaryl and carbofuran.** *J Ecophysio Occupl Hlth,* **1**(1&2) (2001) 121-130 [30 Ref].

LC50 values recorded at 24, 48, 72 and 96 h for the catfish, *Clarias batrachus* ranged between 16.27 and 2.75 ppm for carbaryl and 1.47 and 3.84 ppm for carbofuran. The presumable harmless concentration determined for both the insecticide were 0.480 ppm and 0.35ppm respectively. Acute exposure of sublethal concentrations to the catfish at 30, 60 and 90 minutes revealed that opercula beats was proportional to the exposure period and concentration of the toxicant.

0103-179. Magare SR, Patil HT (Dept Zoo, AS Mandals CHC Arts, SGP Comm BBJP Sci Coll, Taloda, Dist Nandurbar, 425413, M.S). **Studies on pyruvic acid level under influence of acidity of water on zinc toxicity in a fish *Barbus ticto*.** *Polln Res,* **20**(1) (2001) 83-86 [17 Ref].

Paper deals with the behavioural responses, rate of oxygen consumption, survival of fish and variation in pyruvic acid level of the fish, *Barbus ticto* exposed to different levels of zinc and pH. The impacts were studied with the long term toxicity tests. Studies in exposure to zinc under influence of the acidity of water casuses severe damage to the pyruvic acid level in liver and muscles of the freshwater fish, *Barbus ticto* for 96 hours under the laboratory conditions. The pyruvic acid level was found to be declined throughout the exposure period except during the 24 hours exposure during which its was found to be increased. Zinc was found to affect the metabolic setup of pyruvic acid in a fish.

0103-180. Mahajan AY, Zambare SP (DN Coll, Faizpur 425503 Tal Yawal, Dist Jalgaon, MS). **Effect of salts of copper and mercury on oxygen consumption of the freshwater bivalve *Corbicula striatella*.** *Eco Env Conserv,* **7**(1) (2001), 71-73 [12 Ref].

Freshwater bivalves, *Corbicula striatella* were exposed to acute and chronic doses of copper sulphate and mercuric chloride and the oxygen consumption was estimated after specific period. The uptake of oxygen was found to be reduced on acute and chronic exposure to copper sulphate and mercuric chloride.

0103-181. Margarat A, Jagadeesan G, Sethupathy S (Dept Zoo, Annamalai Univ, Annamalainagar – 608 002). **Comparative effect of pencillamine and taurine on mercury poisoned mice, *Mus musculus* (Linn.).** *Polln Res,* **20**(1) (2001), 1-4 [5 Ref].

Sublethal dose of mercury treated mice showed a decreased level of succinate dehydrogenase (SDH) level and acetylcholinestrase (AchE) activity in brain, liver, muscle and kidney tissues. But, the lactate dehydrogenase (LDH) level was increased in the respective tissues. Penicillamine and taurine were given to mercury poisoned mice to find out the recovery.

0103-182. Mathew Mercy, Andrews MI (Dept Zoo, Mar Thoma Coll, Tiruvalla 689103, Kerala). **Effect of hinosan on the hatching rate and larval survival of B*ufo melanostictus* Schneider.** *Polln Res,* **20**(1) (2001), 31-34 [21 Ref].

The hatching rate of tadpoles of *Bufo melanostictus* was delayed and decreased with increasing concentrations of the pesticide hinosan. The hatching was completed within 24 hours after the spawning in lower concentrations of the pesticide (up to 2.1ppm). It took 48-72 hours for completing the hatching in higher concentrations. The hatching potential was totally destroyed at 3.5 ppm. The survival of tadpole was found concentration dependent.

0103-183. Mishra Diwakar, Srivastava Susmita, Srivastava Sunil K, Srivastava Ajay K (Dept Zoo, DDU Gorakhpur Univ, Gorakhpur 273009). **Plasma calcium and inorganic phosphate levels of a freshwater catfish *Heteropneustes fossilis* in response to cypermethrin treatment.** *J Ecophysio Occupl Hlth,* **1**(1&2) (2001), 131-138 [46 Ref].

Freshwater catfish, *Heteropneustes fossilis* were subjected to 5.76 mg/L(.8 of 96 h LC50) and 1.44 mg/L (0.2 of 96 hLC50) of cypermethrin for short term and long term, respectively. In short term experiment, the plasma clacium levels of cypermethrin treated *H. fossilis* exhibit no change at 24 h. The levels indicate a decrease at 48h. This response persists till the close of the experiment (96 h). In cypermethrin exposed fish the phosphate levels remain unaffected up to 48h. In long term experiment, there is a decrease in the plasma calcium level following 7 days exposure to cypermethrin.

0103-184. Mitra Jayati, Banerjee Samir, Sarkar Nirmal Kumar (Dept Zoo, Univ Calcutta, Calcutta 700019). **Study of foodchain transport and haematotoxicity of lead.** *Polln Res,* **20**(2) (2001), 164-166 [12 Ref].

Paper examines the results if environmental lead transported to animals of higher trophic levels from those of lower trophic levels through the food-chain and to re-examine haematological effects of chronic lead toxicity in mammals. Besides, the histology of liver of rats fed with lead-treated fish was examined in order to know if lead affects the histomorphology of this organ.

0103-185. Muni Anand, Gupta AK, Kumar Ravindar, Ranjana (Environ Res Lab, PG Dept Zoo, SSV Coll, Hapur 245101). **Biochemical assessment of pesticides toxicity in *Notopterus notopterus*.** *Environ Issues Manag,* Nature Conservator Publication – 6, (2000), 245-255 [51 Ref].

Notopterus notopterus were exposed to 1/2nd, 1/4th and 1/8th fractions of 96 hr LC50 of aldrin and marathion and organic and inorganic components of blood with lipids, non-lipids and water contents of tissues (liver, kidney and muscles) were investigated. There was a significant elevation in the glucose, lactate, total phosphorus, non-protein nitrogen, sodium, magnesium, calcium and chloride level and was significant decrease in phospholipid level in blood of fish from the control value.

0103-186. Noor Alam Md, Sadhu DN (Dept Zoo, Giridih 815301, Bihar). **Studies on toxicity of the pesticides Kadett –36 to *Channa striatus*.** *J Env Polln,* **8**(2) (2001), 175-177 [12 Ref].

The pesticides find their way to aquatic environment through flushing by rains, and disturb the hydrobiological charters of the water, inflicting injuries to the aquatic

organisms in general and fishes in particular. In view of higher demand of the paddy-field fishes by poor villagers, the present investigation on the effect of Kadett-36 (monocrotophos 36% SL, a product of Pesticide India Limited, Calcutta) on a common paddy-field fish *Channa striatus* is reported.

0103-187. Pande Sunil P, Deshpande Leena S, Kaul SN (Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). **Laboratory and field assessment of arsenic testing field kits in Bangladesh and West Bengal, India.** *Environ Monit Assess,* **68**(1) (2001), 1-18 [3 Ref].

Paper presents the results of the laboratory and field evaluation conducted in Bangladesh and West Bengal of five arsenic testing field kits. The salient features of the kits, their merits and limitations have been brought out. Based on the criteria of kit design, quality of chemicals used, colour compactor charts, detection range, time required for analysis, cost etc., a comparative ranking of the kits has been made to facilitate the choice of the kit to meet specific requirements.

0103-188. Pandey Ratna, Singh SP (Dept Zoo, Univ Lucknow, Lucknow 226007). **Nickel in our life.** *J Ecophysio Occupl Hlth,* **1**(1&2) (2001), 87-93 [20 Ref].

Nickel is essential in maintaining good health in humans as well as animals. Following high oral exposure to nickel, effects in animals included death, respiratory effects, gastrointestinal effects, hematological effects, hepatic effects, renal effects, decreased body weight, neurological and reproductive effects.

0103-189. Rai RK (Dept Civil Engng, Govt Coll Engng, Karad 415124). **Bioassay study on ammonium dichromate and dye chemical effluents.** *J Indl Polln Contl,* **17**(1) (2001), 159-163 [7 Ref].

Bioassay study was conducted on ammonium dichromate and dye chem effluents to determine median lethal concentration, LC50, on guppy fishes. The toxic as well as other characteristics of the effluents were also determined. The reeducation-precipitation method was used to remove chromium and air stripping method to remove ammonia from the effluents to reduce their toxicity.

0103-190. Rane MA, Dave BN (Centl Labour Inst, Sion, Mumbai 400002). **Lipid and lipoproteins alteration in workers exposed to carbon disulphide.** *Indian J Occupl Environ Med,* **4**(1) (2000), 14-18 [14 Ref].

A total of 80 male workers of the spinning department of a rayon industry, aged from 30-56 years, exposed to CS2 at more than 30 mg/cu.m for 18-25 years was studied. The results showed that in exposed workers, level of serum cholesterol and triglycerides were high

Wastes

0103-207. Afshan Athiya, Ramraj, Halappa Gowda TP, Karanth NGK (Dept Environ Engng, Sri Jayachamarajendra Coll Engng, Mysore 570006). **Comparative sorption of Cu2+ and Pb2+ by three microbial strains.** *Indian J Environ Sci,* **5**(1) (2001), 77-87 [14 Ref].

Maximum uptake of Cu2+ and Pb2+ by *Saccharomyces* Strain MAS95, *Pseudomonas* Strain PTM and *E.coli* Strain ICP89 was complete within the first 10min. For both the metals, increase in biomass concentration lowered specific metal uptake by cell, whereas initial metal concentration increased their uptake. The difference between observed and predicted mean values is found to be 4.3%. Relative importance of predicted values has been studied through sensitivity analysis, which indicates that the kinetic parameters are more sensitive to the residual metal concentration than the adsorption isotherm constants.

0103-208. Avasn Maruthi Y, Ramakrishna Rao S (C/o Y. Markandeyulu, Q No : C-1-1/5, New III Town Police Stn Compound, Visakhaptnam 530003, Andhra Pradesh). **Effect of sugar mill effluent on organic reserves of fish.** *Polln Res,* **20**(2) (2001), 167-161 [14 Ref].

The physico-chemical characteristics of sugar mill effluent, discharged from Tummapala sugar factory, Anakapalli (Andhra Pradesh), and their impact on local fish, *Channa punctatus* were observed. High values of BOD and COD reveal the presence of high concentration of biodegradable organic matter in the effluent. The harmful effects of

effluent was also studied with respect to survival of fish. The consequential demand on organic reserves is analyzed and established.

0103-209. Ayub Sohail, Ali SI, Khan NA (Univ Polytechnic, Aligarh Muslim Univ, Aligarh, U.P). **A study on the removal of Cr (VI) by sugar cane bagasse from wastewater.** *Polln Res,* **20**(2) (2001), 233-237 [16 Ref].

The treatment of chromium bearing effluents have been reported through several methods. Most of these methods need high capital and operational costs. However among these, adsorption is found to be highly effective, inexpensive and easy method to operate. India is an agricultural country and generates considerable amount of wastes which could be used as adsorbent.

0103-210. Bhavani T, Sarma PN,* Krishna D (*Analyt Div, IICT, Taranaka, Hyderabad 500007). **Correlations among physico-chemical properties of effluents of various chemical process industries.** *Polln Res,* **20**(1) (2001), 17-24 [5 Ref].

Very good correlations were observed among the physico-chemical properties for the effluents of various chemical process industries and IICT (Indian Institute of Chemical Technology, Hyderabad) processes. These correlations are very helpful in knowing the associations among the physico-chemical properties of effluents. Also, good prediction equations have been developed for predicting COD in terms of pH, COD and TDS.

0103-211. Chakradhar B, Rawlley RK, Padmakaran Prabha (Regl Res Lab, CSIR, Bhopal 462026, MP). **Stabilisation of hazardous waste for usable building materials.** *J Indian Assoc Environ Manag,* **27**(3) (2000), 239-245.

Zinc extraction process generates hazardous waste sludge during the recovery of electrolytic zinc. The characterisation of the waste with reference to ignitability, corrosivity, reactivity and E.P toxicity testing falls under category 3 of hazardous waste rules. The Toxicity Characterisation Leachate Procedure (TCLP) test was carried out for the extraction of leachate and subsequently toxic heavy metals were estimated. The material developed can be suitable for making bricks or tiles for use as building materials.

0103-212. Chaudhuri S, Gongopadhyay A, Mishra AK (Dept Civil Engng, Jadavpur Univ, Calcutta). **Bacterial degradation of indole.** *J Indian Assoc Environ Manag,* **27**(3) (2000), 279-283 [8 Ref].

Studies on aerobic degradation of indole revealed that indole can be utilized as a sole source of carbon and nitrogen by a number of microorganisms and can be transformed to its metabolites. Experiments showed that further growth of micro-orgaisms could not be made possible because of the presence of these metabolites. Attempts are being made to degrade these derivatives further to have complete oxidation of indole.

0103-213. Das KK, Saha SK, Dasmahapatra GP, Pal TK (Analizer Consultium Construction Pvt Ltd, 10, Sourin Roy Rd, Behala, Kolkata 700016). **Wastewater treatment of a pharmaceutical manufacturing unit by a batch package activated sludge plant – a case study.** *J Indian Assoc Environ Manag,* **27**(3) (2000), 255-259 [6 Ref].

Characteristics of wastewater from the manufacture of pharmaceuticals and the pollution load in terms of COD and BOD were estimated. A full scale treatment plant was designed and built based on physico-chemical treatment by lime and alum followed by biological treatment in a semibatch package activated sludge plant. Evaluation of the plant indicated a BOD removal exceeding 95%.

0103-214. Das Manas, Masud Hassan K (Dept Chem Engng, Calcutta Univ, 92 APC Rd, Calcutta 700009). **Studies on lignin biodegradation of non-conventional lignocellulosic agro-waste material by using *P. chrysosporium* - a pollution control biopulping process.** *J Indl Polln Contl,* **16**(2) (2000), 195-200 [25 Ref].

The lignin biodegradation of jute stick a lignocellulosic agro-waste in aerobic condition by a white-rot-fungi *P. chrysosporium* in liquid-solid phase batch system with time variables digestion process in nitrogen limited culture medium was successfully studied . The delignification of non conventional raw material used in pulping process was satisfactory. The yielding of various celluloses was also good.

0103-215. Dikshit AK, Kumar Sunil (Dept Civil Engng, Indian Inst Techno, Kharagpur 721302). **Optimised design of a wastewater treatment plant.** *J Indian Assoc Environ Manag,* **28**(1) (2001) 13-24 [18 Ref].

A modular software has been developed for simulating the performance of the wastewater treatment plant. This simulation programme provides a basis for finding the most optimal design from among several feasible alternatives. The use of present model as a tool for the optimisation of the wastewater treatment plant has been demonstrated by applying it to design a domestic wastewater treatment system for an average flow of 45 MLD.

0103-216. Gajalakshmi S, Ramasamy EV, Abbasi SA* (*Centl Polln Contl Energy Techno, Pondicherry Univ, Kolapet, Pondicherry 605014). **Potential of ten epigeic and two anecic earthworm species in vermicomposting of water hyacinth.** *Bioresource Techno,* **73**(3) (2001), 177-181 [20 Ref].

The potential of two epigeic species (*Eudrilus eugeniae* Kinberg, and *Perionyx excavatus* Perrier) and two anecic species (*Lampito mauritii* Kinberg and *Drawida willsi* Michaelson) of earthworms was assessed in terms of efficiency and sustainability of vermicomposting water hyacinth (*Eichhornia crassipes*, Mart. Solm.). In all the reactors, the earthworms grew well, increasing their weights by more than 250%. The maximum net gain of weight (average 30.7g) was by *E. eugeniae*, followed by *P. excavatus*, *L. mauritti* and *D. willsi*.

0103-217. Gandhirajan M, Selvi A (Tech Sharp Enviro System (Pvt.) Ltd, C-39 II Avenue, Anna Nagar, Chennai 600040, Tamil Nadu). **Coolant oil waste treatment using CATFLOC-T.** *J Indl Polln Contl,* **17**(1) (2001), 141-144 [2 Ref].

A study on de-emulsification, of coolant oil waste with CATFLOC-T, was conducted. The results show that CATFLOC-T, is effective in de-emulsification and oil separation.

0103-218. Gaur Abhishek, Koijam Brajeshori, Gupta Sanjay* (*Dept Microbio, SBS (PG) Inst Bio Medl Sci Res, Balawala, Dehradun 248161). **Fermentation kinetics of fuel gas generation and its inter-relationship with degradation of volatile fatty acids in**

anaerobic treatment of distillery effluents. *J Indl Polln Contl,* **16**(2) (2000), 153-160 [15 Ref].

The fermentation kinetics of fuel gas production form the raw distillery effluent in batch-fed culture digester were studied. Volatile fatty acid (VFAs) production from the effluent by the mixed cultures have been observed throughout the fermentation process. In the presence of the enriched methanogenic culture this VFAs concentration decreases to a very low values correlating the efficient degradation of short chain fatty acids.

0103-219. Ghose MK, Sen PK (Cent Mining Env, Indian Sch Mines, Dhanbad 826004). **Characteristics of iron ore tailing slime in India and its test for required pond size.** *Environ Monit Assess,* **68**(1) (2001), 51-61 [8 Ref].

The physical and chemical nature of the tailing slime depends on milling operations and water content in the effluent. The characteristics of the tailings dictate the type of disposal facility required. Studies on tailing slime have been carried out at iron ore mine in Orissa and the results are discussed Sedimentation test was carried out on tailings and the area required for tailing pond was found to be 3155 m2 in comparison to 10,000 m2 obtained from the use of an empirical equation. Provision of tailing pond for the disposal of tailings is a conservation of resources in addition to pollution control, and sedimentation test is essential for required pond size calculation.

0103-220. Krishna RS, Yenkie MKN* (*Laxminarayan Inst Techno, Nagpur Univ, Nagpur 440010). **Preparation of carbon from pyrolysis of cocount husk and evaluation of its adsorption characteristics.** *J Indl Polln Contl,* **17**(1) (2001), 35-41 [9 Ref].

An effort has been made to prepare activated carbon from coconut husk by pyrolysis and its effectiveness as adsorbent for the removal of phenol from aqueous phase is evaluated. The produced carbon showed low carbon content (53%) and high volatile matter (27%) and ash content (13%). Its phenol adsorption capacity was only about 10-15% of the adsorption capacity shown by commercially used activated carbons.

0103-221. Kumar Alok, Patil DA (Indian Inst Env Manag, South Indian Edn Soc, Plot 1E, Sector V, Nerul, Navi Mumbai 400706). **Solid waste generation from a glass manufacturing unit and its impact on environment.** *J Indl Polln Contl,* **17**(1) (2001), 19-25 [4 Ref].

A benign industry such as a glass/bottle-manufacturing factory also generates large amount of solid waste, which are not properly managed. Paper identifies the source of solid waste generation, their characteristics and also the rate of generation in one 230 TPD (tons per day) glass manufacturing unit.

0103-222. Kumar N, Gaikwad RW (Dept Cheml Engng, Provara Rural Engng Coll, Loni 413736). **Review of technologies for removal of nitrogen compounds from industrial effluent and wastewater.** *J Indl Polln Contl,* **17**(1) (2001), 145-157 [47 Ref].

The objective of the communication is to have an insight about importance of protection and conservation of our environment in the impact of aromatic and nitrogen compounds on the environment. Various methods of treatment have been studied. Physical/chemical methods when directly used for N-compounds are not economical. Biological methods seems to be good alternative as compared with physical and chemical methods of removal.

0103-223. Lokhande RS, Sathe CN (Dept Chem, Univ Mumbai, Vidyanagari, Santacruz (E), Mumbai 400098). **Monitoring and assessment of heavy metal contents in the industrial effluents from Ambarnath MIDC area (Maharashtra).** *Polln Res,* **20**(2) (2001), 239-243 [5 Ref].

The M.I.D.C. area of Ambarnath is one of the highly polluted industrial belts. The study was conducted to determine the levels of heavy metals. The sampling was carried out from the polluted parts of the industrial area. The tremendous variations in the parameters were observed. All the parameters were detected in all the samples collected throughout the study period. The concentrations observed are above the permissible limits that of prescribed by WHO and Indian standards.

0103-224. Lokhande RS, Vaidya SS (Dept Chem, Univ Mumbai, Vidyanagari, Santacruz (East), Mumbai 400098). **Monitoring and analysis of few heavy metals in the industrial effluents of Dombivali- Kalyan M.I.D.C. Area.** *Indian J Environ Prot,* **21**(1) (2001), 38-40 [2 Ref].

Dombivali – Kalyan M.I.D.C. is one of the most polluted industrial areas consisting hundreds of small scale units of different types. The industrial area is comprising of textile processing pharmaceutical manufacturing, chemical manufacturing and many other units of various types. The effluents from different stations are monitored throughout the year for the assessment of pH, temperature, BOD, and few metal contents, like Cd, Cu, Pb, Ni and Zn.

0103-225. Mahajan Rakesh Kumar, Mahajan Anita (Dept Chem, Guru Nanak Dev Univ, Amritsar 143005). **Simultaneous determination of heavy metals in white sugar and final molasses using differential pulse anodic stripping voltammetry and differential pulse polarography.** *Res J Chem Env,* **5**(2) (2001), 41-44 [6 Ref].

Paper deals with the simultaneous determination of some heavy metals, in sugar and final molasses samples using differential pulse anodic stripping voltammetry. The concentration of these metals were determined using standard addition method. In order to compare the sensitivity of different voltammetric techniques for the determination of the heavy metals to trace level, the experiments has also been carried out in differential pulse polargraphic mode for white sugar samples only.

0103-226. Mahesh S, Ramesh HS, Sudhir HS, Kumar BR (Teaching Fac, Dept Environ Engng, SJ Coll Engng, Mysore –6). **Microbial scavengers- fungi for Cu++ removal from industrial wastewater.** *J Indl Polln Contl,* **17**(1) (2001), 135-139 [7 Ref].

Fusarium solani fungal species tend to remove 90% Cu++ from solution in the alkaline pH range of 8.0 –10.0. Contact time studies indicate higher sorption of Cu++by *Fusarium solani* species. The linear fit of the Lagergren plot justify the authenticity of the kinetic data. Rate constants ‘K’ for the test species *Fusarium solani*, *Rhizopus nigricans* and *Aspergillus niger* are 0.42 day –1, 0.48 day–1 and 0.46 day–1 respectively.

0103-227. Malik DS, Malik Amrita (Dept Zoo Environ Sci, Gurukul Kangri Univ, Hardwar 249404). **Preliminary study of some physico chemical parameters of Modi-Distillery unit.** *J Nature Conserv,* **12**(2) (2000), 307-312 [11 Ref].

Some selective physico-chemical parameters were analysed in the effluent of Modi Distillery at Modinagar (District-Ghaziabad). The study has been carried out at three sampling sites fixed at effluent treatment plant of Modi Distillery. After analysis it was found that temperature varied from 79.72 to 28.04°C, total solids ranged 34534.30 to 1212.33 mg/l, pH ranged 3.99 to 7.08, DO varied from nil to 0.015 mg/l. The effluent treatment includes the primary treatment and secondary treatment and subsequent dilution of the effluent after treatment to make a final discharge.

0103-228. Manisankar P, Ravi C, Viswanatham S (Dept Indl Chem, Alagappa Univ, Karaikudi 630003). **Electrochemical destruction of disperse red –17 dye effluent in a batch reactor.** *J Indian Assoc Environ Manag,* **27**(3) (2000), 304-308 [9 Ref].

Paper envisages a method to remove the disperse red-17 dye from the synthetic effluent by electro-oxidative destruction of the dye. The process of oxidation was followed by the measurement of absorbance and COD before and after the treatment. The pH, current density, and duration of electrolysis were varied and the effects were studied. As maximum of 90% COD reduction and 98% reduction in the absorbance were achieved after the electrolysis of disperse red-17 for two hours at 4.5A/dm2 in acidic medium in the presence of salt.

0103-229. Mariappan V, Balamurugan T, Rajan MR (Dept Bio, Gandhigram Rural Inst, Deemed Univ, Gandhigram 624502). **Characterization of tannery industry effluent polluted soils in Dindigul city, India.** *Env Eco,* **19**(2) (2001), 469-471 [11 Ref].

Study deals with the characterization of tannery effluent polluted soil in Dindigul city. The pH of unpolluted soil was high, whereas that of polluted soil was low. The electrical conductivity and chloride content was high and it was unfit for the growth of plants. The heavy metals in all the samples were adequate for the growth of plants.

0103-230. Mariappan V, Rajan MR, Balamurugan T, Ramasubramanian V (Dept Bio, Gandhigram Rural Inst, Deemed Univ, Gandhigram 624502). **A survey on the quality of three industrial effluents.** *Env Eco,* **19**(2) (2001), 491-493 [11 Ref].

A survey on the quality of three industrial effluents such as tannery, dye, and plate making effluent was done. Various physico-chemical parameters were determined for the samples. Water quality index (WQI) values were found to be high indicating highly polluted nature of these effluents.

0103-231. Mishra BP, Tripathi BD (Cent Adv Std Bot, Banaras Hindu Univ, Varanasi 221005). **Sewage quality analysis: pollutants removal efficiency of a sewage treatment plants.** *J Indl Polln Contl,* **16**(2) (2000), 239-251 [18 Ref].

Untreated and treated sewage samples of Varanasi, India were analysed at monthly intervals. The treated sewage showed a sharp reduction in BOD(84.9%) and COD(79.9%) values. DO content of treated sewage increasing 62.4%, however other characteristics showed less difference in the values between untreated and treated sewage and per cent reduction in the values of treated sewage remained less that 17%.

0103-232. More Snehal V, John Sheeja, Seetarama Rao B, Nair Balachandran Unni, Seeta Laxman R (Div Biochem Sci, Natl Cheml Lab, Pune, 411008). **Chromium removal and reduction in COD of tannery effluent by actinomycetes.** *Indian J Environ Hlth,* **43**(3) (2001), 108-113 [24 Ref].

Alkalotolerant / alkalophilic actinomycetes NCIM 5080 and NCIM 5142 produce alkaline protease in presence of chromium ions. These properties of isolates are suitable for treatment of tannery effluents which are alkaline and contain chromium and proteinaceous matter. Both the actinomycetes are able to grow in undiluted tannery effluents and remove chromium almost completely and reduce the COD by 70%-80% during growth as well as by pregrown biomass.

0103-233. Murali S, Narayan Arun E, Vidyavati, Sriniketan G (Dept Cheml Engng, KRE Coll, Surathkal 574157, Karnataka). **Studies on colour removal by microbial means.** *J Indl Polln Contl,* **16**(2) (2000), 211-215 [12 Ref].

A laboratory scale study on decolourizing dyes was made. Since biological methods of decolourization are inherently advantageous to physical and chemical methods, they were used in this study. In the present study *Aspergillus niger* was used to decolorize different concentrations of methyl red solution, which gave encouraging results.

0103-234. Naik RV, Gaikwad RW (Dept Cheml Engng, Pravara Rural Engng Coll, Loni, Dist Ahmednagar 413736). **Powdered activated carbon assisted biodegradation.** *J Indl Polln Contl,* **17**(1) (2001), 99-106 [3 Ref].

A very viable method of treating industrial wastewater is Powdered Activated Carbon Treatment (PACT). With the addition of small quality of powder activated carbon in the existing activated sludge treatment, the process is carried out. The experiments rendered effluent concentration levels as per required stringent standards hence easily disposed to larger water bodies. Cost estimation has also been done for activated sludge process and PACT.

0103-235. Narayana J, Parveez Syed (Dept Environ Sci, Kuvempu Univ, Shankaraghatta 577451, Shimoga Dist, Karnataka). **Treatment of paper mill effluent using water hyacinth – *Eichhornia crassipes*.** *J Indl Polln Contl,* **16**(2) (2000), 161-164 [6 Ref].

Preliminary survey was conducted to identify the sources of pollution discharged to Bhadra river at Bhadravathi and the down stream area. The Mysore Paper mill effluent containing bagasse accumulated at the discharging sites, and the effluent colour, odour, turbidity and dead fishes floating on the surface of water was identified. Based on the source the present investigation was undertaken to study the strength of the effluent, and the same was used for biological treatment using water hyacinth.

0103-236. Pari G, Durai Velan D (Vellore Engng Coll, Vellore, Tamil Nadu). **Adsorption dynamics : comparative study on low cost adsorbents.** *J Indl Polln Contl,* **16**(2) (2000), 201-203 [4 Ref].

The adsorption properties of various common adsorbents were studied. Their adsorbing potentials were compared in the process of removal of chromium. Batch type

experiments were conducted and the removal efficiencies of various adsorbent were found. Tea dust was found to be an effective replacement for activated carbon.

0103-237. Parikh Keyuri, Pandit Beena, Sudhakar Padmaja, Chudasama Uma (Dept Appl Chem, Fac Techno Engng, MS Univ Baroda, Vadodara 390001). **Application of an inorganic ion exchanger in waste-water treatment.** *Polln Res,* 20(2) (2001), 291-294 [96 Ref].

Zirconium tungstate (ZW) an inorganic ion exchanger of the class of tetravalent metal acid salt has been synthesized and characterised for elemental analysis, spectral analysis and thermal analysis. Ion exchange capacity of ZW has been determined and its application in waste water treatment has been explored. ZW has been found to be a promising material in softening of water and in the removal of heavy metal ions such as mercury, lead, nickel and silver.

0103-238. Patil Dilip B, Tijare Rajendra V (Dept Chem, Govt Sci Coll, Gadchiroli 442605). **Investigation of pollution mystery of suspected carcinogen Cr (VI) and its control.** *J Indl Polln Contl,* **17**(1) (2001), 43-47 [4 Ref].

Attempt has been made to solve the pollution mystery of suspected carcinogen Cr (VI) from hypothetical industrial waste. The paper discusses the procedure to find out the culprit industry causing Cr (VI) pollution and how to control the Cr (VI) pollution generated by industry.

0103-239. Poonghuzhali MV, Sivakamasundari S, Lalitha P (Dept Chem, Avinashilingam Univ, Coimbatore 641043). **Kinetics and thermodynamics of removal of phosphate from waste water using activated carbon from agrowaste.** *J Indl Polln Contl,* **17**(1) (2001), 75-81 [5 Ref].

Phosphate removal from waste waters has become a necessity owing to its hazardous effects. In the present study sorption method was selected for phosphate removal since it is cheap and more efficient and a higher percentage of phosphate removal can be achieved. Activated carbon obtained from an agro waste coirpith was used as an adsorbent. The effect of temperature on sorption process was studied at 30°, 40° and 50° C by batch technique.

0103-240. Prakash NB (Bharath Inst Sci Techno, Selaiyur, Chennai 600073). **Biokinetic studies of tannery effluent under aerobic oxidation process.** *J Scient Indl Res,* **60**(4) (2001), 344-347 [4 Ref].

A laboratory scale experiment was conducted on aerobic digestion of tannery effluent using cowdung as the seed material. The BOD removal of 95.8 per cent was obtained at an optimum organic load of 0.6kg BOD/m3/d. Biokinetic coefficients were calculated for the data obtained to study the metabolic performance of the microorganisms.

0103-241. Prashant Kumar A, Ray Ranjan, Halder A (Env Dept, Engrs India Ltd, New Delhi). **Management of toxic spent caustic effluent from petroleum industry – an innovative approach.** *J Indian Assoc Environ Manag,* **27**(3) (2000), 233-238.

Paper emphasises on the innovative approach applied in treatment of toxic sulphides present in the refinery spent caustic effluent in an environmentally acceptable manner. The efficacy of the enhanced oxidation of sulphides using hydrogen peroxide over conventional precipitation process is discussed.

0103-242. Prashanti Sam R, Rajeswari CV (STBC Degree Coll, Kurnool). **Sources of pollution from a typical factory.** *J Indl Polln Contl,* **17**(1) (2001), 1-7.

Paper describes the sources of pollution from a typical factory, the differences between planned (permitted) and unplanned emissions and outlines how factories can reduce planned emission and prevent unplanned emission. It describes other sources of pollution including old contamination, sewage treatment works, farms and diffuse sources.

0103-243. Raghu Rao A, Gaikwad RW (Dept Chem Engng, Pravara Rural Engng Coll, Loni 413736, Maharashtra). **Odour removal from sugar industry waste by adsorption and chemical oxidation.** *J Env Polln,* **8**(2) (2001), 171-174 [3 Ref].

Paper deals with the removal of odour from sugar industry waste by adsorption and chemical oxidation techniques. Activated charcoal is used as an adsorbent in adsorption technique and KMnO4 is used as an oxdizing agent in chemical oxidation. The effect of concentration, contact time pH, and dosage has been studied during

asdsorption technique. The effect of KMnO4 as an oxidizing agent has been studied in chemical oxidation technique. The optimum values for different conditions have been estimated.

0103-244. Rahman ANE, Khaleel Akmal MA, Prasad KBS (Indian Inst Cheml Techno, Hyderabd 500007). **Pyrolysis of solid wastes.** *J Scient Indl Res,* **60**(1) (2001), 52-59 [6 Ref].

Pyrolysis of solid wastes like papers, rags, garden wastes, used tea leaved and municipal solid waste (MSW) is carried out in a fixed bed reactor for studying distribution of energy in pyrolytic products and their possible applications as fuel. The temperature of 600°C is found to be good getting maximum yield of tar and is enhanced from 16 per cent to 27.6 percent as the pyrolysis time reduces from 35 min to 5 min. The calorific values of solid, liquid and gaseous products of pyrolysis of all the wastes show a good fuel potential.

0103-245. Rao M, Bhola AG (Dept Civil Engng, Coll Engng, Badnera 444701, MS). **Removal of chromium using low-cost adsorbents.** *J Indian Assoc Environ Manag,* **27**(3) (2000), 291-296 [16 Ref].

Adsorption technique has been applied for the removal of hexavalent chromium from aqueous solution using wheat straw dust, saw dust, and coconut jute, and the results are compared with the powdered activated carbon. The high uptake of hexavalent chromium was observed with PAC at pH 2.0, and for the other adsorbents at pH 6.0. The sorption of Cr (VI) is diffusion-controlled and the external mass transfer co-efficient were determined by varying contact time, adsorbents dose, initial Cr (VI) concentration and the adsorbent particle size at a temperature of 38

Forestry and Environment

0103-266. Bhardwaj SD, Panwar Pankaj, Gautam Sachil (Dept Silvicult Agroforestry, Dr. YS Parmar Univ, Horticult Forestry, Nauri, Solan HP). **Biomass production potential and nutrients dynamics of *Populus deltoidas* under high density plant.** *(The) Indian Forester,* **127**(2) (2001), 144-153 [24 Ref].

The experiment on *Populus deltoides* was laid out in randomised block design with three densities under rainfed conditions in mid hill zone of Himachal Pradesh. The plantation harvested after 13 years, produced maximum biomass (218t/ha) in the closest spacing of 60 cm x 60 cm for which the bole contributed 90.71 percent of the total above ground biomass accumulation. The nutrient accumulation in the biomass also differed with the density. The maximum nutrients were present in the closest spacing.

0103-267. Lakshman HC, Inchal RF (PG Dept Bot, Karnataka Univ, Dharwad 580003). **Amendment of sterilized mined spoil and forest soil on *Cassia* species colonized with VAM.** *J Nature Conserv,* **12**(2) (2000), 227-236 [27 Ref].

Screening of VA-Mycorrhizal fungi was carried out on twenty one plants from stock piled mined spoils and twenty five plants from natural undisturbed sites. The percent of VAM colonization and spore population was assessed in different seasons and *Glomus* species was most dominated among VAM spores. The results revealed that the percent of colonization of spore population was more significant in plants collected from undisturbed sites.

0103-268. Sharma AB (Trng Associate, Krishi Vigyan Kendra, Sultanpur 228118). **Ecological and economical interaction of social forestry.** *J Nature Conserv,* **12**(2) (2000), 277-283 [6 Ref].

The ecological and economical interaction of social forestry and its objective are given in detail. In general, social forestry has been classified in to (i) urban forestry (ii) rural forestry and (iii) agro forestry. In social forestry, Jawahar Rozgar Yojna has been discuss in details. In agroforestry, technological input, choice of species, Tasser lac

collection and social forestry and environment are discussed with reference to social forestry.

0103-269. Tiwari SC (Dept Forestry, NE Regl Inst Sci Techno, Nirjuli 791109, Itanagar, Arunachal Pradesh). **Vesicular-arbuscular mycorrhizal association of tree species in humid tropical forests of Arunachal Pradesh.** *Eco Env Conserv,* **7**(1) (2001), 21-23 [15 Ref].

Presence of the VAM association has been evaluated in 25 tree species of humid tropical forests. All the 25 species tested had the VAM association with their roots. VAM colonization varied from species to species and ranged from the least of 22% in *Kydia calycina* to the highest of 81% in *Phoebe goalparensis*. Occurrence of the VAM symbiosis was found to be distributed among 22 families representing 25 tree species in the investigation.

0103-270. Uniyal Kamla (Forest Pathology Div, Forest Res Inst, Dehra Dun). **Incidence of Arbuscular mycorrhizal fungi in ecologically restored mined area of Doon Valley.** *(The) Indian Forester,* **127**(6) (2001), 690-693 [3 Ref].

Paper reports the occurrence of AM fungi in ecologically restored phosphate mined area at Maldevta in Doon Valley (Uttaranchal). 11 host species represented by 4 tree species, 4 shrubs and 3 grasses were screened for association of AM fungi and roots were assessed for colonization.

Wildlife

0103-271. Joshi Ritesh, Verma J (Dept Environ Sci, Gurukul Kangri Univ, Hardwar 249404). **Impact of human activities on the movement pattern of elephants (*Elephas maximus*) in Hardwar range of the Rajaji National Park area.** *Nature Biosphere,* **5**(1&2) (2000), 35-37 [6 Ref].

The elephant has suffered much more as compared as compared to other wild animals due to loss of natural habitat as it is the largest land animal and unnatural way for their existence due to anthropogenic activities. Human pressure into the deeper forest regime had made a great impact on the elephant's movement in and around the park area. Elephants also move during the night period near the human settlements due to inadequate forage requirement within the park area.

Energy

0103-272. Bhatia Bela, Sharma HL (Dept Bot, Deshbandhu Coll, Univ Delhi, Kalkaji, New Delhi 110019). **Fuel wood production and wasteland reclamation.** *The Botanica,* **50** (2000) 84-93 [16 Ref].

Fuelwood production by growing plants on wasteland assumed considerable significance in the light of widening gap between the fuelwood production and requirement. The two pronged attack of ecological degradation and scarcity of fuelwood resulting from indiscriminate clearing of forests can be controlled by evolving sound strategies for identification, demarcation and categorization of wastelands, followed of suitable fuelwood tree species for use in soil reclamation work. Field trials have established the potential of *Acacia auriculiformis, A nilotica, Prosopis juliflora, Casuarina equisetifolia, Sesbania grandiflora, Leucaena leucocephala, Azadirachta indica* and Poplar as promising fuelwood species for afforestation of wastelands.

0103-273. Deshpande VP, Kaul SN (Natl Environ Engng Res Inst, Nagpur 440020). **Energy recovery through bioconversion of organics of domestic sewage.** *J Indl Polln Contl,* **16**(2) (2000), 145-152 [4 Ref].

Domestic sewage was treated in anaerobic fixed film moving bed reactor. It was found to be available system due to comparable organic removal efficiency and biogas yield. The reactor system possesses advantage of low initial investment cost due to its simplicity and greater surface area.

0103-274. Gupta Sanjay, Pandey Abhay K, Sharma Nilesh C (Dept Microbio, SBS (PG) Inst Biomedl Sci Res, Balawala, Dehradun 248161). **Biomethanation of citric acid fermentation effluent.** *Himalayan J Env Zoo,* **14**(2) (2000), 109-114 [9 Ref].

Citric acid fermentation effluent waste was subjected to anaerobic digestion inoculated with mixed mesophilic methanogenic bacteria, isolated from cattle dung, in batch and repeated batch process. Almost 90% COD decreases with 64% yield of methane gas as a consequence of 10 days HRT, in batch process. However, the percentage yield of methane gas was relatively low (65%) but remains almost same in three cycles of repeated batch process.

0103-275. Krishna Prasad V, Kant Yogesh, Gupta Prabhat, Sharma C, Mitra A, Badrinath KVS (Natl Remote Sensing Agency, Dept Space, Balanagar, Hyderabad500037). **Biomass and combustion characteristics of secondary mixed deciduous forests in Eastern Ghats of India.** *Atmos Env,* **35**(18) (2001), 3085-3095 [43 Ref].

Biomass qualities at three different sites in tropical moist mixed secondary deciduous forests before and after burning have been quantified in the forest patches cleared for shifting cultivation purposed. The contribution of dry biomass material having more than 70 cm diameter is found to be very low indicating that most of the trunks were burnt superficially. The overall combustion completeness suggested that mixed leaf litter and branch material contributed to most of the combustion.

0103-276. Pandit BR, Jana CK (Dept Life Sci, Bhavnagar Univ, Bhavnagar 364002, Gujarat). **Energy content and its calorific values of *Tectona grandis* in Dangs forest ecosystem.** *Adv Plant Sci,* **14**(1) (2001), 53-56 [10 Ref].

The calorific values in the different fractions of *Tectona grandis* L, was analysed by Bomb calorimeter. The highest calorific values (15792 cal/gm dry weight) and lowest (4789 cal/gm dry weight) the values were observed at Chinchnigaon site. These variations may be due to different fractions, soils and amount of nutrients in three different seasons.

0103-277. Thaker Vrinda S, Singh Yash Dev (Dept Biosci, Saurashtra Univ, Rajkot, Gujarat). **Selection of tree species for energy plantation in arid- semi-arid area- III. Comparative growth studies. *(****The) Indian Forester,* **127**(6) (2001), 678-683 [9 Ref].

Comparative growth analysis of three tree species viz. *Acacia nilotica, Leucaena leucocephala* and *Prosopis juliflora* were studied. The correlation coefficient and regression models were worked out between biomass and dependable variables like, stem weight, diameter at base, leaf weight, branch weight and plant height. Amongst the three species tested , *L. leucocephala* recorded maximum biomass followed by *A. nilotica* and *P. juliflora*. treated plants. Stomatal frequency increased in all concentrations and on both surfaces of the leaf. Leaves of treated plants show increased number of epidermal cells though smaller in size as compared to those of leaves of a control plant.

0103-297. Shripal, Jaishree, Kumar Naresh (Dept Bot, DAV (PG) Coll, Muzaffarnagar 251001). **Age affects sensitivity of *Solanum tuberosum* L. to simulated acidic rain.** *J Nature Conserv,* **12**(2) (2000), 285-287 [6 Ref].

The sensitivity of potato (*Solanum tuberosum* L.) c.v. Kufri Lalima to simulated acidic rain has been observed using young plants of two different ages. Seedlings of two different ages (15 days and 30 days old) were exposed to simulated acidic rains with pH 5.0, 4.0, 3.0, 2.5 and 2.0, once in a week for three weeks. The plants of younger group were more sensitive than older group.

0103-298. Singh TP, Joshi BD (Dept Biotechno, LN Mithila Univ, Darbhanga 846008, Bihar). **Genotoxic effect of tannery effluent in *Allium cepa* L. III. Effluent of the rainy season.** *J Env Polln,* **8**(2) (2001), 155-158 [17 Ref].

Tannery effluent collected during the rainy season depressed the mitotic division to considerable extent in the root meristem of *Allium cepa* L. The capability of treated cells to recover from the mitotic depression declined gradually. Total number of abnormal cells and cells with non clastogenic abnormalities recovered more than those possessing clastogenic ones and this difference in recovery behaviour was attributed to the differential degree of damage caused to the cellular and chromosomal systems by the two classes of aberrations.

0103-299. Sivakumar K, Subbaiah KV, Saigopal DVR (Dept Chem, SV Arts Coll, Tirupati 517502). **Studies of certain trace elements in industrial effluents, sediments and their effect on plant physiology.** *Polln Res,* **20**(1) (2001), 99-102 [9 Ref].

Trace elements such as chromium, lead, copper, zinc and iron were detected from industrial effluents and in their sediments by atomic absorption spectrophotometer. Effect of these elements on different plant species were studied by using wet ashing method. These studies revealed that the trace elements which are present in effluents and sediments altered the physiology of certain plant species. These trace elements showed toxic effect on different plant organs such as-leaf, stem, root, flower etc.

0103-300. Sundari S, Kanakarani P (Dept Eco, Mother Teresa Women's Univ, Kodaikanal 624101, Tamil Nadu). **The effect of pulp unit effluent on agriculture.** *J Indl Polln Contl,* **17**(1) (2001), 83-97 [8 Ref].

Attempt is made to assess the impact of pulp unit waste water discharge on the environment particularly agriculture. The analysis shows that the partially treated effluents has adversely affected the ground water resources, soil, fertility, crop production, land value and has also resulted in the death of livestock.

0103-301. Trag Abdul Rashid, Tamir Ali S, Mahmooduzzafar, Siddiqui Tariq O, Iqbal Muhammad (Dept Bot, Hamdard Univ, Hamdard Nagar, New Delhi-110062). **Foliar responses of *Zizyphus mauritiana* L. to emissions of coal fired thermal power plant.** *Adv Plant Sci,* **14**(1) (2001), 229-235 [14 Ref].

Study of leaves of *Z. mauritiana* L. collected from a non-polluted sited (Hamdard University campus) and a heavily polluted site (near Badarpur Thermal Power Plant) has brought out certain morphological, biochemica and physiological changes with respect to pollution. Among the epidermal feature, density and length of stomata and trichome length of both surface and trichome density of adaxial surface decreased under air pollution stress.

0103-302. Vincent S, Mary Jee Jee, Cruz M, Leo Thomas A (PG Res Dept Zoo, Loyola Coll, Chennai 600034). **Bioremediation of chromium by the aquatic macrophyte *Caldesia paranassipolia* (L) Parl.** *Polln Res,* **20**(1) (2001), 75-77 [6 Ref].

Young plants of *Caldesia paranassipolia* were selected and analysed to study their role in bioremoval of chromium. The observations showed that the uptake of chromium by the plant samples increase in chromium as the concentration increases. It has been interpreted that due to increase in the concentration and exposure to number of days, the uptake of chromium also increases. Thus by the introduction of biological agent such as *Caldesia paranassipolia* one can reduce the contamination of natural habitat at a lower cost.