

Environmental Management

0201-001. Alone BZ, Pandya GH, Kondawar VK (Natl Environ Engng Res Inst, Nagpur 440020). **Multichannel detection of organics in environmental samples.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 329-331 [4 Ref].*

Paper discusses the changed role of analysts as a result of automation and availability of specific detectors such as multichannel diode array detector for detecting trace impurities, and studying the chromatogram in 3D (A, t). Attempts have been made to develop methods to detect phenols.

0201-002. Andey SP, Nanoti MV (Natl Environ Engng Res Inst, Nagpur 440020). **Silt management in run-of-the river hydroelectric projects.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 133-136.*

The environmental impacts due to silt need to be studied critically in EIA of hydel power projects and pragmatic EMP has to be evolved. All the options for management of silt to mitigate adverse impacts are to be evaluated technologically and the priority rating and trade off analysis should be carried out for each project. The best fit options is assessed on the criteria of technological feasibility, environmental compatibility, economic viability and social acceptability.

0201-003. Arkatkar Shrinivas S, Kolte Santosh S (Nirma Inst Techno, Ahmedabad). **Industrial pollution control by preparation of industrial zoning atlas - a case study.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 281-286 [6 Ref].*

Zoning atlas for siting of industries, zones and classifies the environment in a district and presents the pollution receiving potential of various sites/zones in the district through the maps. Paper highlights how zoning can be done for industries (especially chemical industries) through preparation of zoning atlas and hence controlling the industrial pollution.

0201-004. Awasthi Ajay K, Singh Vinod K, Bharti Anil K (Sch Environ Bio, APS Univ, Rewa, MP 486003). **Environmental impact assessment of oil refinery at Lohgara, Allahabad (U.P.).** *Int J Mendel*, **18**(4) (2001), 129-130 [5 Ref].

The oil refinery spread throughout the length and breadth of India manufacture the petroleum product which are required for day to day use. Attempt has been made to assess and highlight the various adverse as well as beneficial impact of the oil refinery at Lohgara, Shankargarh Allahabad (U.P.).

0201-005. Bhalerao BB, Wairagrade Madhavi (Aquair Consulting Engrs, Nagpur). **Waste water treatment and disposal for molasses based alcohol distillery - a case study.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March, 2002, Nagpur, 21-27.

A case study has been presented for a 30kL/day distillery. The water requirement, the wastewater generation, its characteristics have been given. A comprehensive system for wastewater management for such a distillery has been presented. The installation and operating costs as well as projected returns from such a system has also been presented.

0201-006. Bhole AG (Environ Engng Consultant Nagpur). **Education in environmental engineering.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 395-399.

Causes of pollution and also prevention and control of pollution are important aspects now concerned with everybody's life and hence knowledge about these aspects at various levels of education is essential. Hence courses at various levels cover these aspects of pollution. But those who do not attend regular school education are less aware about pollution. For them mass education concerned with pollution is very essential. Paper presents an overview of environmental awareness and education at various levels.

0201-007. Bindu G, Anilkumar KG (Dept Atmos Sci, Cochin Univ Sci Techno, Cochin 16, Kerala). **Study of assimilative capacity for environmental management.** *J Indl Polln Contl*, **17**(2) (2001), 281-288 [7 Ref].

Cochin, due to the rapid industrialization and urbanization, needs due considerations to urban meteorological aspects. So the study of assimilative capacity, which is the maximum amount of pollution load, is necessary. Analysis of different meteorological regimes points out that the city is highly susceptible to high pollution. Pollution potential also agrees with the results showing lowest values during noon hours with the mixing height <1250 m and wind speed 2-6 m/s. This shows that meteorological regimes are not favourable for dispersion in the area.

0201-008. Bodhe GL, Dharmadhikari DM, Kaul SN (Natl Environ Engng Res Inst, Nagpur 440020). **Automation in water and wastewater treatment facilities.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 245-250 [10 Ref].

Continuous monitoring of physico-chemical parameters for water and wastewater is essential to know the pollution loads in a particular stream. Advantages of wastewater treatment plant automation with their merits and demerits have been elaborated in the paper. Important aspects which are related to water/wastewater quality monitoring instrumentation and their interfacing have been covered.

0201-009. Deshpande Jayashree (Dept Environ Sci, SBES Coll Sci, Aurangabad 431001). **Bioconversion of garbage into soil enricher (biofertilizer) — a case study.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 195-197.

Due to fast urbanisation and industrialisation accompanied by growth in population, the cities are now facing problems of solid waste management. This leads to problems of health and sanitation. Various methods are available for processing of

municipal solid waste. Bioconversion of garbage into soil enricher with the help of decomposing microorganisms is discussed in the paper.

0201-010. Deshpande Shrikant (Water Waste Solutions Thermax Ltd, Pune). **Effluent recycle and reuse for industry.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 43-46.*

It is observed that the lowering of water table has reduced the availability of ground water and deteriorated its quality. In some areas it is simply not available. Because of such and other reasons today industries are actively considering a recycle of waste water. There are already some effluent recycle installations in India and abroad working in various industries. There is enough data on operation and maintenance of such system. This paper is intended to share the practical technical aspect of Effluent recycle system.

0201-011. Deshpande VA, Vanerkar AP, Lokhande SK, Tajne DS, Dhopte SM (Natl Environ Engng Res Inst, Nagpur 440020). **SWOT analysis of training programmes on environmental analytical instrumentation.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 319-323 [8 Ref].*

SWOT Analysis is a method of systematic group reflection for managers, organizations and institutions to identify and analyze the strengths and weakness of an organization as well as the opportunities and threats are revealed by the information gathered from the external sources. It helps to develop a strategy that uses the strength and opportunities to reduce the weakness and threats and to achieve the objectives of an organization.

0201-012. Dhabadgaonkar SM (Environ Engng Consultant, Nagpur). **Some thoughts on strategies for pollution prevention and control in India.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 237-243 [9 Ref].*

Paper aims to outline some thoughts on strategies for pollution prevention and control in India with special attention to water pollution. While dealing on the subject, the basic premise is that there is a strong desire and political will to eradicate the pollution to a sustainable level, not overlooking the aspect of development. Therefore, it is emphasized that Research and Development assumes a great significance in the promotion of effective and sustainable solutions.

0201-013. Eldho TI (Dept Civil Engng, Indian Inst Techno, Kharagpur 721302, West Bengal). **Groundwater contamination - the challenge of pollution control and protection.** *J Indian Water Works Assoc*, **33**(2) (2001), 171-180 [9 Ref].

Containment of the pollutant plume is possible through physical barriers, interception systems and well systems. The concept of groundwater protection zones around the water supply wells is found to be an effective pollution control measure and protective step against pollution at the source.

0201-014. Gajghate DG, Hasan MZ, Nandy T, Kaul SN (Natl Environ Engng Res Inst, Nagpur 440020). **Performance evaluation of a full scale ETP for a fertilizer industry with recourse to capacity expansion.** *J Indl Polln Contl*, **17**(2) (2001), 245-255 [5 Ref].

Study provides details on generation of wastewater, present status of pollution, and performance evaluation of existing effluent treatment plant (ETP) for a fertilizer plant producing diversified products. The implementations of proposed ETP facility achieve the intended objective of pollution control for existing plant and predicted to be effective in maintaining effluent quality to the desired level for future expansion of the plant.

0201-015. Galgale HM, Kanade GS, Shinde VM (Natl Environ Engng Res Inst, Nagpur 440020). **Applications of remote sensing in environmental studies.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 307-310 [6 Ref].

Paper focus as on various application of Remote Sensing in brief. With the help of optimum ground truth, secondary data and sensors knowledge the various themes

pertaining to study can be successfully generated. These thematic coverages and secondary data is then used for matrix analysis or is used as the input for studies carried out in Geographical Information System environment. Depending on the nature of study and sensors used one can go for satellite band ratios for extracting particular information of use.

0201-016. Ganesh Babu KV, Sharma Niraj, Shukla Anuradha (Centl Rd Res Inst, Mathura Rd, New Delhi 110020). **Environmental audit as an effective management tool.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 117-122 [6 Ref].

Environmental auditing has been encouraged as a part of environment management systems. Paper discusses the definition of environmental auditing, to understand why an audit can be an important management medium, necessary elements for an environmental audit to yield maximum benefits, how environmental auditing acts as an initiating step for the environment management system and steps involved to carryout environmental audit.

0201-017. Gangadhar BD (Sharanabasaveshwar Coll Sci, Gulbarga 585103, Karnataka). **Multipurpose museums for environmental education.** *Eco Env Conserv*, 7(4) (2001), 481-484 [1 Ref].

Effectiveness of museums in inspiring and educational pursuits is highlighted. The types of museums needed, their management from the standpoint of environmental education and management with reference to Indian situations are discussed.

0201-018. Gawaikar VG, Bhattacharyya JK, Shekdar AV (Natl Environ Engng Res Inst, Nagpur 440020). **Industrial solid waste management in the perspective of ISO 14001.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 219-221 [6 Ref].

ISO-14001 specifies the requirement for an environmental management system against which an organisation may be certified by a third party. As per the requirement of ISO-14001, an environment friendly solid waste management system is needed to be

adopted by the industries. Hazardous waste needs special attention as uncontrolled management of these waste leads to degradation of environmental quality and causes adverse impact on public health. This paper highlights various measures to be adopted for appropriate management of solid waste in the industries to ensure clean environment and fulfil the requirement of ISO-14001.

0201-019. Ghugey Vijay L (Nature Sci (Clubs) Soc, Manewade Rd, Nagpur 440024). **Environment education, training and awareness programmes for school children and youth by nature science (club) society.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 391-393.*

Paper presents the important role of NGOs in implementing environmental education, training and awareness programmes for school children and youth. Various strategies adopted to sensitize the youngsters regarding pollution prevention and control have been briefly discussed through a case study.

0201-020. Godbole S, Gote S, Lalkar M, Chakrabarti T (Natl Environ Engng Res Inst, Nagpur 440020). **Physical properties of blend films of poly-3-hydroxybutyrate and starch.** *Proc Conf Polln Prev Contl India : IAEM, 2-3 March, Nagpur, 355-359 [14 Ref].*

Poly-3-hydroxybutyrate a microbially produced thermoplastic, is currently receiving considerable industrial attention because of its similar material properties to polypropene. Its potential application as biodegradable and biocompatible plastics is well-documented. In this paper, the compatibility of PHB with starch for improved properties and cost reduction is discussed. The thermal and mechanical properties of the blended films were studied by means of thermogravimetry, differential scanning calorimetry and an automated material testing system. The results revealed that blend films had a single glass transition temperature for all the proportions of PHB: starch tested.

0201-021. Jagtap Jayashri, Pande SP, Kaul SN (Natl Environ Engng Res Inst, Nagpur 440020). **Some studies with ECORITE PAC-2010 as a coagulant.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 177-182 [1 Ref].*

Paper describes the performance evaluation studies of ECORITE PAC-2010 of M/s. DCM Shriram Consolidated Limited (DSCL) as a coagulant. It was observed that

ECORITE PAC-2010 acts as a good coagulant over a wide range of turbidity and produces larger and more readily settleable flocs than alum. The residual aluminium is less in ECORITE PAC-2010 treated water than that in alum treated water.

0201-022. Jawahar Raj N, Kumaraswamy K (PG Res Dept Geo, Natl Coll, Tiruchirapalli 620001 Tamil Nadu). **Assessment of sea water intrusion around the Vaippar river estuary of Tamil Nadu, India.** *Int J Eco Environ Sci*, **27**(2) (2001), 121-124 [10 Ref].

The problem of sea water intrusion into the freshwater aquifers of the areas around the Vaippar river estuary in Tamil Nadu has been studied with the help of geophysical survey and hydrochemical analysis. The saline water occupies more areas with increasing depths indicating the possibility of encountering saline water at still greater depths. The total dissolved solids concentration and chloride-bicarbonate ratios reveal that groundwater is severely contaminated by seawater intrusion up to 10 km inland from the coast. Further, the contamination of groundwater in the area by sodium chloride ions, is due to the intrusion of sea water into the freshwater aquifers of the area.

0201-023. Kashyap SM, Kanade GS, Shinde VM (Natl Environ Engng Res Inst, Nagpur 440020). **Applying internet technology for GIS and Remote Sensing applications.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 311-312 [2 Ref].

Availability of computers and Internet technologies and their integration with GIS is leading to interesting applications. Paper reports case study on using Web Browser for making presentation report for GIS and Remote Sensing projects. Commercial application using GIS technologies is not much realized in India. Paper discusses new methodology to support a user desire to find a suitable data from the GIS report. The present case study highlights, how effectively GIS can be integrated with Web technology for information propagation.

0201-024. Katpatal YB, Lataye DH (Visveswaraya Regl Coll Engng, Nagpur 440011). **A model for delineating flood hazards and soil erodibility zones in Bhandara district using GIS.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 299-302 [6 Ref].

The unanticipated events like floods make it inevitable to develop advance information systems which not only could be used for estimation but also for post flood

measures accurately. The study identifies the flood hazard zones and the soil erodibility zones around Vainganga river in the district. The objective has been to delineate existing LU/LC classes which are mainly affected by the floods and not their quantitative estimation. Paper designs, a model and later an information system to warn, at a given instance of flood.

0201-025. Kelkar PS, Kumar Rakesh, Shrivastava A (Natl Environ Engng Res Inst, Nagpur 440020). **Environmental and business benefits of EMS according to ISO 14001.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 99-104.

A number of organizations / companies in India are going in for ISO 14001 certification. ISO 14000 standards provide a framework to assist environmental management system leading to an improved performance of an organization. The paper discusses the potential benefits accrued from this certification.

0201-026. Khan Anisa B (Salim Ali Sch Eco Environ Sci, Pondicherry Univ, R V Nagar, Pondicherry 605014). **Water monitoring and seawater intrusion in Kalapet, Pondicherry 605014.** *Nature Env Polln Techno*, 1(1) (2002), 13-17 [8 Ref].

Depletion of groundwater near to the coastal regions results in the intrusion of nearby marine waters. The annual depletion rate in Pondicherry is 1-1.5 m. The analysis of groundwater collected from Kalapet region of Pondicherry indicates a chloride content as high as 1808 mg/L and total dissolved solids at 3276 mg/L. Resource recovery and management through water harvesting and recharge of surface water and storage irrigation tanks are urgently required.

0201-027. Khitoliya RK, Rao SV (Punjab Engng Coll, Chandigarh 160012). **Accreditation, certification and environmental management system.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 95-98 [8 Ref].

The International standards (series of ISO 14000) have become an integral part of the business to make them competitive in the world market. They have already been popularized in industry and service organization for handling their environmental issues either by implementing on their own or through third party certification. Paper depicts the various procedural steps to get ISO certification for an industry.

0201-028. Makesh Kumar B, Kumaraguru AK (Dept Plant Sci, Sch Biol Sci, Madurai Kamaraj Univ, Madurai 625021, Tamil Nadu). **Heavy metals in some environmental samples around a few industrial locations of Tuticorin coast.** *Eco Env Conserv*, **7**(4) (2001), 379-385 [14 Ref].

Study monitored some heavy metals in the ambient environment of selected industrial and sewage effluents discharge locations around Tuticorin Coast, Gulf of Mannar, India. The concentration of the metal varied depending upon the industrial effluent. The overall study indicated that, among all the metal the concentration of lead was relatively high and zinc was low in collected samples, because lead compound has been used in a wide variety of industrial application.

0201-029. Mishra PC, Patel RK (Dept Chem, Regl Engng Coll, Rourkela, Orissa). **To estimate the efficiency of the water treatment plant at Sector 2, Rourkela.** *J Indl Polln Contl*, **17**(2) (2001), 297-305 [14 Ref].

The water requirements of Rourkela Steel Township is met by the water treatment plant situated at Sector-2. It is observed that turbidity of raw water is minimum in the month of January and maximum in the month of August. pH of raw water is minimum in the month of February and maximum in June. Hardness is minimum in January, February and December but maximum in July and August. By taking the value of turbidity, pH and hardness of drinking water the plant is found to be most efficient during the month of August.

0201-030. Mukherjee Aeshita, Borad CK, Parasharya BM, Soni VC (AINP Agricl Ornithology, Gujarat Agricl Univ, Anand 388110, Gujarat). **Factors affecting distribution of the sarus crane *Grus antigone antigone* (Linn) in Kheda district, Gujarat.** *J Bombay Natl Hist Soc*, **98**(3) (2001), 379-384 [14 Ref].

Sarus crane *Grus antigone antigone* were counted in an intensive ground survey, carried out in Kheda district, Gujarat. There was a distinct difference in the crane abundance amongst the tehsils (subdivisions) of Kheda district. Crane distribution in the district was determined by the physical structure of the habitat. The factors determining distribution within the district were pattern, height and water requirement of the crops, standing water body with vegetation and visibility index of the landscape.

0201-031. Nikhil Kumar (Environ Manage Gr, Centrl Mining Res Inst, Dhanbad 826001, Jharkhand). **Situation and strategies for the utilization of flyash in rural areas.** *J Indl Polln Contl*, **17**(2) (2001), 307-312 [9 Ref].

A large amount of flyash from industry solid refuse were discharged in the course of production and consumption of coal. The increase of the production and utilization of coal in large amount will exert bigger and bigger pressure on the environment. Rural areas are the sectors where coal waste flyash can be utilized for the sustainable rural development. The present situation and strategies on discharge and utilization of flyash has been discussed in rural areas.

0201-032. Panda RK (Water Techno Cent Eastern Reg, Indian Coun Agricl Res, Bhubaneshwar 751023, Orissa). **Mapping of coastal waterlogged area by optical remote sensing.** *India J Soil Conserv*, **29**(3) (2001), 196-199 [4 Ref].

Attempt is made to map the coastal waterlogged areas of Daya – Bhargavi, Bhargavi – Kushbhadra and Kushbhadra – Devi doab of Orissa by Optical Remote Sensing technique. The study shows that reliable information on waterlogging is possible through visual interpretation of LANDSAT – MSS/TM data.

0201-033. Panda SC, Kar RN, Patra P, Das B (Regl Res Lab, Bhubaneshwar 751013). **Environmental study of a timber products industry.** *J Indl Polln Cont*, **17**(2) (2001), 313-323 [11 Ref].

Paper attempts to describe the environmental status at the Mangalam Timber Products Limited, Nawarangpur, Orissa. The parameters studied were soil, water, air and noise. The soil samples were analysed for agricultural parameters, heavy metals and bacterial count. Water/effluent samples were analysed for asthetics, heavy metals, hardness and bacterial count. The air was analysed for total suspended particulate matter. A noise survey was carried out at all noise emitting sources within the factory premises. A floral survey was also done. Conclusions and recommendations are given.

0201-034. Patil MP, Deshkar AM, Deshpande SD, Chakrabarti T (Natl Environ Engng Res Inst, Nagpur 440020). **An approach for development of risk based emission standards.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur 123-126 [5 Ref].*

Paper presents an approach for developing risk based emission standards with a case study for bulk drug industry. The approach includes identification of hazardous air pollutants (HAPs), assessment of safe exposure levels of such HAPs with respect to human and animal health, and estimation of maximum permissible emission rate for HAPs for various releases and atmospheric conditions to comply with the safe exposure levels using appropriate air quality models.

0201-035. Prasad Basudeo, Bajpai RP (Centl Scient Instrumentation Org, Chandigarh 160030). **Community health studies and pollution monitoring instruments.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 313-317 [11 Ref].*

Air borne particles have long been known to be health hazard, ever since major cities became filled with soot in the early days of the industrial revolution. More recently, scientists and environmentalists have turned their attention to smaller particles as a potential health threat. A case study of few industrial towns of Punjab with its environmental monitoring data has been presented. Emphasis has been laid down to design and develop micro controller and PC based low cost high volume self diagnostic and self repairing instrument and further devise a network facility for rapid environmental monitoring and pollution mapping.

0201-036. Rajesh Banu J, Logakanthi S, Vijayalakshmi GS (Sri Paramakalyani Cent Environ Sci, Manonmanium Sundaranan Univ, Alwar Kurichi 627012). **Biomangement of paper mill sludge using an indigenous (*Lampito mauritii*) and two exotic (*Eudrilus eugineae* and *Eisenia foetida*) earthworms.** *J Environ Bio, 22(3) (2001), 181-185 [14 Ref].*

Study was carried out to dispose the paper mill sludge biologically using two exotic species (*Eudrilus eugineae* and *Eisenia foetida*) and an indigenous species (*Lampito mauritii*) of earthworm. The paper mill sludge in various concentration 25%, 50% and 75% were subjected to vermitub treatment for a period of 60 days. During the

period of study data were collected on reproductive strategies of earthworm and chemical analysis of wastes before and after treatment. Results obtained indicate that 25% concentration of sludge was ideal and of the three worms used *Eisenia foetida* proved to be the best worm for biomanagement.

0201-037. Raman NS, Sarin R (Natl Environ Engng Res Inst, Nagpur 440020). **Environmental audit : sign post for sustainable industrial economy.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 105-112.

Environmental Audit (EA) is a structured and comprehensive mechanism for ensuring that the industrial activities do not adversely affect the environmental quality and the economy of the industrial sector improves as a consequence of improved process and energy effectively as also the occupational health and safety. This paper emphasizes that the successful EA program investigates all possibilities of energy saving, material saving and water budgeting through conservation of resources to protection of environment. It presents the various options for environmental management in Indian industry, including reactive control measures on one hand and anticipative preventive strategies on the other hand.

0201-038. Rathi AKA (Govt Gujarat, Industries Commissionerate, Gandhinagar 382017). **Issue facing Indian industry in implementing cleaner production.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 113-116.

The cleaner production movement is no doubt picking up slowly in the country. It, however, requires visionary and proactive policies, missionary zeal and dedicated efforts at different levels for wider and quicker acceptance for reaping the fruits. Paper addresses various issues faced by Indian industry in implementing cleaner production.

0201-039. Ravi P, Suri Babu CS, Vincent S, Mary Jee Jee Cruz M (Centl Leprosy Teaching Trng Inst, Chengalpet 603001). **Management of wastes from hospital industry and biological institutions : the continuing challenge.** *Convergence*, 3(1-4) (2001), 55-59 [8 Ref].

Hospital waste and other biological wastes includes all the waste generated by health-care establishments, research facilities and laboratories. Out of which 10-25% of waste is regarded as hazardous health care waste. Apart from hazardous infectious

waste, pathological waste, sharps, pharmaceutical waste, genotoxic waste, chemical waste, heavy metal, pressurized containers, radioactive waste, and other wastes also add up to the volume.

0201-040. Reddy RC, Kelkar PS, Rao IR, Rama Rao KG (Natl Environ Engng Res Inst, Nagpur 440020). **Collection treatment and reuse of treated sanitary wastewater – a case study.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 47-49.*

A detailed study was undertaken for infrastructure development plans for National Institute of Rural Development (NIRD) Campus, to upgrade their existing wastewater collection and treatment facilities. The suggested wastewater management plan includes, diversion of wastewater from existing septic tanks to a common collection sump, raw wastewater pumping, waste stabilization ponds, chlorination of treated wastewater, final collection sump, pumping to overhead reservoir for reuse. Optimal design of treated wastewater collection and distribution network was also prepared for reuse of treated wastewater for gardening.

0201-041. Sadasivan Pillai K, Amalan Stanley V (Fredrick Inst Plant Prot Toxicol, Padappai 601301). **Implications of fluoride – an endless uncertainty.** *J Environ Bio, 23(1) (2002), 81-87 [80 Ref].*

Paper deals with the health issues pertaining to fluorosis with special emphasis in the Indian context. It explains the equivocal evidences of fluoride-related problems and discusses the control measures of fluorosis. In general, it reveals how fluoride is useful at very low concentrations and at the same time brings forth manifestation of clinical abnormalities at higher concentrations that are the basis of the principles of toxicology.

0201-042. Sahu BK, Mahajan SP, Mukherji S (Indian Inst Techno Powai, Mumbai 400076). **Pollution in iron and steel industry opportunities and challenges.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 287-292 [12 Ref].*

Paper discusses concepts and possibilities of pollution prevention in the iron and steel production processes, highlighting how this leads to resource conservation and

waste minimization. A case study is discussed to show the environmental benefits that can be achieved by pollution prevention.

0201-043. Sarangi B, Biswal SK, Pradhan SC (Dept Metallurgical Material Engng, Indira Gandhi Inst Techno, Sarang, Talchar Dhenkanal 759146, Orissa). **On the correlation study of some water quality parameters of ground water around Sargipali lead-zinc mines, India.** *Polln Res*, **20**(3) (2001), 481-485 [10 Ref].

The ground water which is supposed to be the main source for drinking water in and around Sargipali is being polluted by the continuous seepage of water from the tailing pond of lead-zinc mines situated at Sargipali. Since in a remote place like Sargipali it is quite difficult to monitor all the required water polluting parameters alternative method should be suggested/developed which can provide at least a rough idea about the water quality with minimum effort.

0201-044. Sendil Velan S, Jeyachandran K, Bhaskar K (Dept Mechl Engng, Bharath Inst Sci Techno, 173, Agaram Rd, Selaiyur, Chennai 600073, Tamil Nadu). **Cold-start emission performance for reducing environmental pollution from spark-ignition engine using electrically heated catalytic converter.** *J Env Polln*, **8**(4) (2001), 345-350 [5 Ref].

Attempt has been made to study the pollution from the automobile spark-ignition engine. An electrically heated catalytic converter (EHCC) is used to reduce the level of pollution from engine exhaust. Paper deals with the development and performance analysis of the EHCC with copper oxide as a catalyst. It is found that the EHCC reduces cold-start emission, when used with existing catalytic converter.

0201-045. Sharma JK, Arora MK (Technol Inst, Textile Sci, Bhiwani 127021). **Environmental friendly processing for textile.** *Polln Res*, **20**(3) (2001), 447-451 [20 Ref].

Dyes, pigments, auxiliaries and chemicals are indispensable for modern textile processing. But, most of them are potential health hazards. Many countries including India have introduced strict eco-standards for textile industries. With more tougher controls expected in the years to come, it is essential to have control measures to

minimize the effluent problem. The article reviews waste minimization in the textile industry through use of advanced processing techniques.

0201-046. Sharma JK, Arora MK (Technol Inst Textile Sci, Bhiwani 127021). **Decolourization of textile effluent.** *Polln Res*, **20**(3) (2001), 453-457 [18 Ref].

Most of these unused synthetic dyes and pigments in effluent of textile industry are potential health hazard and some of these are even carcinogenic in nature. They affect the water quality of the area by contamination and seepage to underground water, thereby result in change of water quality. Therefore their removal or minimization is essential from effluent. Technocrats have worked extensively to invent suitable methods to solve this problem. This article reviews the working of some of these methods.

0201-047. Sharma Rajnikant, Pervej Shams (Dept Chem, Govt Arts Sci Coll, Durg 491001, Chhattisgarh State). **Measurement of selected major constituents of stack emitted dusts around an integrated steel plant.** *Nature Env Polln Techno*, **1**(1) (2002), 55-60 [15 Ref].

A respirable dust sampler was positioned at selected 32 sites, within the radius of 10 km around an integrated steel plant at Bhilai. Samples of nonrespirable suspended particulate matter (NRSPM) (Size > 10 μ) and respirable suspended particulate matter (RSPM) (< 10 μ) were collected by operating the sampler for 24 hours, using recommended condition of operation. It has been found from analysis data that except iron, all the elements have shown higher concentration RSPM compared to NRSPM. Correlation coefficient and enrichment factors were also calculated.

0201-048. Sharma VJ, Ambulkar AR, Bhojar RV (Natl Environ Engng Res Inst, Nagpur 440020). **Potential health hazards associated with solid waste management in India.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 199-203 [7 Ref].

Open disposal of solid waste is also associated with the problems of degradation of environmental quality and causes health hazard to workers as well as surrounding communities. Leachate generated from dumpsites contaminates the groundwater and surface water bodies endangering the human health and life. In keeping with the existing

waste management practices in India the potential health impacts on community and municipal workers have been highlighted.

0201-049. Shukla KML, Khan AA, Khan Shabina, Verma Ashok Kumar (Pandit SNS Govt (Autonomous), PG Coll, Shahdol 484001, MP). **Herbal folk medicine of Chhuri Hills, district Bilaspur, (M.P.) India.** *Adv Plant Sci*, **14**(2) (2001), 363-366 [9 Ref].

Paper deals with ethno-medicinal uses of 26 plant species occurring in Chhuri Hills of Bilaspur district, Madhya Pradesh. The methods of preparation and doses of administration of crude drugs as suggested by tribal herbalists are mentioned. The botanical name, family and local names are given along with medicinal use.

0201-050. Shukla R Rakesh, Siddharth S (Dept Geo, Banaras Hindu Univ, Varanasi). **Retardation of the oxidation of pyrite minerals in coal mines – a case study.** *Polln Res*, **20**(3) (2001), 313-317 [7 Ref].

Study aims at abatement of acid generation due to sulfide mineral in tailing dam or neutralization of acidic water by suitable mineral/chemical material, to control or reduce the acidity of tailing dam, in order to utilize dam water for further use. This will provide a better and safer environment for future generation.

0201-051. Singh BB, Dinesh Singh Thakur (Dr. Babasaheb Ambedker Technol Univ, Lonere 402103). **Time dependent mathematical model for the setting of primary and secondary pollutants.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 89-94 [6 Ref].

Paper deals with a three-dimensional unsteady mathematical model of the primary and secondary pollutants. This model deals with the time-dependent point source which is continuous in nature. Here the effects of the settling of the larger particles on the ground-level concentrations have been studied. It has been found that the effect of settling is to increase the ground level concentration near the source in case of primary pollutants. In case of the secondary pollutants, the ground level concentration increases away from the source.

0201-052. Singh Shivesh P, Saxena Rajesh (PG Dept Zoo, Govt Autonomous Coll, Satna, MP). **Land use/land cover change study in Chitrakoot and its environs using remote sensing technique.** *Eco Env Conserv*, **8**(1) (2002), 33-36 [8 Ref].

Changes in land use/land cover over a period of 20 years were studied, using space based satellite remote sensing technique in part of Chitrakoot area of Satna district falling within the state boundary of M.P. The environmental changes in and around the study area have been clearly identified, mapped and monitored by the visual comparison of land use/land cover maps, which was prepared by using SOI topomaps of year 1974-75 and space borne remote sensing satellite data of year 1996, using visual interpretation techniques along with revenue map of the area.

0201-053. Singh Suchitra N (Maharashtra Inst Techno, Pune). **Effective waste management through integrated vermiculture technology.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 209-213.

Integrated Vermiculture Technology uses the earthworm – aerobic bacteria – plant ecosystem. This technology is cost effective and it involves low operational and maintenance costs. The following treatment systems are based on this technology : [a] Aerobic Vermi-Bacterial (AVB) system for solid waste management [b] Solid Immobilised Bio-Filter (SIBF) for wastewater treatment. Integrated Vermiculture Technology could prove to be vital technology in our endeavour towards a healthy living, sustainable development and a better environment. The paper presents a case study in respect AVB and SIBF.

0201-054. Sinnarkar SN, Bankar A (Natl Environ Engng Res Inst, Nagpur 440020). **Dissemination of information relating to environmental science and technology.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 385-389.

Environmental science and engineering is an established yet highly dynamic interdisciplinary field. With the literature widening in scope and quantum, comprehensive reviews on various aspects appear in learned journals. This paper endeavours to be a review quasi reviews in this field and suggests the information organization to enhance information access from a variety of documents which may not be readily available in a single library.

0201-055. Telang SR (Mumbai Metropolitan Region Dev Authority, Bandra Kurla Complex, Mumbai 400051). **An innovative strategy for construction of sewage pumping station on a sea shore.** *J Indian Water Works Assoc*, **32**(4) (2000), 295-297 (Late Recd).

A Sewage Pumping Station (SPS) is usually constructed fairly well below the ground level in order to collect the sewage by gravity. Construction of any underground structure is generally found difficult in practice. The problem is further compounded if site for such construction is on the shore line of sea. Besides the salinity of water, the uplift or buoyancy of water during foundation and superstructure construction is a major hurdle. An innovative strategy was designed and implemented recently in construction of an SPS on sea shore line in Greater Mumbai.

0201-056. Temburkar AR, Mhaisalkar VA (Visveswaraya Regl Coll Engng, Nagpur). **Environmental appraisal of an institutional campus – a case study.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 137-141 [5 Ref].

Environmental assessment to improve the environmental quality should be conducted in institutional campuses. This would help improving the environmental quality and ensuring the availability of goods and services on sustainable basis. Paper presents a case study on environmental appraisal of an institutional campus.

0201-057. Thacker NP, Dixit RC, Nitawara (Natl Environ Engng Res Inst, Nagpur 440020). **Water quality monitoring for priority pollutants in urban area.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 189-194 [6 Ref].

The quality of final water released by treatment plants at Delhi have been monitored for priority organic pollutants viz. instantaneous THMs (InstTHMs), trihalomethane formation potential (TFP) and organochlorine pesticides during monsoon, winter and summer seasons. The organochlorine pesticides were found in not detectable level (NDL) to low micogram per liter and below the WHO regulated health related guideline values (GVs). Among InstTHMs and TFP, the levels of chloroform, bromodichloromethane, dibromochloromethane and bromoform as InstTHMs were found within WHO GV.

0201-058. Vellakkan J John (Dept Eco, St Johns's Coll, Palayamkottai 627002, Tirunelveli dist, Tamil Nadu). **Externalities in Tirunelveli Corporation.** *Polln Res*, **20**(4) (2001), 565-569 [9 Ref].

The residential environment of Tirunelveli corporation is not so conducive in order to improve the life expectancy of the urban people. Negative externalities in this Corporation affect all types of people. It is the peoples' behaviour which make the living condition miserable in this corporation. Therefore, it was concluded that water, shelter, sanitation and health remained relatively very poor because of very poor residential environment. It was suggested that both people and the local authorities create a conducive atmosphere regarding awareness on environmental pollution.

0201-059. Yogamoorthi A, Ramesh N (Cent Future Std. Pondicherry Univ, Pondicherry 605014). **EIA for proposed lignite mining project in the Pondicherry region – a case study.** *J Indl Polln Contl*, **17**(2) (2001), 325-340 [11 Ref].

An attempt has been made to prepare a preliminary EIA report with reference to the proposed lignite mining project in the Pondicherry region as so to get first-hand information on the state of art of the region and possible impacts on the existing environmental parameters as well as and the residents and their economic activities due to proposed mining activity.

Air Pollution

0201-060. Basha Shaik, Joshi HV (Centl Salt Marine Cheml Res Inst, Bhavnagar 364002). **Emissions of polycyclic aromatic hydrocarbons (PAHs) from thermal power stations.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 345-348 [51 Ref].*

Volatile organic emissions, particularly polycyclic aromatic hydrocarbons (PAHs) have started increasing concern due to their carcinogenic character. Emissions of polycyclic aromatic hydrocarbons from fluidized bed combustion have been reviewed in this paper. An attempt has been made to study the origin of PAH and their sampling and analytical procedures. The influence of fuel, combustor types and few other variables have also been discussed.

0201-061. Chelani Asha B, Padke KM, Gajghate DG, Hasan MZ (Natl Environ Engng Res Inst, Nagpur 440020). **Status of PM 10 in four coastal cities of India.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 59-63 [10 Ref].*

The status of particulate matter having aerodynamic size less than 10 micron (PM 10) in four major coastal cities of India (Kolkata, Mumbai, Chennai and Kochi) at three sites in each city viz. industrial, commercial and residential is presented. It is found that Kolkata is most polluted city with reference to particulate matter among the four, whereas Mumbai is the second most polluted city.

0201-062. Dixit DK (Visvesvaraya Regl Coll Engng, Nagpur 440011). **Eco-refrigeration and ozone depletion.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 375-379, [9 Ref].*

The stratospheric ozone depletion due to chlorofluorocarbons (CFCs) has necessitated the quest for ozone-friendly refrigerants. The paper discusses the ozone-depletion and global-warming potential of commonly used refrigerants and critically examines the environmental implications. The global efforts directed at ozone-layer

protection and for the development of CFC substitutes are also reviewed. The current status and strategy to address the problem in the Indian context is highlighted.

0201-063. Goyal SK, Gupta HK, Lohitesh MD, Chalapati Rao CV (Natl Environ Engng Res Inst, Nagpur 440020). **Effect of seasonal variations on dispersion of air pollutants – a case study.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 65-69 [9 Ref].

Meteorology plays a very important role in dispersion of air pollutants emitted from elevated point sources and the resultant predicted ground level concentrations (GLCs). In order to study these variations, impact of SO₂ emissions emitted from multiple point sources of an industry located in northern India has been predicted using Industrial Source Complex (ISC) air quality model under different meteorological scenarios. Cumulative effect of all the meteorological parameters in the present study indicates the occurrence of maximum GLCs in monsoon season, followed by post monsoon, summer and winter seasons, indicating that winter season need not necessarily be the critical season as generally considered from air pollution point of view under a given set of conditions.

0201-064. Lahiri T, Roy S, Basu C, Ganguly S, Roy MR, Lahiri P (Dept Neuroendocrino, Univ Calcutta, Kolkata). **Air pollution in Calcutta elicits adverse pulmonary reaction in children.** (The) *Indian J Medl Res*, **112**(7) (2000), 21-26 [26 Ref].

Pulmonary responses of children chronically exposed to ambient air pollution in Calcutta have been investigated. The results showed marked rise in respiratory symptoms (43 in urban vs 14 in rural) and sputum alveolar macrophage (AM) number was observed in urban children compared to their rural counterparts. The urban group also demonstrated increased numbers of neutrophils, eosinophils suggest inflammatory and allergic lung reaction, elevated MN count is indicative of greater genotoxic effect on the exposed tissues of urban children.

0201-065. Pandit M, Singh AP, Kapoor JC (Cent Env Exposure Safety, Metcalfe House, Delhi 110054). **Measurement of suspended particulate matter and noise levels during blast trials in a coal field.** *Polln Res*, **20**(3) (2001), 429-433 [9 Ref].

Blasting trials were carried out for a period of one week at Ghugus Open Cast mine of Western Coal fields Ltd. with varying quantities of explosives. Monitoring of SPM and noise levels was carried out during these trials. Analysis of data collected indicates that very high transients in SPM concentrations, much higher than the maximum permissible limits, occurs just after the blasts, especially in the downwind directions. The observations during these field studies have revealed that the background SPM concentration were also above the permissible limits in the proximity of these mines, even during the non working days.

0201-066. Ramamurthy N, Thirumaran M (Dept Phys, Annamalai Univ, Annamalainagar 608002). **The carbon monoxide levels in automobile exhaust – a case study in Chidambaram town.** *Indian J Environ Hlth*, **43**(4) (2001), 144-147 [9 Ref].

Among the various pollutants emitted from vehicles, CO is the primary pollutant and very toxic one. The CO monitor method was used to measure the CO level in Chidambaram town. From the study, it is evident that the CO level is closely related to the density of motor vehicles plying on the roads. With increase in number of motor vehicles CO level also increases, which pollutes the roadside environment severely in future.

0201-067. Ruj Biswajit, Bhaumik GC (Dept Chem, Regl Engng Coll, Durgapur 713209, West Bengal). **Some gaseous pollutants in Durgapur, an industrial city of India.** *J Env Polln*, **8**(4) (2001), 383-384 [3 Ref].

Ambient air was monitored for a period of one year with respect to sulphur dioxide and nitrogen dioxide at three sites in an industrial city Durgapur (W.B.). It has been observed from the study that concentration levels are lower from the month of July to October and higher from the month of December to June, at all the three sites.

0201-068. Senthilnathan T, Srivatsan PS, Rao Anusha S, Bhaskaran A, Rajan RD (Velammal Engng Coll, Chennai 600066). **Analysis of ambient air pollutants in Chennai during the year 2000.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 71-74 [3 Ref].

Air pollution indexing is a scheme that transforms the (weighted) values of individual air pollution related parameters for various pollutants into a single number or

set of numbers called the Air Quality Index (AQI). Paper elucidates the Analysis of four of the five major pollutants namely SO₂, NO_x, PM₁₀ and SPM present in air by using air pollution indexing technique and offers a software solution for computation of AQI.

0201-069. Sivacoumar R, Jayabalon R, Subrahmanyam YV, Jothikumar N, Swarnalatha S (Natl Environ Engng Res Inst, CSIR, Taramani 600113). **Air pollution in stone crushing industry and associated health effects.** *Indian J Environ Hlth*, **43**(4) (2001), 169-173 [6 Ref].

The various unit operations involved in stone crushing have the potential to emit process and fugitive dust. A detailed air pollution survey was conducted at Pammal, 26 km to the southwest of Chennai. The particle size analysis indicates high percentage of finer particles and silica content posing serious health problems to the people exposed for longer duration. Fine inhalable particulate matter (PM_{2.5}) which has more associated human health problems was found high in the work place of stone crushers. This study indicates that most of the people are having respiratory problems.

0201-070. Srinivas T, Kamal Kumar J (Dept Environ Std, Coll Engng, GITAM, Visakhapatnam). **Air dispersion modelling tilted plume model : a consideration to gravitational settling of particles.** *Polln Res*, **20**(4) (2001), 589-596 [12 Ref].

An extensive set of the "Partial reflection" model has been used to develop a model which would evaluate the Ground Level Concentrations of air pollutants while considering the changes in wind velocity, atmospheric stability classes and the gravitational settling of particles. An interesting feature of this model is that a gravitational settling speed is taken into account when the particles of the plume settle downwards from a height (hg), whereas the Gaussian Plume Model neglects the consideration of gravitational settling speed and is valid only for steady wind conditions.

Water Pollution

0201-071. Bhosle AB, Rao Balaji (PG Dept Environ Sci, Yashwant Mahavidyalaya, Nanded 431602, MS). **Comparative study of treated and untreated river water for potability.** *Polln Res*, **20**(3) (2001), 475-479 [12 Ref].

Present study reports bacteriological quality of river Godawari water before and after treatment studied for one year. The coliform concentration in raw water varied from 175 to 900 org/100 mL while in municipal (treated) water it ranged from nil to 25 being absent only on three occasions out of 24 observations.

0201-072. Biswal SK, Majhi B, Behera JP (Dept Chem, Indira Gandhi Inst Techno, Sarang, Talcher 759146, Orissa). **Groundwater quality near ashpond of thermal power plant.** *Polln Res*, **20**(3) (2001), 487-490 [6 Ref].

Water samples from dug well and tube well near the ash ponds of thermal power plant in Angul – Talcher area were analysed for pre-monsoon and post-monsoon period. The chemical characteristics of the water samples were studied and classified.

0201-073. Das S, Mehta BC, Srivastava SK (Centl Ground Water Bd, Bhubaneshwar). **Groundwater quality and pollution in shallow phreatic aquifers of Orissa.** *Polln Res*, **20**(4) (2001), 657-667 [14 Ref].

Groundwater quality of shallow phreatic aquifers in Orissa is generally good and suitable for all uses with EC mostly below 1000 S/cm and Cl within 100 mg/l. However high contents of iron, nitrate, fluoride, chromium and manganese in scattered pockets and high salinity in coastal areas render groundwater unsuitable for use. Paper presents results of study on groundwater quality in shallow phreatic aquifers based on groundwater monitoring.

0201-074. Dasgupta Adak M, Adak S, Purohit KM* (*Dept Ceramic Engng, Regl Engng Coll, Rourkela 769008, Orissa). **Studies on water quality of village Timjore, Orissa – Part II : agricultural utilities.** *J Env Polln*, **8**(4) (2001), 321-327 [14 Ref].

Evaluation of different physico-chemical parameters of river Brahmani and ground water of the river basin at Timjore Village (Lathikata Block, Sundargarh District, Orissa) are carried out to study the agricultural utilities of the water samples for irrigation purposes. The observed values of different physico-chemical parameters are compared with the standard values proposed by different groups of investigators. It is observed that all water samples are good for irrigation purpose.

0201-075. Dasgupta Adak Mahuya, Purohit KM* (*Dept Chem, Regl Engng Coll, Rourkela 769008, Orissa). **Assessment of the water quality in Rajgangpur industrial complex 11 : metallic parameters.** *Polln Res*, **20**(4) (2001), 575-581 [10 Ref].

Investigations were carried out for the determination of some metallic parameters in drinking waters collected from eight different sources in the vicinity of Rajgangpur Railway Station. The results of these analyses were within the maximum permissible limit recommended by the United States Public Health, WHO, ISI and ICMR. The correlation coefficients amongst different cations and anions (analysed from the experimental water samples), and some significant regression equations have been worked out.

0201-076. Dhage SS, Malve SP (NEERI Zonal Lab, Mumbai). **A solution to tackle nitrate pollution in rural areas.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 143-150 [32 Ref].

Nitrate in potable water is one of the important environmental problems as intake of excessive nitrate presents a potential risk to public health. Ion Exchange is one of the best suited method for nitrate removal. This study had optimized the batch process of ion exchange technique under various operating conditions. Paper presents experimental details carried out to develop a batch process for elimination of nitrates from drinking water which can be adopted by individual households.

0201-077. Fokmare Anil K, Musaddiq Mohammad (PG Dept Microbio, Shri Shivaji Coll, Akola 444001, MS). **Comparative studies of physico chemical and bacteriological quality of surface and groundwater at Akola (Maharashtra).** *Polln Res*, **20**(4) (2001), 651-655 [25 Ref].

Bacteriological profile indicates a very high B.O.D., M.P.N. and the presence of bacteria like *E. coli*, *Salmonella*, *Shigella*, in both the sources. Surface water show a very high contents of total dissolved solid, total alkalinity, total hardness, Ca, Mg, NO₃, SO₄ during March to June. In ground water most variations occurred from October to March. PH, electrical conductivity, total dissolved solid, total alkalinity, total hardness, Ca, Mg, SO₄, NO₃, and coliform showed a downward trend from April to June. It is observed that values of several parameters exceeded the permissible limits pointing out the necessity of proper treatment disposal and management of wastes discharged into the rivers and on an open land.

0201-078. Freeda Gnana Rani D, Thamaraiselvi C, Ebanasar J (Govt Arts Coll, Ariyalur 621713, Tamil Nadu). **Study of potability of water sources in cement industrial area Ariyalur, Tamil Nadu.** *J Indl Polln Contl*, **17**(2) (2001), 257-269 [16 Ref].

Ariyalur is a place of cement industries in and around it. The water quality of different drinking water sources are analysed for potability. Variations are observed and remedial measures are suggested.

0201-079. Freeda Gnana Rani D, Durgadevi N, Ebanazer J (C-43 Dalmiya colony, Dalmiyapuram 621651, Trichi dist, T.N.). **Evaluation of drinking water quality of five villages in Jayakondam Panchayat Union, Ariyalur district, Tamil Nadu.** *Eco Env Conserv*, **7**(4) (2001), 459-463 [13 Ref].

Two drinking water sources of the villages Jayankondam, Melure, Manakkarai, Suriyamanal and Sengunthapuram of Jayankondam Panchayat Union, Ariyalur District, Tamil Nadu are studied for potability. Nine physical parameters and seventeen chemical parameters are studied. All the samples are found to be suitable for drinking.

0201-080. Gupta Rajiv, Kewalramani Manish A, Anshuman, Ralegaonkar Rahul (Birla Inst Techno Sci, Pilani 333031, Rajasthan). **An *in-situ* self purification system for stagnant water bodies.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 159-162 [10 Ref].

Paper presents design of an *in-situ* purification system based on the effect of the variation of flow on the water quality parameters for stagnant water bodies. The important parameter of this purification system is the longitudinal dispersion coefficient. This coefficient combines the effect of diffusion and dispersion. A case study pertaining to a stagnant water body in the campus has been performed and analysis on the effectiveness of changes in volumetric flow rate on some of the pollutant concentrations in water has been carried out. It can be concluded from the study that the variation of volumetric flow rate has a definite effect on the concentration of water quality parameters.

0201-081. Gupta SK, Gupta RC, Seth AK, Gupta AB, Bassin JK, Gupta A (Satellite Hosp, Banipark, Jaipur 302006). **Methaemoglobinaemia in areas with high nitrate concentration in drinking water.** *(The) Natl Medl J India*, **13**(2) (2000), 58-61 [22 Ref].

An epidemiological investigation was undertaken in all age groups to assess the prevalence of methaemoglobinaemia in areas with high nitrate concentration drinking water. The results showed, high nitrate concentrations cause severe methaemoglobinaemia (7%-27% of Hb) in all age groups, especially in the age group of less than 1 year and above 18 years. The lower levels of methaemoglobin in the age group of 1-18 years is probably due to better reserve of cytochrome b5 reductase activity and its adaptation to increasing nitrate concentration in water to compensate for methaemoglobinaemia in this age group.

0201-082. Jayasree J (Dept Chem, St Xavier's Coll, Thumba, Thiruvananthapuram – 695586). **Chemistry of coastal ground water in Thiruvananthapuram.** *Eco Env Conserv*, **8**(1) (2002), 59-61 [10 Ref].

The physical and chemical characteristics of ground water in the west coast of Thiruvananthapuram district was evaluated using parameters like pH, total solids, hardness dissolved oxygen, chloride sulphate, magnesium, iron etc. The results

revealed that there is deterioration of water quality in certain regions. The possible reasons for water quality degradation was also analysed.

0201-083. Joshi SD, Pandit VI, Hasan MZ (Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). **Rainwater composition of Kochi.** *Polln Res*, **20**(4) (2001), 597-600 [7 Ref].

Studies were carried out to characterise the rain water of Kochi for its pH, conductivity sulphates, nitrates and chlorides. The first rain water in the industrial area showed a pH value of 5.5 thereby indicating occurrence of acid rain phenomenon. The interrelationship of anionic and cationic species from different sources in causation of acid rain phenomenon have been reported.

0201-084. Katpatal YB, Nandanwar NR, Ahirkar SB (Visvesvaraya Regl Coll Engng, Nagpur). **Water quality parameters extraction through remote sensing techniques : a case study.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 303-306 [5 Ref].

The basic data for pollution studies can be collected though conventional and remote sensing methods. In conventional methods taking water samples collects the data. In RS techniques the spectrometers and radiometers in the form of spectral signatures collect the data. Mathematical regression analysis between two sets of parameters is carried out to find out relation between them. Results of the analyze are presented in the form of mathematical expressions, graphs and maps.

0201-085. Kaushik A, Jain S, Dawra J, Sahu R, Kaushik CP (Dept Environ Sci Engng GJ Univ, Hisar 125001, Haryana). **Heavy metal pollution of river Yamuna in the industrially developing state of Haryana.** *Indian J Environ Hlth*, **43**(4) (2001), 164-168 [18 Ref].

Heavy metal concentrations in the river Yamuna flowing along the state of Haryana through Delhi have been reported selecting 16 stations covering the upstream and downstream stations for major industrial complexes of the state. While Fe, Ni and Co concentrations exceeded the maximum permissible limits prescribed for drinking all along the river, the Cd concentrations crossed the acceptable standards in Delhi

downstream. The Pb concentrations declined in the eutrophicated Delhi downstream while Zn concentrations remained within desirable limits throughout.

0201-086. Keshav Haribhakta V, Chaudhuri Malay (Dept Civil Engng, Indian Inst Techno, Kanpur 208016, U.P.). **Flotation-clarification of water by natural coagulants.** *Nature Env Polln Techno*, **1**(1) (2002), 61-65 [2 Ref].

An experimental study has shown pressure flotation using natural coagulants to be a promising low-cost option for water clarification. A household unit for flotation-clarification was designed and fabricated.

0201-087. Kulshrestha Shalini, Singh RV (Dept Chem Univ Rajasthan, Jaipur 302004). **Water pollution due to rising nitrate level in some parts of Jaipur and its remedies.** *J Env Polln*, **8**(4) (2001), 339-343 [4 Ref].

Successive studies on the physico-chemical parameters of water were carried out over a period of two months at 19 different sites in the Jaipur city, India. Analysis revealed that there has been a certain change in the concentration of various constituents. pH varied from (7.7-8.1) and rise in chloride and TDS in some water samples is observed. There have been changes in fluoride concentration (0.2-0.3 mg/l). An important fact that has been emerged in the study is about the rise in nitrate concentration.

0201-088. Madhusudhana Reddy P, Subba Rao N (Dept Geo, Dr BR Ambedkar Open Univ, Jubilee Hills, Hyderabad 500033). **Effects of industrial effluents on the groundwater regime in Visakhapatnam.** *Polln Res*, **20**(3) (2001), 383-386 [8 Ref].

Visakhapatnam, is an industrialised urban area with several industries such as Hindustan Petroleum refinery, Coramandal Fertilizers, Hindustan Polymers, Hindustan Zinc Smelter, Alum Factory etc. Because of its location adjacent to marsh land Hindustan Petroleum and Coramandal Fertilizers are not involved in the deterioration of groundwater, whereas the effluents of Hindustan Polymers at Gopalpatnam and Hindustan Zinc Smelter and Alum factory at Mindi are effecting groundwater chemistry. An attempt has been made to study the degree of pollution by industrial effluents on groundwater regime.

0201-089. Mahapatra Tapan R, Sahu Sobhan K, Padhy SN (Dept Marine Sci, Berhampur Univ, Berhampur 760007, Orissa). **Distribution of calcium and magnesium in Gopalpur Creek waters, Bay of Bengal.** *Nature Env Polln Techno*, **1**(1) (2002), 23-26 [9 Ref].

The seasonal variation of calcium and magnesium concentration in the surface waters of Gopalpur Creek were studied. Calcium and magnesium concentration increased from the upper reaches of the creek towards the mouth and varied linearly with chlorinity value. Premonsoon period recorded higher values than other seasons, whereas monsoon period encountered lower value.

0201-090. Mohapatra D, Das B, Chakravarty V (Mineral Benefication Div, Regl Res Lab (CSIR), Bhubaneswar 751013, Orissa). **A correlation study on physico chemical characteristics of ground water in Paradip areas.** *Polln Res*, **20**(3) (2001), 401-406 [12 Ref].

The physico-chemical characteristics of the ground water in Paradip township and its surrounding areas are analysed. There is a wide variation in the quality of water from point to point which is reflected by the related parameters. A correlation analysis has been carried out among the various parameters. The usefulness of this approach has been demonstrated to predict the quality of ground water. The agreement between predicted and observed values is found to be satisfactory. The result of the study indicates deterioration of ground water in localized areas.

0201-091. Murali M, Satyanarayana T (Dept Environ Std, Coll Engng, GITAM, Visakhapatnam). **A study on sources of water pollution at Machilipatnam, A.P.** *Polln Res*, **20**(3) (2001), 471-473 [6 Ref].

Machilipatnam is a shore town and is the head quarters of Krishna District of A.P. It is flat terrain with practically approaching to zero above MSL. The domestic sewage is simply discharged on the ground surface in the vicinity of houses only. Because of flat terrain, the sewage stagnates locally. This stagnated domestic sewage is the main source of water pollution. It pollutes the groundwater severely. In this study, the sources of water pollution at Machilipatnam have been studied by analyzing the sewage samples

collected in the Machilipatnam town area. The results are tabulated and discussed. Preventive and control measures of water pollution at Machilipatnam have been recommended.

0201-092. Nageswara Rao VV (Chaitanya Byharathi Inst Techno, Gandipet Hyderabad 500075). **Comparison of the ground and surface water quality in and around the Osman Sagar Lake.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 171-172 [4 Ref].

The surface waters from the Osman sagar lake and the ground waters from the surrounding areas of this lake has been analysed for the water quality. All the parameters are well with in the desirable limits of drinking water standards. There is no presence of carbonates in both surface and ground waters. The surface waters have shown a little content of B.O.D.

0201-093. Pande KS (Analyt Res Lab, Hindu Coll, Moradabad 244001, UP). **An integrated pollution study of surface water sediments and ground waters of river Ramganga at Moradabad.** *Polln Res*, **20**(4) (2001), 601-608 [12 Ref].

Ramganga river for a stretch of 36 km at Moradabad has been studied for pollution in surface water, sediments and ground waters in river width area. The pollution is mainly caused by the untreated effluent of nearly 450 electroplating plants and the entire brass and stainless steel industry apart from the domestic wastewaters. The physical, chemical and biological parameters are determined.

0201-094. Pandey AK, Dutta S, Sharma KC (Dept Environ Std, Maharshi Dayanand Saraswati Univ, Ajmer, Rajsthan). **Impact of marble slurry on subsurface water - a case study of Kishangarh, district Ajmer.** *Nature Env Polln Techno*, **1**(1) (2002), 5-11 [11 Ref].

The impact of marble slurry on sub-surface water quality was studied. The quality parameters were compared with standards laid by WHO and ISI for drinking water quality. It is significant to note that the level for all physico-chemical parameters of the ground water sources exceeded the permissible level prescribed by the BIS (1993) and WHO (1992) standards for drinking water. The raw effluent released from the industry is highly hazardous both from salinity and sodicity consideration.

0201-095. Reghunath Rajesh, Sreedhara Murthy TR, Raghavan BR (Dept Marine Geo, Mangalore Univ Mangalagangothri P.O. 574199, Karnataka). **Spatial distribution of pH, electrical conductivity and total dissolved solids of groundwater of Nethravathi river basin, Karnataka State, India.** *Polln Res*, **20**(3) (2001), 413-418 [11 Ref].

Attempt has been made to study the spatial distribution of pH, EC and TDS of ground water of Nethravathi river basin, Karnataka State, India. The pH value of groundwater varies from 5.56 to 8.21 with an average (mean value) of 6.95. The pH range is not within the limits prescribed by WHO or ISI either in the highest desirable level or maximum permissible level. EC values range from 51.02 S/cm to 2783.31 S/cm with an average of 350.18 S/cm. The TDS values of the study area ranges from 20 mg/L to 940 mg/L with an average of 190 mg/L and it falls within the maximum permissible limit of ISI and ICMR.

0201-096. Ruj Biswajit (Dept Chem, Centl Mechl Engng Res Inst, Durgapur, West Bengal). **Water quality and corrosivity of ground water of north western part of Bankura district, West Bengal.** *J Env Polln*, **8**(4) (2001), 329-332 [5 Ref].

A survey was undertaken to assess the quality of ground water in the northwestern part of Bankura district of West Bengal, taking both physical and chemical parameters into consideration. It was observed from the study that 78% of the water samples from tubewells exceeds the limit permissible for portable water with respect to iron. The nature of corrosivity of ground water was also determined.

0201-097. Sarkar Amita, Singhal Vineeta, Arora MP (Dept Zoo, Agra Coll, Agra 282001). **Physicochemical characteristics of Hindon and Narmada rivers.** *J Expt Zoo India*, **5**(1) (2002), 107-112 [5 Ref].

The physicochemical characteristics of water of river Hindon and Narmada have been studied. Various ostracods have also been reported in these rivers. Water of river Hindon was found to be more polluted than river Narmada.

0201-098. Sharma SK, Jain PK, Tambe JA (Centl Ground Water Bd, Centl Regn, Nagpur). **Ground water pollution by domestic sewage and faecal matter discharged into dry dugwells in Jarud area, Amravati district, Maharashtra.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 163-169 [11 Ref].*

The unused unlined dugwells in Jarud towns, Maharashtra have been converted into latrines by the local inhabitants of Jarud. As such, the sewage is being disposed into the dried aquifer having a direct continuity to the ground water reservoir. In order to study the impact of direct injection/disposal of sewage in the ground water regime, 20 water samples were collected from nearby borewells and dugwells. The chemical analysis results show that the nitrate content amongst these samples varies from 29 to 271 mg/L. The BOD, which is generally not found in ground water at greater depth, is also recorded in the village at the depth of more than 20 m bgl in the range varying from 0.96 to 5.29 mg/L. This indicates the presence of organic matter into the ground water at such depths.

0201-099. Sharma SK, Tiwari AN, Nawale VP (Centl Ground Water Bd, Centl Regn, Nagpur). **Nitrate pollution in ground water of Nagpur city area.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 173-176 [6 Ref].*

The chemical analysis of 120 water samples, collected from dugwells and borewells in the metropolitan of Nagpur have shown nitrate content varying from 0.7 to 420 mg/l and traces to 948 mg/l in pre and post-monsoon respectively. The findings of the study indicate that domestic sewage flowing in the Nag nala, leaching from landfill sites, cattle farming and improper disposal of refuse from slums are getting percolated to the ground water causing increase in the concentration of nitrate.

0201-100. Sharma SK, Tiwari AN, Nawale VP (Centl Ground Water Bd, Centl Regn, Nagpur). **Impact of industrial pollution on ground water quality in Kalmeshwar area, Nagpur district, Maharashtra.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March 2002, Nagpur, 183-188 [6 Ref].*

Indiscriminate disposal of industrial waste has affected ground water quality in Kalmeshwar area, located 20 km northwest of Nagpur. The findings of the study indicate that the quality of ground water in the area has deteriorated to a dangerous proportion

making it unfit for drinking and irrigation purposes. Augmentation of ground water by suitable artificial recharge techniques may help in bringing down the concentration of ions present in the ground water.

0201-101. Singh Shailesh K, Singh Amarjeet K (Ganga Polln Monit Proj, Geo Dept, Patna Univ, Patna 800005). **Assessment of physicochemical characteristics of surface and subsurface waters in fire and non-fire zones of Jharia coal field in district Dhanbad, India.** *J Env Polln*, **8**(4) (2001), 355-359 [6 Ref].

Bastacola (non-fire zone) and Lodna (fire zone) areas are situated in southern part of Jharia Coalfield, District Dhanbad (Bihar). A systematic on the physico-chemical characteristics of surface and subsurface waters from 18 samples of non-fire and fire zone has been carried out to assess the impact of coal seam fire on the quality of water. It was observed that the coal seam fire does not only damages valuable resource of nation, but it also degrade/deteriorate the quality of water, which can produce adverse effects on the inhabitants residing in and around fire zone area.

0201-102. Sukumaran GB, Sivakumar EKT, Trivedy RK (Dept Geo Presidency Coll, Chennai 600005). **Pollution of ground water around Saint Thomas Mount Panchayat Union, Chengalpattu MGR district, Tamil Nadu, India.** *J Indl Polln Contl*, **17**(2) (2001), 225-230 [14 Ref].

Paper reports groundwater pollution around St. Thomas Mount Panchayat Union, T.N. The water quality was found to be seriously affected by tanneries waste disposal. Chromium was found to be higher in concentration. Suggestions for water quality improvements have been given.

0201-103. Ubala MB, Farooqui Mazahar, Arif Pathan Md, Zaheer Ahmed, Dhule DG (Dept Chem, Vasant Rao Naik Coll, Aurangabad). **Regression analysis of ground water quality data of Chikalthana industrial area, Aurangabad (Maharashtra).** *Oriental J Chem*, **17**(2) (2001), 347-348 [6 Ref].

Bore-well (ground) water samples from Chikalthana industrial area of Aurangabad, (Maharashtra) have been analyzed for various water quality parameters and correlation coefficient among different constituents were determined. A regression equation to predict the concentration of water quality constituents having significant

correlation coefficient with oxidation-reduction potential, the usefulness of these equations in predicting the ground water quality is discussed.

Noise Pollution

0201-104. Dharmadhikari DM, Navghare Sonali, Singh RN (Natl Environ Engng Res Inst, Nagpur). **Traffic noise level prediction models.** *Proc Natl Conf Polln Prev Contl India: IAEM*, 2-3 March 2002, Nagpur, 81-87 [23 Ref].

Noise from motor vehicles is the most extensive source of noise in most communities. The prediction models used to describe the noise levels produced by various vehicles can be used both for highway planning and design projects and for developing strategies and assessing regulatory alternatives of noise emission source regulation. Paper reviews the models used for prediction of road traffic noise and validates the models used in India.

0201-105. Karunakaran T (Dept Socio, Madura Coll, Madurai 11, Tamil Nadu). **Effect of noise on industrial workers - a sociological survey.** *Eco Env Conserv*, 7(4) (2001), 477-480 [10 Ref].

Study was conducted among the industrial workers of Coimbatore city, Tamil Nadu to know the level of adaptation, effects on social relationship, interpersonal communication, work performance and views on noise control measures. The other problems caused by noise are also analysed. It is evident that the workers adapt themselves to the noise when they are working for a long period in the noisy environment. The high noise area respondents are also having a strong view on control of noise in industries. More respondents are affected by physiological and psychological health problems, which are caused by noise.

0201-106. Kisku GC, Barman SC, Kidwai MM, Bhargava SK (Environ Monit Div, Indl Toxicol Res Cent, MG Marg, Lucknow 226001). **Environmental impact of noise levels in and around open cast bauxite mine.** *J Environ Bio*, 23(1) (2002), 51-56 [19Ref].

In order to assess the impact of bauxite mine noise on employees health and in and around bauxite mine environment, general noise sources and equipment noise were

monitored. All these noise sources were compared with prescribed standard noise levels laid down by Central Pollution Control Board (CPCB). Data has also been compared with reference site, north block hill top which is barren and virgin plateau / top covered with grass only and free from human interference. Equipment noise levels were much higher than the other zone of the mine which does not have the corresponding standards.

0201-107. Murthy Usha N, Murthy Krishna (Civil Engng Dept. Bangalore Univ). **Rotated component analysis to assess the noise levels due to different type of vehicles - a case study.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 75-79.

To assess noise levels due to traffic in Bangalore city limits a case study was undertaken in a developed stretch. From the collected data equivalent noise levels[Leq] were calculated. Using the statistical package [SPSS] the field data was reduced to Rotated Component Matrix in about five iterations. By observing the matrix it is possible to identify the type of vehicle that is responsible for causing noise at a particular junction.

0201-108. Singh Nalini Mohan, Narayana Rao S (Centl Lab, Bihar State Polln Contl Bd, Patna). **A reconnaissance of traffic noise pollution in the city of Patna.** *Indian J Environ Hlth*, **43**(4) (2001), 138-143 [8Ref].

The existing noise pollution status of Patna urban environment with emphasis on objective measurement is reported. The data were compared with the published data of other towns and cities and the possible factors responsible for change in the noise levels are discussed.

Ecology

0201-109. Biswas BK, Konar SK (Fisheries Lab, Dept Zoo, Univ Kalyani 741235, West Bengal). **Influence of hazardous industrial wastes on plankton in the river Damodar at Durgapur in West Bengal.** *Polln Res*, **20**(4) (2001), 583-588 [13 Ref].

The river Damodar at Durgapur received wastes from different major industries. An investigation was carried out to assess the impact of waste disposal on plankton in different seasons. A total of 31 phytoplankton and eight zooplankton taxa were identified from four sampling sites. Change in the percentage composition of different groups of plankton at different sites was noted. Certain pollution tolerant planktonic algae were dominated in the discharge zone indicating polluted nature of the river in this stretch.

0201-110. Ghose MK, (Cent Mining Env, Indian Sch Mines, Dhanbad 826004, Jharkhand). **Changes in microbial numbers in soil dumps of coal mining areas.** *Indian J Soil Conserv*, **29**(1) (2001), 53-58 [18 Ref].

One large open cast coal project of Eastern Coalfield Ltd. (ECL) was investigated to assess the decrease of microbial population in different age classes of mine soil dumps. Mine soil characteristics of the dumps were compared with those of unmined soil and results have been discussed. Soil microbes were found to be positively correlated with field moisture, organic carbon and pH. The changes were found to be statistically significant. Topsoil preservation for the renewal of damaged land has been discussed.

0201-111. Joshi PC, Singh Ajeet (Dept Zoo Environ Sci, Gurukul Kangri Univ, Harwar 249404). **Analysis of certain physico-chemical parameters and planktons of freshwater hill stream at Nanda Devi Biosphere Reserve.** *Uttar Pradesh J Zoo*, **21**(2) (2001), 177-179 [13 Ref].

Study observed some physico-chemical parameters of Rishi Ganga river during a period of seven months. The results show higher value of dissolved oxygen, low to moderate water temperature, slightly higher pH and a very low amount of free CO₂ in Rishi Ganga indicating no sign of pollution of the water body.

0201-112. Kamble GC, Tayade DT (Dept Bot, SRRL Sci Coll, Morshi Dist, Amravati 444905). **Studies of some physicochemical parameters and hydrobiological algal pollutants of water sources in Revasa.** *Oriental J Chem*, **17**(3) (2001), 493-496 [15 Ref].

The human activities influence the profuse growth of algal pollutant which, in turn, are responsible to hamper the water quality and thus make the water hygienically unsafe for drinking purpose. Paper investigate some physico-chemical parameters by given chemical method along with hydrobiological algal pollutants from water sources of Revasa river. The place of Revasa is located in Amravati district of Maharashtra state in India.

0201-113. Kanungo VK, Sinha Sanju, Naik ML (Sch Life Sci, Pt RS Univ, Raipur 492010). **Net primary productivity of some aquatic macrophytes in sewage-sullage mixture.** *J Environ Bio*, **22**(3) (2001), 219-223 [10 Ref].

Sewage-sullage mixture from Raipur city is spread over a vast area surrounding the city. Net primary productivity of three macrophytes: *Ipomoea aquatica*, *Marsilea quadrifolia* and *Nelumbo nucifera* were valuated while being cultivated in such sewage-sullage mixture. Productivity was determined either with periodic biomass removal or through removing the biomass only once at the time of growing season (*N. nucifera*). Thus, these macrophytes are yielding a high amount of human consumable biomass from an area which neither be a useless wetland.

0201-114. Katti RJ, Mohan Kumar B, Venkatesha Moorthy KS, D'souza Ronald K (Dept Fisheries Env Eco, Coll Fisheries, Mangalore 575002). **Hydrography and net phytoplankton in the Arabian sea off Chitrapur receiving industrial effluents – pre and post assessment.** *Polln Res*, **20**(3) (2001), 373-382 [20 Ref].

A study on the hydrography and net phytoplankton in the Arabian Sea off Chitrapur before and after receiving the treated industrial effluents has been carried out. The sampling were made during post and pre monsoon season in monthly intervals at 5, 10 and 15 m. depth along effluent discharge sector. The diversity index of phytoplankton during pre discharge at 5, 10 and 15m. depth fluctuated from 1.11 to 2.21, 0.73 to 2.19

and 0.75 to 2.29, while in post discharge period, the values varied from 1.42 to 2.22, 0.88 to 2.04 and 1.00 to 1.87 respectively.

0201-115. Kundangar MRD, Abubaker Adnan (Natl Inst Aquatic Eco, J&K LWDA Habak Naseembagh, Srinagar 190006). **Post dredging changes and comparative limnology of Dal Lake Kashmir.** *Polln Res*, **20**(4) (2001), 539-547 [13 Ref].

Paper deals with post dredging changes in the physico-chemical and biodiversity of Dal Lake Kashmir. Comparison of dredged and undredged zones has been drawn in order to evaluate the physico-chemical and microfloral changes in two zones besides impact assessment studies. Nitrate nitrogen and total phosphorus content depicted a decrease after dredging, while increase in the ammonical-nitrogen and orthophosphate was recorded. Phytoplankton and zooplankton did not depict any significant variation at dredged and undredged site.

0201-116. Mahadev J, Hosmani SP (Dept Std Environ Sci, Univ Mysore Manasagangotri, Mysore 570006). **Langliers index and its relation to phytoplankton in two lakes of Mysore city.** *Nature Env Polln Techno*, **1**(1) (2002), 19-21 [5 Ref].

Langlier, calcium carbonate saturation index is commonly used to evaluate the scale forming and the scale dissolving tendencies of water. Assessing these tendencies are useful in corrosion control programmes and in prevention of calcium carbonate scaling in pipes in equipments such as industrial heat exchangers and domestic water heaters. Phytoplankton growth in such waters have a tendency to reduce such processes. Members of the chlorococcales and blue greens seem to dominate such saturated waters.

0201-117. Mahapatro TR, Padhy SN (Dept Marine Sci, Berhampur Univ, Berhampur 760007, Orissa). **Seasonal variation of micronutrients in Rushikulya estuary (Bay of Bengal).** *Polln Res*, **20**(4) (2001), 529-533 [22 Ref].

Behaviour of nitrate, phosphate and silicate were studied at five selected stations in Rushikulya estuary adjoining the Bay of Bengal. Significant variations were observed in different seasons : silicate and nitrate showed an inverse relation with salinity in all the seasons, whereas phosphate varied directly with salinity in premonsoon and an inverse

relation in postmonsoon period. An increasing trend was observed for nitrate and silicate while phosphate showed a decreasing trend along estuarine to riverine region.

0201-118. Maruthanayagam C, Prama R, Senthil Kumar C (Dept Zoo, AVC Coll, Mannampandal, Mayiladuthurai 609305, Tamil Nadu). **Diel variation of zooplankton in Thirukkulam pond ecosystem at Mayiladuthurai, Tamil Nadu.** *J Env Polln*, **8**(4) (2001), 371-375 [14 Ref].

The present work was carried out at Thirukkulam pond near A. V. C. College. The biomass of zooplankton varied during different hours of the day. A total of 19 zooplanktonic species occurred belonging to five groups namely Protozoa, Rotifera, Ostracoda, Cladocera and Copepoda. Among the 19 species, each three from Protozoa and Cladocera, four from Ostracoda and Copepods and five from Rotifera were recorded.

0201-119. Maruthanayagam C, Subramanian P (Dept Zoo, AVC Coll, Mayiladuthurai 609305). **Cluster formation of zooplankton and its relation to seasonal variation.** *Uttar Pradesh J Zoo*, **21**(1) (2001), 53-57 [6 Ref].

The survey of zooplankton was carried out in Pak Bay near to Mandapam. A total of 81 species of zooplankton were observed during the study period. The abundance and distribution pattern of each and every species show direct relation to seasonal effect. The results also affirm significant cluster formation during the study period.

0201-120. Mitra Abhijit, Banerjee Kakoli, Pal Sudipta, Neogi Subhendu, Bhattacharyya DP (Dept Marine Sci, Univ Calcutta, Calcutta 700019). **Seasonal variation of nutrients in and around Lower Long Sand, West Bengal, India.** *Ultra Scientist Phyl Sci*, **14**(1) (2002), 7-10 [5 Ref].

In the Hooghly estuarine region, a seasonal variation of nutrient concentrations is noticed and it is affected by the various physicochemical characteristics of the estuarine system like dilution factor, salinity and pH. The variation is enhanced due to monsoonal run-off from the highly urbanized city of Calcutta, Howrah and the newly developing Haldia complex. The present study of monitoring the nutrients in the aquatic phase was undertaken around the Lower Long Sand at the confluence of the Bay of Bengal and the Hooghly river.

0201-121. Paulraj A, Kannan KP*, Altaff K, Muthmary J (*CAS Bot, Univ Madras, Guindy Campus, Chennai 25). **Diversity of mesophilic fungal populations in freshwater aquaculture ponds in Tamil Nadu.** *Convergence*, **3**(1-4) (2001), 44-51 [24 Ref].

Studies on biodiversity of the fungal population present in the soil samples of freshwater aquatic ponds showed a variety of fungal species. General mycological techniques were followed to study the fungal population. The distribution pattern of the fungi and the role played by them are discussed.

0201-122. Prakash Sadguru, Ansari Khalid K, Sinha Mukul (Chthyo Lab, Dept Zoo, MLK (PG) Coll, Balrampur 271201). **Seasonal dynamics of zooplankton in a freshwater pond developed from the waste land of brick kiln.** *Polln Res*, **20**(4) (2001), 681-683 [7 Ref].

Zooplankton population density was maximum in April (996 units/litre) and minimum in January (450 units/litre). Twenty species of zooplankton were recorded (Rotifers-8 sp., Cladocerans-7 sp., Copepods-3 sp. and Ciliates-2 sp.). Various physico-chemical factors like water temperature, free CO₂, pH and chloride are in positive correlation with different zooplankton groups.

0201-123. Rajak US, Singh AK, Singh Ram (Dept Entomo, ND Univ Agricul Techno, Kumarganj, Faizabad 224229). **Ecological implications on non target animals arising from rodenticide use.** *J Expt Zoo India*, **5**(1) (2002), 69-71 [4 Ref].

The insects (yellow wasps and black ants) fed on gut contents of poisoned rats had shorter life span with the higher percentage of mortality. Cent percent mortality was observed in the black ants fed on the gut contents of the rats died to the feeding on zinc phosphide mixed feeds. Similar results were also obtained when the yellow wasps were fed on the same material. The dogs however did not eat the rats died with zinc phosphide.

0201-124. Reddy MN, Srivastava Vibha (Dept Bio Sci, South Gujarat Univ, Surat 395007). **Effect of heavy metals on the primary productivity and impact of acclimatization on the toxicity to photosynthetic activity in *Chlorogloea fritschii*.** *Polln Res*, **20**(3) (2001), 331-335 [14 Ref].

The effect of heavy metals on the primary productivity of the pond was estimated. Inhibitory effect of these metals on the photosynthetic activity of *Chlorogloea fritschii* was studied and compared with that of pond water. The toxicity order of the metals was found to be $Hg^{2+} > Cu^{2+} > Cd^{2+} > Pb^{2+} > Zn^{2+}$.

0201-125. Saha T, Ghosh PB, Sommajumdar S, Bandyopadhyaya TS (Inst Wetland Manag Ecol Design, B-4, Sector 111, Salt Lake, Calcutta 700098). **Seasonal distribution in Subhas Sarovar, Calcutta.** *Polln Res*, **20**(3) (2001), 319-321 [8 Ref].

The level of occurrence and mode of seasonal distribution of the surfactants in the water medium of Subhas Sarovar were studied. The concentration of surfactants of the type linear benzene sulfonate (LAS) varied from 0.09 to 0.43 ppm and the trend of seasonal variation was almost similar to those of pH and total alkalinity. The activity of detergents in the medium might play a great role in the variation of water hardness.

0201-126. Sarangi Bijaya Ketan, Kanungo Sunita, Chakrabarti Tapan (Natl Environ Engng Res Inst, Nagpur 440020). **Tissue culture bamboo — a boom for rapid revegetation programme.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March, 2002, Nagpur, 251-256 [16 Ref].

Paper describes an efficient protocol for production of tissue cultured bamboo saplings ready for mass scale plantation. Studies have shown that tissue cultured bamboos grow twice as fast as that of seedling bamboo under same field condition. Tissue cultured bamboo saplings offer great versatility for rapid growth and generation of biomass in less time period, in comparison to seed raised planting materials. The monoclonal tissue cultured bamboo may be used as improved planting material for rapid agro-forestry, social forestry, forestation and other plantation programs for eco-restoration and sustainable development.

0201-127. Saxena Alok, Shrivastava Pradeep (Dept Limno, Barkatullah Univ, Bhopal, MP). **Primary production by phytoplankton in a sewage fed lake and energy transformation to fish yield.** *Polln Res*, **20**(4) (2001), 613-617 [18 Ref].

Shahpura lake is a sewage contaminated water body with a higher phytoplankton assemblage. Species of Cyanophyceae dominated throughout the study period. Species of Chlorophyceae and Bacillariophyceae remained sub dominant. Lavish growth of

macrophytes specially *E. crassipes* were also observed. Primary productivity was observed high in the surface water of the lake and reduced with depth because of low light penetration due to auto shading and high turbidity. High chlorophyll-a values was also observed.

0201-128. Sharma Kamayani, Chaturvedi RK, Bhardwaj SM, Sharma KP (Dept Bot, Univ Rajasthan, Jaipur 302004). **Patterning of the vegetation in response to water pollution in Sanganer, Jaipur.** *J Env Polln*, **8**(4) (2001), 305-320 [40 Ref].

Phyto-sociology of plant communities was studied during the spring the late rainy seasons at six polluted sites. Both submerged and free-floating hydrophytes were absent at these sites. 74 plant species belonging to 35 families were found on their bank. *Cynodon dactylon* was the most dominant species at almost all the sites. The values of density, IVI and other phyto-sociological indices decreased markedly for most of the marshy plant species on account of both pollution as well as competition imposed by dominant and co-dominant plant species in the communities.

0201-129. Sharma BK, Hussain Md, (Dept Zoo, NE Hill Univ, Umshing, Shillong 793022, Meghalaya). **Abundance and ecology of zooplankton in a tropical flood plain lake, Assam (NE India).** *Eco Env Conserv*, **7**(4) (2001), 397-403 [29 Ref].

Zooplankton of Samuajan beel, a tropical floodplain lake of the Brahmaputra basin of Assam state, comprised an important component of net plankton and depicted trimodal annual pattern. Copepoda > Rotifera > Cladocera > Rhizopoda registered the stated order of quantitative abundance. Copepoda > Rotifera > Cladocera > Rhizopoda and Copepoda > Rotifera contributed to summer zooplankton peak and monsoon maxima respectively while Rotifera mainly resulted in their winter maxima.

0201-130. Shastri Yogesh, Bhogaonkar PY, Barhate VP (PG Dept Bot, MSG Coll, Malegaon Camp, Dist Nasik, 423105). **Physico chemical characteristics and algae of a percolation tank of Pimpalgaon.** *Indian J Environ Hlth*, **43**(4) (2001), 174-175 [13 Ref].

Physico-chemical characteristics and algae of a percolation tank of Pimpalgaon (Dabhadi) have been studied. The studies reveal that in all 92 algal taxa belonging to four classes i.e. Cyanophyceae, chlorophyceae, Bacillariophyceae and Euglenophyceae

were recorded. Cyanophyceae members show luxuriant growth in summer. Euglenoids show better growth during winter and when pH 9.09.

0201-131. Sivakumar K, Altaff K (Unit Reproductive Bio Live Feed Cult. PG Res Dept Zoo, The New Coll, Chennai 600014). **Diversity of freshwater rotifiers of Dharmapuri district, Tamil Nadu.** *Convergence*, **3**(1-4) (2001), 25-30 [26 Ref].

Zooplankton samples were collected from fifty different freshwater bodies of Dharmapuri District, Tamil Nadu and diversity of rotifiers were analysed. Water temperature ranged between 22 C to 29 C during winter and 24 C - 34 C during summer, while pH ranged from 6.0 to 8.0. Twenty six species of rotifers were recorded in the present study of which fifteen species occurred in winter and four species during summer season exclusively whereas seven species of rotifiers occurred in both the seasons.

0201-132. Slathia D, Gupta SC, Dutta SPS (Dept Environ Sci, Univ Jammu, Jammu 180006). **Limnobiologic studies of Rehtari Spring Udhampur, Jammu with special reference to zooplankton.** *J Nature Conserv*, **13**(2) (2001), 297-306 [33 Ref].

Physico-chemical characteristics of water and zooplankton of Rehtari Spring, Udhampur, Jammu, were studied and have been described. Zooplanktonic analysis has shown the seasonal presence of protozoans (fifteen species) and rotifers (four species) only. Analysis of coefficient of correlation of total zooplankton, with various physico-chemical characteristics of water has shown insignificant correlation.

0201-133. Sreenivasa Rao A, Ramamohana Rao P (Dept Inorganic Analyt Chem, Sch Chem, Andhra Univ, Visakhapatnam 530003, AP). **Heavy metals concentrations in the sediments from Kolleru Lake, India.** *Indian J Environ Hlth*, **43**(4) (2001), 148-153 [36 Ref].

The sediments samples were collected at different points from Kolleru Lake of Andhra Pradesh in three seasons a year over a period of three years and analyzed for heavy metals and organic matter. Concentrations of Cu, Pd, Cd, Mn, Ni, Co, Fe and Zn in the sediments were analysed by using Atomic absorption spectrometer (AAS) and selected sediments samples were analysed for Be, Sr, Ba, B, Mo, Tl, V, Cr, Ag, Bi, As and Se by using inductively coupled plasma Mass Spectrometer.

0201-134. Suriyanarayana Moorthi M, Habibullah Mohammed (PG Dept Zoo, The New Coll, Chennai 600014). **Icthyofauna of Ennore estuary.** *Convergence*, **3**(1-4) (2001), 60-64 [9 Ref].

Ennore estuary is an excellent biome for ecological studies as it shows remarkable diversity of various fauna and flora. In recent years construction of North Madras Thermal Power Project and continuous dumping of effluent into this estuary by various factories of North Chennai have depleted the major fish fauna and natural oyster beds. Present social status of this estuary is also discussed.

0201-135. Vareethiah K, Haniffa MA, Narayanan M (Dept Zoo, St Judis Coll, Thoothoor 629176). **Density diversity and retting pollution : a case study.** *Polln Res*, **20**(3) (2001), 323-329 [32 Ref].

Water quality and plankton data were collected from Anandan Victoria Martandavarman Canal (A.V.M. Canal), south west coast of India, polluted by coir - retting. Comparative data from retting - and non polluted zones and statistical inferences drawn thereupon pointed to organic enrichment in the former. Density diversity indices of phyto - and zooplankton showed annual maxima of 4.83 and 3.59 in the pollution free site whereas respective values in the retting zone were 3.2 and 2.87. Species richness and species evenness too showed appreciable differences in space.

0201-136. Vidhale NN, Gangawane LV (Soil Microbio Pesticides Lab, Dept Bot, Dr. Babasaheb Ambedkar Marathwada Univ, Aurangabad 431004, MS). **Effects of heavy metals on *E. coli* in the rhizosphere of sewage irrigated crop plants.** *Polln Res*, **20**(3) (2001), 365-371 [10 Ref].

Survey of *Escherichia coli* in the rhizosphere and soil of various crops grown in sewage irrigated fields at Aurangabad indicated that its occurrence varied significantly from crop to crop. *E. coli* population was also higher in the rhizosphere than in the soil. *E. coli* population was completely eliminated in the rhizosphere and soil of all the three crops (chilli, cauliflower and maize) within 21 days. Hg was highly toxic than other metals. Bacterial and fungal population other than *E. coli* was also reduced highly due to heavy metals. Management of *E. coli* through the application of these metals in sewage irrigated soils is suggested.

0201-137. Waghmare SV, Paunikar WN, Lakhe SB, (Natl Environ Engng Res Inst, Nagpur 440020). **Methodology for recovery of indigenous viruses from primary sludge.** *Indian J Environ Hlth*, **43**(4) (2001), 194-199 [25 Ref].

Freon extraction method for recovery of viruses from primary sludge has been studied with sonication and the beef extract elution methods. Several variables within the freon extraction method were worked out and it was observed that equal volume of 10% buffered beef extract (pH 7.0), as that of the sludge sample, was required for optimum virus elution.

0201-138. Zargar S, Ghosh TK, Chakrabarti T (Natl Environ Engng Res Inst, Nagpur 440020). **Impact of elevated temperature to freshwater alga *Chlorella vulgaris*.** *Proc Natl Conf Polln Prev Contrl India : IAEM*, 2-3 March 2002, Nagpur, 325-328 [20 Ref].

Impact of various sublethal levels of temperature on select growth parametrs, of the green alga *Chlorella vulgaris* was evaluated for 15 days in artificial nutrient-fortified growth medium. Apparently, temperature at 36 or below did not have remarkable adverse effects on the parameters studied. Levels of temperature in various water bodies were compared, and importance of heat-shock protein in algae and consideration of several aquatic organisms while evaluating safe levels of temperature were discussed.

Nature and Natural Resources Conservation

0201-139. Anand Mohan B, Bharatha Lakshmi B (Dept Zoo, Andhra Univ, Visakhapatnam). **Note on the status, habitat, distribution and ecology of golden gecko, *Calodactylodes aureus* in the south Eastern Ghats of Andhra Pradesh.** *J Nature Conserv*, **13**(2) (2001), 207-210 [2 Ref].

Golden gecko (*Calodactylodes aureus*) is a member of the family Gekonidae (geckos). It is a rare and a endangered species, endemic to Seshachalam Hills of Sri Venkateswara Wildlife Sanctuary, Andhra Pradesh and occurs in deep crevices among

rocks. The article deals briefly with its habitat, distribution, feed, colouration, egg laying habit and other habits. Based on the observations of behaviour of this reptile, some conservation measures are also suggested.

0201-140. Beena KR, Arun AB, Raviraja NS, Sridhar KR (Dept Biosci, Mangalore Univ, Mangolagangotri 574199, Mangalore, Karnataka). **Arbuscular mycorrhizal status of *Polycarpaea corymbosa* (Caryophyllaceae) on sand dunes of west coast of India.** *Eco Env Conserv*, **7**(4) (2001), 355-363 [28 Ref].

A survey was performed to understand arbuscular mycorrhizal (AM) fungal association and distribution of a seasonal plant species, *Polycarpaea corymbosa* on the coastal sand dunes of west coast of India. These plants are growing in mixed and pure stands at about 40 m away from the low tide level. The plant biomass was higher in mixed stands than in pure stands. Roots recovered from mixed stands revealed the presence of arbuscules and vesicles, but none of the roots of pure stands showed AM fungal colonization.

0201-141. Kotia Amit, Kumar Ashwani (D-86, Kantinagar, Station Rd, Jaipur 302006). **Biodiversity characteriztion in arid and semiarid regions of Indian Desert.** *Int J Mendel*, **18**(4) (2001), 109-110 [2 Ref].

Occurrence of saline soils with pH up to 9.0 is a common feature in sandy areas of Rajasthan. But the forest cover left are rich in biodiversity which has great economic value. Characterization of different plant species of economic value was undertaken.

0201-142. Mishra AK, Sharma UC (Div Agricl Engng, ICAR Res Complex NEH Region, Umroi Rd, Umiam (Barapani) 793013, Meghalaya). **Traditional wisdom in range management for resource and environment conservation in north eastern region of India.** *Himalayan Eco Dev*, **9**(1) (2001), 27-32 [18 Ref].

Unabated exploitation of forests in the region has caused ecological imbalance. Farmers practising shifting cultivation, though not averse to newer technologies, do not adopt them due to socio-economic reasons. However, amidst faulty agricultural practices, there exist some indigenous land use systems, developed by the tribal farmers due to their ingenuity and skill; which are eco-friendly, do not involve

deforestation and take care of resources and soil health, such farming systems need to be popularized in the region under iso-agro-climatic conditions.

0201-143. Murali M, Sreenivas M (Dept Environ Std, Coll Engng, GITAM, Visakhapatnam 530045, A.P.). **Studies on the effect of salinity on engineering properties of soil.** *Nature Env Polln Techno*, **1**(1) (2002), 35-37 [6 Ref].

Industries generally discharge their effluents in a nearby stream or onto ground surface. These effluents seep through the pores of soil and vary the pore fluid characteristics, which in turn change the soil properties. This paper aims at study of such effect on a typical expansive soil with the salinity of pore fluid. The variations of soil properties in terms of volume change behaviour as well as strength characteristics are studied with varying salt concentration. The results are compared and discussed.

0201-144. Ray Jnanabrata (Dept Bot, Suri Vidhyasagar Coll, Suri, Birbhum 731101, West Bengal). **Some common medicinal plants of Birbhum.** *Int J Mendel*, **18**(4) (2001), 141-142 [4 Ref].

The information regarding the availability and use of some medicinal plants of Birbhum district of West Bengal has been studied. More than one hundred species of medicinal value are distributed in different regions of the district of which the most commons are used for traditional health care. Further studies could be taken for search of new germplasm.

0201-145. Sarangi A, Bhattacharya AK, Singh A, Singh AK (Water Techno Cent, Indian Agricl Res Inst, New Delhi 110012). **Use of Geographic Information System (GIS) in assessing the erosion status of watersheds.** *Indian J Soil Conserv*, **29**(3) (2001), 190-195 [6 Ref].

The erosion status of a watershed provides a clue to watershed prioritization and subsequent activities for conservation of land and water resources within the watershed. In this study, two watersheds viz. Banha Watershed at upper Damodar Valley, Jharkhand and IARI watershed at Delhi are considered for hypsometric analysis. The hypsometric analysis performed on these two watersheds revealed that the Banha watershed is less susceptible to erosion where as IARI watershed is at stabilised state i.e. not prone to any further erosion. This finding points out the need for conservation

measures in Banha watershed for controlling further erosion through construction of soil conservation structures.

0201-146. Shukla KML, Khan AA, Khan Shabina, Verma Ashok Kumar (Pandit SNS Govt (Autonomous) PG Coll, Shahdol 484001, MP). **Ethnobotanical studies in Korba basin, district Bilaspur, (M.P.), India.** *Adv Plant Sci*, **14**(2) (2001), 391-394 [8 Ref].

The aboriginal tribes of Korba basin follow rich ethnobotanical and folk practices. They mostly depend on natural resources for their existence, which deriving their needs they collect plant for their food and also they have developed their own tradition for health care. The paper deals 24 plants belonging 23 genera and 15 families of Angiosperms used as food and medicinal practices.

0201-147. Singh HS (Gujarat Ecol Edn Res Foundation, Indroda Park Sec 9, Gandhinagar 382009, Gujarat). **Indian wild ass (*Equus hemionus khur*) in the Little Rann of Kutch, Gujarat, India.** *J Bombay Natural Hist Soc*, **98**(3) (2001), 327-334 [7 Ref].

The Little Rann of Kutch is a unique saline desert and is synonymous with the Indian wild ass, locally called ghor khar. Paper deals with the population trend distribution, migration and population characteristics of the wild ass. Encounters in different habitat types revealed that though the barren Rann does not provide food and water, it is an important habitat for the wild ass. Attempts were also made to study the habitat utilisation pattern and management problems of the Sanctuary for conservation of the wild ass in the region.

0102-148. Singh RB, Singh Yogendra (PG Dept Bot, MS Coll, Motihari 845401, Bihar). **Preliminary observations on the ethnomedicinal plants on Indo-Nepal border (Champan), Bihar.** *Int J Mendel*, **18**(3) (2001), 87-89 [7 Ref].

An ethnomedicinal study was made among tribals of Indo-Nepal border (Champan), Bihar. The paper reports informations from various tribal communities about their medical practices. Vernacular name, botanical name, family, plant parts of medicinal use and methods of administration are also presented.

0201-149. Sinha Bhaskar (Natl Inst Sci, Techno Dev Std, CSIR, New Delhi 110012), **Himalayan ecopollution.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 273-276 [15 Ref].

Himalayas have had a great climatological impact on the country's environment and people. Several man-induced activities in the Himalayas have accelerated Himalayas degradation and threatened the equilibrium of mountains ecosystems. There are numerous age old practices persisting in the Himalayan villages. Some older generation people are still retaining them. If village institutions are kept at the centre of sustainability, then it would not be hard to stop Himalayan eco-pollution.

0201-150. Thoyajaksha, Ravishankar Rai V (Dept Std Appl Bot Biotechno, Univ Mysore, Manasagangotri, Mysore 570006). ***In vitro* micro propagation of *Dictyospermum ovalifolium* Wight - a rare and endemic plant in Western Ghats, India.** *Plant Cell Biotechno Molecular Bio*, **2**(1&2) (2001), 57-62 [15 Ref].

Paper describes the micropropagation of *Dictyospermum ovalifolium* (Commelinaceae) an endangered plant species endemic to the Western Ghats region of Karnataka as a conservation measure. Nodal segments and shoot tips of *Dictyospermum ovalifolium* were used as explants for *in vitro* culture establishment. Rooted plantlets were successfully transferred to their original habitat.

Health and Toxicology

0201-151. Abrahan Kurian Mathew, Radha Krishnan Tresa* (*Dept Aquatic Bio Fisheries, Univ Kerala, Kariavattom, Thiruvananthapuram, Kerala 695581). **Study on the gill of field crab *Paratelphusa hydrodromus* (Herbst.) exposed to nickel.** *J Environ Bio*, **23**(2) (2002), 151-155 [32 Ref].

Paratelphusa hydrodromus (Herbst.) was exposed to 50 ppm nickel chloride solution for a period of 10 days under laboratory conditions. The gills of the treated and non-treated animals were sectioned, strained and examined under a compound microscope and noticed significant changes such as enlargement of gill lamellae, lifting up and rupture of epithelial cells, enlargement of mid rachis, hyperplasia and hypertrophy, appearance of pyknotic nuclei and a general necrosis in the treated gills.

Results suggest that a comparatively low concentration of nickel (50 ppm) is enough to elicit pathological changes in *Paratelphusa hydrodromus*.

0201-152. Aditya Ajit Kumar, Chattopadhyay Sajib, Mitra Shyamal (Dept Zoo, Visva Bharathi Univ, Shantiniketan 731235). **Effect of mercury and methyl parathion on the ovaries of *Labeo rohita* (Ham.).** *J Environ Bio*, **23**(1) (2002), 61-64 [16 Ref].

Adult pre-spawning fish *Labeo rohita* were sublethally (1/5th 96h LC50) exposed to mercuric chloride and metacid-50 (methyl parathion). Accumulation of mercury and methyl parathion was studied and it was found that pre-spawning ovary appears as a potent organ for deposition of both the pollutants. RNA / DNA ratio of the control and treated fish were studied. It was found that the significant decrease in RNA / DNA ratio occurs after 9 and 30 days of exposure for mercury and 30 days for methyl parathion.

0201-153. Anand Kumar A, Tripathy AP, Tripathy NK (PG Dept Zoo, Berhampur Univ, Berhampur 760007). **Effect of dimecron on the blood parameters of *Heteropneustes fossilis*.** *J Environ Bio*, **22**(4) (2001), 297-299 [21 Ref].

The effect of an organophosphate insecticide, dimecron, has been studied on certain haematological parameters, of *Heteropneustes fossilis* following exposures to the LC50 for 24 h and 96 h and 1/10 and 1/50 parts of 96 h LC50 for 90 days. There was a significant decrease in the Hb%, RBC number, Hct% and O₂ carrying capacity of blood. But, there was significant increase in the MCH and MCV values following both acute and chronic exposures. The results indicate possible induction of anaemia in the exposed fish.

0201-154. Bharatha Lakshmi B, Bangaramma Y, Rao LM (Dept Zoo, Andhra Univ, Visakhapatnam 530003, AP). **Frequency of external infection of *Liza melinoptera* (Valenciennes) from polluted harbour waters of Visakhapatnam.** *Polln Res*, **20**(4) (2001), 619-626 [32 Ref].

A comparative study on the frequency of external infections like E.U.S., descaling, skin rot, fin rot and gill rot in *L. melinoptera* from the polluted channel of Vizag harbour (St. I) and relatively unpolluted Gosthany estuary near Bhimili (St. II) was made for a period of one year. The percentage of external infection was significantly

more at the polluted harbour area compared to the Gosthany estuary waters. The results of the present study have been subjected to the statistical analysis.

0201-155. Bharatha Lakshmi B, Rao KM, Bangaramma Y, (Dept Zoo, Andhra Univ, Visakhapatnam 530003). **Impact of industrial pollution on the nutritive value of *Liza parsia* from harbour waters of Vizag.** *Aquacult*, **2**(2) (2001), 111-116 [18 Ref].

Investigations on the bio-chemical composition of the mullet *Liza parsia* from the polluted Vizag harbour waters in comparison to that of the relatively unpolluted Gosthani estuarine waters have been carried out. The amount of total protein, carbohydrates and lipids was observed to be far less in the fish from harbour waters. The concentration of biochemical constituents has been compared with the concentration of heavy metals in the medium. The marked decrease in biochemical constituents was observed with increased concentration of Pb and Cd. The results have been subjected to statistical analysis to find out the difference in between the two habitats.

0201-156. Bojarajan B, Arumugam M, Subramanian, VV, Sivasubramaniam V (Dept Bot, RM Vivekananda Coll, Chennai). **Heavy metal tolerance uptake and accumulation by the freshwater plankton, *Scenedesmus acuminatus* and *Meesocyclops aspericornis*.** *Convergence*, **3**(1-4) (2001), 18-24 [13 Ref].

A fresh water green alga, *Scenedesmus acuminatus* and a zooplankton, *Mesocyclops aspericornis* were selected for the present study. The LC50 values for the heavy metals, Cd, Cu and Zn were determined. The heavy metals could be arranged in the following manner in the increasing order to toxicity: Zn<Cu<Cd for *S.acuminatus* and Zn<Cd<Cu for *M.aspericornis*. The heavy metals could be arranged in the following order of increasing uptake and accumulation: Cu<Cd<Zn in *M.aspericornis* and in *S.acuminatus* Cd<Cu<Zn.

0201-157. Chandra Smita, Ram RN*, Singh J (*Dept Fishery Bio, Coll Fishery Sci, GB Pant Univ Agricult Techno, Pantnagar, 263145 (US Nagar) Uttaranchal). **Toxic effect of carbofuran on certain hematological parameters in yearlings of *Cyprinus carpio*.** *Aquacult*, **2**(2) (2001), 137-140 [11 Ref].

The effects of toxicologically safe concentration (16.0 ppm) of commercial formulation of a carbamate pesticide, carbofuran were studied in yearlings of both sexes,

male and female of *Cyprinus carpio* var. *communis* to evaluate its influence on certain haematological parameters after 105 days of exposure and recovery with prior exposure of 75 days subjected to pesticide free water for 30 days. In specimens of both sexes of treated groups, significant decrease in total erythrocytes count, total leucocytes count and haemoglobin concentration were recorded. Results are also suggestive of no sex related differential response of species of carbofuran toxicity.

0201-158. Choubisa SL, Choubisa Leela, Choubisa DK (PG Dept Zoo, SBP Govt Coll, ML Sukhadia Univ Gen Hosp, Dungarpur 314001, Rajasthan). **Endemic fluorosis in Rajasthan.** *Indian J Environ Hlth*, **43**(4) (2001), 177-189 [44 Ref].

Chronic fluoride toxicity in the form of osteo-dental fluorosis was observed in both sexes of children and adults from ten villages located in the vicinity of alive fluoride mines of Dungarpur district (Rajasthan) where F concentration in drinking waters varied from 1.2 to 8.9 ppm. At 1.7 and 6.1 mean F concentrations, 70.6% and 100.0% of children (<18 years) and 68.0% and 100.0% adults, respectively, were found to be affected with dental fluorosis of varying grades.

0201-159. Flora SJS (Div Pharmacol Toxicol, Defence Res Dev Establishment, Jhansi Rd, Gwalior 474002). **Lead exposure : health effects prevention and treatment.** *J Environ Bio*, **23**(1) (2002), 25-41 [128 Ref].

Article focuses on the risk to human health associated with exposure to lead. Various human health effects associated with lead are discussed based on human and experimental data. Another important information provided is regarding recent developments in the area of treatment i.e. chelation therapy against lead poisoning. Emphasis has been given to data, which have become available in the last decade.

0201-160. Gandhi DN (Dept Occupl Hygiene, Natl Inst Occupl Hlth (KMR), Meghani Nagar, Ahmedabad 380016). **Organ toxicity testing *in vitro* bioassay : alternative methods.** *Polln Res*, **20**(4) (2001), 549-556 [37 Ref].

Review emphasises on isolated organ/tissue preparations and its role in prediction of toxicity induced by various chemicals and /or environmental pollutants. Alternative method that provide useful information for human health and environmental risk in all areas of toxicity testing is also discussed. Certain methods/bio-assays provide

mechanistic information that is useful for interpretation of data and improved prediction of toxicity. Some methods provide saving in time and cost, reduce the number of animals required for toxicologic assessments and also help in future progress in the development of alternative toxicological test methods.

0201-161. Gautam AK, Agarwal K, Shah BA, Kumar S*, Saiyed (*Natl Inst Occupl Hlth, Meghani Nagar, Ahmedabad 380016, Gujarat). **Lead induced spermatotoxicity in mouse and MPG treatment.** *J Environ Bio*, **22**(4) (2001), 287-291 [26 Ref].

Protective efficacy of MPG (2-mercaptopropionyl glycine) was studied against the toxic effect of lead acetate in Swiss albino mice. The animals were treated with single dose of lead acetate @ 180, 200 and 250 mg/kg b/wt in presence and absence of MPG. The results indicated that the body weight was slightly higher in MPG treated groups on day 10 as compared to only respective lead treated groups in all the three dose level. However, significantly lower body weight was observed in both lead treated and lead along with MPG treated groups as compared to control. Pattern of mortality is similar in both lead treated and lead plus MPG treated groups.

0201-162. Gautam RK, Gautam Kalpana (Dept Zoo Entomo, St John's Coll, Agra 282002). **Pesticides alter amino acids in *Channa punctatus*.** *Uttar Pradesh J Zoo*, **21**(1) (2001), 23-25 [6 Ref].

Paper presents histochemical observations made on amino acids in stomach and intestine of *Channa punctatus* after the treatment of endosulfan and diazinon pesticides. The observation reveals an overall depletion in the activities of arginine and tryptophane, it means that these pesticides interact with cellular proteins.

0201-163. Gautam RK, Gautam Kalpana, Lal Tejeshwari (Dept Zoo Entomo, St John's Coll, Agra 282002). **Pesticides alter inorganic ions in *Channa punctatus*.** *J Nature Conserv*, **13**(2) (2001), 221-224 [4 Ref].

The effect of two commonly used pesticides endosulfan and diazinon were examined on two inorganic element i.e. calcium and iron gastrointestinal in tract of a teleost fish *Channa punctatus*. It has been seen that the calcium contents affected in the longitudinal and serosa layer in stomach after endosulfan and diazinon treatments. In intestine an elevation in the presence of calcium ions was noticed in muscularis layer.

0201-164. Goswami K, Bhattacharya B (Dept Biochem, Vivekananda Inst Medl Sci, 99, Sarat Bose Rd, Calcutta 700026). **Renal function in lead exposed urban population.** *Polln Res*, **20**(3) (2001), 395-399 [18 Ref].

Raised blood and urinary lead concentrations were associated with abnormal renal function, reflected in raised serum urea and creatinine concentrations, and with a reduction in creatinine clearance rate. Also, a positive correlation between serum calcium and blood lead in men was found to be inversely related. Apparently no evidence of any overt clinical symptoms in any of these was perceived affected people. These finding emphasis the importance of measurement of blood lead concentrations in adults in the general population to combat the effects of lead toxicity before the clinical signs predominate.

0201-165. Hymavathi V, Rao LM (Dept Zoo, Andhra Univ, Visakhapatnam 530003). **Effect of slaughter house pollution on the biochemical composition of *Channa orientalis*.** *J Environ Bio*, **22**(3) (2001), 209-212 [22 Ref].

Study deals with the biochemical composition of *Channa orientalis* from a habitat polluted by slaughter house wastes in comparison to an unpolluted habitat of Mudasarlova stream of Visakhapatnam. The total proteins, carbohydrates and lipids were found to be less in the organisms collected from the polluted habitat. The probable reasons for these variations are discussed in detail.

0201-166. Jabeen Mussarat, Zaidi Almas, Khan Saghir Md (Dept Microbio, Fac Agril Sci, Aligarh Muslim Univ, Aligarh 202002, UP). **Determination of IgG immunoglobulin in the sera of agro mill workers exposed to bio allergens.** *Polln Res*, **20**(4) (2001), 501-507 [24 Ref].

The culture filtrate antigens of *Saccharopolyspora rectivirgula*, *Thermoactinomyces thalpophilus* and *T. sacchari* obtained from cotton spinning mill, Sandila, Hardoi and Saatha Sugar Mill Aligarh, India, were used to analyze precipitin reaction and IgG antibodies in symptomatic, asymptomatic and nonexposed healthy controls. The ELISA values of the precipitin positive symptomatic cases were significantly higher as compared to the asymptomatic and healthy controls. ELISA was

found more sensitive and accurate for the rapid detection of immunoglobulin in the sera of patients affected by bioallergens.

0201-167. Jeyarathi Shanthi T, Jebanesan A (Dept Zoo, TK Govt Arts Coll, Vriddhachalam). **Effect of sublethal concentration of chlorpyrifos on acetylcholinesterase activity in freshwater fish *Cyprinus carpio* Communis (Linnaleus).** *Convergence*, **3**(1-4) (2001), 31-35 [32 Ref].

Acetylcholinesterase (AChE) was determined in brain, liver, muscle and kidney tissues of an fresh water fish *Cyprinus carpio* fingerlings exposed to a sublethal concentration of 0.014 ppm (1/5th of LC50) of chlorpyrifos for 7 days, 14 days and 21 days of exposure period. The highest inhibition of AChE activity in brain was on 7th day of pesticide treatment and gradual recovery thereafter.

0201-168. Jyothi B, Narayan G, (GI, Navodaya Apartments, Snehapuri, Nacharam, Hyderabad 500076, Andhra Pradesh). **Effect of pesticides carbaryl and phorate on serum cholesterol level in fish, *Clarias batrachus* (Linn).** *J Environ Bio*, **22**(3) (2001), 233-235 [10 Ref].

Freshwater edible catfish *Clarias batrachus* (Linn.) was treated with sublethal concentration of two different groups of pesticides - carbaryl, a carbamate and phorate, an organophosphate for 24,72,120 and 168 h. The disorders of lipid metabolism were observed in serum. Cholesterol levels in the serum decreased significantly throughout the exposure period with both the pesticides. These results indicate one significant manifestation of the toxic response from the fish under the stress of pesticide exposure.

0201-169. Karmegam N, Daniel Thilagavathy (Dept Bio, Gandhigram Rural Inst, Deemed Univ, Gandhigram 624302). **Effect of methyl parathion on hatching of cocoons of the earthworms *Eudrilus eugeniae* and *Perionyx excavatus*.** *Uttar Pradesh J Zoo*, **21**(2) (2001), 103-108 [23 Ref].

The toxicological effect of organophosphate pesticide methyl parthion was investigated by exposing the cocoons of the earthworms, *Eudrilus eugeniae* and *Perionyx excavatus* to the concentrations ranging from 1 to 10 ppm for 60 days in laboratory condition. It has been observed that the cocoons of the earthworms *P. excavatus* and *E. eugeniae* were not able to hatch even at low concentration of methyl

parathion. This study gives the first basic information on the effect of methyl parathion on the cocoons of earthworms.

0201-170. Kennedy IJJ, Sampath K (Dept Zoo, V.O. Chidambaram Coll, Tuticorin 628008). **Short term and long term survival studies in *Rana tigrina* tadpoles with reference to methyl parathion toxicity.** *J Environ Bio*, **22**(4) (2001), 267-271 [9 Ref].

Toxicity of methyl parathion was studied on survival of *Rana tigrina* tadpoles. The LC50 values for short-term (upto 96 h) and long term studies (hatching to froglet) were determined. The LC50 values for 96 h and the total larval period were 4.36 and 1.30 ppm respectively. The toxicity of methyl parathion enhanced in relation to increase in concentration and duration. Teratological defects such as scoliosis and failure in emergence of fore limb were noticed. Safe levels were calculated for short-term (0.1ppm) and long-term (0.03ppm) studies.

0201-171. Khan AK, Shaikh AM, Anasari NT (Dept Zoo, Dr BA Marathwada Univ, Aurangabad 431004). **Cadmium chloride toxicity in glycogen level from body parts and whole body of marine edible gastropod *Babylonia spirata*.** *Uttar Pradesh J Zoo*, **21**(3) (2001), 203-206 [11 Ref].

Marine edible gastropod *Babylonia spirata* (shell length 40-50 mm) from Mirkarwada, Ratnagiri (West coast of India), in summer were exposed to cadmium chloride at 0.1 ppm and 0.5 ppm (1/10th of LC0 and LC50 respectively), for 7 days exposure i.e. 7 days laboratory depuration and 7 days field depuration. Changes in glycogen level of both the groups occurred as compared to control group. The glycogen level of 7 days exposed 1/10th LC0 group showed increase in operculum soft body and 1/10th LC50 group showed increase in operculum whole body.

0201-172. Khan MM, Tandon SN, Khan MT, Pandey US, Idris MZ (Dept Physio, ERA Lucknow Medical Coll, Sarfarazganj, Hardoi Rd, Lucknow 226003). **A comparative study of effects of cigarette and bidi smoking on respiratory function tests.** *J Environ Bio*, **23**(1) (2002), 89-93 [13 Ref].

The effects of cigarette and bidi smoking on pulmonary function tests have been studied on 90 healthy males from North India. Forced vital capacity (FVC), peak expiratory flow rate (PEFR), forced expiratory volume in 1 sec (FEV1) were determined

in 30 nonsmokers (as control group), 30 cigarette smokers and 30 bidi smokers. All the above pulmonary function parameters were found to be lower among smokers as compared to nonsmokers. Moreover, the decrease in the pulmonary function tests was greater in cigarette smokers as compared to bidi smokers.

0201-173. Khare Sarita, Singh Sudha, Mehrotra Asha (Dept Zoo, Sarojini Naidu Govt Girls PG Coll, Shivaji Nagar, Bhopal 462016). **Histopathological changes in the gills of *Nandus nandus* induced by endosulfan and carbaryl.** *Nature Env Polln Techno*, **1**(1) (2002), 1-4 [15 Ref].

Nandus nandus was exposed to sublethal concentration of endosulfan (0.04 ppm) and carbaryl (0.05 ppm) for one month. After the exposure significant histopathological alternations in different parts of gills were observed.

0201-174. Kumar Pradeep, Prasad AK, Mani U, Maji BK, Dutta KK, (Inhalation Toxicology Div, Indl Toxicology Res Cent, MG Gandhi Marg, Lucknow 226001). **Effect of trichloroethylene (TCE) inhalation on biotransformation enzymes of rat lung and liver.** *J Environ Bio*, **23**(1) (2002) 1-6 [25 Ref].

The toxic effects of trichloroethylene (TCE) inhalation on pulmonary and hepatic biotransformation enzymes in rats have been investigated by assay of aniline hydroxylase(AH), aminopyrine-N-demethylase, benzo-a-pyrene hydroxylase and glutathione-s-transferase activities and glutathione (GSH) contents in liver as well as lungs of exposed animals. In both organs phase I and phase II drug metabolizing enzymes have been found to be increased along with decrease in GSH contents following TCE inhalation.

0201-175. Kumar Ravindar (PG Dept Zoo, SSV (PG) College, Hapur 245101). **Experimental investigations on the toxicity of ammonia : effects of gill structure of air breathing teleost *Channa punctatus* (Bloch).** *Polln Res*, **20**(4) (2001), 627-629 [14 Ref].

Fresh water air breathing teleost *Channa punctatus* (Bloch) were observed in laboratory after exposure of sublethal concentration (70 ppm) of ammonia. Gill showed well pronounced alterations after 28 days of exposure with exogenous ammonia. Gills

exhibited characteristic lesions as necrosis in gill lamella, hyperplasia in epithelial cells, fusion of secondary lamellae, clubbed tip and vacuolisation.

0201-176. Kumari Anupma, Sinha RK*, Gopal Krishna, Prasad K (*Env Bio Lab, Dept Zoo, Patna Univ, Patna 800005, Bihar). **Dietary intake of persistent organochlorine residues through Gangetic fishes in India.** *Int J Eco Environ Sci*, **27**(2) (2001), 117-120 [17 Ref].

The concentration of organochlorine residues have been analysed in the fishes of River Ganga at four sites in Bihar: Buxar, Patna, Mokama and Rajmahal, and the average daily intake of these chemicals by human beings was estimated from the WHO data on average daily consumption (g) of fish by Indians. The concentrations of DDTs, HCHs, aldrin and endosulfan (ng g⁻¹) ranged 65.1-147.6, 228.6-401.7, 24.6-52.7 and 6.2-39.6 respectively, in the muscles of small fishes, and 211.3-1072, 309-862.4, 10.2-64.9 and 12.8-53.6 respectively, in large fishes. The average daily intake per capita by humans were: DDTs 3.48 g, HCHs 8.48 g, aldrin 1.01 g, and endosulfan 0.61 g.

0201-177. Madurakavi K (PG Dept Zoo, ANJA Coll, Sivakasi 626124, Tamil Nadu). **Effect of ultraviolet-A and ultraviolet-B on the biochemical changes of integument and fecundity of the tobacco caterpillar *Spodoptera litura* (Fabricus).** *Nature Env Polln Techno*, **1**(1) (2002), 39-41 [18 Ref].

Attempt has been made to study the quantitative variation in the integumentary protein, chitin, lipid and fecundity of the UV-A and UV-B irradiated larvae of tobacco caterpillar *Spodoptera litura* (Fab.). When compared to the control, the UV-A and UV-B irradiated third, fourth and fifth instar larvae showed a significant reduction in the amount of lipid and chitin, but the amount of protein increased significantly and the fecundity reduced in irradiated larvae.

0201-178. Mallika R, Srinivasan KN, Pugalendi KV (Dept Biochem, Annamalai Univ, Annamalinagar 608002). **Effect of occupation on lipid peroxidation and antioxidants status in masons.** *Indian J Physio Pharmacol*, **44**(1) (2000), 87-91 [27 Ref].

Effect of occupation on haematological factors, lipid peroxidation and antioxidants' status was studied in masons and compared with normal subjects. Red blood corpuscles (RBC), haemoglobin (Hb), Vitamin C, Vitamin E, β -carotene levels and

glutathione peroxidase superoxide dismutase and catalase activities decreased. Thiobarbituric acid reacting substances level increased. Occupational exposure to cement increased lipid peroxidation but decreased antioxidants' levels in masons. Increased lipid peroxidation seems to be responsible for the reduction in RBC and Hb.

0201-179. Malviya Rachana, Wagela DK (Sch Energy Environ Std, Devi Ahilya Vishwavidhyalaya, Takshshila Parisar, Indore, 452017). **Studies on lead concentration in ambient air, roadside dust and its influence on the healthy traffic police personnel at Indore.** *Polln Res*, **20**(4) (2001), 635-638 [23 Ref].

Lead concentration in ambient air and roadside dust at eight distinctly located sampling stations of Indore City has been thoroughly studied. The maximum lead level in air was recorded at Kothari Market, which is a centrally located commercial area of the city. While the lead in roadside dust was found maximum at Shastri Bridge. A preliminary investigation of blood lead concentration in traffic policemen was also recorded, but no significant relation could be established between blood lead content and physical status and age of the person.

0201-180. Mishra Anju, Pandey GC, Pandey AC*, Shukla Siddharth (*Dept Fisheries, NDUAT, Kumarganj, Faizabad). **Alteration in the gonads of *Clarias batrachus* Linn, following exposure to paper mill effluent.** *J Indl Polln Contl*, **17**(2) (2001), 219-223 [19 Ref].

Changes induced by paper mill effluent concentrations (20, 60 and 100%) has been observed on gonadal weight and levels of protein, glycogen and cholesterol in the tissues of *Clarias batrachus* after 30 days exposure. Remarkable increase in gonadal weight and its tissue glycogen and cholesterol were observed in the fish exposed to 60 to 100% effluent concentration. In contrast, significant decrease in gonadal protein was recorded in exposed fishes at higher concentrations. The probable reasons for the alterations in gonadal weight and biochemical constituents are discussed.

0201-181. Muthusamy A, Jayabalan N (Dept Plant Sci, Sch Life Sci, Bharatidasan Univ, Tiruchirapalli 620024). **Effect of factory effluents of physiological and biochemical contents of *Gossypium hirsutum* L.** *J Environ Bio*, **22**(4) (2001), 237-242 [46 Ref].

The effect of sago and sugar factory effluents was studied on *Gossypium hirsutum* L. var. MCU 5 and MCU 11. Plants were irrigated with 0, 25, 50, 75 and 100% of effluents of both factories. At lower concentration (25%) of sugar factory effluents had stimulatory effect on all biochemical contents observed. Moreover, all concentration of sago factory effluents were found to have inhibitory effect on all biochemical contents except proline content which increased with increasing concentration of both the effluents. Plants growing adjacent to sago and sugar factories or irrigated with such type of polluted water, may accumulate heavy metals found in both the effluents and if consumed may have similar effect on living organisms.

0201-182. Parveen Mahira, Kumar Santosh (Dept Biosci, Barkatullah Univ, Bhopal 462026). **Effect of DDVP on the histology and AchE Kinetics of heart muscles of *Rattus norvegicus*.** *J Environ Bio*, **22**(4) (2001), 257-261 [17 Ref].

The LD50 of DDVP (Dichloro, dimethyl vinyl phosphate) for *Rattus norvegicus* was 21.4 mg/kg. b.w. The two sub lethal doses 1 and 3 mg/kg showed many histopathological changes in the working heart muscles and also showed significant necrosis in this S-A node, A-V node and bundle of His of the cardiac conducting system. These sublethal doses of the OP pesticide caused a significant inhibition of AchE. The maximum inhibition was noticed at the highest dose.

0201-183. Patel DR (Office Chief Engr, PHE Dept, Indore Zone, Indore, MP). **Impact of fluorosis on tribal rural population of Mandla and Mohgaon blocks of Mandla district (MP).** *J Indian Water Works Assoc*, **32**(3) (2000), 223-226 [9 Ref], (Late Recd).

Present studies have shown that many villages in Mandla and Mohgaon blocks of Mandla district are worst affected areas of fluoride incidence through drinking water sources mainly of hand pumps/tube wells of rural areas. Prolonged exposure to high fluoride content in drinking water has resulted in various permanent deformities.

0201-184. Pratima M, Angadi SB, Mathad RD (Dept Bot, Gulbarga Univ, Gulbarga 585106, Karnataka). **Growth responses of microalgae to multiple metal ion stress.** *Int J Eco Environ Sci*, **27**(3) (2001), 97-103 [22 Ref].

The effect of four heavy metals (nickel, zinc, cadmium and lead) were studied, individually and in combination, on the diazotropic cyanobacterium *Hapalosiphon*

stuhlmannii and the photosynthetic green alga *Scenedesmus quadricauda*. The interactive effect of heavy metals was investigated over the concentration range of 0.1-15.0g L⁻¹ by adopting an exponential cell growth model. The cultures treated with higher metal concentrations were decolorized and developed enlarged and deformed cells. The degree of antagonism varied with the bimetallic concentrations and was, in fact, lowest for the higher metal concentrations. The degree of antagonism due to combination of lead-nickel and cadmium-zinc was higher in *Scenedesmus quadricauda* than in *Hapalosiphon stuhlmannii*.

0201-185. Ram RN, Singh IJ, Singh DV (Dept Fishery Bio, Coll Fishery Sci, GB Pant Univ Agricul Techno, Pantnagar 263145). **Carbofuran induced impairment in the hypothalamo - neurohypophyseal - gonadal complex in the teleost, *Channa punctatus* (Bloch).** *J Environ Bio*, **22**(3) (2001), 193-200 [32 Ref].

The effect of chronic exposure to carbofuran (4.5 ppm in static water) for six months on the gonadal histophysiology and hypothalamo-neurohypophyseal complex was studied in *Channa punctatus*. Experimental observations revealed significant inhibition of gonadal development with associated degenerative abnormalities as evidenced by ovarian and testicular histology and reduced gonadosomatic index. Degenerative changes in ovary were exhibited by stage I (oogonium) and stage II (immature/non-vitellogenic) oocytes as marked by perinuclear ooplasmic lysis, clumping and dissolution resulting in disintegration of nuclear material altogether attributed to complete degeneration of such oocytes.

0201-186. Ramalingam K, Indra D (PG Res Dept Zoo, Govt Arts Coll, Nandanam, Chennai 600035). **Copper sulphate (CuSO₄) toxicity on tissue phosphatases activity and carbohydrates turnover in *Achatina fulica*.** *J Environ Bio*, **23**(2) (2002), 181-188 [28 Ref].

A time course study on the sublethal toxicity of CuSO₄ on tissue carbohydrate metabolites level and their phosphatases activity in *Achatina fulica* revealed differential response. The levels of total carbohydrates and glycogen in the body mass muscle, foot muscle and hemolymph revealed their involvement in the endogenous derivation of energy during stress. The same metabolites in digestive gland revealed its importance to

reproduction and development. The lactate accumulated in all the tissues implied the mechanism of CuSO₄ toxicosis in the metabolic acidosis.

0201-187. Ramalingam V, Panneerdoss S, Girija M, Ilango S (Dept Zoo, KM Cent PG Std, Lawspet, Pondicherry 605008). **Lindane induced changes in the testis of albino rats.** *Polln Res*, **20**(3) (2001), 435-437 [10 Ref].

The effect of oral administration of lindane (1 mg/kg body weight for 6 days) was seen in the testis of adult albino rats. Lindane treatment significantly reduced the body weight as well as the weight of the testis. Several histological alterations were observed in the testis of treated rats. Total lipid content was also significantly reduced in the testis after the administration of lindane.

0201-188. Ramalingam V, Panneerdoss S, Girija M, Ilango S (Dept Zoo, KM Cent PG Std, Lawspet, Pondicherry 605008). **Mercuric chloride induced changes in the histology of the testis and serum testosterone in adult albino rats.** *Polln Res*, **20**(3) (2001), 439-442 [11 Ref].

The effect of mercuric chloride (4mg/kg body weight, daily for 7 days) was seen on the serum testosterone as well as on the histology of the testis in adult albino rats. Mercuric chloride significantly reduced the body weight. The weight of the testis and accessory sex organ weights were also reduced. Circulating testosterone level decreased after the treatment. Light microscopic observations of the testis of mercuric chloride treated rats revealed several histological changes showing the adverse effects of mercuric chloride on the testis.

0201-189. Rangaswamy CP (Centl Inst Brackishwater Aquacult, Chennai 600028). **Endosulfan induced alterations in the ionic composition of blood of *Oreochromis mossambicus* (Peters).** *Eco Env Conserv*, **8**(1) (2002), 101-103 [17 Ref].

Significant alterations in the ionic composition of blood were recorded in *Oreochromis mossambicus* exposed to sublethal and lethal concentrations of endosulfan. Dysfunction of osmoregulatory processes was manifested by the increased levels of serum sodium, potassium and chloride and decreased levels of phosphate and bicarbonate. This calls for careful application of pesticides in plant protection operations to ensure proper protection of fishery resources.

0201-190. Rani Rekha, Trivedi SP, Singh P, Singh RK (Div Toxicology, Central Drug Research Institute, Lucknow 226001). **Hematotoxic effect of linear alkyl sulphonate (LAS) in fish *Heteropneustes fossilis*.** *J Environ Bio*, **23**(1) (2002), 101-103 [13 Ref].

It was observed that clotting time decreased with the increased concentrations of LAS. However, the decrease was more pronounced at LC50 for 24 h and at the end of 96 h LC50, it was very close to control values.

0201-191. Rawat DK, Bais VS, Agrawal NC (Lab Environ Bio, Dept Zoo, Dr. HS Gour Vishwavidyalaya, Sagar 470003). **A correlative study on liver glycogen and endosulfan toxicity in *Heteropneustes fossilis* (Bloch.).** *J Environ Bio*, **23**(2) (2002), 205-207 [15 Ref].

The biochemical tests were conducted to find out the relationship between liver glycogen and endosulfan toxicity on a cat fish *Heteropneustes fossilis* (Bloch.) using 0.00075, 0.00050, and 0.000375 ppm concentrations for 15, 30, 45 and 60 days of exposure periods. The quantity of liver glycogen showed decreasing trend as concentration to toxicant increased. The depletion in glycogen contents is greatly affiliated to cellular damage in hepatic cells.

0201-192. Sahni Kavita, Saxena Y (Dept Zoo, Vedic Kanya PG Mahavidyalaya, Jaipur 302004). **Toxic effect of difethialone on the liver of swiss albino mice, *Mus musculus*.** *Uttar Pradesh J Zoo*, **21**(1) (2001), 47-52 [15 Ref].

Difethialone is the newly developed anticoagulant rodenticide causing severe and irreversible hepatic damage even in lower doses. The changes were visible after one day of the poison feeding but these were more severe at later stages. Higher dosages of difethialone showed more pronounced pathological lesions at early autopsy intervals. The changes included migration of nuclei, dilation of sinusoids, swelling of hepatocytes, fatty degeneration with vacuolization, lymphocytic infiltration in and around portal and central veins and in sinusoids.

0201-193. Sakthivel Veena, Gaikwad SA (Dept Zoo, SVKM Mithibai Coll, Vile-Parle (West), Mumbai 400056). **Tissue histopathology of *Gambusia affinis* (Baird and Girard) under dimecron toxicity.** *Eco Env Conserv*, **8**(1) (2002), 27-31 [12 Ref].

The investigation was undertaken to evaluate the toxicity of dimecron (phosphamidon) an organophosphate pesticide used in agriculture. Long term exposure (30 days) to sublethal concentration 0.0068 ppm of dimecron on some tissues like alimentary canal, liver, kidney and gill were studied. The observed major changes were hepatic lesions with necrosis, pycnotic nuclei, vacuolation, damaged blood vessels, and accumulation of cytoplasmic granules in lever.

0201-194. Sakthivel Veena, Gaikwad SA (Dept Zoo, SVKM Mithibai Coll, Vile-Parle (W), Mumbai 400056). **Ultrastructural alterations produced in the liver of *Gambusia affinis* (Baird and Girard) after dimecron toxicity and its subsequent effect on dehydrogenases.** *Eco Env Conserv*, **8**(1) (2002), 41-46 [10 Ref].

Paper deals with electron microscopic studies of fish liver chronically treated with sub lethal doses of Dimecron, an organophosphorus insecticide. Decrease in SDH activity suggests a reduction in the rate of oxidative metabolism at mitochondrial level possibly resulted by a change in ultra structure of the mitochondrion as observed in the study. LDH activity showed a sudden inhibition at the end of the first week and the inhibition that continued in activity was marginal.

0201-195. Sarada NC, Mary Sard A (Dept Chem, Vellore Inst Techno, Deemed Univ, Vellore-14). **Impact of carcinogens, heavy metals on environment and their removal.** *Convergence*, **3**(1-4) (2001), 36-38 [10 Ref].

Toxic chemicals, carcinogens and excess of nitrates, fluorides and mineral salts damage the plant, animal and human population. The effects of carcinogens on plants, animals and human life is discussed. Removal of carcinogens, heavy metals by different methods has been given in detail.

0201-196. Saravana Bhawan P, Geraldine P (Dept Animal Sci, Barathidasan Univ, Tiruchirapalli 620024). **Carbaryl-induced alterations in biochemical metabolism of the prawn, *Macrobrachium malcolmsonii*.** *J Environ Bio*, **23**(2) (2002), 157-162 [31 Ref].

Study was performed to investigate the toxic impact of carbaryl on biochemical metabolism in the hemolymph, brain, hepatopancreas, gills and muscle of intermoult juveniles of the economically important prawn, *Macrobrachium malcolmsonii*. The concentration of glutathione S-transferase (GST) was found to be higher in test prawns when compared with controls. This suggests that a mechanism of detoxification was in operation to neutralise carbaryl toxicity. However, the toxic effect of carbaryl was not fully neutralised, and hence, alterations were recorded in basic biochemical metabolism of test prawns.

0201-197. Sasi KS, Sangh Rashmi (302 Southern Labs, Facility Ecol Analyt Testing (FEAT). Indian Inst Techno, Kanpur 208016). **Analyzing pesticide residues in winter vegetables from Kanpur.** *Indian J Environ Hlth*, **43**(4) (2001), 154-158 [8 Ref].

Pesticide residues in food has become a consumer safety issue. In the first phase of the analysis on pesticides, the problem of pesticide residues in fresh winter vegetables as offered to the consumer of Kanpur was identified. To provide a meaningful ranking of pesticides in crop, twelve most commonly used pesticides and 24 samples of freshly collected vegetables were selected.

0201-198. Satyanarayan Shanta, Rao Padma, Wachasunder SD, Ramakant, Kaul SN (Natl Environ Res Inst, Nagpur 440020). **Bio accumulation kinetics and organ distribution of chlorinated pesticides in *Cyprinus carpio* and *Puntius ticto*.** *Proc Natl Conf Polln Prev Contl : IAEM*, 2-3 March, 2002, Nagpur, 349-354 [16 Ref].

The study of bioaccumulation kinetics and organ distribution of chlorinated pesticides in *Cyprinus carpio* and *Puntius ticto* was studied in detail in continuous fed system. The fish was exposed to test water containing sub-lethal concentrations of the pesticides. Sub-lethal dose was arrived at based on the detail acute toxicity evaluation studies. Variability of Aldrin, dieldrin, BHC and DDT in fish tissues like gills, muscles, intestine, kidney and liver was evaluated and is presented.

0201-199. Shanti K, Jaganathan R (PG Res Dept Zoo, Kongunadu Arts Sci Coll, Coimbatore 641029, Tamil Nadu). **Testicular toxicity in albino rat (Wistar strain) to oral administration of sodium arsenite and ascorbic acid.** *Nature Env Polln Techno*, **1**(1) (2002), 81-85 [35 Ref].

Sodium arsenite was administered orally to male albino rat to test the biochemical changes and the changes in histological picture of testis. It brought about significant decrease in glycogen and total protein. Alteration in cholesterol and alkaline phosphatase revealed that sodium arsenite had adversely affected the structural and functional integrity of testicular tissues.

0201-200. Sharma Dushyant Kumar, Awasthi JK (Dept Zoo, Govt PG Coll, Guna, MP 473001). **Haematological and biochemical studies of the furnace workers of glass industries in Firozabad (U.P.).** *J Indl Polln Contl*, **17**(2) (2001), 271-280 [31 Ref].

The workers in the glass industries are exposed to a number of pollutants such as heat, chemicals and gases like CO₂, CO and SO₂. Haematological and biochemical studies were carried out to study the combined effect of these pollutants. Studies revealed a considerable low total erythrocyte count (TEC), reduced Hb concentration and slightly low total leucocyte count (TLC) in the workers as compared to the control group but the levels of blood urea were found to be high.

0201-201. Sharma Dushyant Kumar, Awasthi JK (Dept Zoo, Govt PG Coll, Guna 473001). **Haematology of the furnace workers of glass industries in Firozabad (U.P.).** *J Expt Zoo India*, **5**(1) (2002), 33-40 [25 Ref].

Haematological studies were carried out to study the combined effect of the pollutants in the glass industries. Studies revealed a low RBC count, reduced Hb concentration, low PCV values in the furnace workers are compared to control group. MCV and MCHC values were found to be normal. The studies indicate a state of normocytic and normochromic anaemia in furnace workers.

0201-202. Shukla Vineeta, Rathi Pratima, Sastry KV (Dept Biosci, MD Univ, Rohtak 142001). **Effect of cadmium individually and in combination with other metals on the nutritive value of fresh water fish, *Channa punctatus*.** *J Environ Bio*, **23**(2) (2002), 105-110 [22 Ref].

Impact of metal cadmium on the nutritive value of *Channa punctatus* on exposure to a sublethal concentration (1.12 mg/l) of cadmium (Cd²⁺) for 15 and 60 days has been

studied. Among the various parameters selected, the level of moisture in liver and muscle was increased, while decrease was noted in the level of ash, total proteins and inorganic constituents like iron, calcium, inorganic phosphate, sodium and potassium in both liver and muscle in the two types of exposure. The total lipid level of liver increased, while muscle lipid level was decreased.

0201-203. Sindhe VR, Veeresh MU, Kulkarni RS (Dept Zoo, Gulbarga Univ, Gulbarga 585106). **Ovarian changes in response to heavy metal exposure to the fish *Notopterus notopterus* (Pallas).** *J Environ Bio*, **23**(2) (2002), 137-141 [29 Ref].

The ovarian and hepatic protein, lipid and cholesterol content were estimated in the fish, *Notopterus notopterus* after exposing it to heavy metals at sublethal concentrations. The protein, lipid and cholesterol content of ovary and liver got reduced and amongst the three exposures (mercuric chloride, cadmium chloride and their combination) it was significantly reduced in the order of (HgCl₂>HgCl₂+CdCl₂>CdCl₂>control). The above results indicated that HgCl₂ is highly toxic and its toxicity gets reduced in combination.

0201-204. Singh Snehlata, Sadhu DN (Dept Zoo, KB Womens' Coll, VBU, Hazaribagh 825301, Jharkhand). **Toxicity and behaviour of Rogor (dimethoate) exposed *Channa punctatus* (Bloch).** *J Env Polln*, **8**(4) (2001), 377-378 [8 Ref].

Paper gives toxic effects of a commonly used organophosphorus insecticide Rogor and behavioural responses in a freshwater snake headed fish *Channa punctatus* (Bloch). The values of rogor for LC₅₀/96 hours and LC₁₀₀/96 hours at 22 ± 2 °C were 34 and 37 ppm respectively. Some abnormal behaviour in the fish was also noted in the sublethal concentration of Rogor.

0201-205. Singh Yogender, Saxena MM (PG Dept Zoo, Dungar Coll, Bikaner 334001). **Thermal tolerance in some gastropods of Indian desert region.** *Uttar Pradesh J Zoo*, **21**(2) (2001), 109-112 [6 Ref].

In laboratory, *Digoniostoma pulchella* and *Indoplanorbis exustus* presented a wider range of thermal tolerance (40 °C, i.e. from 15 to 55 °C and from 10 to 50 °C respectively) as compared to *Gabbia orcula* and *Gyraulus rotula* (30 °C, i.e. from 25 to

55 °C and from 20 to 50 °C respectively). Prosobranch snails were more sensitive to low temperature while pulmonate snails to high temperature.

0201-206. Suricuchi Padmaja, Nagaraju T (Dept Zoo, Osmania Univ, Hyderabad). **A study on selenium toxicity on aspartate amino transferase in wistar rats.** *Polln Res*, **20**(4) (2001), 571-573 [12 Ref].

Adult male *Wistar* strain albino rats were given one intraperitoneal injection of sub-lethal dose of selenium and the variations in aspartate and alanine amino transferase activity were observed in the animals after 7 days and 14 days selenosis. In both the experimental groups a significant ($P < 0.001$) rise in the activity of both the enzymes was observed as compared to control.

0201-207. Tilak KS, Jhansi Lakshmi S, Anitha Susan T (Dept Zoo, Nagarjuna Univ, Nagarjunanagar 522510). **The toxicity of ammonia, nitrate and nitrite to the fish, *Catla catla* (Hamilton).** *J Environ Bio*, **23**(2) (2002), 147-149 [11 Ref].

The acute toxicity of unionized ammonia, nitrite and nitrate to the Indian major carp *Catla catla* (Hamilton) was determined using static continuous flow through systems for 24 hours. The median lethal concentration (LC50) values for 24 h ammonia (NH₃-N) and nitrate (NO₃-N) were 0.045 mg/l, 120.84 mg/l and 1565.43 mg/l in static test respectively and were 0.036 mg/l, 117.43 mg/l and 1484.08 mg/l in continuous flow through test respectively.

0201-208. Tilak KS, Veeraiah K, Anita Susan T, Yacobu K (Dept Zoo, Nagarjuna Univ, Nagarjunanagar 522510). **Toxicity and residue studies of fenvalerate to some selected freshwater fishes.** *J Environ Bio*, **22**(3) (2001), 177-180 [26 Ref].

The toxicity test of fenvalerate were conducted to fresh water fishes *Labeo rohita* (Hamilton), *Catla catla* (Hamilton), *Cirrhinus mrigala* (Hamilton), *Aplocheilichthys punctex* (Hamilton) and *Ctenopharyngodon idellus* (Valenciennes). The static and continuous flow through tests were employed to determine the lethal concentration (LC50) for 24h, 48h and 96h to the test fish. It was observed that *Cirrhinus mrigala* is more sensitive in this pesticide followed by *Aplocheilichthys punctex*, *Labeo rohita*, *Catla catla* and *Ctenopharyngodon idellus*.

0201-209. Tilak KS, Veeraiah K, Ramana Kumari GV (Dept Zoo, Nagarjuna Univ, Nagarjunannagar 522510, AP). **Toxicity and effect of chloropyrifos to the freshwater fish *Labeo rohita* (Hamilton).** *Polln Res*, **20**(3) (2001), 443-445 [12 Ref].

Toxicity of chloropyrifos to the freshwater fish *Labeo rohita* (Hamilton) using static and continuous flow through system, is determined. The LC50 values are determined for 24, 48, 72 and 96 hours. The toxic effect as induced in the biochemical changes of total protein and glycogen are studied.

0201-210. Tilak KS, Veeraiah K, Vijaya Lakshmi S (Dept Zoo, Nagarjuna Univ, Nagarjunanagar 522510, A.P.). **Mixed toxicity of fenvalerate and monocrotophos to the freshwater fish *Catla catla*, *Labeo rohita* and *Cirrhinus mrigala*.** *J Ecotoxicol Environ Monit*, **11**(3) (2001), 163-168 [16 Ref].

The toxicity of monocrotophos and fenvalerate is determined to the freshwater fish *Catla catla* (Hamilton), *Labeo rohita* (Hamilton) and *Cirrhinus mrigala* (Hamilton) by using static and continuous flow through system. The pesticides are mixed in two ratios of 1:1, 1:2, and 1:4 using monocrotophos and fenvalerate formulation as Balvan and Dumicidae. The monocrotophos is less toxic than fenvalerate to the fish and synergistic action is there basing on cotoxicity coefficient.

0201-211. Tilak KS, Veeraiah K, Yacobu K (Dept Zoo, Nagarjuna Univ, Nagarjuna Nagar 522510, AP). **Studies on histopathological changes in the gill, liver and kidney of *Ctenopharyngodon idellus* (Valenciennes) exposed to technical fenvalerate and EC 20%.** *Polln Res*, **20**(3) (2001), 387-393 [22 Ref].

Histopathological changes are observed in the tissues of gill, liver and kidney of the fish *Ctenopharyngodon idellus* (Valenciennes) when exposed to technical and sublethal concentration of 20% EC of fenvalerate, a synthetic pyrethroid. The tissue damages like necrosis, vacuolar degeneration and dtrophy and observed which are due to the effect of the pesticide.

0201-212. Titus A, Rudra A, Thacker NP, Titus SK, Shekdar AV (Natl Environ Engng Res Inst, Nagpur 440020). **Isolation and characterisation of organochlorine pesticides residues from landfill sites.** *Indian J Environ Hlth*, **43**(4) (2001), 190-193 [8 Ref].

Organochlorine pesticides (OCIPs) have been analysed in the soil samples collected from landfill site, which was abandoned for more than ten years. The most commonly used OCIPs of the region were identified and analysed in the soil samples collected at various depths. p,p' -DDT was not found in any of the layers, this could be due to its degradation into its metabolites. P,p' -DDE was detected in 2 m and 5 m and bottom(7M) layer while p,p'-DDD was found only at 2 m level.

0201-213. Tripathi G, Harsh S, Verma P (12, Shakti Colony, Ratanada, Jodhpur 342001, Rajasthan). **Fenvalerate - induced macromolecular changes in the catfish, *Clarias batrachus*.** *J Environ Bio*, **23**(2) (2002), 143-146 [16 Ref].

The effects of sublethal concentration of fenvalerate on DNA, RNA, RNA/DNA ratio and protein contents were estimated in gill and kidney tissues of an air breathing fish, *Clarias batrachus*. Fenvalerate reduced the DNA content in gills, whereas it did not produce any significant effect on DNA in kidney. This tissue-specific change in DNA content may be due to differential effects of fenvalerate or its metabolite(s) on synthesis and/degradation of DNA in gill and kidney cells of the fish. RNA and protein contents declined substantially in both the tissues in response to fenvalerate treatment.

0201-214. Trivedi SP, Kumar Manoj, Mishra Abha, Banerjee Indrani, Soni Ajay (Dept Zoo, Univ Lucknow, Lucknow 226007). **Impact of linear alkyl benzene sulphonate (LAS) on phosphatase activity in testis of the teleostean fish, *Heteropneustes fossilis* (Bloch).** *J Environ Bio*, **22**(4) (2001), 263-266 [28 Ref].

Work alteration in the activity of acid and alkaline phosphatase was evaluated in testicular tissue of fresh water fish *Heteropneustes fossilis* exposed to LC50 value of linear alkyl benzene sulphonate (LAS) for different exposure periods. With increase in the concentration of chemical LAS, the activity of acid phosphatase (ACP) was reported elevated while a significant fall in the activity of alkaline phosphatase (ACP) was recorded for same exposure period.

0201-215. Venkataramana GV, Anandhi Usha, Shenbagavalli, Murthy PS (Dept Zoo, Bangalore Univ, Bangalore 560056). **Histopathological changes in the cardiac muscle of the freshwater gobiid fish, *Glossogobius giuris* (Ham) in response to malathion treatment.** *Polln Res*, **20**(3) (2001), 407-411 [31 Ref].

The fresh water gobiid fish *G.giuris* when exposed to sublethal concentration of malathion (0.05, 0.25, and 0.5 ppm) for short term treatment (24 to 96 hrs) exhibited muscle necrosis in the cardiac muscle. The histopathological changes include increase shrinkage of striated muscle, number of vacuoles, disposition of nucleus and empty spaces. The study suggests that inflammation of cardiac muscle is characterised by the presence of excessive accumulation of leucocytes in the interspaces of muscle fibers due to toxic stress by malathion.

0201-216. Vincent S, Ambrose T, Selvanayagam M (PG Res Dept Zoo, Loyola Coll (Autonomous) Chennai 600034). **Impact of cadmium on food utilization of the Indian major carp *Catla catla* (Ham).** *J Environ Bio*, **23**(2) (2002), 209-212 [18 Ref].

Catla catla, under the sublethal stress of cadmium exhibited depletion in food utilization parameters and it was concentration dependent. Heavy metal intoxication was found to exhibit reduction in biomass.

0201-217. Waykar Bhalchandra, Lomte VS (Dept Zoo, Rashtriya Arts Sci Comm Coll, Chalisgaon, Dist Jalgaon 424101, M.S.). **Total protein alteration in different tissues of freshwater bivalve, *Parreysia cylindrica* after cypermethrin exposure.** *Eco Env Conserv*, **7**(4) (2001), 465-469 [23 Ref].

Effect of cypermethrin on the total protein content of mantle, foot, gill, digestive gland and whole body of fresh water bivalve, *Parreysia cylindrica* was studied. The bivalves were exposed to 0.4992 ppm cypermethrin as acute treatment and 0.09984 ppm as chronic treatment. Decrease in total protein content of all tissues was observed with an increased exposure time. The most change of protein content occur in digestive gland followed by gill, mantle, whole body and foot.

0201-218. Yamuna A, Saravana Bhavan P, Geraldine P* (*Dept Anim Sci, Bharathidasan Univ, Tiruchirapalli 620024). **Effects of Hg and Cu on hemocytes-mediated functions in the prawn, *Macrobrachium malcolmsonii*.** *J Environ Bio*, **23**(1) (2002), 7-13 [24 Ref].

Sublethal effects of Hg and Cu on the hemocytes-mediated functions in the juveniles of the economically important freshwater prawns, *Macrobrachium malcolmsonii* were investigated. The population of total hemocytes, percentile phagocytosis and superoxide anion production were found to be increased in test prawns exposed to the lowest sublethal concentration of these two metals in comparison to controls. This indicates the fact that a mechanism of host-defence was in an active state to encounter metal toxicity.

Wastes

0201-219. Ajmal M, Mohammad A, Anwar S (Dept Appl Chem, ZH Coll Engng Techno, Aligarh Muslim Univ, Aligarh 202002). **Sorption studies of heavy metals on teak leaves (*Tectona grandis*) using thin-layer and column chromatographic techniques.** *Polln Res*, **20**(3) (2001), 425-428 [10 Ref].

In order to evaluate the utility of teak leaves as an adsorbent for heavy metals, thin-layer and column chromatograph techniques have been carried out. Because of toxicity of heavy metal cations, it is necessary to reduce their concentration in effluent. Paper reports on the use of TLC and column chromatographic techniques as a tool for studying the sorption capacity of teak leaves power towards heavy metal cations.

0201-220. Amal Raj S, Murthy DVS (Dept Civil Engng, Crescent Engng Coll, Vandalur, Chennai 600048). **A modified trickling filter model based on existing trickling filter performance.** *Polln Res*, **20**(4) (2001), 535-538 [12 Ref].

The existing trickling filter model proposed by Hosono *et al.*, 1978; has been modified by adopting a new parameter, depth, while calculating effective reaction rate constant (k). The existing trickling filter model was developed in general for all types of plastic media but the proposed model is applicable only for cross flow media types. The

proposed model was verified with the help of data obtained from the treatment of dairy wastewater.

0201-221. Ayub Sohail, Iqbal Ali S, Khan NA (Aligarh Muslim Univ, Aligarh). **Successful utilization of agrobased material for the treatment of wastewater.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 361-368 [37 Ref].

Study evaluates the heavy metal removal efficiency of agro-waste materials such as coconut shell in treatment of wastewaters. The effects of pH, contact time, adsorbent dose, concentration of metal, particle sizes and temperature were studied. The coconut shells exhibits good adsorption characteristics and the data follow both Freundlich and Langmuir models. Thermodynamics parameters indicate the feasibility of the process. Kinetic studies have been performed to understand the mechanism of adsorption. Column studies have been carried out to compare these with batch capacities.

0201-222. Bachewar MS, Mehta BH (Dept Chem, Univ Mumbai, Vidhyanagari, Mumbai 400098). **Assessment of waste effluents from drug industries and its influence on soil quality.** *J Indl Polln Contl*, **17**(2) (2001), 239-243 [9 Ref].

The physico-chemical characteristics of the effluents from M/S Godavari Drug industry in the Nanded district of Maharashtra has been analyzed. The waste effluent generated during various manufacturing process of bulk drug was characterized for different water quality parameter. The toxic effect of waste effluent was evaluated with respect to soil quality. SAR value of the soil was very high and cannot be recommended for any agricultural use.

0201-223. Barman SC, Kisku GC, Salve PR, Misra D, Sahu RK, Ramteke PW, Bhargava SK, (Environ Monit Div, Indl Toxic Res Cent, MG Marg, P.B. No. 80, Lucknow 226001). **Assessment of industrial effluent and its impact on soil and plants.** *J Environ Bio*, **22**(4) (2001), 251-256 [31 Ref].

Study deals with the assessment of industrial water of an electronic component manufacturing unit with electroplating and its subsequent effects on soil and plants receiving the effluent. The physico-mechanical parameters of the soil samples were not changed due to irrigation of the treated effluent, but the concentration of metals were comparatively higher than the control soil. Higher accumulation of metals was found in

the plant parts in naturally growing weeds and cultivated crop plant irrigated with treated effluent. Elevated accumulation of metals in *Eichhornia crassipes* and *Marsilea* sp. growing along the effluents channel has been identified as a potential source of biomonitoring of metals particularly for Cu and Ca and can be utilised for the removal of heavy metal from wastewater.

0201-224. Bodkhe SY, Sarin R (Natl Environ Engng Res Inst, Nagpur 440020). **Performance evaluation of anaerobic filter with high rate tube settlers used for wastewater treatment.** *Proc Natl Conf Polln Prev Contrl India : IAEM*, 2-3 March 2002, Nagpur, 5-11 [5 Ref].

The new configuration of anaerobic reactor comprising built in mechanism based on the principles of high rate sedimentation for removal of suspended solids from raw effluent have been used for the treatment of municipal wastewater. Suspended solids removal is effected in inclined tube settlers which act as a pretreatment system before the fixed film anaerobic reactor. The performance evaluation shows that this configuration of anaerobic system holds promise to be used as a package waste water treatment plant for medium strength biodegradable wastewater laden with high concentration of suspended solids.

0201-225. Chandra Sekhar M, Chakravarthy (Dept Civil Engng, Water Environ Div, Regl Engng Coll, Warangal 506004). **Study of removal of zinc by coal and clay minerals.** *J Indian Water Works Assoc*, **32**(4) (2000), 305-307 [9 Ref].

A number of sorbents have been used to remove zinc by adsorption from industrial effluents. In the study, low cost, locally available coal and clay minerals like montmorillonite and kaolinite are used as sorbents for removal of zinc from synthetic effluents.

0201-226. Chatterjee Priya, Golwalkar Sucheta, Mukundan Usha* (*Plant Biotechno Lab, RJ Coll, Ghatkopar (W), Mumbai 400086). **Removal of aromatic amines and phenols from water by peroxidase produced by cell cultures of *Momordica dioica*.** *Polln Res*, **20**(4) (2001), 523-527 [17 Ref].

Plant cell cultures of *Momordica dioica* produce intracellular and extracellular peroxidase. These can precipitate aromatic amines and phenols with varying efficiency.

When the concentration of -dianisidine was 0.1 mg/ml it was removed with a maximum efficiency of 96% when the pH of the reaction mixture was 6.0 and the H₂O₂ concentration was 4.8 mM and the amount of enzyme required for the removal was 0.061 mg/ml. The removal efficiency of -Naphthyl amine was 95% while phenols were removed at comparatively lower efficiency of 65%.

0201-227. Chaudhari AR, Nagpurkar LP, Ekha JD (Priyadarshini Coll Engng Arch, Nagpur). **Uptake of heavy metal ions using carbonaceous material obtained from paper industry solid waste.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 215-218 [10 Ref].

Lignin is one of the major waste products in the pulp and paper industries. Degradation of lignin was carried out by using thermal energy and microwave irradiation in presence of ZnCl₂ which is known to increase the uptake capacity of carbon residue. The studies have established several merits of microwave techniques over conventional method such as better quality coke, shorter degradation time, easy control etc. Use of ZnCl₂ during degradation of lignin was found to be highly effective. Further, carbonaceous material showed maximum uptake of the toxic Pb⁺² from the aqueous solution thus exploring the greater possibility of utilization of industrial waste lignin.

0201-228. Daga Kailash, Loonker Sangeeta, Gupta Vikal, Singh AV, Mohta Rajendra (Dept Chem, JNU Univ, Jodhpur 342005). **Physico-chemical investigation on carpet grade wool and its effluent.** *Oriental J Chem*, **17**(3) (2001), 469-472 [9 Ref].

Different carpet grade wool was characterized on the basis of % medulation and diameter under Ermascop. The wool was scoured with different anionic surfactant and the effluent so generated was physico-chemically analysed. The main pollution load in scouring effluent was due to TSS, TDS and COD. The chemistry of the effluent generated by scouring of finer quality wools like Merino was found to be different than generated by Indian carpet grade wool.

0201-229. Daga Kailash, Loonker Sangeeta, Rathore Jaswant S, Katiyal Sanjeev (Dept Chem, JNU Univ, Jodhpur, Rajasthan). **Removal of colour from aqueous solution by polymeric resin.** *J Indl Polln Contl*, **17**(2) (2001), 347-355 [20 Ref].

Removal of colour from aqueous phase was studied using adsorbent prepared from DVB styrene and ethylene diamine. The effects of pH, amount of resin required, shaking time were investigated. The optimum pH is 7 and amount of resin required for almost 100% removal of Magenta is 200 mg and 400 mg for Direct Red and Brilliant Blue H-5G respectively. The adsorption follows Freundlich model as well as Langmuir model.

0201-230. Dahasahasra SV, Bhole KS, Darwheakar SM, (Maharashtra Jeevan Pradhikaran, Nagpur). **Status of Nagpur sewerage scheme and proposal for utilization of effluent from sewage treatment plant.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March, 2002, Nagpur, 29-33.

The Government of India has framed the National Water Policy, which has emphasized on the recycling and reuse of city wastewater. The new sewage treatment plant of 100MLD capacity has been recently commissioned for the city of Nagpur which has crossed a population of 2 millions and placed in the list of mega cities of India. The paper highlights the status of sewerage facilities in the city and the proposal of utilization of treated effluent for irrigation emanating from new sewage treatment plant.

0201-231. Das Satabdi, Kaviraj Anilava (Dept Zoo, Kalyani Univ, Kalyani 741125, West Bengal). **Effect of chelating agent EDTA, adsorbent activated charcoal and chemical fertiliser single super phosphate on the partitioning of cadmium in the sediment — a short term experiment.** *Polln Res*, **20**(4) (2001), 609-612 [16 Ref].

Experiment on partitioning of cadmium in the sediment was done in glass jars for 96h in the laboratory. Three chemicals were used to study their effects on partitioning of Cd, namely, activated charcoal, EDTA and single superphosphate. Cd was found to partition distinctly among various fractions of sediment. Treatment of activated charcoal, EDTA and single superphosphate significantly reduced the concentration of cadmium bound to organic fraction of the sediment.

0201-232. Deka S (Inst Adv Std Sci Techno, Kanapara, Guwahati 781022, Assam). **Bacterial strains, degrading crude oil from petroleum polluted soil of Assam.** *Polln Res*, **20**(4) (2001), 517-521 [10 Ref].

A total of four bacterial strains have been isolated from petroleum polluted soil of oil field situated at Moran (Assam). Strains were identified as *Pseudomonas aeruginosa*, *Pseudomonas stutzeri*, *Bacillus aneurinolyticus* and *Serratia marcescens*. In a laboratory conducted experiment it was observed that *Pseudomonas stutzeri* was the most efficient hydrocarbon degraders amongst the bacterial strains isolated from petroleum polluted soil of Assam.

0201-233. Deshpande SD, Patil MP, Chakrabarti T, Kaul SN (Natl Environ Engng Res Inst, Nagpur). **Evaluation of modification in existing effluent treatment plants of public sector in Tamil Nadu manufacturing decorative flowers — a case study.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March, 2002, Nagpur, 35-42 [4 Ref].

A public sector in Tamil Nadu, processing a vast range of decorative flowers of Indian origin is engaged in exporting varieties of dried flowers, potpourri flowers and ready-made bouquet. Since bleaching and dyeing are the main process in product formation the wastewaters from these section and combined wastewater were characterized. Based on the treatability studies, the recommendations are suggested for modification in the existing effluent treatments plants.

0201-234. Dongre RS, Rao NN, Kaul SN (Natl Environ Engng Res Inst, Nagpur 440020). **Fenton's oxidation system for chemical treatability of H-acid wastewater.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March, 2002, Nagpur, 341-344 [7 Ref].

Recently Fenton's reagent is found very efficient in the treatment of a variety of industrial wastes containing a range of toxic and refractory organic compounds. H-acid(1-amino-8naphthol-3,6-disulphonic acid) is widely used in the chemical industry for the synthesis of direct, acid, reactive and azoic dyes. Paper attempts Fenton's oxidation of H-acid wastewater using various Fe²⁺ sources viz. FeSO₄ and Fe-based complex minerals viz. iron malachite with metal composition. In addition CoCl₂, NiCl₂, CuCl₂, ZnCl₂ and SnCl₂ were also used for assessing the relative reactivity towards oxidation of H-acid containing wastewater.

0201-235. Gawalpanchi RR, Mhaisalkar VA, Bhide AD (Visvesvarya Regl Coll Engng, Nagpur). **Compost from municipal solid waste.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March, 2002, Nagpur, 205-208 [8 Ref].

For successfully tackling the problem posed by ever increasing quantities of solid waste in urban areas, recycling technologies such as composting should be increasingly adopted. A start has recently been made by the Ministry of Environment & Forests and the Municipal Solid Waste (Management and Handling) Rules 2000 specify the permissible heavy metal contents in the compost. It is felt that these need to be made comprehensive for the benefit of the municipal agencies as well as the consumers.

0201-236. Ghangrekar MM, Kahalekar UJ, Sakle JJ, Takalkar SV (Govt Coll Engng, Osmanpura, Aurangabad 431005). **Treatment of sewage by UASB reactor.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March, 2002, Nagpur, 13-19 [8 Ref].

The performance of the lab-scale UASB reactor and granular medium filtration in series and pilot-scale UASB reactor could give COD reduction between 60 to 80% while treating sewage. The UASB reactor followed by completely mixed activated sludge process (ASP) or granular media filtration can be economical alternatives for treatment of sewage.

0201-237. Gupta Abhik, Gupta Susmita (Dept Eco, Assam Univ, Silchar 788011, Assam). **Heavy metals in soil and the moss *Plegiothecium denticulatum* from Meghalaya.** *Polln Res*, **20**(4) (2001), 631-634 [19 Ref].

Concentrations of Mn, Ni, Pb and Zn in the roadside soil and the moss *Plegiothecium denticulatum* were determined in different areas of Meghalaya State, Northeastern India. Concentration of all the metals were higher in both soil and moss in sites near roads that experience heavy traffic, as compared to those in relatively remote areas. The results obtained indicate that *P. denticulatum* is a suitable biomonitor species for atmospheric deposition of lead, nickel and zinc.

0201-238. Jayabalan M, Kannan D, Padmavathi S, Prem Kumar G, Rajarathinam K (Res Cent Bot, VHN Senthil Kumara Nadar Coll, Virudhunagar). **Effect of tannery effluent on vigor index percentage speed germination index of seeds of paddy ADT-36.** *J Indl Polln Contl*, **17**(2) (2001), 207-212 [14 Ref].

The effect of various diluted concentration of tannery effluent viz., on Vigour Index and Speed Germination index of paddy (*Oryza sativa* L. var. ADT - 36) was studied. Diluted effluent at concentrations of 1% and 10% was found to exert positive impact on plant growth. The use of effluent at lower concentrations not only limit the environmental hazards but also serves as additional potential source of liquid fertilizers.

0201-239. Jeyaramraja PR, Anthony R, Rajendran A, Rajakumar K, (Res Cent Bot, VHN Senth Kumara Nadar Coll, Virudhunagar 626001). **Decolourization of paper mill effluent by *Aspergillus fumigatus* in bioreactor.** *Polln Res*, **20**(3) (2001), 309-312 [15 Ref].

Decolourization and phenol reduction of paper mill effluent by the fungus, *Aspergillus fumigatus* isolated from paper mill effluent were studied. Optimum condition with regard to carbon sources, nitrogen sources and the addition of surfactant were worked out. Repeated batch experiments in an aerated bioreactor were performed with Ca-alginate immobilized fungus. The immobilized fungal beads were found to be effective for eight batches of effluent treatment.

0201-240. Jham Rishi, Ranglani Manish, Rupani Gyanesh, Purohit SJ (Thadomal Shahani Engng Coll, T.P.S. 111, Bandra (W), Mumbai 400050). **Removal of chromium from electroplating wastes.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March, 2002, Nagpur, 369-373.

Electroplating of metals is a very important and common industrial process. The waste from the plating department contains chromium and other elements such as cyanide. The treatment of plating wastes can be broadly classified according to whether plating chemicals are to be destroyed or recovered. Destructive processes are aimed primarily at reducing the contaminants in the effluents stream to a non-toxic form rather than reclaiming the chemicals. As the electroplating wastes contain low concentrations of chromium, none of the recovery methods are feasible. Therefore hexavalent chromium is reduced to trivalent chromium, followed by precipitation. This method is most feasible for electroplating industry i.e the method of reduction followed by precipitation.

0201-241. Joshi AR (Process Dev Div, Natl Cheml Lab, Pashan, Pune 411008). **Separation of lignin from black liquor of pulp and paper industry - a case study.** *Proc Natl Conf Polln Prev Contl India : IAEM, 2-3 March, 2002, Nagpur, 293-297.*

There are few hundreds paper mills in India with a production capacity ranging from 2,000 to 10,000 tonnes per annum based on the agricultural residues like bagasse, straws, bamboo, hardwoods etc. NCL has developed a formulation in the form of a powder called an additive. When an aqueous stream containing lignin diluted with proper quantity of water, is treated with an additive, lignin and other organics undergo chemical and physical changes and get precipitated. The precipitate settles. Clarified water leaving as overflow, is suitable for reuse in the plant or disposal into either sea or river.

0201-242. Kaur Sumanjit, Paul Kamaldeep (Dept Pharmaceutical Sci, Guru Nanak Dev Univ, Amritsar 143005). **Reduction of chemical oxygen demand (COD) from aqueous dye solutions using sawdust ash as an adsorbent.** *Polln Res, 20(4) (2001), 557-564 [19 Ref].*

A low cost adsorbent saw dust ash was used for the adsorption of five acid dyes — Acid Red 119, Acid Violet 49, Acid Blue 15, Acid Violet 17 and Acid Violet 54 from aqueous solutions. The equilibrium data could be well described by Freundlich equation and Langmuir equation over the entire range of concentrations. In addition, the effect of contact time, pH and amount of adsorbent were determined.

0201-243. Kaushik V, Sharma HK, Prasad K, Bera MB (Fd Techno Dept, Sant Longowal Inst Engng Techno, Longowal 148106, Dist Sangrur, Pubjab). **Utilization of husk ash from rice milling industry - a review.** *J Indl Polln Contl, 17(2) (2001), 201-205 [12 Ref].*

From the advent of number of rice milling industry, husk a byproduct obtained from rice is generally utilized for the energy value. Large quantity of ash from the combustion of husk is a matter of serious concern. There is hardly any utilization in India. The concrete actions and thoughts are lacking towards its utilization. This paper attempts to review the various applications towards optimum utilization of husk ash.

0201-244. Khan Samiullah, Bhardwaj Rakesh Kumar (Dept Appl Chem, ZH Coll Engng Tech, Aligarh Muslim Univ, Aligarh 202002). **Effect of flyash on the growth, development and metal ions uptake by board bean (*Vicia faba*) and chilli (*Capsicum frutescens*) plants.** *Eco Env Conserv*, **8**(1) (2002), 47-50 [27 Ref].

A green house experiment was conducted to evaluate the effect of flyash (FA) on the growth, development and metal ions uptake by board bean (*Vicia faba*) and chilli (*Capsicum frutescens*) plants. The results indicated that the lower doses of FA upto 15 gm Kg⁻¹ soil had a beneficial effect with regards to growth, development and nutrient uptake by both the plants grown in FA amended soil. At higher doses beyond this dose posed a significant phytotoxic effect with the increasing concentrations of FA.

0201-245. Kolte Santosh S, Arkatkar Shrinivas S (Nirma Inst Techno, Ahmedabad). **Prevention of natural water pollution by utilisation and reuse of industrial effluents - a case study.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March, 2002, Nagpur, 127-132 [5 Ref].

Laboratory experiments on growth of *Glycine max* and *Phaseolus mungo* with varying concentrations of dairy waste has given favourable results with early germination, increased growth of roots, promotory growth of seedlings and improved radicle and plumule length. The study has revealed that instead of simply discharging the treated / partially treated effluents (preferably biodegradable effluents from dairy and other food industries) on land / water; its proper utilization and application through suitably designed irrigation system (like High Rate Transpiration System) would result in certain agro-horticultural benefits.

0201-246. Kovale Shekhar (Coll Fisheries, Shirgaon, Ratnagiri 415629, Maharashtra). **Influence of copper and zinc on production / decomposition of organic matter in Vellar estuary.** *Polln Res*, **20**(4) (2001) 509-515 [17 Ref].

Attempt has been made to study the influence of copper and zinc on biochemical oxidation of organic matter and regeneration of nutrients. Experimental studies using copper and zinc on ppb levels showed high exertion of BOD values of phosphate of oxidative origin decline with high concentration of test metals copper and zinc. Higher values of velocity rate constant 'K' were obtained. The amount of oxygen used by

microorganisms during decomposition of organic matter gives the indirect measure of the amount of biodegradable organic material present in the sample.

0201-247. Kowshik Meenal, Nazareth Sarita (Dept Microbio, Goa Univ, Taleigao Plateau 403206, Goa). **Bio sedimentation of mine tailings by *Fusarium solani*.** *J Indl Polln Contl*, **17**(2) (2001), 341-346 [10 Ref].

Mine tailings have a high concentration of suspended material and metal complexes. It is routinely treated for sedimentation with various chemicals that in themselves are pollutants. The mycelial mass of *Fusarium solani* added to mine tailings, greatly increases the natural rate of sedimentation. Homogenisation of the biomass increases its capacity for sedimentation. Storage of the mycelium upto a week, does not affect the sedimentation rate.

0201-248. Kshirsagar CM, Mahajan SM (Govt Coll Engng, Karad 415124). **Case study on pollution prevention and innovative waste reuse.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March, 2002, Nagpur, 51-53 [7 Ref].

Paper deals with present practices of sugar industries in respect of waste disposal and the possible eco-friendly remedies that can be effectively deployed on the fronts of efficiency, ecology and economics. This experimentation investigates the option of optimization of temperature of the Fluidized Bed Combustion (FBC) boiler in order to achieve combustion efficiency as high as 90-95% and pollution free and flawless working of FBC boilers alongwith successful utilization of distillery waste i.e. spentwash in a modified form as a supplementary fuel for the FBC boiler.

0201-249. Kulkarni Jitendra R, Shrivastava VS (Chem Res Cent, GTP Coll, Nandurbar 425412). **Removal of Ni ions in aqueous media using low cost adsorbent.** *J Indl Polln Contl*, **17**(2) (2001), 289-295 [15 Ref].

The adsorption technique using coconut husk was applied for the removal of Ni ions from aqueous samples. The dried and powdered husk was contacted with acidified HCHO and the resin product so obtained is highly efficient in adsorbing Ni ions from the solutions. The extent of removal/adsorption was depended upon the pH, amount of adsorbent used and the time of contact. The sorbent is effective for quantitative removal of Ni ion at alkaline pH(7-10), and 30 minute time of contact.

0201-250. Kumar Sundhir, Kushwaha R, Sapra S, Gupta AB, Bhargava A (Civil Engng Dept, Malaviya Regl Engng Coll, Jaipur). **Impact of textile industry on groundwater quality of Sanganer, Jaipur.** *J Indian Water Works Assoc*, **33**(4) (2001), 321-326 [4 Ref].

Study was taken up to assess the quality of ground water in Sanganer to get an indication of contamination due to disposal of dye industry wastewater and indiscriminate use of fertilisers. This would serve as a base to evolve suitable waste management strategy for the area.

0201-251. Malaviya Piyush, Rathore VS (Dept Environ Sci, Coll Basic Sci Humanities, GB Pant Univ Agricl Techno, Pantnagar 263145, Uttaranchal). **A correlation study on some physico chemical quality parameters of pulp and paper mill effluents.** *Polln Res*, **20**(3) (2001), 465-470 [17 Ref].

The data collected on the various physico-chemical characteristics of the pulp and paper mill wastewater have been analysed for correlation, regression and prediction studies alongwith per cent deviation among various parameters. Highly significant correlations and linear relationships were obtained between the effluent quality parameters studied. These linear relationships are highly useful in predicting the effluent quality parameters of the paper mill.

0201-252. Masud Hossain SK, Das Manas, Ibrahim SH (Dept Cheml Engng, Mohamed Sathak Engng Coll, Kilakarai 623806, T.N.). **Studies on alcohol fermentation from sulfite waste liquor of pulp and paper industry - remediation in pollution load.** *Polln Res*, **20**(3) (2001), 343-347 [15 Ref].

Batch experiments were performed for the anaerobic fermentation of sulfite waste liquor. The inoculum dose was about 4% of the working volume. The pH of the fermenting medium was between 4.8 to 5 and constant temperature was maintained at (27 ± 2) °C. The ethanol concentration was minimum 4 per cent and maximum 5.8 per cent (volume per cent) after a hydraulic retention time 30h with mixed cultures of *Saccharomyces cerevisiae* and *Tarula utilis*. These two microbes were cultured in the suspended aerobic batch growth process separately for 24 h before inoculation. Besides

satisfactory alcohol fermentation, the inoculated microbes had also shown very good COD and BOD₅ (at 20 °C) removal.

0201-253. Masud Hossain SK, Das Manas, Ibrahim SH (Dept Cheml Engng, Mohmed Sathak Engng Coll, Kilakarai 623806, T.N.). **Aerobic studies on pollution - abatement of sulfite pulp bleaching effluent using *Phanerochaete chrysosporium* (MTCC-787).** *J Indl Polln Contl*, **17**(2) (2001), 191-200 [25 Ref].

The white-rot fungus *Phanerochaete chrysosporium* decomposes chlorinated organic compounds in sulfite bleaching effluents which are considered to be resistant to bacterial treatment. The optimum digestion time is eight days (HRT). Seven days old aged with 15 percent (V/V) inoculum concentration is the optimum to bleach the sulfite bleaching effluent to a maximum pollution-abatement. 1.5 percent (w/v) glucose and 0.15 percent (w/v) nitrogen concentrations can degrade the maximum (78.97) percent COD and maximum (80.88) percent BOD.

0201-254. Mazumdar Debabrata (Bengal Engng Coll, P.O. Botanic Garden Howrah 711103, West Bengal). **Characterisation study of wastewater from a typical pesticide industry.** *J Indian Water Works Assoc*, **32**(3) (2000), 215-221 [6 Ref].

The synthetic organic pesticides are of great concern for environment because most of them are cumulative toxic poison and ultimately may reach objectionable levels in water or aquatic life. The study deals with a synthetic pesticide — ‘Acephate’ which is basically an aliphatic compound containing S, P and N.

0201-255. Minocha AK, Jain Neeraj, Verma CL (Centl Bldg Res Inst, Roorkee 247667, Uttaranchal). **Effect of inorganic and organic materials on the solidification of heavy metal sludge.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 229-235 [14 Ref].

Solidification studies were conducted using three binders, viz., portland cement (CEM), cement-fly ash (CFA) and lime-fly ash (LFA) to solidify a synthetic heavy metal sludge containing nitrates of Cr, Ni, Cd and Hg. The results of the analysis indicate that Cu, grease and phenol has a significant detrimental effect on the physical properties of the solidified sludge, which increases with the increase in interferent concentration. In contrast sodium hydroxide increases the rate of set and 28-day compressive strength of

samples containing cement as binder. The observations confirm the need for the waste to binder specific studies prior to the selection of a solidification process for the treatment of hazardous waste.

0201-256. Mishra S, Remteke DS, Wate SR, Moghe CA, Sarin R (Natl Environ Engng Res Inst, Nagpur 440020). **Assessment of water quality in Amlakhadi receiving various industrial wastewater discharges.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March, 2002, Nagpur, 151-157 [6 Ref].

The overall physico-chemical quality of Amlakhadi, a natural drain receiving effluents from industries, in Gujarat, indicates that it is characterized by presence of enormous colour, suspended solids, with pH varying from neutral to acidic. The levels of organic and inorganic (mineral) content are found to get elevated with an average of 440mg/l BOD and 6398 mg/l of dissolved solids respectively. Phenol concentration also appears to be high with an average of 2.2 mg/l. The pollutants, however are found to get diminished at the confluence point due to dilution available during high tide in the estuarine zone. The data thus generated during the study period has been used for the assessment of pollution load in Amlakhadi.

0201-257. Mohanty SK, Tiwari RN (Dept Chem, BB Coll, Bargainbadia, Mayurbhanj, 757105, Orissa). **Generation and nature of biomedical waste from the outdoor department and kitchen of a medium hospital.** *J Env Polln*, **8**(4) (2001), 351-353 [5 Ref].

Paper reports the results of a survey to determine the daily generation and nature of biomedical waste at the Baripada district headquarters hospital (BDHH) in Mayurbhanj district of Orissa. The survey was conducted in two units of the BDHH, viz., the Outdoor Department and the hospital kitchen. It was found that the total biomedical waste generated daily in the Outdoor Department ranges from 9.9 to 14.0 kg/day with an average of 11.6 kg/day, out of which 22.4% waste is infectious.

0201-258. Padoley KV, Rao NN, Pandey RA (Natl Environ Engng Res Inst, Nagpur 440020). **Treatment of pyridine containing wastewater using Fenton's reagent : a pretreatment option for biodegradation.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 333-340 [18 Ref].

Wastewater from a chemical industry manufacturing pyridine and its derivatives was characterized and the results indicated presence of pyridine, -picoline and -picoline. Different oxidative methods viz: Fenton's reagent, photooxidation using titanium dioxide (TiO₂) and UV light and electrochemical methods were applied for the pretreatment of wastewater. The results indicate that Fenton's reaction was more effective. The Fenton pretreated wastewater was subjected to biodegradation using the same biomass and it was found that the combined treatment (Fenton followed by biodegradation) could remove 96% of COD, 99% of pyridine, 99.6% of -picoline and 99% -picoline.

0201-259. Pande Sapna, Shrivastava VS (Cent PG Res Chem, GTP Coll, Nandurbar 425412, Maharashtra). **Heavy metal accumulation in industrial solid waste amended soils.** *Nature Env Polln Techno*, **1**(1) (2002), 73-75 [14 Ref].

The accumulation of As, Cd, Cu, Hg, Ni, Pb and Zn in industrial solid waste amended soil has been studied. The soil samples were taken at the depth of 15 cm from the surface. The concentration of some metals was found to be higher. The detected concentration of metals has also been correlated with the organic matter and chemical demand of the samples.

0201-260. Patel Jignesh B, Sudhakar Padmaja (Dept Appl Chem, Fac Techno Engng, The Maharaja Sayajirao Univ Baroda, Kalabhavan, Vadodara 390001). **Phosphate removal from aqueous solutions using mango seed powder.** *J Indl Polln Contrl*, **17**(2) (2001), 213-218 [10 Ref].

The removal of phosphate ions by aluminium treated mango seed powder have been studied. Study was carried out by the batch technique as a function of phosphate concentration, contact time, temperature and pH of the solution. Maximum adsorption was observed at acidic pH and 30 °C. The adsorption process follows Freundlich sorption isotherm.

0201-261. Patil PP, Baviskar SH, Shimpi Seemar R, Gosavi Meena R, Bendre Ratnamala S, Kumbhar PP (Sch Cheml Sci, North Maharashtra Univ, P.O. Box-80, Jalgaon 425001, MS). **Effect of sugar industry effluents on germination and growth**

of *Triticum aestivum* and *Phaseolus vulgaris*. *Oriental J Chem*, **17**(2) (2001), 331-333 [12 Ref].

A study on effect of sugar industry effluents on germination and growth of rabbi monocotyledon crop *Triticum aestivum* (wheat) as well as kharif dicotyledon crop *Phaseolus vulgaris* (dew bean/matki) was carried after the physico-chemical analysis of effluents. The maximum germination and growth was found for 25% concentration of effluent. The higher concentration elicited deleterious effects on the germination of both crop seeds as well as growth of crop seedlings. The overall rate of growth was observed rapid for *Phaseolus vulgaris* (dew bean/matki) than *Triticum aestivum* (wheat).

0201-262. Raghavendra K, Prakash KL, Somasekhar RK (Dept Environ Sci, Bangalore Univ, Bangalore 560056). **Qualifications of dry weather flow of wastewater in the Vrishabhavathi valley, Bangalore.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 277-280 [8 Ref].

Paper describes the quantification of wastewater flow in the natural drainage system. The flow measurement in two-phase system is impracticable with the available techniques. The narrow crested rectangular weir method was adopted to quantify the wastewater in the present investigation. The data was also cross checked with the wastewater estimation using population and water consumption data of the catchment.

0201-263. Rao LM, Hymavathi V (Dept Zoo, Andhra Univ, Visakhapatnam 530003, Andhra Pradesh). **Effect of slaughter house pollution on the biochemical composition of *Channa punctatus*.** *J Indl Polln Contl*, **17**(2) (2001), 357-362 [17 Ref].

Study deals with the biochemical constituents of *Channa punctatus* from unpolluted and polluted habitats of Mudasarlova stream of Visakhapatnam. The biochemical constituents like proteins, carbohydrates and lipids were found to be less in organisms occurring in the polluted habitat. The probable reason for these variations are discussed in detail.

0201-264. Rao LM, Hymavathi V (Dept Zoo, Andhra Univ, Visakhapatnam 530003, AP). **Age and growth of *Channa orientalis* in relation to slaughter house waste pollution in Mudarsarlova stream of Visakhapatnam.** *Polln Res*, **20**(3) (2001), 303-308 [12 Ref].

A detailed study on the age and growth of *Channa orientalis* from Mudasarlova stream of Visakhapatnam in relation to slaughter house pollution has been undertaken. The growth rate was observed to be more at polluted zone. However, older and larger individuals were encountered at the unpolluted zone only. Probable eco-biological factors resulting such variations are discussed.

0201-265. Rao LM, Padmaja G (Dept Zoo, Andhra Univ, Visakhapatnam 530003, Andhra Pradesh). **Effect of industrial pollution on the nutritive value of *Megalops cyprinoides* from harbour waters of Visakhapatnam.** *J Indl Polln Contl*, **17**(2) (2001), 363-367 [20 Ref].

The observations revealed a marked difference, between the organisms of the two stations, in the content of the total protein, carbohydrates and lipids. Specimens from harbour waters contaminated by heavy metal effluents of industries showed lesser concentration of total protein, carbohydrates and lipids compared to those of the Yerragedda mouth waters. The results have been subjected to critical ecological and statistical analysis to understand the influence of industrial pollution and to draw reasonable conclusions.

0201-266. Rao M, Parwate AN, Bhole AG (Civil Engng Dept, Coll Engng, Badnera 444701, MS). **Uptake of nickel from aqueous solution by adsorption using low cost adsorbents.** *Polln Res*, **20**(4) (2001). 669-675 [26 Ref].

Paper evaluates the efficiencies of the low-cost adsorbent materials for the removal of nickel (II) ions. Various factors affecting the adsorption process were also investigated. The order of selectivity is PAC > sawdust > fly ash > wheat straw dust > coconut jute > bagasse. The equilibrium data was used to determine the adsorption capacities of adsorbent materials. It was found that PAC followed Langmuir adsorption isotherm and the other adsorbents Freundlich isotherm.

0201-267. Raysoni Amit (Mahatma Gandhi's Mission Coll Engng Techno, Kamothe, Navi Mumbai 410209). **Eco friendly treatment of industrial wastewaters for 3rd World developing nations.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 381-384 [3 Ref].

Paper throws light on the Reed Bed System Technology for treating industrial waste waters. The pros and cons of this RBS system adopted by the Punjab Government in the Fatehgarh Sahib district of Punjab are discussed. The success of the UASB technology as regards with the cleaning of the Ganga river under the auspices of the Ganga Action Plan has been discussed. Also the latest usage of the Ozonation technique, as far as the treatment of the industrial wastewater is concerned, holds good promise for the developing countries like India. The latest modernization adopted in the above technique are also discussed.

0201-268. Rohella RS, Choudhary S, Manthan M, Murthy JS (Regl Res Lab (Coun Scient Indl Res) Bhubaneswar 751013, Orissa). **Removal of colour and turbidity in pulp and paper mill effluents using polyelectrolytes.** *Indian J Environ Hlth*, **43**(4) (2001), 159-163 [10 Ref].

Study was undertaken for removal of the colour, turbidity and COD from pulp and paper mill effluents using polyelectrolytes for pollution control and its safe disposal. A novel method of treating the above effluent with 0.2 ml/L of rishlyte 80 L for the removal of colour, turbidity and COD has been found to be optimal and techno-economically viable when compared with the conventional method of treatment with alum.

0201-269. Satpute DB, Shastri Pratima, Dharmadhikari DM (Natl Environ Engng Res Inst, Nagpur 440020). **Economic utilisation of fruit and vegetable solid waste for value addition — an environmental approach.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 223-227 [19 Ref].

Fruit and vegetable industries are prime part of industries in India. The solid waste produced by these industries is not treated in most of the cases and is supplied to the farmers for feeding to the cattle, instead of recycling and reuse. The solid waste of these industries could be converted to highly attractive industrial chemicals and can be subjected to bioconversion processes. The paper envisages an urgent need to develop processes to produce value-added products from the waste and the environment approach for the same.

0201-270. Sharma Ajay, Sharma Bhoopendra, Mathur RP, Ameta Suresh C (Dept Chem, Coll Sci, Sukhadia Univ, Udaipur 313001, Rajasthan). **Use of zinc oxide particulate system as a photocatalyst : photobleaching of brilliant green.** *Polln Res*, **20**(3) (2001), 419-423 [20 Ref].

The photocatalytic reaction of brilliant green on zinc oxide powder has been carried out in presence of light. The photocatalytic bleaching of dye was observed spectrophotometrically. The effects of variation of different parameters like concentration of brilliant green, PH, amount and particle size of semiconductor and light intensity on the rate of photocatalytic bleaching was observed. A tentative mechanism for the photocatalytic bleaching of brilliant green has been proposed.

0201-271. Sharma Deepti, Sharma Poonam, Tiwari Swati, Kesarwani Ritu (Dept Cheml Engng, Raipur Inst Techno, Raipur 4492001). **Use of solar energy for declourization of dye bearing effluent by photo catalytic oxidation.** *Eco Env Conserv*, **7**(4) (2001), 415-419 [6 Ref].

Solar powered photo catalytic processes would be ideally suited for the treatment of water in developing nations where water shortage is a severe problem as it gives almost 100% colour removal without formation of sludge/toxic material as the end product. Result shows that low pH, low concentration of dye favour the removal of dye from its solution. The decolourization kinetics found to be pseudo first order with respect to dye concentration. The catalyst coated over iron can be economically recovered from suspension by an external magnetic field with minimum loss.

0201-272. Shastry Sunita, Nandy Tapas, Kaul SN (Natl Environ Engng Res Inst, Nagpur 440020). **Treatment of vegetable oil and vanaspati industry wastewater using high rate anaerobic reactor system.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 1-4 [9 Ref].

Feasibility of a high rate anaerobic reactor system (UASB) was investigated for the treatment oil and vanaspati industry wastewater with recourse to biogas recovery. After removal of free oil and grease through oil and grease removal facility, the wastewater was used as feed. Startup of 50 L reactor with diluted feed of approximately 1000-1500 mg/L of chemical oxygen demand (COD) was accomplished in about 65 days using

seed sludge from an anaerobic lagoon treating vegetable oil and vanaspati industry wastewater. Based on the studies carried out, it can be concluded that the UASB reactor system would be an appropriate treatment option for vegetable oil and vanaspati industry wastewater.

0201-273. Shinkar NP, Polawar RM, Nandy T, Kaul SN (Govt Polytechnic, Nanded, M.S.). **Reduction of sulfate using fixed film fixed bed reactor system.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 55-57.

Effluents of fertilizer industries, mining industries, poly sulphide rubber industries and certain industries are the potential sources of sulfurous compounds. Municipal sewage also contains some quantity of sulfate, but from pollution point of view it is too low. Sulphate rich industrial effluents have a serious environmental problems. Paper discusses the performance of fixed bed reactor in reducing the sulphate concentration in sewage.

0201-274. Shrivastava VS, Wagh SP (Cent PG Res Chem, GTP Coll, Nandurbar 425412). **Metallic and organic studies of sewage and sludges.** *Eco Env Conserv*, 7(4) (2001), 455-457 [12 Ref].

Sewage and sludge samples were collected from a tribal town. Taloda (M.S.). This town is situated at the foot hills of Satpura valley. The metals like Cu, Zn, Cd, Pb, Fe, Ca and Mg were determined by inductively coupled plasma atomic emission spectrophotometry (ICP-AES). For this determined HCl-HNO₃ and 4N HNO₃ extracts were prepared. The total organic matter have also been determined to evaluate the presence of organic and metallic moieties in sewage and sludge environment.

0201-275. Shukla Siddhartha, Sharma Rajeev, Thakur Indu Sekhar* (*VI/1918 Ta Colony, Sector 6, P.O. Pantnagar, (Dist, U.S. Nagar), GBPUA&T, Pant Nagar 263145, Uttaranchal). **Enrichment and characterization of pentachlorophenol degrading microbial community for the treatment of tannery effluent.** *Polln Res*, 20(3) (2001), 353-363 [27 Ref].

A mixed microbial community isolated from the sediment core of the pulp and paper mill having potentiality to degrade pentachlorophenol was enriched in a chemostat containing mineral salt medium and sodium pentachlorophenol as sole source of carbon

and energy. The bacterial community obtained on day 240 after continuous enrichment comprised of three bacterial strains, identified as *Pseudomonas* sp. (two strains) and *Arthrobacter* sp. (one strain). The community produced significant reduction in COD (74.4%), chromium (75%), sulfides (88.9%), total phenol (84%) and pentachlorophenol (80.8%).

0201-276. Siddiqui Shazia, Singh LP, Khan MW (Dept Bot, Aligarh Muslim Univ, Aligarh 202002, UP). **Influence of flyash on the growth and yield of mustard plants (*Brassica juncea* Czern & Coss).** *Cheml Environ Res*, **9**(3&4) (2000), 303-308 [16 Ref]. (late pub).

An experiment was conducted to study the effect of fly ash on growth and yield of mustard (*Brassica juncea* Czern & Coss). Study revealed that application of lower concentrations (20 and 40%) of fly ash significantly enhanced the growth and yield parameters. 40% level of fly ash proved to be optimum for all the parameters studied. It can be concluded that soil amended with 40% level of fly ash proved best in enhancing the yield of mustard and seeds were safe for human consumption.

0201-277. Singh SP, Nagar BB (Cent Energy Std Res, DAVV, Indore 452017, MP). **Land fill disposal and spill site environment characterisation.** *Polln Res*, **20**(4) (2001), 645-650 [5 Ref].

Paper outlines the various processes affecting the fate of organic chemicals in soil environment conditions, summarises the environmental conditions encountered by the organisms. Environmental conditions faced by the organisms are distinctly different in the two major soil zones : the unsaturated and the saturated zone. Chemicals may be present within the soil environment, including the vapour phase, the adsorbed phase and the soluble phase. These different chemicals affect the rate of biodegradation of chemicals by naturally occurring organisms.

0201-278. Srivastava RK, Ayachi AK, Mishra Mona (Environ Res Lab, Dept Bot Env Sci, Govt Autonomous Coll, Jabalpur 482001, MP). **Removal of chromium (VI) by utilization of bidi leaves.** *Polln Res*, **20**(4) (2001), 639-643 [15 Ref].

Conventional methods for the removal of Cr (VI) from waste water include chemical precipitation, ion exchange, electrolysis and adsorption by activated carbon.

Owing to operational difficulties and the cost of the treatment, some new methods have been tried for a long time, among them being adsorption on low cost adsorbents. In the present investigations the cut chips of bidi leaves has been used as these are produced as waste in bidi industries and doesn't find any specific uses except for dumping here and there.

0201-279. Srivastava RK, Ayachi AK, Sehgal Vandana, Sen Anoop (Environ Res Lab, Dept Bot Env Sci, Govt Sci Coll, Jabalpur MP). **Studies on the nitrate removal by water hyacinth and Ipomea leaves.** *Plant Arch*, **1**(1&2) (2001), 81-85 [11 Ref].

Paper deals with the use of two Indian plants species i.e. water hyacinth and ipomea leaves for the removal of nitrate. Various parameters like contact time, temperature, pH, adsorbent dose and stirring time were taken to get maximum adsorption of nitrate on to water hyacinth and ipomea leaves. Both plants species were found to be efficient in removing nitrate from waste water and upto 98% removal was recorded.

0201-280. Srivastava RK, Sehgal Vandane, Sen Anoop (Environ Res Lab, Dept Bot Env Sci, Govt Autonomous Sci Coll, Jabalpur, MP). **Sorption studies on cadmium removal by ipomea leaves.** *Eco Env Conser*, **7**(4) (2001), 373-377 [13 Ref].

The removal of cadmium from waste water by adsorption on ipomea leaves was investigated to determine the effects of contact time, pH, quantity to adsorbent and temperature. The alkaline (pH 9) aqueous medium favoured the removal of cadmium by ipomea leaves. Batch adsorption experiments conducted at 30 C, 50 C, and 70 C, showed that adsorption of ipomea leaves increases when temperature is increased from 30 to 50 C and then decreases when temperature increases from 50 to 70 C. Low adsorbent dose gave better results. The maximum removal of cadmium by ipomea leaves was upto 98%.

0201-281. Suman Raj DS, Chary NS, Lahiri Sangath. Padmaja V, Usha KS, Sudha Madhavi N, Anjaneyulu Y (Jawaharlal Nehru Technol Univ, Hyderabad 500028). **Biotreatability of common effluent treatment plant waste water using lab scale activated sludge process and sludge characterisation.** *Proc Natl Conf Polln Prev Contl India : IAEM*, 2-3 March 2002, Nagpur, 257-264 [19 Ref].

The study is carried out to evaluate the treatability efficiency by varying F/M ratio. For each F/M ratio considered the performance is evaluated at three MLSS concentrations of 2000 mg/l, 3000mg/l and 4000mg/l. The studies are carried out at two different HRT's. The reduction in BOD values for both the HRT's studied were in good validation with the COD and a BOD reduction of over 85% was observed for almost all the concentrations studied. Further the activated sludge from the aeration tank was subjected to various microbiological and biochemical analysis to know the probable organisms involved in waste stabilization. Characterization of the dried sludge was carried out to assess the suitability and applicability of the sludge as manure.

0201-282. Verma V, Mehta M, Dwivedi VR, Ameta SC* (*Dept Chem, Coll Sci, ML Sukhadia Univ, Udaipur). **Photocatalytic treatment of wastewater : removal of nickel (11).** *Cheml Environ Res*, **9(3&4)** (2000), 315-320 [20 Ref] (Late Pub).

Photocatalytic reduction of Ni(II) over semiconducting iron(III) oxide was carried out. The progress of reaction was observed spectrophotometrically. Variation of different parameters on the rate of photocatalytic reduction was studied. A tentative mechanism for the reduction has been proposed.

Forestry and Environment

0201-283. Nirmal Kumar JI, Kumar Rita N, Joseph Shintu (Natubhai V Patel Coll Pure Appl Sci, Vallabh Vidhyanagar 388120, Gujarat). **Tree species diversity of Khatana forest of south Gujarat.** *J Nature Conserv*, **13**(2) (2001), 149-166 [17 Ref].

An environmental study was carried out to analyze the quantitative and qualitative study of tree diversity of Khatana forest. A total of 4125 individual trees belonging to 37 tree species were counted in Khatana. The species like *Tectona grandis*, *Terminalia crenulata*, *Acacia catechu* etc. with high frequency, density, abundance were registered in almost all Land Scape Elements (LSE). However, *Madhuca indica*, *Lagerstromea parviflora*, *Acacia nilotica*, *Grewia tiliaefolia*, *Morinda tomentosa* were found to be less frequency, density and abundance in study LSE.

Wildlife

0201-284. Chhangani Anil Kumar (Dept Zoo, JNV Univ, Jodhpur 342005, Rajasthan). **Threats to Kumbhalgarh Wildlife Sanctuary in relation to flora and fauna.** *J Nature Conserv*, **13**(2) (2001), 177-185 [8 Ref].

In the recent past the Kumbhalgarh Wildlife Sanctuary (KWS) has become vulnerable to several threats which may deshape the sanctuary and the survival of native flora and fauna living in and around the sanctuary. These are grazing, weed spread, tree cutting, forest fires and floods. These factors are changing the profile of the sanctuary. The number of animals, particularly the large animals are under threat as a result of road accidents, forest fires and floods. These needs to be halted.

Energy

0201-285. Kanhe Narendra M, Gupta Rajesh, Bhole Anand G (Visvesvaraya Regl Engng Coll, Nagpur). **Promotion of biomethanation technology for protection of water resources from industrial pollution - an Indian Scenario.** *Proc Natl Conf Polln Prev Contrl India : IAEM*, 2-3 March 2002, Nagpur, 265-271 [17 Ref].

It is the need of the time that industrialists in India should think of controlling the pollution as well as generating an alternate source of energy. Biomethanation technology serves both the purposes wherever wastewater is amenable for anaerobic treatment. The Government of India (GOI) suggested the implemented action plans for the promotion of biomethanation technology. Some important guidelines provided by GOI are presented in this paper. A current status of implementation of such technology of such technology is also presented.

Plant and Pollution

0201-286. Agrawal SB (Dept Biol Sci, Allahabad Agricul Inst. (Deemed Univ), Allahabad 211007). **Physiological and biochemical responses of field grown *Vicia faba* L. plants to supplemental ultra violet-B radiation.** *Nature Env Polln Techno*, 1(1) (2002), 67-72 [34 Ref].

In a field experiment *Vicia faba* plants were grown under ambient and supplemental untraviolet-B (sUV-B) radiation at 20% ozone depletion. Decline in photosynthesis was associated with reductions in chlorophyll and carotenoid pigments at all ages of plants. Concentrations of UV-B absorbing pigments and flavonoids increased with age. The amount of antioxidant and ascorbic acid decreased after exposure of UV-B.

0201-287. Arindam Kumar (Dept Bot, JMDPL Madhila Coll, Madhubani, Bihar). **Irrigational impact of industrial effluent on chemical constituents of soil and plant.** *Adv Plant Sci*, 14(2) (2001), 351-358 [26 Ref].

Impact of periodic watering from germination to maturity with carbonaceous sugar mill effluent on chemical constituents of soil and *Hordeum vulgare* var IB65 was assessed. Watering with effluent caused alteration in chemical constituents of soil and such alteration resulted in reduction in phosphate, potassium, total nitrogen, carbohydrate, crude protein and increase in sodium, calcium, sulphate, chloride, and ash content of root, stem, leaf and seeds of *Hordeum vulgare* var IB65. Carbonaceous sugar mill effluent produces adverse effects on soil fertility and chemical constituents of plant if used for irrigation purposes.

0201-288. Bindhu SJ, Bera AK (Dept Plant Physio Bidhan Chandra Krishi Vishwavidyalaya, Mohanpur 741252 W.B.). **Impact of cadmium toxicity on leaf area, stomatal frequency, stomatal index and pigment content in mungbean seedlings.** *J Environ Bio*, **22**(4) (2001), 307-309 [6 Ref].

Effect of different concentrations of CdSO₄ (10⁻⁴M, 5 x 10⁻⁴M and 10⁻³M) on leaf area, stomatal frequency, stomatal index and pigment content in 6 days old mungbean seedlings was studied under laboratory conditions. Except at 10⁻⁴M CdSO₄, leaf area decreased with an increase in the concentration of CdSO₄. Stomatal frequency on the leaf surface increased at 5 x 10⁻⁴M and 10⁻³M CdSO₄ in comparison to untreated control. However, reverse was the case for stomatal index. Chlorophyll-a, chlorophyll-b, total chlorophyll, and chlorophyll a/b ratio were increased at 10⁻⁴M CdSO₄, and decreased thereafter with an increase in the concentration of Cd²⁺. Possible reasons for the stimulatory effect at low concentrations and inhibitory effect with higher concentrations are discussed.

0201-289. Gupta AK, Tripathi BD, Dwivedi AK (Dept Bot, 12, DIG Colony, Varanasi 221002). **Productive behaviours of a tropical deciduous plant in response to air pollution by brick industry.** *Int J Mendel*, **18**(3) (2001), 91-92 [13 Ref].

In a pot culture experiment *Ficus religiosa* was exposed to brick industry pollution. Ambient air quality monitoring and biochemical foliar analysis at control site and polluted site was done fortnightly. The obtained values showed positive correlation through t-test.

0201-290. Gogoi Nirmali, Baruah KK (Dept Crop Physio, Assam Agricl Univ, Jorhat 785013, Assam). **Effects of natural gas flare on growth flowering and yield of rice (*Oryza sativa* L.).** *Polln Res*, **20**(3) (2001), 337-341 [12 Ref].

The effect of oil field pollution particularly natural gas flaring (burning) on growth, flowering and yield development of rice (*Oryza sativa* L.) was studied near an oil installation of ONGC. The inhibitory effect of flare on crop growth, flowering and yield in rice was observed up to 45 meter distance from the gas flare point. Intensity of damage was more pronounced upto 30 m distance, particularly on yield attributing parameters-grain per panicle, filled grain (%), high density grain (%) and grain yield.

0201-291. Kannan A, Ramteka PW (Dept Biochem Biotechno, Allahabad Agricl Inst, Allahabad 211007). **Uptake of nickel (11) by *Serratia marcescens*.** *J Environ Bio*, **23** (1) (2001) 57-59 [18 Ref].

Bioaccumulation and biosorption of various nickel salts of *Serratia marcescens* (NCIM 2078) were investigated. Biosorption of nickel was found maximum for the nickel nitrate and nickel chloride as 28.08 and 25.50 mg/l nickel was obtained in dry biomass of *S.marcescens*, respectively. The possible role of pigment prodigiosin in uptake of nickel is discussed.

0201-292. Katiyar V, Dube PS (Inst Env Manag Plant Sci, Vikram Univ, Ujjain 456010). **Assessment of two legumes against SO₂-NO₂ at three ages of plant growth.** *J Env Polln*, **8**(4) (2001), 333-337 [20 Ref].

Two leguminous crops, *Pisum sativum* var. Arkil and *Cicer arietinum* var. Lal Chana, were investigated under the SO₂ and NO₂ exposure at three ages of plant growth. 20 days and 40 days old crop with 10 days and 20 days fumigation of NO₂ and NO₂+ SO₂ revealed the stimulatory effect in four assessed parameters i.e. total chlorophyll content, free proline, foliar protein content and NR activity. Thirty days old crop with 30 days NO₂ + SO₂ exposure has expressed the inhibitory effects for same parameters, which might be due to the excess accumulation of ions over their scavenging potential.

0201-293. Khan TI, Devpura Shikha (Indira Gandhi Cent HEEPS, Univ Rajasthan, Jaipur 302004). **Effect of simulated acid rain on *Phaseolus vulgaris* var. HUR-15.** *Nature Env Polln Techno*, **1**(1) (2002), 31-34 [12 Ref].

The seedlings of *Phaseolus vulgaris* var. HUR-15 tolerated simulated acid rain exposure down to pH 3.1. Seeds succumbed at pH level 2.1. At pH 3.1, the percentage reduction in length and dry weight of root and shoot varied between 75-90%, whereas in chlorophyll content reduction was 81.5%.

0201-294. Mandal Madhumanjari, Mukherjee S (Dept Bot. Scottish Church Coll, 1, Urquhart Square, Kolkata 700006). **A study on the activities of a few free radicals scavenging enzymes present in five road side plant.** *J Environ Bio*, **22**(4) (2001), 301-305 [18 Ref].

The road side plants are continuously exposed to the high levels of oxides of nitrogen and sulphur dioxide, emitted from automobile. Resistance of automobile exhaust pollution was studied with *Nerium indicum* Mill, *Boerhaavia diffusa* L., *Amaranthus spinosus* L., *Cephalandra indica* Naud, and *Tabernaemontana divaricata* L., growing on the edges of Delhi Road, National Highway 2 (NH 2) near Dankuni, West Bengal. By analysing the activities of few enzymes it appears that among the five plants examined, *Amaranthus* and *Cephalandra* are equipped with a very good scavenging system to combat effects of air pollution.

0201-295. Masood A, Seema A, Amin S, Farooq M (Dept Biotechno, Univ Kashmir, Srinagar). **Effect of sulfur dioxide on spinach foliar glycolipids.** *Polln Res*, **20**(3) (2001), 299-301 [16 Ref].

Spinach leaf discs treated with 10-100 ppm aqueous sulfur dioxide showed a decrease in glucolipid content at all the concentrations of sulphur dioxide tested. Inhibition of superoxide desmutase combined with an increase in lipid peroxidation was observed. Increase in free sugars leakage from the leaf discs was directly correlated with damage to cellular membrane lipids.

0201-296. Naidu KC (P/BAG 2002 Water Affairs, Maun, Botswana). **Effect of oil pollution on certain plants under field condition.** *J Ecotoxicol Environ Monit*, **11**(3) (2001), 195-203 [20 Ref].

The primary objectives have been to define the most sensitive areas for oil pollution and to quantify the plant injury to oil refinery effluent. Surveys conducted around Madras Refineries Limited, India revealed the cumulative effects of oil pollution on plants which were photographed and documented. Damage was both immediate and long-term and greatest in the heavily oiled soil or water with simultaneous recovery of rhizomatous species. The four categories of plant symptoms to oil pollution, typical of nutrient deficiencies include yellow foliage, chloronecrosis, wilting and defoliation and leaf roll.

0201-297. Pragasam A, Kannabiran B (Dept Bot, Bharathidasan Govt Coll Women, Pondicherry). **Effect of distillery effluent on the morphology biochemistry and yield of *Vigna mungo*.** *Adv Plant Sci*, **14**(2) (2001), 547-552 [14Ref].

Paper brings out the effect of Pondicherry distillery effluent on the growth, biochemistry and yield of *Vigna mungo*. All the parameters studied showed an increase over control in 10 and 25 per cent concentrations. The higher concentrations (50, 75 and 100 per cent) were found to reduce growth and yield.

0201-298. Reddy VRK (Cytogenetics Lab, Dept Bot, Bharathiar Univ, Coimbatore 641046). **Genotoxic effects of mercuric chloride (HgCl₂) on root tip cells of *Allium cepa* L.** *Adv Plant Sci*, **14**(2) (2001), 557-560 [3 Ref].

Cytological effects of HgCl₂ were analysed on somatic chromosomes of *Allium cepa*. The heavy metal reduced the mitotic index, and induced a variety of cytological and chromosomal abnormalities. Due to recovery, although the MI was improved but was less than that of absolute control. Reduction in cytological aberrations were noticed only in lower concentration treatments with higher duration of recovery period. The results revealed that mercuric chloride is positively mitostatic, chromotoxic and clastogenic in nature in the root meristems of the studied test system.

0201-299. Salgare SA, Palathingal Trisa (Dept Bot, Inst Sci, Mumbai 400032). **Effect of industrial pollution at Sewri - Mumbai on the rate of decrease in pollen germinability of successive flowers of *Moringa pterygosperma*-I.** *Plant Arch*, **1**(1&2) (2001), 41-43[9 Ref].

Potentiality of pollen germinability in *Moringa pterygosperma* was observed in F and F-24 series. Pollen of either series collected from unpolluted area of Colaba and polluted area of Sewri-Mumbai showed their germination even after 10 hours of their storage at room temperature. Industrial pollution at Sewri stimulated the rate of decrease in pollen germinability of successive flowers of *M. pterygosperma*.

0201-300. Shankar Karuna, Srivastava MM (Centl Res Inst (Ay.) 474/6, Stiapur Rd, Lucknow 226020). **Uptake and translocation of selenium by maize (*Zea mays*) from its environmentally important forms.** *J Environ Bio*, **22**(3) (2001), 225-228 [28 Ref].

Pot culture studies were conducted to examine the effect of selenite (SeO₃) and selenate (SeO₄) on the uptake and translocation of root absorbed selenium in maize *Zea mays* plants grown in sand and soil culture. Increasing selenium supplementation (0.5-6.00 g/ml), increased the selenium retention in roots, but there was little transfer of selenium from shoot to grains. The study indicates that selenite species (less mobile) also accumulates in maize plants when supplied in solution form. Selenium does not cause any adverse effect on the maize plants.

0201-301. Sharma Vinod, Sharma Rajeev, Sharma KD (Dept Bot, SGN Khalsa PG Coll, Sri Ganganagar 335001). **Distillery effluent effect on seed germination, early seedling growth and pigment content of sugar beet (*Beta vulgaris* Linn. Var. Mezzanan-Poly).** *J Environ Bio*, **23**(1) (2002), 77-80 [10 Ref].

Bioassay studies were carried out to assess the toxicity of distillery effluent on seed germination, seedling growth and pigment contents. Higher concentrations (>.5%) of effluent were found to be toxic but however, can be used for irrigational purpose after proper dilution.

0201-302. Srinivas N, Chandrapaul B, Prasada Rao PVV (Dept Environ std, Coll Engna, GITAM, Visakhapatnam 530045). **Biomonitoring of dust pollution.** *Nature Env Polln Techno*, 1(1) (2002), 27-30 [23 Ref].

The response of seedlings of *Tridax procumbens* and *Parthenium husterophorus* to particulate air pollutants on morphological changes and chlorophyll pigment was studied. The maximum reduction in leaf area, lengths of shoot and root, API and total biomass was observed in *Tridax* seedlings compared to *Parthenium* seedlings. The present study indicates that *Tridax procumbens* seems to be more sensitive to air pollution, hence may be suggested as an indicator species of air pollution.