

Environmental Management

0203-001. Arya DS, Abbasi SA*(*Cent Polln Contl Energy Techno, Pondicherry Univ, Kalapet, Pondicherry). **Identification and classification of key variables and their role in environmental impact assessment : Methodology and software package INTRA.** *Environ Monit Assess*, 72(3) (2001), 277-296 [13 Ref].

A methodology for distinguishing the more important parameters from the less important ones is described. The methodology aims at identifying and shortlisting the key parameters which ought to be studied in a given EIA situation, thereby helping in reducing time, effort, and cost of EIA. A software package INTRA (INTER-parameter Relationship Analysis) based on this methodology, has been developed.

0203-002. Ashok KR, Ramasamy C (Agricl Coll Res Inst, Killikulam, Tamil Nadu). **Economic analysis of soil conservation measures – a case study of two watersheds in Tamil Nadu.** *Indian J Soil Conserv*, 30(1) (2002), 83-86 [3 Ref].

The study estimated the B-C ratio of investment on soil conservation in two watersheds of Tamil Nadu and showed that the ratio was negative or very low in the initial period of investment. However the B-C ratio was favourable in the long run. The major constraints expressed by the farmers in adoption of soil conservation measures were financial, labour availability and water scarcity.

0203-003. Asthana A, Gupta VK* (*Sch Std Chem, Pt. Ravishankar Shukla Univ, Raipur MP). **Determination of ethylene glycol in environmental samples.** *Cheml Environ Res*, 10(1&2) (2001), 5-12 [14 Ref].

A new reagent system for the spectrophotometric determination of ethylene glycol in various environmental samples is described. The method is based on the oxidation of ethylene glycol to formaldehyde by periodic acid which is subsequently estimated by the coupling with phloroglucinol in alkaline medium. The method has been applied for the determination of ethylene glycol in motor oil, chocolate wrapper and biological samples.

0203-004. Balaji S (Forest Coll Res Inst, Tamil Nadu Agricul Univ, Mathupalayam, Tamil Nadu) **Joint Forest Management in Tamil Nadu – problems and prospects. *Indian Forester*, 127(11) (2001), 1201-1206 [5 Ref].**

Joint Forest Management (JFM) is eliciting peoples' participation in the management of natural forests for sustainable management. The advantages and constraints in using JFM approach are discussed. The synergetic effect of biological, hydrological and sociological approaches adopted in JFM strives to ameliorate the conditions of rural people and facilitate their co-operation in the management of adjacent degraded natural forests in an integrated manner.

0203-005. Banerjee G, Kumar B (Dept Sanitary Engng, All India Inst Hygiene Public Hlth, 110, CR Avenue, Kolkata 700 073). **Pesticide (acephate) removal by GAC : a case study. *Indian J Environ Hlth*, 44(2) (2002), 92-101 [18 Ref].**

Study reports the performance of granular activated carbon (GAC) in the removal of acephate contained in the effluent of a nearby pesticide manufacturing industry. In the batch study, the optimum dose of GAC was found to be 85 gm/litre for almost 100% removal of acephate from its initial concentration of 2.9 mg/litre which was found in the industrial effluent under treatment.

0203-006. Banerjee Sujoy, Sharma SK (5/963, Viraam Khand, 5 Gomti Nagar, Lucknow, UP). **Timber distribution scheme (TDS) in Himachal Pradesh – issues and perspective. *Indian Forester*, 127(11) (2001), 1223-1228 [4 Ref].**

The Timber Distribution Scheme (TDS) included the provision of timber trees for over a fixed period of time for the repair and construction of houses, fuelwood during celebrations and festivals, repair of temples (*Devtaa* rights), timber for the repair of bridges, etc., subject to the payment of a token amount in certain cases as may be applicable. However, over the past few years, the population has increased greatly while at the same time, the TDS policies have not been revised. As a result, this has created tremendous pressure on the meagre forest resources that are existing at present. Paper attempts to highlight certain important issues related to TDS in Himachal Pradesh.

0203-007. Chakradhar B, Mishra Alka, Padmakaran Prabha, Kaul SN (Regl Res Lab, Coun Scient Indl Res, Bhopal 462026). **Kinetic constants for anaerobic fixed bed reactor system.** *J Indian Assoc Environ Manag*, 28(2) (2001), 131-135 [4 Ref].

Anaerobic fixed bed reactor system is used for the treatment of cotton digestion wastewater which is generated during digestion with alkali. Substrate removal kinetics was developed using Dewalle and Chain model and pseudomechanistic models. The values of kinetic rate constant K_2 (A/V), loading rate constant K_L , and the inhibition coefficient (K_s) were determined for the system.

0203-008. Das Mihir K, Awasthi Ajay K, Pandey Rakesh K (Sch Environ Bio, APS Univ, Rewa 486003). **Environmental impact assessment of mining and thermal power generating activities in Singrauli area using remote sensing techniques.** *Env Eco*, 20(2) (2002), 327-336 [4 Ref].

Paper deals with the study of environmental monitoring and land use/land cover changes in the Singrauli area due to open cast coal mining and thermal power generating activity. The study was carried out using multirate remotely sensed satellite data of 1988 and 1993 and topographical maps of 1969, through visual interpretation. The monitoring on a regular basis would help in perceiving the extent the direction of alterations and also in evolving mitigating measures.

0203-009. Devasigamoney Jayakumar (Wheel Axle Plant, Yelahanka, Bangalore 560064). **Analysis of shop floor injuries in steel industry.** *Indian J Occupl Environ Med*, 6(2) (2002), 80-85 [2 Ref].

This retrospective study was conducted to study the injuries in a specific work place. The study was conducted in the steel casting division of a steel industry. The incident rate of the injuries per 1000 employees ranges between 42 and 61. The average man days lost per injury ranged between 19 and 37 days.

0203-010. Dikshit AK, Padmavathi T, Das RK (Indian Inst Techno, Kharagpur, West Bengal). **Locating potential landfill sites using geographic information systems.** *J Environ Syst*, 28(1) (2000-01), 43-54 [16 Ref].

A Geographic Information System-based method has been presented that identifies potential landfill areas for preliminary assessment. The regulatory restrictions, area attributes, and site assessment criteria provided by experts and/or users have been taken into account. The proposed method has been demonstrated by applying it to a landfill site selection study for the Nilgiri block of Balasore district of Orissa in India.

0203-011. Dutta P (Dept Mining Eng, Bengal Engng Coll, Howrah 711103). **Environmental impact assessment of mining projects – a comparative review of Canada, Australia and India.** *J Inst Engrs (Min Engng)*, 82(Feb) (2002), 45-47 [9 Ref].

The EIA procedures and contents of the assessment documents for mining projects have been studied for Canada, Australia and India. A comparison reveals wide differences in the contents of the EIA documents, institutional arrangements, levels of assessment and opportunities for public participation in the process.

0203-012. Ghose MK, Giradhari L (Cent Mining Env, Indian Sch Mines, Dhanbad 826004). **Impact assessment of a coal washery project on socio economic environment : an Indian case study.** *J Environ Std Policy*, 4(1) (2001), 35-44 [16 Ref].

To evaluate the impact of a coal washery project, an investigation was carried out in the Patherdih coal washery of BCCL (Bharat Coking Coal Ltd). The existing socio-economic environment scenario of the study area has been discussed and the methodology adopted has been described. The coal washery project appears to have brought significant socio-economic development to the area. It has involved the immigration of industrial workers in the area and opened avenues for different types of employment.

0203-013. Gill AS, Lal B (Natl Res Cent Agroforestry, Jhansi, UP). **Agroforestry in reference to disaster, environment and development.** *(The) Indian Forester*, 128(1) (2002), 27-34 [11 Ref].

Agroforestry in an inter disciplinary, multi-sector approach of land use. Its prime objective is over all optimization and to protect the environment and maintain the ecological integrity. Paper deals in greater length, the role of agroforestry in control of natural disasters, protection of environment and enhancement of development activities.

0203-014. Goyal CP, Brahma BC (Rajaji Natl Park, Dehra Dun, Uttaranchal). **Carrying capacity of govind Wildlife Sanctuary (and National Park)**, Uttarkashi District. *Indian Forester*, 127(10) (2001), 1171-1177 [10 Ref].

Paper evaluates Physical Carrying Capacity (PCC = Visitors per day) and the Real Carrying Capacity (RCC = Visitors per day) for Govind Wildlife Sanctuary (and National Park) situated in Uttarkashi District of Uttaranchal. Ten significant routes used by people within the Protected Area have been chosen for the study. On an average, 1323 visitors visit the Protected Area in a year during the tourist season, PCC represents a parameter that the ecosystem can withstand under static conditions.

0203-015. Gupta HS (Res Evaluation Div, Ranchi, Jharkhand). **Remote sensing techniques for evaluating land use/land cover : a case study**. *Indian Forester*, 127(7) (2001), 755-762 [3 Ref].

Study depicts that the satellite remote sensing data can be of great help in quick assessment and real time monitoring of existing natural resource, like water and forest and it can be effectively used for catchment area evaluation, change pattern in command area etc. Present study provides the baseline spatial database for forest manager to quickly asses, evaluate and monitor the change in forest resources/environment under the impact of the dam, any time in future also.

0203-016. Jagannatha Rao R, Bhat PR, Murali* KS, Murthy Indu K, Ravindrath NH (*Cent Ecol Sci, Indian Inst Sci, Bangalore). **Joint forest planning and management in Uttara Kannada : a review**. *Myforest*, 37(2) (2001), 421-428 [5 Ref].

An assessment of Joint Forest Management (JFM) was undertaken in Uttara Kannada district, with a view to understand the progress made towards JFM goals. Data was obtained from the Forest Department with respect to the number of VFC formed, microplans prepared, memorandum signed with the VFCs, and area brought under JFM, alongwith field level discussions to understand the perception of people at the local level.

0203-017. Jha Sanjeeva Kumar (Dept Statistics, Pachhunga Univ Coll, North Eastern Hill Univ, Aizawal, Mizoram). **On upper bias in 'Forest Cover' data of hilly terrain obtained through satellite imagery with special reference to Mizoram**. *Indian Forester*, 127(8) (2001), 871-878 [6 Ref].

The high intensity of slope of hills in Mizoram causes a significant degradation in the ground resolution of the sensor of a satellite. Consequently, the intensity of the corresponding picture element gets increased in favour of higher canopy density class owing to the adequacy in the natural vegetational growth in the State. Hence, during cover classification stage, an upper bias is introduced. The paper tries to investigate and measure the bias.

0203-018. Joshi MW, Talkhande AV, Andey SP, Kelkar PS (Natl Environ Engng Res Inst, Nagpur 440020). **Urban community perception towards intermittent water supply system.** *Indian J Environ Hlth*, 44(2) (2002), 118-123.

While evaluating intermittent and continuous water supply systems, consumers opinion survey was undertaken for critical appraisal of both modes of operation. With the help of a pre-designed set of questions relating to various aspects of water supply and the opinion of consumers regarding degree of service, a house to house survey was conducted in the study area of Ghaziabad and Jaipur.

0203-019. Kaur Ravinder, Dutta D (Div Environ Sci, Indian Agricul Res Inst, New Delhi). **GIS based digital delineation of watershed and its advantage over conventional manual method – a case study on watersheds in Hazaribagh and Bankura districts of Jharkhand and West Bengal.** *Indian J Soil Conserv*, 30(1) (2002), 1-7 [4 Ref].

Attempt has been made to compare the manual (AISLUS) and digital watershed delineation procedures on test watersheds in Hazaribagh and Bankura districts of Jharkhand and West Bengal. Besides this the benefits of digital delineation procedure over conventional (AISLUS) manual method have also been highlighted. The study indicates that traditional manual delineation of watersheds involves subjectivity in locating the ridgelines, which often leads to a slight change in the actual watershed shape and thus area.

0203-020. Kler DS, Uppal RS, Kumar Anshuman, Kaur Gurdip (Dept Agro, Punjab Agricul Univ, Ludhiana 141004). **Imbalance and maintenance of ecosystem – a review.** *Env Eco*, 20(1) (2002), 20-48 [34 Ref].

Excessive and wasteful use of resources along with the unplanned development and inadvertent consumption is creating self destructive path in biodiversity of

ecosystem due to monoculture, heavy fertilization, pest control, resource erosion, leading to soil, water, air and human health problems. It needs ecosystem management through soil, air and water conservation techniques for cost effective and future use.

0203-021. Kumar Ashok, Kalsotra BL (MAM Coll, Dept Chem, Jammu 180006). **Geochemistry of river and lake sediment of Garhwal Himalayas, Uttar Pradesh.** *Indian J Environ Prot*, 21(10) (2001), 887-898 [39 Ref].

The periglacial sediments deposited on the bank of the river Mandakini and sediments collected from the adjoining lake, near the snout of glacier (known as Chourabari Tal or Gandhi Sarovar) have been studied for geochemical characteristics and their interaction with the glacial melt waters.

0203-022. Kumar S, Rao DN (Cent Econ Std Planng, Sch Socl Sci, Jawaharlal Nehru Univ, New Delhi 110067). **Valuing the benefits of air pollution abatement using a health production function.** *Environ Resource Econ*, 20(2) (2001), 91-102 [16 Ref].

Paper estimates the economic value that people in an urban area in India – PTPS (Panipat Thermal Power Station) Colony in Panipat, Haryana – place upon improving the air quality. The dose-response method, based on the Gerking and Stanley model, is used to estimate the economic benefits of air quality improvement. The relatively successful application of the dose response method at PTPS colony suggests that the technique can be more widely applied in developing countries like India.

0203-023. Kumbhar Pramod P, Dewang Purushottam M (Dept Pesticides Agrochemls, Sch Cheml Sci, North Maharashtra Univ, P O Box No. 80, Jalgaon 425 001, Maharashtra). **Eco-friendly pest management using mototerpenoids. I. Antifungal efficacy of thymol derivatives.** *J Scient Indl Res*, 60(8) (2001), 645-648 [11 Ref].

Ether and ester derivatives of thymol, 5-methyl-2 (1-methyl ethyl) phenol, a natural monoterpene, were synthesized and antifungal potency against *Aspergillus niger*, *Fusarium oxysporum* and *Alternaria alternata* was evaluated to study structure-activity relationships. Thymyl ethers showed better antifungal potency than esters in overall studies.

0203-024. Mahadevan R, Latha G (Natl Inst Ocean Techno, Chennai 600036). **Influence of coastal flooding on surge estimates along the east coast of India.** *Indian J Marine Sci*, 30(3) (2001), 115-122 [22 Ref].

The influence of coastal flooding on surge estimates along the coast is examined using a procedure that is different from the conventional wet-dry grid point method. The coastal boundary is assumed fixed in the present study. The mass and momentum fluxes across the coastal boundary due to surge flooding the coastal regions are modeled as sources/sinks along this boundary in the equations governing the flow field. The equations are solved using an explicit finite element scheme.

0203-025. Mohammad Raffi S, Ramanujam TK (Indian Inst Techno, Dept Cheml Enngg, Chennai 600036). **Environmentally sustainable rural development in India.** *Indian J Environ Prot*, 21(9) (2001), 852-855 [2 Ref].

Paper describes the need for an environmentally sustainable rural development in India. The particular attention is paid to issues, like environmental education, water resources management, energy management, and forest management in rural India. The paper also describes the role of decentralization in rural development.

0203-026. Mishra Ravi, Parihar UBS (Environ Plnng Coordination Org, E-5 Arera Colony, Bhopal 462016). **Geoenvironmental studies of the ton's basin, South West of Maihar, district Satna (M.P.).** *Nature Env Polln Techno*, 1(2) (2002), 141-145 [8 Ref].

The geoenvironments of the Ton's basin area have been analysed for evaluating the possibilities of development without destruction. The area is reeling under the impact of various adverse environmental parameters resulting due to various lime based industries. Generally, the ground water of the area is good for drinking purposes. The high concentration of TDS, hardness, sulphate and chloride were observed in some ground water samples.

0203-027. Misra VK (Soc Promotion Wasteland Dev, New Delhi). **Changing policies and system of forest management in India.** *Wasteland News*, 17(2) (2001-02), 49-61 [6 Ref].

Governments in many parts of the world including India, have in the recent past, initiated political and administrative processes for decentralised resource management. This trend is driven by the need to reduce high cost of transaction on centralised management of resources and need for a socially just, equitable and sustainable resource management.

0203-028. Narula Kapil K, Wendland Frank, Bhujanga Rao D D, Bansal N K (Tata Energy Res Inst, Habitat Cent, Lodhi Rd, New Delhi 110003). **Water resources development in the Yamuna river basin in India.** *J Environ Stud Policy*, 4(1) (2001), 21-33 [13 Ref].

Paper addresses the emerging concerns regarding water resources sustainability through a case study for a large river basin in India using an area-wide approach. An assessment of water resources development in the Yamuna river basin, has been conducted by evaluating present and future water availability.

0203-029. Nawghare P, Vyas RD, Nandy Tapas, Kaul SN, Szpyrkowicz L, (Natl Environ Engng Res Inst, Nagpur 440020). **How much do effluent treatment plant units cost?** *J Indian Assoc Environ Manag*, 28(2) (2001), 97-101 [5 Ref].

Relationships of estimated construction costs to appropriate capacity parameters for each of the various major units of Effluent Treatment Plant have been presented. Review of the data for 60 plants selected for the study indicated that capacity of various plant units could be used in estimating the construction costs of various units as also the operation and maintenance cost of an effluent treatment plant.

0203-030. Nayak Shailesh, Bahuguna Anjali (Marine Water Resources Gr, Space Applications Cent, Ahmedabad 380015, Gujarat). **Application of remote sensing data to monitor mangroves and other coastal vegetation of India.** *Indian J Marine Sci*, 30(4) (2001), 195-213 [56 Ref].

The Marine National Park, in the Gulf of Kachchh, mangrove areas were monitored for the last 25 years. The degradation of mangroves continued up to 1985 and the condition significantly improved due to the adoption of conservation measures. This has helped in planning various management actions to conserve this vital ecosystem. IRS data have been used in identifying dominant plant communities in many mangrove

areas. This is a unique approach for providing spatial information at plant community level and can be seen as a first step towards bio-diversity assessment. Along with the mangroves, seaweed, seagrass beds and dune vegetation have also been mapped with reasonable accuracy.

0203-031. Nazareth AP, Radhakrishnan KV (Dept Fisheries Resources Manag, Coll Fisheries, Mangalore 575002). **Integrated coastal management of Dakshina Kannada and Udupi – a case study.** *Indian J Environ Hlth*, 44(1) (2002), 24-36 [19 Ref].

The study area, an ecologically sensitive region is developing at a very fast rate in Dakshina Kannada district alone. Innovative technologies have been introduced in the area of capture and culture fisheries and also there has been major industrial development. These two aspects have led to user-user conflict and concern for environmental degradation. The study reveals an urgent need to put in place processes leading to integrated coastal management. Cause and effects have been discussed and possible remedies suggested.

0203-032. Neppolian B, Shankar MV, Murugesan V>(*Dept Chem, Anna Univ, Chennai 600025). **Semiconductor assisted photodegradation of textile dye.** *J Scient Indl Res*, 61(3) (2002), 224-230 [35 Ref].

The degradation of commonly used textile dye reactive red 2 in an aqueous solution by means of photocatalysis using ZnO in the form of slurry is studied. When concentration of the dye increases from 60 to 140 ppm, the rate constants vary between 0.055 and 0.019 min⁻¹. The disappearance of the dye follows approximately pseudo-first order kinetics. This method suggests the possible use of ZnO photocatalysed degradation of textile dye present in wastewater.

0203-033. Nirmala S, Vani KNK, Chowdary Rao T, Sarath Babu M, Ramachandran D, Rambabu C, Soma Sekhara Rao K (Nagarjuna Univ PG Cent, Dept Chem, Nuzvid 521201). **Physico – chemical and bacterial quality of mineral waters and cool drinks.** *Indian J Environ Prot*, 21(9) (2001), 803-805 [4 Ref].

Study deals with the quality of locally marketed mineral water packed in bottle and pouches. For various samples the parameters, like pH, TDS, ALK, TH, Cl⁻, F⁻, NO₂⁻,

NO_3^- , SO_4^{--} , Na^+ , K^+ , Ca^{++} , Mg^{++} , DO, COD, and MPN count were selected and determined. The soft drinks available in the local market were also selected and analysed for pH, EC, TDS, F^- , SO_4^{--} , Na^+ , K^+ , Ca^{++} , DO to assess their quality.

0203-034. Pande VC, Khatik GL, Kurothe RS, Nambiar KTN (Centl Soil Water Conserv Res Trng Inst, Res Cent, Vasad 388306, Gujarat). **People's participation in ravine reclamation through afforestation – a case study.** *Indian J Soil Conserv*, 30(1) (2002), 77-82 [7 Ref].

The study conducted at Sarnal in Kheda district of Gujarat, attempts to probe participation and factors affecting it and identify the determinants of participation in a ravine reclamation programme. The People's Participation Index (PPI) in the afforestation conservation programme works out to be 51.3, with participation of landless (PPI-53.6) and marginal farmers (PPI-49.8) being comparatively higher than that of small farmers (PPI-44.0).

0203-035. Patil MA (Natl Productivity Coun, 5, Institutional Area, Lodhi Rd, New Delhi 110003). **Environmental management scenario in stone crusher industry sector and cleaner production possibilities.** *TERI Inf Monit Environ Sci*, 6(2) (2001), 83-92 [2 Ref].

Environmental management scenario in the stone crusher industry sector can be substantially improved through adoption of cleaner production schemes. This would also increase the productivity of these units by way of reduced dust generation, reduced energy consumption, lesser breakdowns leading to increased plant availability.

0203-036. Pradeep Kumar G, Prathapasenan G (Taxonomy Lab, Dept Bot, Fac Sci, the MS Univ Baroda, Vadodara, Gujarat). **Tree diversity of Shoolpaneshwar Wildlife Sanctuary in Gujarat.** *Indian Forester*, 127(11) (2001), 1207-1214 [11 Ref].

The entire area of Shoolpaneshwar Wildlife Sanctuary has been surveyed for gathering information regarding vegetation and floristic components of the area. During the survey special emphasis has been given for enlisting the different tree species in the area. In addition the observations on biotic factors as well as other environmental factors leading to the destruction of natural habitats of plants have also been incorporated.

0203-037. Priyakant, Kanade GS, Deshpande Ajay, Kondewar VK (Natl Environ Engng Res Inst, Nagpur 440020). **Geographical Information System for complete environmental study in context of mining : a case study.** *J Indian Assoc Environ Manag*, 28(2) (2001), 109-112 [1 Ref].

Paper describes an integrated approach of modern technology coupled with traditional knowledge for arriving at a Decision Support System (DSS). The DSS can be used by technical, financial and managerial decision-makers. The database elements and presentation support of the system can also be used to effectively communicate the decisions regarding environment and mining to the masses.

0203-038. Rao M, Parwate AV, Rangari PJ, Deshpande VP (Coll Engng, Badnera 444701). **Environmental problems associated with the development of an industrial area – a challenge.** *J Indian Assoc Environ Manag*, 28(2) (2001), 102-105.

Maharashtra State Industrial Development Corporation has proposed an Additional Amravati Industrial Area in Amravati district covering an area of 2800 hectares. Some of the problems that may arise due to development of new industrial area are discussed. It is felt that proper management of environment concerns being faced by the existing and likely to be faced by the proposed industrial estate should receive top priority so as to achieve sustainable development in the region.

0203-039. Reddy RC, Ravindra Rao, Kelkar PS, Rao IR, Ramarao KG, Elyas SI (Natl Environ Engng Res Inst, Hyderabad Zonal Lab IICT Campus, Hyderabad 500007). **Performance evaluation of water treatment plants based on microfilter technology for rural water supply.** *Indian J Environ Hlth*, 44(1) (2002), 12-18 [2 Ref].

Panchayat Raj Engineering Department (PRED), Government of Andhra Pradesh installed package water treatment plants on a trial basis, in some villages in Krishna district of Andhra Pradesh. These plants consist of three stage treatment comprising of pulverized quartz filter bed, activated carbon bed and micro filter unit followed by disinfection. Paper presents the findings and conclusions of the performance evaluation study.

0203-040. Sarkar SK, Chattopadhyay RN* (*Rural Dev Cent, Indian Inst Techno, Kharagpur, West Bengal). **Role of sabai grass (*Eulaliopsis binate*) for sustenance of forest protection committee members.** *Indian Forester*, 127(7)(2001), 737-742.

In Nayagram block of West Midnapore Forest Division (West Bengal) sabai is grown extensively both inside and outside forest areas. There is immense scope in value addition of this produce to augment the income of the protection committee members. That will also help the institutions to achieve economic viability. Rural Development Centre of Indian Institute of Technology, Kharagpur is imparting training to Forest Protection Committee members on processing, value addition and exploring markets of the sabai based products.

0203-041. Sarkar SK, Chattopadhyay RN* (*Rural Dev Cent, Indian Inst Techno, Kharagpur, West Bengal). **The extent of economic viability of institutions foremed for JFM – Case study from Midnapore district of West Bengal.** (*The Indian Forester*, 128(1) (2002), 3-18 [11 Ref].

Attempts are made to assess the income of the FPC member from different sources and resources in Midnapore District of West Bengal, selecting sample FPCs all over the district. How far such income is encouraging to keep them involved in the programme and the ways and means of enhance income have also been indicated and suggested.

0203-042. Sarma Arunima, Bhattacharyya KG (Gauhati Univ, Dept Chem, Guwahati 781014). **Neem leaves as a possible adsorbent for pollutant in aqueous medium – a case study with methylene blue.** *Indian J Environ Prot*, 21(10) (2001), 899-902 [9 Ref].

Neem (*Azadirachtin indica*) tree has occupied a unique position in the present day science because of its widely acclaimed medicinal and insecticidal value. In the present work, grounded neem leaves have been used as an adsorbent in aqueous medium to remove colour due to methylene blue as a model process for treating colour effluents.

0203-043. Sethi PIA, Singh TP (Forest Biodiversity Group, Tata Energy Res Inst, New Delhi –110003). **Village resource development as an incentive to sustain the Joint**

Forest Management programme. *Indian Forester*, 127(11) (2001), 1215-1222 [11 Ref].

Case studies from India indicate that village resource development activities may provide an important incentive for sustaining interest in the Joint Forest Management Programme apart from leading to improvements in people's livelihood status. Ensuring sustainability of such activities, however, requires several innovative measures including the development of village funds and enhancing of inter-sectoral linkages.

0203-044. Sharma Arpita, Ray GG (Centl Inst Fisheries Education India, Coun Agricul Res, 30 GN Block, Sector IV/V, Salt Lake City, Kolkata –700091). **Physical environment of some selected small scale industries in Mumbai.** *India. J Environ Res*, 11(2) (2001), 107-109 [12 Ref].

In small scale industries in India, workplaces are usually small open spaces of small rooms where women work in significant numbers and the paper assesses the environmental conditions in which they are working.

0203-045. Sharma DD, Sharma Anita* (*Dept Bot, Hans Raj Coll, Delhi Univ, Delhi). **Watershed management in rainfed areas : learning from the people.** *Indian Forester*, 127(8) (2001), 845-854 [9 Ref].

All the spatial component of land mass viz. arable land, non-arable land and drainage lines are being developed as one organic unit under the project "National Watershed Development Project for Rainfed Areas" which is mainly based on people's indigenous knowledge. Recognising that it is not possible to motivate most of the rural people without economic incentive, the technology comprises of both, the conservation systems and production systems.

0203-046. Sharma M, Surana DM (Dept Mining Engng, JN Vyas Univ, Jodhpur 342001). **Analysis of body injuries due to accidents in sandstone quarrying areas around Jodhpur.** *J Inst Engrs (Min Engng)*, 82(Feb) (2002), 35-40 [3 Ref].

Attempt has been made to analyse systematically existing status of accidents in sandstone quarries. Paper highlights the problematic areas and identifies the causes of

accidents, unsafe practices by workmen and unsafe working conditions in quarrying areas. Some suggestions have been made to reduce accidents and their severity.

0203-047. Shekhar Ambati (Coll Socl Work, Red Hills, Hyderabad 500004). **Strategic approaches to community participation in environment education.** *Indian J Environ Prot*, 21(10) (2001), 932-936 [7 Ref].

Paper discusses about emerging problems and poses some fundamental questions about the relevance of developing a community participation strategy at all. Some broad contextual questions are considered prior to developing the strategy itself.

0203-048. Sinha RK (Environ Bio Lab, Zoo Dept, Patna Univ, Patna 800005). **An alternative to dolphin oil as a fish attractant in the Ganges river system : conservation of Ganges river dolphin.** *Biol conserv*, 107(2) (2002), 253-257 [7 Ref].

Oil extracted from blubber of the Ganges river dolphin, *Platanista gangetica*, is used as a fish attractant in India and Bangladesh. This oil fishery is associated with the mortality of hundreds of dolphins every year. Oil from fish scraps was field tested for 121 days during 1997-1999 in the Ganges at Patna and was a very effective alternative to dolphin oil as a fish attractant.

0203-049. Srinivasan P, Raman Anand, Sharma DN (Rad Safety Syst Div, Bhabha Atomic Res Cent, Mumbai). **Assessment of calibration parameters for an aerial gamma spectrometry system using Monte-Carlo technique.** *Environ Monit Assess*, 75(1) (2002), 73-85 [8 Ref].

During a radiation emergency subsequent to a nuclear accident or weapon fallout, quick assessment of the ground contamination and the resulting exposure is of prime importance in planning and execution of effective counter measures. The methodology includes generation of theoretically simulated gamma spectra at a required detector position for a given source distribution on the ground using Monte-Carlo method provided by general purpose couples neutron/photon transport code (MCNP CCC-200).

0203-050. Subramanyam D (A20, Swasthya Vihar, Delhi 110092). **Biosafety : problems and prospects.** *J Scient Indl Res*, 60(11)(2001), 842-850 [25 Ref].

There is a global concern that uncontrolled release of GMOs may bring adverse effects on environment, and health of humans and animals. There is a strong support among nations that internationally binding biosafety regulations are needed for orderly application of biotechnology that ensures safety to health and environment. The national and international initiative towards this goal have been outlined, discussed and the need for capacity strengthening of developing countries, in this area, are emphasized.

0203-051. Sundararajan M, Loveson VJ, (Environ Manag Gr, Centl Mining Res Inst, Dhanbad 826001). **An approach towards the development of environmental quality index for evaluation and categorization of environmental impacts.** *J Scient Indl Res*, 61(3)(2002), 219-223 [5 Ref].

Attempt has been made to develop an approach for the evaluation of environmental data through index analysis. Based on the sensitivity function evaluation and derivation of Impact Index and Quality Index related to individual parameters of the various components, Integrated Quality Index (IQI) has been derived.

0203-052. Swaminathan K, Subrahmanyam PVR (Natl Environ Engng Res Inst, CSIR Complex, Chennai 600113). **Biodegradation of p-nitrophenol in anaerobic fixed film fixed bed reactor.** *Indian J Environ Hlth*, 44(1) (2002), 8-11 [17 Ref].

Biodegradation of p-nitrophenol (PNP) was studied in upflow anaerobic fixed film fixed bed reactor. The studies showed that PNP was not degraded as a sole carbon source in the reactor. Addition of glucose as co-substrate increased the degradation of PNP. A ratio of >1 in terms of glucose to PNP could achieve 90% PNP degradation.

0203-053. Tewari DD (Dept Eco, Univ Natal, Durban, South Africa). **Domestication of non-timer forest products NTFPs : A case of bamboo farming in Kheda district, Gujarat, India.** *Indian Forester*, 127(7) (2001), 788-798 [12 Ref].

The case study here reveals that profitability of bamboo is very high and crop is financially feasible even at very high discount rates. This is especially true for Kartus variety and some progressive farmers have already adopted it in Gujarat. In addition to profitability factor, other socio-economic factors are believed to be favourable to the domestication of bamboo as an agroforestry crop in the region.

0203-054. Tewari VP, Mishra DK (Arid Forest Res Inst, P.O. Krishi Mandi, New Pali Rd, Jodhpur 342005). **Changes in bio-diversity in Indira Gandhi Nahar Pariyojana area of Rajasthan.** *My Forest*, 37(2) (2001), 449-454 [7 Ref].

To improve the poor agricultural growth as well as living conditions of the people in drought-prone arid parts of Rajasthan State in India, the Indira Gandhi Nahar Pariyojana (IGNP) project was envisaged. Massive afforestation has been taken up to combat desertification in the area using water from the canal. Thus increase in bio-diversity has been observed while at the same time loss of bio-diversity may also be seen as far as indigenous flora and fauna is concerned.

0203-055. Tiwary RK (Centl Mining Res Inst, Barwa Rd, Dhanbad, Bihar). **Environmental impact of coal mining on water regime and its management.** *Water Air Soil Polln*, 132(1-2) (2001), 185-199 [14 Ref].

Article illustrates the quality of acidic and non acidic mine water and leachate characteristic of opencast coal mining over burden dumps. Pollutants such as TSS, TDS, oil and grease and heavy metal are found in the coal mining waste effluents. Management of these liquid waste at the primary level and secondary level have also been suggested to control the pollution level at the source.

0203-056. Venkattakumar R (NRCC, Puthur 574202, Karnataka). **Impact of tannery pollution – implications for development.** *J Environ Res*, 11(1)(2001), 55-59.

More than 90.00 per cent of the unaffected, moderately affected and severely affected respondents had medium to high level of awareness towards the effect of tannery effluent pollution. There were non-significant differences among the moderately and severely affected respondents regarding the adaptability in a polluted environment. An action model was suggested based on the implications drawn out of the results.

0203-057. Venkattakumar R, Anandaraja N*, Srirama N (*Dept Agricul Extn Rural Sociology, Tamil Nadu Agricul Univ, Coimbatore 3). **Conflicts of interest prevailing among the different clientele groups in a tannery effluent polluted agricultural environment.** *J Environ Res*, 11(1) (2001), 13-18 [3 Ref].

The Vellore district with its, more than 700 tanneries accounts for more than 40% of the countries foreign exchange through the export of tanned products. But chromium containing tannery effluents contaminate the agricultural lands and irrigation water causes acute pollution which threatens the agricultural production. Paper studies the interest of affected farmers, tanners, agricultural and tannery labours who have given the conflict of interests among these clientele groups. The study also has come out with some recommendation to the concerned authorities viz., GOI and TNPCB to take immediate and necessary action to overcome the problem in the study area.

0203-058. Verghese George (Dept Env For, A&N Islands, Port Blair, A&N Islands). **Elephant management in Andaman forestry – with a brief note on the status of feral elephants in North Andamans.** *Indian Forester*, 128(2) (2002), 228-234 [1 Ref].

In the Andamans elephants are being used for timber extraction work since the end of the 19th Century. All elephants, departmental or private owned are named. Proper files giving details about their birth, work health, medical history are maintained. Young elephants are also taken proper care. This management has been quite efficient.

0203-059. Verma AK (Working Plans Div, Surat, Gujarat). **Local demands of forest produce and working plan (a case study of Vyara forest division in Gujarat).** *Indian Forester*, 127(8) (2001), 855-864 [8 Ref].

The local requirement of forest produce in Vyara forest division area of Gujarat has been estimated on the basis of primary data collected through sample survey and secondary information available from existing reliable database. It has been found that the area is self sufficient, so far as local demands of timber is concerned. However large demand supply gap exists in case of firewood even in the well-wooded localities.

0203-060. Vijayaraghavan Venkatesh (Natl Law Sch India Univ, P.O. Bag 7201, Nagarbhavi, Bangalore 560072). **Implementation of the biodiversity convention in India and Canada.** (*The Indian J Environ Law*, 2(1) (2001), 21-39 [82 Ref].

There have been some attempts at conserving biological diversity prior to the UN Convention on Biological Diversity especially in countries such as the United States, although there have been none on the scale attempted by the Rio Summit. The effectiveness of such global policy needs to be examined and is attempted by looking at

the implementation of the Convention at the national level, and noting differences in approach and policy.

Air Pollution

0203-061. Balachandran S, Khillare PS* (*Air Polln Monit Lab, Sch Environ Sci, Jawaharlal Nehru Univ, New Delhi 110067). **Occurrence of acid rain over Delhi.** *Environ Monit Assess*, 71(2) (2001), 165-176 [22 Ref].

Precipitation samples were collected as wet-fall only and primarily on event basis in Delhi during the monsoon period. Concentrations of major anions and cations were determined. The pH of the rain water was found to be more than 5.6, showing alkalinity during the early phase of monsoon, but during the late phase of monsoon pH tendency was towards acidity due to lack of proper neutralization of acidic ions.

0203-062. Ernest Raj P, Devara PCS, Maheskumar RS, Pandithurai G, Dani KK (Indian Inst Trop Meteorol, Pune 411008). **Lidar-derived aerosol concentration and their relationship with horizontal winds over an urban location.** *Mausam*, 53(2) (2002), 145-152 [23 Ref].

Lidar-derived aerosol vertical profiles obtained at Pune, have been used in the study to investigate the influence of horizontal winds on the aerosol characteristics in the lower atmosphere. The study shows that the short-and long-term increases in aerosol concentration/loading over the observation site are, to a large extent, influenced by horizontal winds in the surface layers and this in turn, can be attributed to the increasing human/urban activity around the lidar site over the years.

0203-063. Garg A, Kapshe M*, Shukla PR, Ghosh D (*Indian Inst Manag, Vastrapur, Ahmedabad 380015). **Large point source (LPS) emissions from India: regional and sectoral analysis.** *Atmospheric Env*, 36(2) (2002), 213-224 [13 Ref].

Indian large point sources (LPS) contribute to CO₂ and SO₂ emissions to a large extent (above 65%) and to CH₄, N₂O and NO_x emissions to some extent (around 10%). The former emissions are primarily from fossil fuel combustion while the latter have

agriculture sector dominance, explaining the drastic difference in LPS contributions to all India emissions. The present analysis would be useful for policy-making to mitigate these pollutants and their associated impacts.

0203-064. Ghose MK, Majee SR (Cent Mining Env, Indian Sch Mines, Dhanbad 826004). **Air pollution due to opencast coal mining and its control in Indian context.** *J Scient Indl Res*, 60(10) (2001), 786-797 [26 Ref].

An investigation is conducted to evaluate the impact on air environment due to opencast coal mining. Emission factor data are utilized for computation of dust generation due to different mining activities. Approach for the selection of work zone and ambient air monitoring stations are described. Work zone air quality, ambient air quality, and seasonal variations are discussed, which shows high pollution potential due to SPM.

0203-065. Goyal P, Ramakrishna TVBPS (Cent Atmospheric Sci, Indian Inst Techno, Hauz Khas, New Delhi 110016). **Dispersion of pollutants in convective low wind, a case study of Delhi.** *Atmospheric Evn*, 36(12) (2002), 2071-2079 [28 Ref].

The Gaussian plume model (GPM) and two low wind models (LWM1 and LWM2) compute the hourly g.l.c.'s of SO₂ due to industrial and power sources. This evaluation has been performed at four receptors by using three different methods. On the basis of the results and discussion of above methods, it has been concluded that GPM is always overpredicting and LWM2 is consistently underpredicting the concentrations, whereas, LWM1 is performing better than GPM and LWM2.

0203-066. Goyal P, Sidhartha (Cent Atmospheric Sci, Indian Inst Techno, Hauz Khas, New Delhi 110016). **Effect of winds on SO₂ and SPM concentrations in Delhi.** *Atmospheric Env*, 36(17) (2002), 2925-2930 [10 Ref].

A study of concentrations of sulphur dioxide (SO₂) and suspended particulate matter (SPM) has been performed in Delhi. The monthly and seasonal variations of concentrations and winds are analyzed. The monthly mean SO₂ concentrations were in the range of 16.15-34.44 mg m⁻³ and showed regular seasonal variations with the highest concentrations in winter and lowest in monsoon season. On the other hand, the monthly mean SPM concentrations reached the highest (465.68 mg m⁻³) in November and the lowest (150.07 mg m⁻³) in August.

0203-067. Granat L, Das SN, Tharkur RS, Rodhe H (Dept Meteorol, Stockholm Univ, S-10691 Stockholm, Sweden). **Atmospheric deposition in a rural area in India - net and potential acidity.** *Water Air Soil Polln*, 130(1-4) (2001), 469-474 [4 Ref].

The data on deposition in NE India (in the countryside N of Bhubaneswar) obtained with wet-only and bulk collectors show that the weighted mean concentrations (and wet deposition) of H^+ and HCO_3^- are almost equal, with dustfall contributing a negligible amount of HCO_3^- and the deposition of potential acidity, in the soil, could be as high as $40 \text{ mmol } H^+ \text{ m}^{-2} \text{ a}^{-1}$ corresponding to a pH of 4.3 in precipitation.

0203-068. Gupta Harish, Rao B, Padma S, Pandit VI, Hasan MZ (Air Polln Contrl Div, Natl Environ Engng Res Inst, Nagpur 440020). **Air pollution modelling: a tool for management of regional air quality.** *Indian J Environ Hlth*, 44(1) (2002), 1-7 [7 Ref].

The usefulness of mathematical modeling and computational simulation techniques used to predict the horizontal and vertical pollutant concentrations of pollutants are explained. Finally a case study of an industrial area in Gujarat region is presented to arrive at setting up of air quality monitoring station for monitoring/management of regional air quality.

0203-069. Halder GN, Sarkar SC (Adv Cent Cryogenic Res, P.O. Jadavpur Univ, P.B. No. 17005, Kolkata 700032). **Scope of carbon dioxide as a natural refrigerant for replacements of CFCs.** *J Energy Southern Africa*, 12(3) (2001), 408-410 [18 Ref].

Carbon dioxide, the old refrigerant in its new form, appears to be a viable alternative refrigerant for the future in the context of CFC phase out and waste gas utilization. This paper is a state-of-the-art report concerning the various possible alternative refrigeration cycles based on carbon dioxide as a natural refrigerant in environmental protection.

0203-070. Kumar R, Rani A, Singh SP, Kumari MK, Srivastava SS (Dept Chem, Dayalbagh Ednl Inst, Dayalbagh, Agra 282005). **Measurements of dry deposition of gaseous and particulate nitrate to marble at a suburban site.** *J Environ Std Policy*, 4(1) (2001), 45-61 [21 Ref].

Dry deposition of nitrate on marble was measured at Dayalbagh in a semi-arid region on India in the winter season. The dry deposition rate of nitrate was 2.1 ± 1.3 mg/m²/d with corresponding ambient concentrations of HNO₃ vapour and particulate NO₃ of 0.84 ± 0.48 µg/m³ and 7.9 ± 1.8 µg/m³, respectively.

0203-071. Mukhopadhyay SK, Biswas H, De TK, Sen BK, Sen S, Jana TK* (*Dept Marine Sci, Calcutta Univ, 35, BC Rd, Kolkata 700019). **Impact of Sundarban mangrove biosphere on the carbon dioxide and methane mixing ratios at the NE Coast of Bay of Bengal, India.** *Atmospheric Env*, 36(4) (2002), 629-638 [42 Ref].

Diurnal and seasonal variations in carbon dioxide and methane fluxes between Sundarban biosphere and atmosphere were measured using micrometeorological method. Study of the diurnal variations of the micrometeorological conditions in the atmosphere was found to be necessary to determine the duration of neutral stability when flux estimation was reliable. Considerable variations in mixing ratios of carbon dioxide and methane at the NE coast of Bay of Bengal were observed due to the seasonal variations of their fluxes from the biosphere to the atmosphere.

0203-072. Murthy ASN, Prasad NS (Dept Marine Sci, Berhampur Univ, Berhampur 760007, Orissa). **Ground concentration of conventional pollutants from major industrial sources of Visakhapatnam.** *Nature Env Polln Techno*, 1(2) (2002), 115-119 [4 Ref].

The application of diffusion model for prediction of ground concentrations from industrial sources has been described. Using power law profiles for wind speed and coefficient of turbulence, the diffusion equation has been solved which yields ground concentrations as a combination of series of Bessel functions. The important conclusions from the study are the efficacy of the theoretical model to predict industrial concentration for any metropolitan area.

0203-073. Nair PR, Chand D, Lal S*, Modh KA, Naja M, Parameswaran K, Ravindran S, Venkataramani S (*Phyl Res Lab, Navrangpura, Ahmedabad 380009). **Temporal variations in surface ozone at Thumba (8.6°N, 77°E)-a tropical coastal site in India.** *Atmospheric Env*, 36(4) (2002), 603-610 [16 Ref].

Surface measurements of ozone and meteorological parameters are made at a tropical coastal site, Thumba. Ozone shows a diurnal variation with daytime higher levels and a sharp change in its values during evening time. The evening time change in ozone values with a secondary peak is found to be due to change in wind pattern from sea-breeze to land-breeze at this site. This secondary peak in ozone is weakest during monsoon period.

0203-074. Negi BS, Jha SK, Chavan SB, Sadasivan S, Goyal A, Sapru ML, Bhat CL (Environ Assess Div, Bhabha Atom Res Cent, Mumbai). **Atmospheric dust loads and elemental composition at a background site in India.** *Environ Monit Assess*, 73(1) (2002), 1-6 [13 Ref].

Air particulate samples collected at a background site situated on the east coast of Thar Desert in Rajasthan State of India were analysed for atmospheric dust loads (SPM) and elemental composition. The values of SPM ranged from 9 mgM^{-3} to 97 mgM^{-3} with an average of 43 mgM^{-3} except a few episodic values, which were 3 to 5 times higher than the average during summer months.

0203-075. Pandey JS, Khan S, Joseph V, Kumar R (Natl Environ Engng Res Inst, Nagpur 440020). **Aerosol scavenging: model application and sensitivity analysis in the Indian context.** *Environ Monit Assess*, 74(2) (2002), 105-116 [28 Ref].

Sulfate aerosols have been found to be the major contributors to precipitation acidity. Thus, in view of the long-term ecological repercussions they have on aquatic ecosystems and their acidity-potential, the present analysis focuses on a case study application of the layer-averaged aerosol-scavenging model for predicting values of the wet scavenging coefficient and sulfate concentrations in the precipitation samples on the basis of the information available for some selected Indian cities.

0203-076. Pandey JS, Khan S, Khanna P (Natl Environ Engng Res Inst, Nagpur 440020). **Modeling and qualification of Temporal Risk Gradients (TRG) for traffic zones of Delhi city in India.** *J Environ Syst*, 28(1) (2000-01), 55-69 [20 Ref].

The city of Delhi was divided into three grids of 6, 12 and 18 km radii. Leaf samples from twelve important traffic zones were collected and microscopically analyzed for measuring relevant stomatal parameters. This data was subsequently used as the

input for the EHER (Ecosystem-Health Exposure-Risk) Model for quantifying risks due to vehicular emissions. Future projections have been made for different categories of vehicles on the basis of models developed for them and calibrated with the help of available data.

0203-077. Parmar RS, Satsangi GS, Lakhani A, Srivastava SS, Prakash S* (*Dept Chem, Fac Sci, Dayalbagh Ednl Inst, Dayalbagh, Agra 282005). **Simultaneous measurements of ammonia and nitric acid in ambient air at Agra (27°10'N and 78°05'E) (India).** *Atmos Env*, 35(34) (2001) 5979-5988 [55 Ref].

Simultaneous measurements of ammonia and nitric acid in ambient air were conducted at Dayalbagh, Agra using the mist chamber technique. Concentrations of HNO₃ are observed to increase during the daytime, consistent with its formation by photochemical reactions, Nitric acid and ammonia concentrations show a significant seasonal variation. Levels of HNO₃ are higher in winter but lower in monsoon, while ammonia shows a reverse trend with higher monsoon and lower winter values.

0203-078. Puste AM, Das DK (Dept Agronomy, Fac Agricl, Bindhan Chandra Krishi Viswavidhyalaya, Mohanpur 741252, Nadia, West Bengal). **Impact of air pollutant emissions on the ecosystems in the vicinity of industrial areas of Indian sub-tropics.** *Water Air Soil Polln*, 130(1-4) (2001), 843-848 [7 Ref].

An investigation to study the effect of emissions through various factories and thermal power plants on the quality of water in lakes, tanks, ponds, even well waters in relation to its use in the welfare of the society. The results showed that intensity of acidity (water pH) as well as concentration of various soluble salts and BOD and COD in the vicinity of an industrial area were very low. A substantially higher acidity and ion concentration were recorded up to 1 km away from industry, where the growth of aquatic plants, organisms and the production of fish were severely affected.

0203-079. Ramamurthy N, Thirumarran M (Dept Phys, Annamalai Univ, Annamalainagar, Tamil Nadu). **Automobile exhaust level of CO: study in Chidambaram town.** *Indian J Environ Hlth*, 44(1) (2002), 37-40 [8 Ref].

The CO monitor method was used to predict the CO level in Chidambaram town. From the study it is evident that the pollution level is closely related to the density of

motor vehicles plying on the roads. With increase in number of motor vehicles, pollution level also increases which polluted the roadside environment severely in future.

0203-080. Ruj Biswajit, Reddy GS (Centl Mechl Engng Res Inst, Durgapur 713209, West Bengal). **Diurnal and seasonal variations of suspended particulate matter in air of Raniganj-Asansol area.** *Nature Env Polln Techno*, 1(2) (2002), 221-222.

Paper deals with the variations in diurnal, average monthly and seasonal levels of suspended particulate matter at four sites in Raniganj-Asansol area. The data indicate that the SPM level remain higher during winters as compared to other periods. Diurnally, the SPM remain highest during the time between 14:00 and 22:00 hours.

0203-081. Samal Alok Chandra, Santra SC (Dept Environ Sci, Univ Kalyani, Nadia, West Bengal). **Air quality of Kalyani township (Nadia, West Bengal) and its impact on surrounding vegetation.** *Indian J Environ Hlth*, 44(1) (2002), 71-76 [29 Ref].

In Kalyani township a study was undertaken to determine the extent of air pollution and its impact on some dominant local flora by studying their anatomico-biochemical features of leaves in a comparative manner. The total chlorophyll content, epidermal thickness, stomatal length and breadth of the leaves were found to decrease while the leaf thickness, stomatal frequency were found to increase in case of pollution stress plants with respect to control plant population of non polluted habitat.

0203-082. Shekar Reddy M, Venkataraman Chandra* (*Cent Environ Sci Engng, Indian Inst Techno, Powai Mumbai 400076). **Inventory of aerosol and sulphur dioxide emissions from India: I-Fossil fuel combustion.** *Atmospheric Env*, 36(4) (2002), 677-697 [94 Ref].

A comprehensive, spatially resolved (1.25°×0.25°) fossil fuel consumption database and emissions inventory was constructed for India. Emissions of sulphur dioxide and aerosol chemical constituents were estimated for and extrapolated to the Indian Ocean Experiment (INDOEX) study period. Emission factors for various pollutants were derived using India specific fuel characteristics and information on combustion/air pollution control technologies for the power and industrial sectors.

0203-083. Shekhar Reddy M, Venkataraman Chandra* (*Cent Environ Sci Engng, Indian Inst Techno, Powai, Mumbai 400076). **Inventory of aerosol and sulphur dioxide emissions from India. Part II—biomass combustion.** *Atmospheric Env*, 36(4) (2002), 699-712 [64 Ref].

A spatially resolved biomass burning data set, and related emissions of sulphur dioxide and aerosol chemical constituents was constructed for India, and extrapolated to the INDOEX period. The national average biofuel mix was 56 : 21 : 23% of fuelwood, crop waste and dung-cake, respectively. Compared to fossil fuels, biomass combustion was a minor source of SO₂ (7% of total), with higher emissions from dung-cake because of its higher sulphur content. Northern and the east-coast India had high densities of biomass consumption and related emissions.

0203-084. Singh Pratibha, Tiwary SL (Dept Bot, Sarojini Naidu Govt PG Coll, Shivaji Nagar, Bhopal 462016). **Biochemical changes in *Phaseolus mungo* (linn.) var. Radiatus under the exposure of sulphur dioxide.** *Nature Env Polln Techno*, 1(2) (2002), 137-139 [17 Ref].

An experiment with *Phaseolus mungo* Var. Radiatus Linn. (variety Jerman-9) was conducted to study the effect of sulphur dioxide on total free amino acids, proteins and growth parameters. Treatments were given to 20-day old plants for 30 days. Results were noted for 35, 50, 65-day old plants. Growth parameters, total free amino acids and proteins were found to be adversely affected under SO₂ exposure of 1.00 ppm.

0203-085. Singh SP, Rani Abha, Kumar Ranjit, Satsangi GS, Maharaj Kumari K, Srivastava SS (Dept Chem, Fac Sci, Dayalbagh Educational Inst, Dayalbagh, Agra 282005). **Dry deposition of aerosol particles at a semi-arid rural site.** *J Environ Stud policy*, 4(1) (2001), 1-10 [20 Ref].

Dry deposition of aerosol particles was determined at Rampur located about 75 km south-east of Agra. The observed flux varied between 1.0±0.9 and 5.4±2.1 mg/m²/d. The calculated dry deposition flux was found to vary between 0.20±0.20 and 3.5±6.4 mg/m²/d for various ions. Deposition flux showed a seasonal variation with maximum rates during the winter followed by summer, and a minimum during the monsoon.

0203-086. Sivacoumar R, Thanasekaran K (Natl Environ Engng Res Inst, CSIR Complex, Taramani, Chennai 600113). **Emission factors and emission estimation for Indian vehicles — a case study.** *J Inst Engrs (Env Engng)*, 81(Sept) (2000), 28-31 [9 Ref] (Late Recd.).

A detailed survey of vehicular pollution in the city of Chennai has been undertaken to assess pollution contribution from transport sector. Methodology adopted in arriving at the vehicular pollution load is discussed. The traffic density of typical Indian categories of vehicle along with respective emission factors has been used for generating emission scenarios. The available information about mobile source emission factors has been compiled from different sources and used for emission estimation from transport sector in the city of Chennai.

0203-087. Srivastava Anjali, Kumar Rakesh (Natl Environ Engng Res Inst, Mumbai Zonal Lab, Mumbai 400018). **Economic valuation of health impacts of air pollution in Mumbai.** *Environ Monit Assess*, 75(2) (2002), 135-143 [8 Ref].

Attempt has been made to establish dose-response relationship of Ambient Air Quality Index and human health, based on time spent by an individual in different microenvironments during one day. Economic valuation of morbidity and mortality has been attempted through lost salary approach. The results show that the avoidance cost is 29% of the total health damage cost.

0203-088. Venkataraman Chandra, Konda Reddy C, Josson Sajni, Shekar Reddy M (Cent Environ Sci Engng, Indian Inst Techno, Powai, Mumbai 400076). **Aerosol size and chemical characteristics at Mumbai, India, during the INDOEX-IFP (1999).** *Atmospheric Env*, 36(12) (2002), 1979-1991 [38 Ref].

Paper reports the size and chemical characteristics of surface aerosols measured at Mumbai during the Indian Ocean Experiment-Intensive Field Phase (INDOEX-IFP), January-March 1999. Carbonaceous (30%) and ionic (20%) constituents contributed significantly to aerosol mass. High black carbon concentrations and a low organic to black carbon ratio implied the predominance of primary carbonaceous aerosol, while a high non-sea salt-sulphate contribution in the fine mode, suggested a probable anthropogenic origin.

0203-089. Venkatesan R, Mathiyarasu R, Somayaji KM (Atmospheric Stud Rad Instrumentation, Indira Gandhi Cent Atom Res, Kalpakkam 603102). **A study of atmospheric dispersion of radionuclides at a coastal site using a modified Gaussian model and a mesoscale sea breeze model.** *Atmospheric Env*, 36(18) (2002), 2933-2942 [28 Ref].

Ground level concentration and sky-shine dose due to radioactive emissions from a nuclear power plant at a coastal site have been estimated using the standard Gaussian Plume Model (GPM) and the modified GPM which incorporates fumigation effect under sea breeze condition. The difference in results between these two models is analysed in order to understand their significance and errors that would occur if proper choice were not made.

Water Pollution

0203-090. Abdul Jameel A (Dept Chem, Jamal Mohamed Coll, Tiruchirapalli 620020). **Evaluation of drinking water quality in Tiruchirapalli, Tamil Nadu.** *Indian J Environ Hlth*, 44(2) (2002), 108-112 [10 Ref].

To evaluate the quality of drinking water in and around Tiruchirappalli city, twenty spots were identified within a radius of about 20 km. All the water bodies were found to contain high level of inorganic salts and total hardness with high electrical conductance. Since they are unsuitable for drinking purposes, method to improve the water quality has been suggested.

0203-091. Abraham Beena T, Anirudhan TS, Sumesh Kumar KS (Dept Chem, SNM Coll, Maliankara 683516, Kerala). **Distribution of hydrographic parameters and heavy metal ions in river periyar.** *Nature Env Polln Techno*, 1(2) (2002), 161-163 [8 Ref].

Pollution of the natural environment from a wide range of sources and pollutants become an inevitable feature of the present day living. Study aims at a look out for the distribution of toxic metals, mercury and lead and also different hydrographic parameters in the River Periyar. Efforts have also been taken to study the effects of different electrolytes and salinity on the adsorption, desorption and retention of Hg (II) ions.

0203-092. Abraham Beena T, Bisi Bose KS, Hena TN (Dept Chem, SNM Coll, Maliankara 683516). **Study of some physico-chemical parameters and treatment of industrial effluent.** *Nature Env Polln Techno*, 1(2) (2002), 213-216 [4 Ref].

Paper studies some physico-chemical parameters of an industrial effluent and its treatment. The pH of the effluent and the total suspended solids present in it were determined. Hexavalent chromium, one of the serious pollutants, was also estimated and it was treated with a suitable method.

0203-093. Aggarwal Shankar G, Chandrawanshi Chandra K, Patel Raj M, Agarwal Smita, Kamavisdar Anand, Mundhara Girdhar L (Sch Std Chem, Pt Ravishankar Shukla Univ, Raipur 492010, M.P.). **Acidification of surface water in central India.** *Water Air Soil Polln*, 130(1-4) (2001), 855-862 [18 Ref].

Paper documents the occurrence of acidic rain and fog events and their effect on surface water pH and aquatic life in central India. Most of the rain and fog water samples collected from Bikunthpur and Korba sites were found to be acidic in nature (i.e. pH<5). However, samples from Ambikapur, Bilaspur, Raipur and Bhilai were slightly acidic and their pH values were always around 5.8. Concentrations of Al, Hg, Mn, Cd and Pb were higher in fish from acid, than from less acid waters. Causes of acidification of the atmospheric water and surface water are critically discussed.

0203-094. Agrwal Madhoolika, Singh Raj Kumar (Dept Bot, Banaras Hindu Univ, Varanasi 221005). **Effect of industrial emission on atmospheric wet deposition.** *Water Air Soil Poln*, 130(1-4)(2001), 481-486 [14 Ref].

In order to quantify the role of industries on atmospheric deposition, wet depositions were collected at different sites in Singrauli area of Sonbhadra district, U.P., India. Rainwater samples were collected on event basis and were analyzed for pH and concentration of H⁺ ions, cation and anion. The monthly variation in rain water pH clearly indicate that early rainfall is more alkaline and as rainy season proceeds rainwater showed lower pH.

0203-095. Ahmed K, Begum J (Coll Vet Sci, Assam Agricl Univ, Khanapara, Guwahati 781022). **Bacteriological quality of water in hill stream of Khanapara during different seasons.** *Nature Env Polln Techno*, 1(2) (2002), 171-173 [11 Ref].

Studies were conducted to assess the bacteriological quality of 108 water samples collected from three different spots in hill stream nearby Khanapara during four different seasons. Total bacterial and coliform ranged from 1300 to 36,800/ml and 0 to 9200/100ml respectively. Significantly higher ($P < 0.001$) bacterial count was observed during monsoon.

0203-096. Bachewar MS, Mehta BH (Univ Mumbai, Dept Chem, Vidyanagari, Mumbai 400098). **Assessment of waste effluents from drug industry and its influence on soil quality.** *Indian J Environ Prot*, 21(9) (2001), 834-836 [9 Ref].

The physico-chemical characteristics of the effluents from M/s Godavari Drug industry from the Nanded district of Maharashtra, has been analyzed. 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.

0203-097. Bandela NN, Vaidya DP, Shivnikar SV, Lomte VS (PG Dept Environ Sci, Netaji Subhash Chandra Bose Coll, Nanded 431601). **Determination of biochemical oxygen demand to estimate biodegradability and self purification capacity of Burul dam water, distt. Nanded, Maharashtra.** *J Aquatic Bio*, 17(1) (2002), 21-22 [4 Ref].

Investigations were undertaken to determine the polluting strength of sewage in terms of oxygen that will require its discharge into Barul dam water in which aerobic condition exists. The values of B.O.D. were maximum (11.1 ppm) in the monsoon and minimum (3.2 ppm) in the winter. The B.O.D. test may be considered as wet oxidation procedure in which the living organisms serves as the medium for oxidation of the organic matter into carbon-dioxide and water.

0203-098. Banerjee D. Niyogi BK, Mandal S (Env Water Manag Res Lab, BB Coll, Asansol 713303). **Biodegradation of phenol using soil bacteria.** *Env Eco*, 20(2) (2002), 259-264 [3 Ref].

Attempt is made to evaluate the bioremediation potentiality of some isolated soil bacteria regarding phenol degradation. Four strains that showed maximum growth were selected for further investigations. The results showed that all the four soil isolates could degrade phenol efficiently at lower concentration (100 ppm), moderately at 500 ppm and

less at 1,000 ppm. Higher concentrations of phenol tend to delay the bacteria in reaching the stationary phase due to a prolonged log phase in nearly all the isolates.

0203-099. Baptiste Ameetha Rosaire, Altaff K (PG Res Dept Zoo, The New Coll, Chennai 600014). **Water chemistry and heavy metals in some freshwater culture ponds of Palavakkam, Chennai, Tamilnadu, India.** *J Aquatic Bio*, 17(1) (2002), 23-25 [13 Ref].

Chemical parameters and heavy metal (Cu, Zn, Hg) contents of three freshwater culture ponds were reported. Results indicate higher values of physico chemical parameters in catfish culture pond compared to others. Heavy metal contents recorded in the present study were well below the maximum permissible limit. Mercury occurred at higher concentration in all three culture ponds compared to other two heavy metals.

0203-100. Bhattacharyya DP, Mahapatra B, Halder KC, Banerjee K, Mitra A (Dept Theoretical Phys, Indian Assoc Cultivation Sci, Jadavpur, Calcutta 700032). **Spectrophotometric analysis of heavy metals in coastal waters of West Bengal.** *Indian J Phys*, 75B(2)(2001), 147-149 [6 Ref].

Paper monitors the monthly variations of dissolved Zn, Cu and Pb in the southwestern sector of Sagar Island. The concentrations of heavy metals in the ambient aquatic phase exhibited a sharp seasonal oscillation with the highest value during monsoon and lowest during pre-monsoon. The concentrations of dissolved heavy metals seems to be controlled by the ambient aquatic salinity and pH.

0203-101. Biswal SK, Sarangi B, Behera JP, Majhi B, Pradhan S, (Indira Gandhi Inst Techno, Sarang, Dhenkanal 759146, Orissa). **Effect of thermal power plant ash pond on ground water.** *Himalaya J Env Zoo*, 15(1) (2001), 35-42 [6 Ref].

The chemical characteristics of dug well and tube well water near all the three thermal power plants of Angul-Talcher area have been studied. Attempt has been made to calculate the correlation coefficient for anion with respect to cations. The study reveals a preliminary finding of predominant cations and anions prevailing in the ground water near the ash ponds.

0203-102. Chakraborty Dibyendu, Konar Sushil Kanta (Fishery Lab, Dept Zoo, Univ Kalyani, Kalyani 741235). **Ecological study on the status of pollution by steel plant waste on river Damodar at Barnpur, West Bengal.** *Indian J Environ Hlth*, 44(1) (2002), 50-57 [25 Ref].

Paper presents a study of physico-chemical quality of river water and abundance and distribution of phytoplankton community in a stretch of river Damodar in relation to steel plant effluents. Effluent discharge significantly changed the phytoplankton community structure. The discharge of steel plant effluent obviously caused habitat degradation resulting ecological modification of phytoplankton community of river Damodar at Barnpur.

0203-103. Chatterjee Chinmoy, Raziuddin M (Dept Zoo, Raniganj Girl's Coll, P.O. Raniganj, Dist. Burdwan, West Bengal). **Determination of Water Quality Index (WQI) of a degraded river in Asansol industrial area (West Bengal).** *Nature Env Polln Techno*, 1(2) (2002), 181-189 [31 Ref].

Limnological investigation was carried out on a degraded river, Nunia in Asansol industrial belt. The present investigation aimed to calculate Water Quality Index (WQI) of the river and to assess the impact of industries, agriculture, and human activities on its water quality. The water at all the sampling stations was recorded above the upper limit in terms of WQI which indicated that the river was not safe for human use.

0203-104. Chaubey M (Cent Energy Std, Indian Inst Techno, New Delhi). **Treatment of dairy effluent with fixed film bioreactor technology.** *Environ Polln Contl J*, 5(2) (2002), 36-38 [7 Ref].

The study was conducted to demonstrate the potential of the fixed film bioreactor technology for the treatment of dairy effluent. This technology possess advantage of low power consumption, small requirement, and high purification rates. Paper describe the treatment scheme and pollutants removal efficiency of plant for the treatment of dairy effluent using fixed film bioreactor technology.

0203-105. Dharmadhikari DM, Dhopte SM, Mandaokar SS, Dara SS (Natl Environ Engn Res Inst, Nagpur 440020). **Recycling and reuse of heavy metals in wastewater in**

the form of environmentally stable ferrites. *J Indian Assoc Environ Mang*, 28(2) (2001), 106-108 [20 Ref].

Paper embodies the results of studies of retrieval of heavy metal ions in solution by ferritisation and its potential application in wastewater treatment. The optimum procedure for ferritisation of heavy metal ions in solution has been evolved with respect to pH, concentration of Fe^{2+} , rate and time of aeration, and temperature. The recommended procedure consists of controlled aeration of the solution containing heavy metal ions and ferrous ions at pH 9.5-10.5 at about 50°C, until the black granular magnetic ferrite separates out.

0203-106. Dhote S, Varughese B, Misra SM (Environ Plnng Coordination Org, Environ Res Lab, Bhoj Wetland Proj, Kachnar, E-5 Sector, Arera Colony, Bhopal 462016). **Impact of idol immersion on water quality of twin lakes of Bhopal.** *Indian J Environ Prot*, 21(11) (2001), 998-1005 [9 Ref].

Idol immersion and its impact on the water quality were studied by considering the magnitude of the environmental problems associated with the Ganesh and Durga idol immersion. As a result large amount of biodegradable and non-biodegradable substances are being added into the lake. The results of important parameters, like turbidity, total alkalinity, total hardness indicates higher values, after the immersion as compared to the pre idol immersion status of the lake.

0203-107. Dinesh Kumar PK, Sarma RV, Zingde MD (Natl Inst Oceanogr, Regl Cent, Cochin 682014). **Probable movement and mixing of contaminants in tidal estuaries – a field study in Kundalika estuary, west coast of India.** *Indian J Environ Prot*, 21(11) (2001), 967-982 [2 Ref].

The probable movement and mixing of contaminants within and through the Kundalika river estuary along the west coast of India are studied. Neutrally buoyant biplane drogues, floats and dyes were tracked at different stages of the tide to assess the behaviour of the contaminants released in the estuary. The studies have shown that contaminants if released in the inner estuary tend to accumulate in the upstream regions and would not be flushed out effectively.

0203-108. Gangadhara Rao M, Subba Rao C, Prasad NVBSS, Eswara Rao KS, Murthy DN (Andhra Univ, Dept Geophysics, Visakhapatnam 530003). **Groundwater salinity in the water logged areas of lower Godavari Delta.** *Indian J Environ Prot*, 21(11) (2001), 1018-1024 [5 Ref].

Paper discusses the status of water logging in the lower Godavari Deltaic regions based on the study of depth to the water levels in the pre and post monsoon periods. The variation of conductivity and total dissolved salts with depth to the water table are also presented. The results indicate that there is a need for tackling the problem of rising water table to protect degradation and negative environmental impact of water logging and intensive agriculture.

0203-109. Garg VK, Gupta Renuka, Khurana Bharti (Dept Environ Sci Engng, Guru Jambheshwar Univ, Hisar 125001, Haryana). **Groundwater quality in western zone of Hisar City (Haryana).** *Indian J Environ Toxicol*, 11(2)(2001), 58-61 [11 Ref].

The chemical characteristic of groundwater in western zone of Hisar city have been studied to evaluate its suitability as potable water. The water quality deteriorated in the studied areas for one or the other quality parameters. The study showed a positive and significant correlation ($p < 0.001$) of electrical conductivity with total dissolved salts, sodium, calcium, chloride, sulphate and total hardness.

0203-110. Ghose MK, Roy S (Cent Mining Env, Indian Sch Mines, Dhanbad 826004). **Land disposal of coke oven effluents for irrigation – an Indian case study.** *J Inst Engrs (Env Engng)*, 81(Sept)(2000), 8-12, [19 Ref] (Late Recd).

The coal carbonizing units produce huge quantities of highly polluted effluents and discharge them into the river bodies without proper treatment. The impact of raw and diluted effluent on ground water quality and soil is discussed. It is estimated that 2.73 hectares of land can be irrigated with the effluents of the coke plant without deteriorating ground water and soil quality.

0203-111. Ghose MK, Sen PK (Cent Mining Env, Indian Sch Mines, Dhanbad 826004). **Status of the characteristics of effluent from iron ore beneficiation plants in India and its management.** *Indian Cheml Engrn*, 43(2) (2001), 95-98 [18 Ref].

Studies were conducted at three iron ore mines, namely, Barsna, Bolani and Dalli, in India. The results obtained from each mine have been discussed and the status of the characteristics of the effluent has been evaluated. The data revealed that the general pollution was due to the increase of suspended solids and iron. Most of the heavy metal constituents were found to be removed in the tailing pond and provision of the tailing pond could be considered as a kind of conservation of resources for the future.

0203-112. Ghosh Dipa, Bhattacharyya KG (Gauhati Univ, Dept Chem, Guwahati 781014). **Removing colour from aqueous medium by sorption on natural clay : a study with methylene blue.** *Indian J Environ Prot*, 21(10) (2001), 903-910 [23 Ref].

Clay dye interaction has been studied under laboratory conditions with respect to locally available kaolinite clay and aqueous methylene blue solution. The clay was used in six different forms. The effect of methylene blue concentration, amount of clay, pH and temperature was carefully investigated. The results indicate that kaolinite can be very effective in removing a basic dye, like methylene blue from water.

0203-113. Gupta Bhuvanesh, Anjum Nishat (Dept Textile Techno, Indian Inst Techno, New Delhi 110016). **Radiation grafted membranes : innovative materials for the separation of toxic metal ions from industrial effluents.** *Indian J Environ Hlth*, 44(2) (2002), 154-163 [34 Ref].

Membranes have shown a promising way to separate metal ions and clean the effluent before discharging them into drains. Radiation grafting offers unique feature of modifying virtually any polymer film or hollow fibre into a membrane. Desired exchange groups or chelating groups may be introduced into polymer by proper selection of the monomer to be grafted. This method provides excellent control over membrane structure by careful variation in the reaction conditions such as dose, dose rate of the irradiation.

0203-114. Hodlur GK, Ravi Prakash M, Deshmukh SD, Singh VS (Natl Geophysl Res Inst, Uppal Rd, Hyderabad 500007, A.P.) **Role of some salient geophysical, geochemical, and hydrogeological parameters in the exploration of fresh groundwater in a brackish terrain.** *Environ Geo*, 41(7) (2002), 861-866 [3 Ref].

Geophysical, geochemical, and hydrogeological parameters, for example longitudinal unit conductance, transverse unit resistance, total dissolved solids and thickness of the weathered zone, have been compared for 25 sites of Navalgund taluk in Dharwar District of Karnataka State, India. Interrelation among these parameters has been analyzed quantitatively by the standard statistical technique leading to a suitable mathematical model.

0203-115. Islam SR, Gyananath G (Sch Life Sci, Swami Ramanand Teerth Marathwade Univ, Nanded 431606). **Water quality for irrigation of Nanded.** *Environ Eco*, 19(4) (2001), 759-763 [15 Ref].

An elaborate study of physico-chemical parameters was undertaken to assess the quality of river, canal and well water for agriculture and irrigation. The investigation carried out for two years and results indicated that water quality was good for irrigation.

0203-116. Jayanti S, Meenambal T, Ramesh ST (Govt Coll Techno, Dept Civil Engng, Coimbatore 641013). Impact study on water scarcity in the coastal areas of Tamilnadu. *Indian J Environ Prot*, 21(10) (2001), 884-886.

A case study on drinking water pond development at Shanmghapuram, Ramanathapuram district has been studied. Impact study on the present status and policy impacts on implementing this system in this district have been studied and presented.

0203-117. Joshi BD, Dishy, Joshi Kamna (Dept Zoo Environ Sci, Gurukul Kangri Univ, Haridwar). **Seasonal variation in some physical characteristics of three hill streams, between Byasi and Rishikesh, in Uttaranchal Himalaya.** *Himalayan J Environ Zoo*, 15(2) (2001), 167-172 [8 Ref].

Paper aims to know the aquatic resource characteristics and diversity of fish resources of the region, from the Garhwal Himalayan valleys. The studies were made for the three minor tributaries of spring fed nature (origin) from the lower most realm of the Himalayan region, on the Goolar gad, eastern Huanl gad, western Huanl gad, between Byasi and Rishikesh stations.

0203-118. Joshi Basant Kumar, Kothayari Bhawati Prasad, Bhandari Narendra Singh (GB Pant Inst Himalayan Env Dev, Kosi Katarmal, Almora 263643). **Ionic dynamics in**

rivulet waters of Gomti Basin – a case study from central Himalaya. *J Environ Res*, 11(1) (2001), 3-6 [9 Ref].

A field study was conducted to assess the variation in physico-chemical characteristics of water of rivulets of Gomti basin watershed in Kumaon Himalayan region. The ionic status of the rivulets studied was found unsuitable for drinking, cooking, bathing and washing purposes without treatment. However, it was found suitable for irrigation in terms of the parameters studied.

0203-119. Kadirvelu K, Santhil Kumar P, Tamaraiselvi K, Subburam V (Dept Environ Sci, Bharathiar Univ, Coimbatore 641046). **Activated carbon prepared from biomass as adsorbent : elimination of Ni(II) from aqueous solution.** *Bioresouce Techno*, 81(1) (2002), 87-90 [8 Ref].

Activated carbon (AC) prepared from waste parthenium was used to eliminate Ni(II) from aqueous solution by adsorption. Batch mode adsorption experiments were carried out, by varying contact time, metal ion concentration, carbon concentration, pH and desorption to assess kinetic and equilibrium parameters. The adsorption capacity (Q_0) calculated from the Langmuir isotherm was 54.35 mg Ni(II)/g of AC at initial pH of 5.0 and 20°C, for the particle size 250-500 mm. Increase in pH from 2 to 10 increased percent removal of metal ion.

0203-120. Kathikeyani TP, Velavan TP, Ramesh M (Dept Bot, Bharathiar Univ, Coimbatore 641046). **Physico-chemical and biological characterization of the river Shanmuganadhi, Tamil Nadu.** *Env Eco*, 20(2) (2002), 482-486 [12 Ref].

Study reports the water quality of the river Shanmuganadhi. The main source of pollution in the river water is the dispersal of sewage water from the surrounding area in and around. The hydrological parameters were analyzed and all the parameters studied are in high level. The biological pollution indicators are also dominant. This shows that the water is unsuitable for drinking and irrigation pruposes.

0203-121. Kazmi AA (Dept Urban Engng, The Univ Tokyo, 7-3-1 Hongo, Bunkyo-Ku, Tokyo-113, Japan). **Water quality modelling of river Yamuna.** *J Inst Engrs (Env Engng)*, 81(Sept) (2000), 17-22 [12 Ref] (Late Recd).

The river Yamuna is moderately polluted in the stretch upstream of Delhi and heavily polluted in the Delhi Stretch. The pollution impact is the highest in low flow months. A surface water quality model – Mike 11, developed by Danish Hydraulic Institute – has been calibrated for the river for low flow months in the specific stretch with regard to BOD, DO and fecal coliforms based. The model has been verified to forecast the effect of pollution control schemes that have been proposed for the river.

0203-122. Kumar A, Siddiqui EN (MECON Ltd, Environ Engng Lab, Ranchi 834002). **Fluoride distribution in groundwater of Ranchi.** *Indian J Environ Prot*, 21(11) (2001), 968-975 [34 Ref].

The results of groundwater analysis indicate that fluoride is distributed heterogeneously in groundwater of the city. Fluoride in high concentration is found in groundwater of southern, western and southwestern zones of the city. The water is found to be slightly acidic in nature and high in iron concentration in most of the study zones.

0203-123. Kumar Sudhir, Gupta AB, Gupta Sunit (Civil Engng Dept, Malaviya Regl Coll, Jaipur 17). **Neet for revision of nitrates standards for drinking water : a case study of Rajasthan.** *Indian J Environ Hlth*, 44(2) (2002), 168-172 [14 Ref].

Attempt has been made to classify ground waters in various districts of Rajasthan based on distribution of nitrate in their drinking water samples. It is seen that nitrate in ground water is unevenly distributed in the state. Major parts of Churu, Alwar, Bharatpur, Jalore, Jaipur, Sikar, Tonk and Jhunjhunu, are inherited by nitrate rich ground waters while districts like Banswara, Bundi, Bikaner, Chittor, Kota and Jhalawar have low nitrates in their ground waters at many places.

0203-124. Lark BS, Mahajan RK*, Walia TPS (*Dept Chem, Guru Nanak Dev Univ, Amritsar 143005). **Determination of metals of toxicological significance in sewage irrigated vegetables by using atomic absorption spectrometry and anodic stripping voltammetry.** *Indian J Environ Hlth*, 44(2) (2002), 164-167 [8 Ref].

Soil and vegetable samples drawn from the fields being irrigated by the city sewage have been analysed for some toxic metals namely copper, iron, cadmium, lead and chromium using atomic absorption spectrometry and anodic stripping voltammetry.

It has been found that these vegetables contain an appreciable amount of these metals per unit dry mass, which the general public is ingesting everyday.

0203-125. Latha MR, Indirani R, Francis Honora J (Dept Soil Sci Agricl Chem, Tamil Nadu Agricl Univ, Coimbatore 641003). **Studies on ground water quality of Coimbatore district of Tamil Nadu.** *J Environ Res*, 11(2) (2001), 89-91 [2 Ref].

The quality of water is described by its chemical and microbiological characteristics. Paper attempts to evaluate the quality of ground water in and around Coimbatore with particular reference to certain specific aspects.

0203-126. Latha MR, Indirani R, Sheeba S, Francis Honora J (Dept Soil Sci Agricl Chem, Tamil Nadu Agricl Univ, Coimbatore 641003). **Ground water quality of Coimbatore district, Tamil Nadu.** *J Ecobio*, 14(3) (2002), 217-221 [5 Ref].

A total of 133 water samples collected from Avinashi, Pollachi and Palladam areas of Coimbatore district, Tamil Nadu, India, were analysed for water quality parameters. The electrical conductivity (EC) of water samples from these areas ranged from 0.45-4.50, 2.27-9.95 and 0.2-2.7 dSm⁻¹, respectively. The highest Sodium Adsorption Ratio (SAR) of 34.20 was observed in Palladam samples.

0203-127. Lingeswara Rao SV (Sri Venkateswera Univ, Dept Geo, Tirupati 517502). **Fluoride toxicity in ground waters of Chittoor district.** *Indian J Environ Prot*, 21(9) (2001), 794-796 [4 Ref].

Fluoride in very limited quantities is desirable for healthy growth of teeth and bones in human beings and prevents dental caries, and in excess quantities causes the disease mottle enamel of teeth called fluorosis. Paper discusses about the toxicity of fluoride in ground water of Chittoor district of Andhra Pradesh.

0203-128. Mahadevaswamy M, Lakshmi TCA, Prasad A, Ashok B (Dept Environ Engng, SJ Coll Engng, Mysore 570006). **Applicability of cement-stabilized municipal incinerated wastewater sludge fly ash and lime-stabilized coal by fly ash as lining/sub based materials.** *J Environ Stud Policy*, 3(2) (2001), 69-77 [21 Ref].

An experimental research programme was conducted to evaluate the potential of cement-stabilized municipal incinerated waste water sludge fly ash and lime-stabilized coal fly ash as lining materials, based on their physico-chemical and engineering properties. Trace quantities of cadmium and chromium were detected, which were within the drinking water limits. The above results indicate that the two mixtures can be used as liners for highway embankments.

0203-129. Mahajan SR (Dept Bot, Bhusawal Arts Sci PON Comm Coll, Bhusawal 425201, Dist. Jalgaon, MS). **Saprobity system for the assessment of water quality of Velhala lake of Jalgaon, Maharashtra.** *J Aquatic Bio*, 17(1) (2002), 1-3 [16 Ref].

Velhala lake is an important lake of Jalgaon District of Maharashtra. Three stations of lake were selected for collection of water and algal samples. The system of Kolkwitz & Marsson is followed to find out saprobity index of Velhala lake and the stations of this lake were found to be b–mesosaprobic in nature.

0203-130. Mahapatro Tapan Rani, Padhy SN (PG Dept Marine Sci, Berhampur Univ, Berhampur 760007). **Behaviour of fluoride in Rushikulya estuary, Bay of Bengal.** *J Environ Res*, 11(2) (2001), 141-144 [13 Ref].

The Rushikulya is a typical tidal and well mixed estuary on the east coast of India. The highly productive features of estuaries alter the concentration levels of some biogeochemically important elements like fluorine. The report studies the behaviour of fluoride in different seasons with respect to chlorinity in Rushikulya estuary.

0203-131. Mariappan P, Yegnaraman V, Vasudevan T (TWAD Bd, 38, Arunachalam Chettiar St, Sekkalai, Karaikudi 630002). **Estimation of groundwater quality using rainfall – a case study.** *Indian J Environ Prot*, 21(11) (2001), 1012-1017 [13 Ref].

Rainfall is the chief external contributor to the groundwater storage and has influence on the quality. Linear relationship model has been developed using the rainfall and chemical characteristics observed. Correlation co-efficient value ranges from 0.016 to 0.92. Mixed trend of variation is found.

0203-132. Nageswara Rao I, Krupanidhi G, Ratnam Kumari R (Andhra Univ, Marine Chem Div, Visakhapatnam 530003). **Heavy metal pollution in the Visakhapatnam**

harbour waters, east coast of India (Bay of Bengal). *Indian J Environ Prot*, 21(9) (2001), 825-830 [23 Ref].

Visakhapatnam harbour is a natural harbour situated in the central east coast of India receives most of the effluents through a rain fed stream of Megadrigedda and also received the city's main domestic sewage. Paper discusses about the heavy metal pollution on the harbour water and its effect on marine populations.

0203-133. Pande KS, Sharma SD, Bhargava DS (Analyt Res Lab, Chem Dept, Hindu Coll, Moradabad 244001). **Study on quality status of Ramganga river at Moradabad.** *J Inst Engrs (Env Engng)*, 81(Sept) (2000), 23-27 [4 Ref]. (Late Recd).

The pollution of the Ramganga river in a stretch about 25 km around Moradabad has been studied. The pollution is caused by effluent wastes produced by nearly 450 electroplating units and entire brass and stainless steel industry, apart from the domestic wastewaters. The river at Moradabad manifests severe organic pollution and build-up of toxicants (heavy metals) particularly, the iron which has well exceeded its permissible limit.

0203-134. Patel KS, Shukla A, Tripathi AN, Hoffmann P (Sch Std Chem, Pt. Ravishankar Shukla Univ, Raipur 492010, MP). **Heavy metal concentrations of precipitation in east Madhya Pradesh of India.** *Water Air Soil Polln*, 130(1-4)(2001), 463-468 [16 Ref].

Rain is a main source for getting water to the ecosystem in the Indian continent. The factors i.e. operation of several heavy metal industries, coming of distant pollutants, high rainfall, etc. are agent for the precipitation of a high amount of the heavy metals in the eastern region of Madhya Pradesh state of India. The particulate matters and gases emitted are scavenged out with rain water for the distribution to the ecosystem. The volume weighted mean concentration and fluxes distribution of most abundant heavy metals described.

0203-135. Pillai AG, Naik Medha S, Monin GA, Rao PSP, Safai PD, Ali K, Rodhe Henning, Granat Lennart (Indian Inst Trop Meteor, Pune 411008, India). **Studies of wet deposition and dustfall at Pune, India.** *Water Air Soil Polln*, 130(1-4) (2001), 475-480 [10 Ref].

Rain water and dustfall deposition samples were collected at Pune and at Sinhagad. The samples were analyzed for major ions, pH and conductivity. The study showed that the rain water at both places is alkaline (pH > 5.6). The wet deposition fluxes of all the ionic components were higher than the dustfall fluxes.

0203-136. Rama KV, Rajeswari S* (*Dept Analyt Chem, Univ Madras, Guindy Campus, Chennai 600025). **Monitoring of manganese pollution in water bodies of Chennai city by water hyacinth.** *Cheml Environ Res*, 10(1&2) (2001), 77-82 [14 Ref].

Industrial processes are the major sources of manganese pollution. Paper monitors manganese pollution at a few places in Chennai city using water hyacinth as a pollution index. The quantitative determination of Mn in sludge and water hyacinth samples was performed by ICP-AES.

0203-137. Ramana S, Biswas AK, Singh AB, Yadava RBR (Indian Inst Soil Sci, Nabi Bagh, Berasia Rd, Bhopal 462038). **Relative efficacy of different distillery effluents on growth, nitrogen fixation and yield of groundnut.** *Bioresource Techno*, 81(2) (2002), 117-121 [16 Ref].

A field experiment with groundnut as test crop was conducted to evaluate the manurial potential of three effluents : raw spent wash, biomethanated spent wash and lagoon sludge vis-à-vis recommended fertilizers and a control. It was found that all the three distillery effluents increased total chlorophyll content, crop growth rate, total dry matter, nutrient uptake and finally seed yield compared to the control but inhibited nodulation and decreased nitrogen fixation.

0203-138. Rao Kulkarni Rajender, Sharma Rita N, Bukari Mehtab (Dept Zoo, Govt Coll Arts Sci Comm, Quepem, Goa). **Diurnal variations of physico-chemical aspects of pollution in Khusavati river at Quepem, Goa.** *J Aquatic Bio*, 17(1) (2002), 27-28 [6 Ref].

Study deals with water quality and pollution load of Khushavati at Quepem based on short term study. The villagers are hard hit during the monsoon when the run off from the mining ore, dumps washing of manganese ore along the banks and trucks in the river results in the contamination of river water making it unsafe for drinking and irrigation. The need to develop an action plan for river conservation is advocated.

0203-139. Rao M, Parwate AV, Bhole AG (Dept Civil Engng, Coll Engng, Badnera 444701). **Adsorption kinetics of copper and lead using bagasse and flyash as low cost adsorbents.** *J Environ Std Policy*, 4(1) (2001), 11-19 [10 Ref].

Removal of Cu^{2+} and Pb^{2+} ions from aqueous solutions was investigated using raw bagasse and fly ash, the waste generated in sugar mills and boilers respectively, as low-cost potential adsorbents. The results were compared with activated carbon under identical conditions.

0203-140. Rathi AKA, Puranik SA (Govt Gujarat Ind Commissionerate, Udyog Bhavan, Gandhi Nagar, Gujarat). **Mixed streams wastewater treatment using adsorption.** *Indian J Environ Hlth*, 44(2) (2002), 138-153 [9 Ref].

Mixed samples prepared from known pure solutes are reported to have synergetic efforts with respect to single solute and multi-solute adsorption. Attempt is made to extend the theory of enhancement ratios to the mixed stream wastewater samples collected from dyes manufacturing industries. The Rathi Puranik model developed for single wastewater streams can be extended to the mixed stream wastewater samples using the rate of COD reduction prediction.

0203-141. Saravanane R, Sundarajan T, Sivamurthy Reddy S (Environ Engng Lab, Dept Cheml Engng, Indian Inst Techno, Madras, Chennai 600036). **Efficiency of chemically modified low cost adsorbents for the removal of heavy metals from waste water : a comparative study.** *Indian J Environ Hlth*, 44(2) (2002), 78-87 [30 Ref].

A comparative study of removal efficiency of heavy metals from aqueous solution by adsorption on non-conventional materials and on chemically activated non-conventional materials, is presented. Of all the low cost adsorbents used in the study, saw dust is found to possess greater adsorption efficiency for all metals, than rice husk under identical experimental conditions.

0203-142. Sarma HP, Bhattacharyya KG (Gauhati Univ, Dept Chem, Guwahati 781014). **Quality of drinking water of tubewells and municipal supply waters with respect to Na, K, Ca, Mg and Fe in the Darrang district.** *Indian J Environ Prot*, 21(11) (2001), 1006-1011 [14 Ref].

The results indicated that the potassium concentrations were relatively lower than the sodium concentration. Similarly Mg concentrations were lower than the Ca concentrations. Iron concentration was above the permissible limit. However it was observed that the iron content of the water samples of Mangaldai sub division was slightly higher than those of Udalguri sub division.

0203-143. Sengupta D, Banerjee SS, Chakrabarti A (Indian Inst Tech, Dept Geo Geophys, Kharagpur 721302). **Radon and arsenic measurements in groundwater around South 24 Parganas, West Bengal.** *Indian J Environ Prot*, 21(11) (2001), 961-967 [8 Ref].

Attempt has been made to understand the radiometric characteristics of the arsenic contaminated groundwater in the form of alpha counts using a portable counter. Extensive radon studies have been undertaken in the Singhbhum shear zone to understand the radon emanation and its long distance transport.

0203-144. Shakkthivel P, Mariappan P, Vasudevan T (Alagappa Univ, Dept Indl Chem, Karaikudi 630003). **Drinking water resources management in a rural habitation of Sivaganga district, Tamil Nadu.** *Indian J Environ Prot*, 21(9) (2001), 861-864 [4 Ref].

Ariyandipatti is a rural habitation in S. Pudur union of Sivaganga district. Among the available sources, people prefer pond water both for drinking and cooking. Demarcation of catchment area and protection from defecation practice in addition to chlorination after every rainfall is suggested to prevent bacteriological pollution of pond water.

0203-145. Sheikh HN, Kalsotra BL (Univ Jammu, Dept Chem, Jammu 180006). **Variation in chemical composition in snow, ice and melt water from Naradu Glacier in different seasons.** *Indian J Environ Prot*, 21(10) (2001), 922-931 [25 Ref].

Snow, ice and melt water from Naradu glacier (H.P. state) were analysed to assess their chemical composition and to gain some insight in the pattern of glacial melting process in different seasons vis-à-vis concentration of various major cations and anions. Commulative increase in concentration of various cations and anions in ice as compared to snow is due to crystallisation of snow in presence of melt water.

0203-146. Shrivastava RK, Shrivastava Seema, Shukla AK (Environ Res Lab, Dept Bot Environ Sci, Govt Autonomous Sci Coll, Jabalpur 482001). **River pollution in India – a brief review.** *J Environ Res*, 11(2) (2001), 111-115 [10 Ref].

The inland water resources both lentic and lotic serve as an ultimate sink for urban liquid waste, industrial and agricultural effluent and suffer from extremely toxic pollutants leading to a total ecological imbalance. Paper discusses about the river pollution in India in this context.

0203-147. Srivastava VS, Yeole PM (Cent PG Res Chem, GTP Coll, Nandurbar 425412, Maharashtra). **Trace metals and biochemical oxygen demand of pulp and paper mill effluents.** *Nature Env Polln Techno*, 1(2) (2002), 121-122 [10 Ref].

Ukai-Songarh pulp and paper mill was selected for the present investigation. The mill is located in Satpura valley in south Gujarat. For the study, the effluents, amended soils and neighbouring plant samples were analysed for trace metals. The obtained concentrations were found to be much higher. Effluents affect quality of soils and adjoining plants. The pulp and paper mill effluent samples have also been investigated for their COD and BOD.

0203-148. Singh Abhay Kumar (Environ Manag Gr, Centl Mining Res Inst, Barwa Rd, Dhanbad 826001). **Quality assessment of surface and subsurface water of Damodar river basin.** *Indian J Environ Hlth*, 44(1) (2002), 41-49 [21 Ref].

Quality assessment study of Damodar river basin water shows that with few exceptions, subsurface water is suitable for drinking and domestic uses. Based on SAR, RSC and percent Na the surface water fall within the excellent to good quality class and subsurface water within good to permissible limit and it can be used for irrigation without any hazard.

0203-149. Singh DK, Srivastava Bhavana (Dept Chem, Harcourt Butler Technol Inst, Kanpur 208002). **Removal of phenol pollutants from aqueous solutions using various adsorbents.** *J Scient Indl Res*, 61(3) (2002), 208-218 [13 Ref].

Review aims at providing study concerned with the application of conventional and non-conventional adsorbents for the removal of phenols. The data presented are

mainly based on laboratory studies and show potential advantages for treatment of phenol bearing wastewater by adsorption on non-conventional adsorbents.

0203-150. Singh Renu, Maheshwari RC (Indian Inst Techno, Cent Rural Dev Techno, Hauz Khas, New Delhi 110016). **Defluoridation of drinking water – a review.** *Indian J Environ Prot*, 21(11) (2001), 983-991 [68 Ref].

Water supply is a daily necessity and key factor in human health and well being. Fluorosis, a slow, progressive, crippling malady known to be prevalent in 150 districts in 15 States of India for 6 decades, is caused by the intake of water contaminated with fluoride beyond the tolerable limits of 1.5 ppm.

0203-151. Srinivas N, Ramakrishna Rao S, Suresh Kumar K (Dept Environ Std, Coll Engng, GITAM, Visakhapatnam 530045). **Water quality in industrial areas of Visakhapatnam.** *Nature Env Polln Techno*, 1(2) (2002), 197-200 [7 Ref].

Physico-chemical characteristics of bore wells of industrial areas of Visakhapatnam were monitored. Water Quality Index calculated from ten physico-chemical parameters taken together varied from 50.0-97.41 ppm indicating level of nutrient load and pollution in the bore waters. The water was not conforming to drinking standards, and hence it is suggested to take all the necessary precautions before the waters are sent into public distribution system.

0203-152. Thacker Neeta P, Kaur Preeti, Rudra Anjana (Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). **Trihalomethane formation potential and concentration changes during water treatment at Mumbai (India).** *Environ Monit Assess*, 73(3) (2002), 253-262 [7 Ref].

The treated water at the outlet of treatment plants and representative service reservoirs of Mumbai city have been evaluated for trihalomethane formation potential. Chloroform, dichlorobromomethane, Chlorodibromomethane and bromoform have been monitored during monsoon, winter and summer. The levels of chloroform are found above the regulated WHO guideline value of 200 mg L⁻¹ in final water during postmonsoon at Ghatkopat (226 mg L⁻¹), Malbar (210.3 mg L⁻¹) and Tulsi (231.26 mg L⁻¹).

0203-153. Thakre Rekha, Joshi D (Land Env Manag Div, Natl Environ Engng Res Inst, Nagpur 440020). **Analysis of wet precipitation of air pollutants in Mumbai (India).** *Environ Monit Assess*, 71(3) (2001), 269-278 [26 Ref].

Bulk precipitation samples at Mumbai (India) were collected during the monsoon seasons and analysed for ionic concentrations using an Ion Chromatograph DIONEX model 100. The variability of sulphate to nitrate ratio in rainwater fluctuates in a wide range from 1.5 to 20 and governed by the sulphate concentrations in the sample. The regression analysis of the data reveals that in the bulk precipitation at Mumbai, SO_4^{2-} is becoming increasingly important relative to NO_3^- .

0203-154. Thirumathal K, Sivakumar AA, Chadranatha J, Suseela KP (PG Dept Zoo, APA Coll Women, Palani 624615). **Physico-chemical studies of Amaravathy reservoir, Coimbatore district, Tamil Nadu.** *J Ecobio*, 14(1) (2002), 13-17 [15 Ref].

The physico-chemical characters of the Amaravathy reservoir, located at south of Udumalpet Coimbatore district were investigated. The temperature ranged from 23.0 to 28.1°C. Nutrients such as calcium, magnesium and phosphate varied in all the months. Chloride content differed from 7.1 to 21.3 mg/l. The dissolved oxygen content was between 5.5 to 7.2 mg/l and total alkalinity fluctuated from 45 mg/l to 130 mg/l.

Noise Pollution

0203-155. Chowdary MJR, Thanasekaran K (Cent Environ Std, Anna Univ, Chennai). **Traffic noise in south Chennai.** *J Inst Engrs (Environ Engng)*, 82(Sept) (2001), 22-26 [6 Ref].

Ambient noise levels due to traffic were measured at several locations in south Chennai. The noise levels were found to be objectionably high at all the locations and were in the range of 92-95 dB. The noise levels measured at some of the same locations earlier were in the range of 71-84 dB.

0203-156. Ingle ST, Pachpande BG (Dept Environ Earth Sci, North Maharashtra Univ, Jalgaon 425001). **Noise : an insidious hazard during festivals.** *Env Eco*, 20(2) (2002), 464-469 [10 Ref].

Ambient noise levels were measured during Dipawali in Jalgaon city. Higher noise pollution levels indicates the noise pollution during the period. The study reveals great change in noise climate which is an indication of fluctuation in the ambient noise levels. The equivalent continuous noise levels are more than prescribed limit at all locations.

0203-157. Murthy Usha N (Bangalore Univ, Dept Civil Engng, Bangalore 560056). **A statistical model between traffic volume and noise levels in urban areas.** *Indian J Environ Prot*, 21(9) (2001), 837-838.

Noise is an unwanted sound dumped into the environment and is definitely a problem for large portion of most urban population as a result of continuing urbanization in developing countries and by steady increase in the traffic flow and capacity of the transport networks. Paper attempts to develop a relation between the traffic volume and noise levels in the Bangalore city.

Ecology

0203-158. Ansari Azra, Rivonkar CU*, Sangodkar U MV (*Dept Marine Sci Biotechno, Goa Univ, Taleigao Plateau, Goa 403206). **Population fluctuation and vertical distribution of meiofauna in a tropical mudflat at Mandovi estuary, west coast of India.** *Indian J Marine Sci*, 30(4) (2001), 237-245 [28 Ref].

A study was conducted to observe the meiofaunal community structure and its temporal and spatial fluctuation and a profile of vertical distribution of a mudflat in relation to sediment temperature, grain size, organic carbon and sedimentary chlorophyll *a*. The sampling was carried out for three seasons viz. pre-monsoon (summer), monsoon and post-monsoon. A vertical zonation in the distribution of fauna was significantly correlated with interstitial water, chlorophyll *a* and sediment organic carbon. It is suggested that meiofauna in mudflats serve as food for the higher tropic levels.

0203-159. Balamurugan S, Vishakan R, Subramanian P (Dept Anim Sci, Bharathidasan Univ, Tiruchirappalli, 620024). **Seasonal variation in non-marine ostracod population in Cauvery river, Tiruchirappalli, Tamil Nadu, India.** *J Expt Zoo India*, 5(2) (2002), 181-187 [30 Ref].

Seasonal variation including qualitative and quantitative analysis of ostracod population were carried out at the three different stations, of Cauvery river near Tiruchirappalli. *Stenocypris distincta* was the dominant species and *S. hislopi* next to this. Quantitative analysis of ostracod population density was found to be maximum ($106/m^3$) in the month of May.

0203-160. Dhembare AJ, Sangle Sarla, Kedri Roopali (PVP Coll, Pravaranagar 413713, Taq Rahata, Dist Ahmednagar, Maharashtra). **Intrinsic absorption rate of phosphates by water hyacinth, *Eichornia crassipes* (Mart) Solm.** *J Aquatic Bio*, 17(1) (2002), 5-7 [8 Ref].

A study was undertaken to determine absorption of phosphates by water hyacinth under laboratory conditions. The results were obtained on net absorption rate, innate capacity of absorption, mean absorption time, coherent absorption time and finite rate of adsorption. The finite rate of absorption was arrived at by calculation and graph.

0203-161. Dixit AM, Geevan CP (Gujarat Inst Desert Eco, 106, GSFC Townships, Fertilizer Nagar, Vadodara 391750). **Multivariate ordination approach for identification of sub-regional homogeneities in Gujarat, western India.** *J Environ Manag*, 64(1) (2002), 13-23 [28 Ref].

Response of some agro-ecological variables to both original and ordinated variables in each of the identified edaphic-climatic units (ECU) has been evaluated using step-wise multiple regressions. The response of these variables, showed that independent of the degree of dynamism, the dependence of these variables was distinct in each ECU. This provided a reality check on the agro-ecological and bio-climatic differentiation among the ECUs.

0203-162. Godhantaraman N (Coastal Ecosyst Res Gr, Marine Resources Env Res Inst, Natl Inst Adv Indl Sci Techno, 2-2-2 Hiro Suehiro, Kure, Hiroshima 737-0197, Japan). **Seasonal variations in taxonomic composition, abundance and food web relationship of microzooplankton in estuarine and mangrove waters, Parangipettai region, southeast coast of India.** *Indian J Marine Sci*, 30(3) (2001), 151-160 [35 Ref].

Seasonal abundance and the relationship of microzooplankton with higher trophic levels were studied in the tropical estuarine and mangrove waters, from

Parangipettai. Taxonomic composition and abundance of microzooplankton exhibited clear seasonal variations, being highest in summer and lowest in monsoon. The overall mean abundance in summer was 4.0 fold (estuary) and 2.5 fold (mangrove) higher than in monsoon. Over the study period, tintinnid ciliates overwhelmingly dominated the microzooplankton community both in terms of species diversity.

0203-163. Jain KL, Dogra Dinesh, Singh Manju (Dept Zoo, CCS Haryana Agricul Univ, Hisar 124004). **Effects of pesticide toxicity on soil mite abundance and their contribution to litter degradation in a forestry plantation.** *Env Eco*, 20(2) (2002), 418-422 [16 Ref].

Study imparts information about the mitemicrobe density and the changes in major soil nutrients in a forestry litter soil compost, following pesticide treatments. It provides a strong evidence for impaired mite population, bacterial activity and the nutrient release in compost after treatment with BHC at 5 g/kg. It caused a reduction of 22.2 to 35.5% in mite number and an ultimate decline of 11.8 to 27.2 kg/hectare of nitrogen available.

0203-164. Katti RJ, Venkatesha Moorthy KS, Mohan Kumar B, D'souza Ronald, Shanthanagouda AH (Dept Fisheries Env Eco, Coll Fisheries, Univ Agricul Sci, Mangalore 575002). **Planktonic crustaceans in relation to hydrography in the Arabian Sea off Chitrapur receiving industrial effluents.** *Env Eco*, 20(1) (2002), 172-181 [26 Ref].

The coastal waters in the Arabian Sea off Chitrapur region receiving industrial effluents from BASF and MRPL were studied for the occurrence and distribution of planktonic crustaceans during pre-discharge and post-discharge periods at 5, 10 and 15 m. The difference between the highest and lowest values of surface water temperature, salinity and dissolved oxygen have been found to be narrowed down during post-discharge period with that of pre-discharge phase.

0203-165. Katti RJ, Venkatesha Moorthy KS, Mohan Kumar B, D'souza Ronald, Shanthanagouda AH (Dept Fisheries Env Eco, Coll Fisheries, Univ Agricul Sci, Mangalore 575002). **Macrobenthos and sediment characteristics in the Arabian Sea, off Chitrapur, southwest coast of India.** *Env Eco*, 20(2) (2002), 490-495 [13 Ref].

Macrobenthos and sediment were studied in the coastal waters of Chitrapur at 5, 10 and 15 m depth stations. The macrobenthos showed no significant difference in space and time. The textural analysis of sediment indicated sandy substratum at shallower station which harbored less benthic population, while on the other hand, the deeper stations which were of silty type registered good population of macrobenthos.

0203-166. Kumar V, Manivannan V (Dept Geo, Natl Coll, Tiruchirapalli 620001, Tamil Nadu). **Benthic foraminiferal responses to bottom water characteristics in the Palk bay, off Rameswaram, southeast coast in India.** *Indian J Marine Sci*, 30(3) (2001), 173-179 [23 Ref].

Recent benthic foraminiferal assemblages from the shallow shelf sediments of the Palk Bay, off Rameswaram were studied qualitatively and quantitatively. The study revealed that the microfaunal assemblage consisting of 108 benthic foraminiferal species belonging to 50 genera of 27 families. Various bottom water parameters were determined and correlated with the foraminiferal population and seasonal distribution of living population was evaluated.

0203-167. Kumar R, Sinha AK, Singh P (Indl Toxic Res Cent, Environ Chem Div, Mahatma Gandhi Marg, Lucknow 226001). **Sediment Quality Index (SQI) of the river Ganga between Shuklaganj (Unnao) and Phaphamau (Allahabad).** *Indian J Environ Prot*, 21(11) (2001), 992-997 [32 Ref].

A simple method has been suggested for the calculation of sediment quality index (SQI) on the data of physico chemical characteristics of river Ganga sediments. The SQI range between 35.7 and 107.89. It has been observed that the SQI values generally decrease in the lower stretch due to the dilution effect because wastewater are carried down in the lower stretch. It clearly shows that, like WQI, the SQI may be indicative of the sediment pollution in riverine ecosystems.

0203-168. Latha MR, Indirani R, Kamaraj S (Dept Soil Sci Agricl Chem, Tamil Nadu Agricl Univ, Coimbatore 641003). **Bioremediation of polluted soils.** *J Environ Res*, 11(1)(2001), 27-29 [3 Ref].

The pollution loads in our soil has led to groundwater contamination through leaching and found their way into our foodchain through soil-plant uptake mechanisms.

Among different methods to overcome the pollution, bioremediation is a viable tool which has been briefly discussed.

0203-169. Menon Sasi Kumar, Pardiwala Rashneh N (Dept Biol Sci, Ramarain Ruia Coll, Matunga, Mumbai 400019). **Marine faunal diversity along the shores of Dahanu taluka : a rapid assessment survey.** *Env Eco*, 20(1) (2002), 233-244 [7 Ref].

A short-term rapid assessment survey was undertaken to evaluate the marine faunal diversity along the shores of Dahanu taluka. The findings can form the base-line data for more intensive surveys in future. The survey reveals the ecological importance of the coastline especially at Vadhavan, where the Government of Maharashtra proposes to build an ultra-modern international port. The survey classifies coastline of Dahanu taluka as rich in terms of faunal diversity and ecologically important for the sustenance of marine resources along the northwest coast of India.

0203-170. Mruthunjaya TB, Hosmani SP (Dept Std Bot, Univ Mysore, Manasgangotri, Mysore 570006, Karnataka). **Comparative account of physico-chemical parameters, enzymatic activity and plankton population in three water bodies of Mysore city.** *Nature Env Polln Techno*, 1(2) (2002), 165-168 [8 Ref].

A comparative account of physico-chemical parameters, plankton population and enzymatic activity in a freshwater lake receiving sewage, and a sewage oxidation pond were studied. Statistical DMRT test was applied to the data to arrive at precise conclusions. Only 10 out of 22 parameters showed significance. Kukkarahalli lake was the most sensitive water body as compared to Dalvoi lake and sewage oxidation pond.

0203-171. Nagaraju A, Karimulla S (Dept Geo, Sri Venkateswara Univ, Tirupati 517502, Andhra Pradesh). **Accumulation of elements in plants and soils in and around Nellore mica belt, Andhra Pradesh, India – a biogeochemical study.** *Environ Geo*, 41(7) (2002), 852-860 [61 Ref].

The accumulation of elements in three dominant plant species, *Jatropha curcas*, *Dodonea viscosa* and *Cassia auriculata*, and their associated soils were studied. Multi-element analysis of these samples was carried out and the biological absorption coefficient (BAC) was calculated. Large amounts of B, Ba, Mn, Sr and Zn were found in the vegetation of the plant species under study.

0203-172. Pandey AK, Dutta S, Sharma KC (Dept Environ Std, MDS Univ, Ajmer 305004, Rajasthan). **A study of the impact of marble dust on soil quality of Kishangarh, Ajmer.** *Nature Env Polln Techno*, 1(2) (2002), 191-196 [13 Ref].

The study was conducted in the vicinity of marble stone crushing areas located at Kishangarh in a radius of 6 km. The study deals with the analysis of soils to understand their physico-chemical properties to investigate the effect of stone crusher dust on the site areas and the neighbouring agricultural fields. From soil analysis it was observed that the pH level of soil samples was not suitable for cultivation of most crops. The calcium concentration in soil is very high mainly due to marble dust pollution.

0203-173. Phukan Smritisikha, Bhattacharyya KG (Gauhati Univ, Dept Chem, Guwahati 781014). **Soil quality alterations with respect to a pulp and paper mill – a case study at Jagiroad, Assam.** *Indian J Environ Prot*, 21(9) (2001), 839-846 [12 Ref].

The Nagaon Paper Mill of the Hindustan Paper Corporation Limited has been operating since 1985 at Jagiroad, a small town in the Morigaon district of Assam. Study has been conducted to investigate impact of the continuous operation of the mill on the soil quality in the nearby areas and thus to evaluate the transport of the pollutants through the soil.

0203-174. Sampath Kumar G (PG Dept Microbio Res Cent, Ponniah Ramajayam Coll, Thanjavur 614904, Tamil Nadu). **Seasonal variations in the biodiversity of arbuscular mycorrhizal fungi in forest ecosystems.** *J Ecobio*, 14(1) (2002), 35-38 [11 Ref].

Spore population of arbuscular mycorrhizal fungal species in different soils selected from scrub, deciduous, evergreen and Sholas at Alagar hills of Madurai were investigated. The AM fungal species richness was found to be the highest in sandy clay loam soils and lowest in clay loam and sandy loam. The results of this study indicate that the season played a major role in the diversity of AM fungal species.

0203-175. Sarangi RK, Chauhan Prakash, Nayak SR (Marine Water Resources, Remote Sensing Applications Area, Space Applications Cent, (ISRO), Ahmedabad 380015). **Phytoplankton bloom monitoring in the offshore water of northern Arabian Sea using IRS-P4 OCM satellite data.** *Indian J Marine Sci*, 30(4) (2001), 214-221 [23 Ref].

IRS-P4 Ocean Color Monitor (OCM) satellite data were analyzed to generate chlorophyll *a* images during the winter monsoon period to understand the high productivity and algal bloom patches as observed in the chlorophyll images. The winter bloom in the northern Arabian Sea is the most intense because of the nutrient build-up prior to its onset is so large and the mixed layer detrans earlier than in the other regions, which in turn triggers the surface productivity.

0203-176. Sedamkar Eshwarlal, Angadi SB (Dept Bot, SK Arts & HSK Sci Inst, Vidyanagar, Hubli 580031). **Primary productivity of two freshwater bodies of Gulbarga, India.** *Nature Env Polln Techno*, 1(2) (2002), 151-157 [20 Ref].

The primary productivity of two permanent standing freshwater bodies of Gulbarga, Jagat and Pala tanks, was carried out. The data on the production values are discussed in relation to variations in the physico-chemical characteristics. In Jagat and Pala tanks the increase in gross and net primary productivity correspond with high temperature, pH, CO₂, dissolved oxygen in addition to nitrate, phosphate, silicate and BOD.

0203-177. Shanmugam M, Ramavat BK, Mody KH, Oza RM, Tewari A (Marine Algae Marine Env Discipline, Centl Salt Marine Cheml Res Inst, Bhavnagar 364002, Gujarat). **Distribution of heparinoid-active sulphated polysaccharides in some Indian marine green algae.** *Indian J Marine Sci*, 30(4) (2001), 222-227 [25 Ref].

Sixteen species of Indian marine green algae belonging to the genus *Caulerpa*, *Cladophora*, *Bryopsis*, *Boodlea*, *Chaetomorpha*, *Ulva*, *Enteromorpha* and *Valoniopsis* were screened for blood anticoagulant activity. Cold and hot water sulphated polysaccharides extracts were prepared, their chemical constituents were estimated and molecular weight (MW) range was determined.

0203-178. Shanthi K, Ramasamy K, Lakshmanaperumalsamy P (Dept Environ Sci, PSG Coll Arts Sci, Coimbatore 641014, T.N.). **Hydrobiological study of Singanallur lake at Coimbatore, India.** *Nature Env Polln Techno*, 1(2) (2002), 97-101 [23 Ref].

Paper deals with the ecological studies of lake Singanallur with special reference to physico-chemical characteristics and water pollution. The various constituents monitored include temperature, pH, conductivity, total dissolved solids, dissolved,

oxygen, alkalinity, total hardness, calcium, magnesium, chloride, sulphate, sodium, potassium, phosphate and nitrate. Significant variations in these parameters were observed throughout the study period.

0203-179. Sharna SL, Pant A* (*Dept Biocheml Sci, Natl Cheml Lab, Pune 411008). **Crude oil degradation by a marine actinomycete *Rhodococcus* sp.** *Indian J Marine Sci*, 30(3) (2001), 146-150 [11 Ref].

An actinomycete isolated from a chronically oil-polluted coastal region near Mumbai (Bombay) Harbour was identified as a strain of *Rhodococcus*. The isolate degraded aliphatic and aromatic, but not the asphaltene fractions of three different crude oils. Under optimized conditions: 70 mM nitrogen as urea, 0.1 mM phosphorous as K_2HPO_4 , pH 8.0 at 30°C and 150 rpm on a laboratory shaker for 72 hours, 72%, 60% and 35% of the aliphatic fraction of Bombay High, Assam and Gujarat crude oils respectively were degraded.

0203-180. Shome Rajeswari, Shome BR (Centl Agricl Res Inst, PB No. 181, Port Blair, A&N Islands 744101). **Microbial L-asparaginase from mangroves of Andaman Islands.** *Indian J Marine Sci*, 30(3) (2001), 183-184 [8 Ref].

Bacterial strains from mangroves of Andamans were analysed for L-asparaginase enzyme. One hundred and eight (54%) of total 200, isolates synthesized L-asparaginase, growing at pH 7.2 and 37°C temperature. Only two gram negative strains appeared to be potent for large-scale production.

0203-181. Siddhanta AK, Goswami AM, Ramavat BK, Mody KH, Mairh OP (Marine Algae Marine Env Discipline, Centl Salt Marine Chemls Res Inst, Bhavnagar 364002, Gujarat). **Water soluble polysaccharides of marine algal species of *Ulva* (Ulvales, Chlorophyta) of Indian waters.** *Indian J Marine Sci*, 30(3) (2001), 166-172 [25 Ref].

Cold and hot water extracts of four different species of *Ulva* viz. *U. reticulata*, *U. lactuca*, *U. rigida* and *U. fasciata* were studied for their polysaccharide (PS) contents. In both the cold (CWE) and hot water (HWE) extracts relatively higher yield of polysaccharides were obtained in *Ulva fasciata* (6.5 and 16% respectively). *Ulva lactuca* was found to contain higher amounts of protein (33.1% in CWE), uronic acid (35.7% in HWE) and sulfate (23.8% in HWE).

0203-182. Singh BK, Jha NN (Dept Chem, DS Coll, Katihar, Bihar 854105). Nutrient status of sediments of Kavar wetland in Bihar. *Nature Env Polln Techno*, 1(2) (2002), 107-114 [27 Ref].

In surface sediment the level of total calcium varied between 480.7 and 719.4 mg/100g, total Mg between 70.3 and 126.6 mg/100g. In 6 inch deep sediment the values of total calcium varied between 590.3 and 640.3 mg/100g, total Mg between 96.4 and 126.4 mg/100g. Interrelationships among different physico-chemical parameters and nutrients in the sediment have been discussed in the paper.

0203-183. Sreenivasulu Reddy P, Rao TVSS, Venkataramana P (Res Extn Centl, Central Silk Bd, Gangaram Rd, Vikarabad 501101). **Vermicompost in management of nutrients and leaf yield in V-1 mulberry variety.** *J Environ Res*, 11(2) (2001), 137-140 [6 Ref].

Investigation was taken up to study the potential of vermicompost for both quantity and quality foliage in mulberry. It was also envisaged to compare the response for mulberry to integrated use of manures and fertilizers with the use of chemical fertilizers alone.

0203-184. Srinivas N, Suresh Kumar K (GITAM, Dept Environ Stud, Coll Engng, Visakhapatnam 530045). **Physico-chemical characteristics of agricultural soils of Visakhapatnam.** *Indian J Environ Prot*, 21(9) (2001), 822-824 [11 Ref].

Soil samples from agricultural fields of different back grounds were collected for various physico-chemical characteristics including trace metals. The metal fraction of the soil showed large variations from metal to metal and site to site. Paper studies the census of trace metal content of agricultural soils of Visakhapatnam.

0203-185. Sunil Kumar R (Dept Zoo, Catholocate Coll, Pathanamthitta 689645). **Biocoenosis and ecological relation of crustacean infauna in the mangrove habitat of a tropical estuary.** *J Ecobio*, 14(3) (2002), 169-176 [23 Ref].

Study enumerates the species composition, population density, relative dominance of species, vertical stratification of tidal variation of crustacean infaunal community of Cochin mangrove ecosystem in Kerala. The ecological factors peculiar to

the fertile and dynamic mangrove substratum in the top as well as bottom subsoil differentiate the stratification of crustacean infauna.

0203-186. Ukey RC, Wadyalkar SR (Crop Prot Div, Centl Inst Cotton Res, Shankar Nagar, Nagpur 400010). **Trichoderma spp. support controlling pollution of environment in and on the soil.** *Nature Env Polln Techno*, 1(2) (2002), 223-224 [12 Ref].

The atmospheric pollutants out of agropesticidal use on crops and as the results of industrial activity are used for growth by *Trichoderma viride* (Pers) Fries on the field crops. *Trichoderma* spp. is the funal antagonist against pathogens of the plant diseases, which is now proved controlling foliar diseases of many more field crops.

0203-187. Verma Yogendra, Hargan MC, Ruparelia SG, Kulkarni PK (Aquatic Toxicology Lab, Natl Inst Occupl Hlth, Meghani Nagar, Ahmedabad 380016). **Toxicological evaluation of sodium chloride through growth inhibition test with *Lemna minor*.** *Env Eco*, 19(4) (2001), 888-892 [12 Ref].

The 7-day median effective concentration EC50 based on frond count, dry weight and root length was worked out. The 7-day median (EC50) value of sodium chloride based on frond count was 4347.44 mg/liter dry weight 4,780.12 mg/liter and root length was 3,935.10 mg/liter respectively. The results suggest that the most sensitive growth parameter was root length followed by frond count and dry weight.

0203-188. Vijaya T, Ramamurthi R, Srivasuki KP (Sri Venkateshwara Univ, Dept Bio Tech, Tirupati 517502). **Important of mycorrhizae in reclamation of saline alkaline soils.** *Indian J Environ Prot*, 21(9) (2001), 770-773

The chemically problematic saline soils have high concentration of soluble salts. These are indicated by electrical conductivity, pH and exchangeable sodium percentage. The electrical conductivity is usually more than four decimeter while the pH is less than 8.5 and the exchangeable sodium percentage is distinctly below 15.

0203-189. Yadav KR, Sharma RK, Kothari RM* (Sch Life Sci, North Maharashtra Univ, P.O. Box No. 80, Jalgaon 425001). **Bioconversion of eucalyptus bark waste into soil conditioner.** *Bioresource Techno*, 81(2) (2002), 163-165 [11 Ref].

An optimized protocol for the bioconversion of eucalyptus bark was devised. It comprised: (i) mechanical reduction in bark size to 0.5-3.0 cm, (ii) moisturising to 60-65%, (iii) fortification with ligninase-rich fungus *Volvariella* sp. (S-1) and 2% urea and (iv) maintenance of this composting mix under aerobic and ambient condition for 14-15 weeks. The resulting bark soil conditioner (BSC) was an easily crumbling, reddish brown biomass, with physico-chemical and microbial properties which would enrich soil fertility/productivity.

0203-190. Yalavarthi Eswari (Biomonitoring Lab, Dept Zoo, Univ Madras, Guindy Campus, Chennai 600025). **Hydrobiological studies of Red hills reservoir, north Chennai, Tamil Nadu.** *J Aquatic Bio*, 17(1) (2002), 13-16 [24 Ref].

Red hills reservoir is one of the fresh water sources water from which is supplied to the Chennai city. Phosphate is one of the limiting factors for the development of the plankton. It ranged from 0 to 0.42 mg/L. Among zooplanktons, rotifers were the dominant group represented by 14 taxa. On the basis of hydrobiological features the reservoir is classified as mesotrophic.

Nature and Natural Resources Conservation

0203-191. Dasappa, Ram Jagat, Swaminath MH* (*Office Conservator Forests (Dev), Aranya Bhavan, Bangalore). Suriga "Hot Spot" [*Mammea suriga* (Buch, - Ham, ex Roxb.) Kosterm.] - **remains of an evergreen forest in Uttara Kannada district, Karnataka.** *MyForest*, 37(2) (2001), 491-494 [7 Ref].

Mammea suriga (Buch.-Ham. Ex Roxb.) Kosterm. is an endemic tree species confined to Western Ghats. An attempt has been made to highlight its occurrence and importance of the species. A brief description, diversity studies, a list of associated species, population structure, uses and parameters which are threatening the survival of this rare species has been discussed.

0203-192. Dhananjaya Rao B. **Relcamation of podu lands for forestry by podu tribes.** *Indian J Environ Prot*, 21(9) (2001), 820-821.

In Ananthagiri range of Visakhapatnam forest division in Visakhapatnam circle, forests have been severely fragmented and degraded by podu cultivation. In order to ensure the reclamation of such podu affected forests for the benefit of the tribals, several motivation camps have been conducted in the forest range and all such villages were brought under the joint forest management programme.

0203-193. Harikumar G, Kaler OP, Joseph Sherly, Peeyuskuthy KJ, Zacharias VJ* (*Dept Zoo, St Joseph Coll, Devagiri, Calicut, Kerala). **The great Indian hornbill (*Buceros bicornis*) and management of old growth forest patches in Periyar Tiger Reserve.** *Indian Forester*, 127(10) (2001), 1165-1170 [10 Ref].

The Great Indian Hornbill is now an endangered species although in Protected Areas it is fairly common. A status survey was conducted in Periyar Tiger Reserve. It has shown its wide distribution in evergreen and semi-evergreen forests where it is found single or in groups. It prefers old growth forest patches.

0203-194. Jude Sudhagar R, Ramesh S, Parthivan KT* (*For Coll Res Inst, Tamil Nadu Agricul Univ, Mettupalayam 641301). **Commercial cultivation of medicinal plants problems and potentials - an overview.** *MyForest*, 37(2) (2001), 499-503 [7 Ref].

With the well established use of medicinal plants through the ages, it is necessary to view the present situation and suggest the various measures available to commercially exploit them, yet on a sustainable basis. Article suggests the measures especially for the researchers in this field, to tap the fullest potential of medicinal plants by genetically improving them.

0203-195. Kundu NK, Ghose MK (Cent Mining Env, Indian Sch Mines, Dhanbad 826004). **Systematic handling of topsoil for the land resource management in coal mining areas.** *J Indian Assoc Environ Manag*, 28(2) (2001). 92-96 [21 Ref].

Removal of topsoil and its storage practices has been described. Preservation of topsoil, redistribution of topsoil, nutrients and amendments to be applied and post-mining soil development practices have been discussed, in accordance with site-specific modern technology. It has been suggested that biological measures must be adopted for the preservation of topsoil if the storage period exceeds the shelf life period.

0203-196. Malhan Sachin, Mukherjee Shantanu, Malhotra Sumeet, Vilas Rohit Kumar (Natl Law Sch India Univ, P.O. Bag 7201, Nagarbhavi, Bangalore 560072). **Protecting traditional knowledge systems.** *(The) Indian J Environ Law*, 2(1)(2001), 85-91 [21 Ref].

At the national and global levels efforts have been carried out to evolve the perfect system of biodiversity conservation. The stakeholders in these experiments are on one end the flora and fauna, and on the other the indigenous peoples. In India, there has been a nascent legislative effort at bringing traditional knowledge systems under the legal protection of an intellectual property rights regime.

0203-197. Mandel RN, Saha GS, Naskar KR (CIFA, Kausalyaganga, Bhubaneswar 751002). **Importance of mangrove vegetation in cyclone-prone coastal region.** *J Environ Res*, 11(2) (2001), 117-120 [6 Ref].

The long east coastal area is a cyclone prone zone and is having several frequent estuaries, as a result scattered delta are found at the mouth of every estuaries. These delta are densely dominated by mangrove vegetation. Suggestions towards ecological protection in whole coastal area should rise up on priority basis based on mangrove vegetation.

0203-198. Padmaiah M, Mohan Rao MSR, Ayyappa B, Chandrappa M, Reddy KK (DOR, Hyderabad, AP). **Impact of conservation measures on vegetation development in the degraded hillock in a watershed - a case study.** *MyForest*, 37(2) (2001), 439-448 [3 Ref].

The study conducted in the Chinnatekur Watershed in Kurnool district of Andhra Pradesh revealed that vegetation development in the degraded hillocks could be possible, when people are empowered, besides peoples' moral support (social fencing) to the concerned organisation. The trenches considered to be the best moisture storage reservoirs supported with trench mount plantation of *Agave*, pruning of unwanted tree species, etc., facilitated better growth of vegetation.

0203-199. Raju Thomas K, John George M, Biju CR (Mar Thoma Coll, Thiruvalla 689103, Kerala). **Freshwater fishes of southern Kerala with notes on the distribution of endemic and endangered species.** *J Bombay Natural Hist Soc*, 99(1) (2002), 47-53 [34 Ref].

Freshwater fishes were collected from rivers of southern Kerala from November 1996 to April 2000. A total of 117 species belonging to 58 genera, 27 families, and 10 orders were recorded. The most abundant order was Cypriniformes, followed by Perciformes and Siluriformes. The distribution of 36 endangered and 11 endemic species is also included. Most of the endangered fish are restricted to one or two rivers.

0203-200. Ravi Kumar K, Vijaya Sankar R, Prabhakaran V (Foundation Revitalisation Local Hlth Traditions, 50 MSH Layout, Anand Nagar, Bangalore 560024, Karnataka). *Utleria salicifolia* Bedd, Ex Hook.f. (**Periplocaceae**) **a monotypic, endemic and critically endangered, red listed medicinal plant relocated from its type locality.** *MyForest*, 37(2) (2001), 495-498 [7 Ref].

Utleria salicifolia Bedd. ex Hook. f., a monotypic, endemic, critically endangered and a little known Red Listed medicinal plant has been recollected from its type locality Anamalai Hills, Tamil Nadu. It is presented with description, ecology and notes on its conservation focus.

0203-201. Savithramma N, Narayana Rao K (Sri Venkateshwara Univ, Dept Bot, Tirupati 517205). **Bio-diversity in angiospermic (medicinal plants) wealth of Sriharikota Island, Andhra Pradesh.** *Indian J Environ Prot*, 21(9) (2001), 811-815 [5 Ref].

Sriharikota is a spindle shaped Island in the Nellore district of Andhra Pradesh. The plant wealth of this island revealed enormous bio-diversity in the population of many species. Around 440 sps of Angiosperms belonging to 115 families have been identified, among them 212 medicinal plants have been identified from this island. Paper deals with diversity of medicinal plants belonging to Angiosperm taxa.

Health and Toxicology

0203-202. Asthana Anupama, Pillai Ajai, Gupta VK (Govt Arts Sci Coll, Dept Chem, Durg). **A simple sensitive spectrophotometric method for determination of dichlorvos in environmental samples.** *Indian J Environ Prot*, 21(9) (2001), 856-858 [10 Ref].

A sensitive method has been developed for spectrophotometric determination of an organophosphorus pesticide dichlorvos, also known as DDVP. The dye shows adsorption maxima at 475 nm and obeys Beer's law in the range of 0.4 to 4 ppm per 25 ml of solution. The method has been successfully applied for the determination of dichlorvos in water, agricultural soil and vegetables.

0203-203. Baby Devaki P, Ramalakshmi T (Sri Venkateswara Univ, Dept Home Sci, Coll Arts Sci, Tirupati 517502). **Body fluoride status of populations with fluorosis in 2 mandals of Anantapur district.** *Indian J Environ Prot*, 21(9) (2001), 797-802 [11 Ref].

The prevalence study of dental and skeletal fluorosis undertaken in Rappthadu and Kuderu mandals of Anantapur district with two different water F⁻ levels showed high prevalence rate in Rappthadu mandal which had higher water F⁻ and food F⁻ levels compared to Kuderu mandal. These levels corresponded to the total F⁻ intake, serum F⁻ and urinary F⁻ levels.

0203-204. Baruah BK, Das M (Dept Zoo, Cotton Coll, Guwahati 781001). **Histopathological changes in ovary of fish *Heteropneustes fossilis* exposed to paper mill effluent.** *Aquacult*, 3(1) (2002), 29-32 [25 Ref].

Communication deals with the histopathological changes in ovary of *Heteropneustes fossilis* exposed to paper mill effluent for a period of 20 days. The oocyte showed partial lysis, swelling, atresia and change in nucleus and cytoplasmic organization. Study further revealed alteration in germinal epithelia, nuclear membrane and retarded development of oocyte. The alterations were due to the influences of the toxic effluent on physiological and metabolic processes including interference in the pituitary – gonadal axis.

0203-205. Baruah BK, Das M (Dept Zoo, Cotton Coll, Guwahati 781001). **Effect of paper mill effluent on the melanophores of fish *Heteropneustes fossilis* (Bloch).** *Aquacult*, 3(1) (2002), 93-95 [9 Ref].

Communication deals with the alteration of melanophores of fish *Heteropneustes fossilis* exposed to paper mill effluent for 20 days. The melanophores showed shrinkage, vacuolation, dissolution and overall degeneration in their structure and melanin granules. The toxic paper mill effluent perhaps induce inhibitory effect on the melanin synthesis by interfering with the endocrine stimulation.

0203-206. Begum Ghousia, Vijayaraghavan Shantha (Fisheries Lab, Coll Sci, Dept Zoo, Osmania Univ, Hyderabad 500007, AP). **Carbofuran toxicity on total lipids and free fatty acids in air breathing fish during exposure and cessation of exposure – in vivo.** *Environ Monit Assess*, 70(3) (2001), 233-239 [12 Ref].

Clarian batrachus, fish were exposed to sublethal concentration of commercial carbofuran for 144 hr. Total lipids and free fatty acids were determined in liver, muscle kidney and ovary at an interval of 24, 72 and 144 hr during exposure and after the release into toxicant free water. The results showed an alteration in free fatty acid content in different tissues of the fish. The elevated levels returned to almost control values after transfer of fish into carbofuran free water.

0203-207. Bhagyalakshmi O, Prasad CE (Sarojini Naidu Vanitha Mahavidhyalaya, MJ Rd, Exhibition Ground, Hyderabad). Spirometric studies of the subjects in an active area of Hyderabad, AP. *Indian J Environ Hlth*, 44(2)(2002), 113-117 [7 Ref].

Persons actively involved in All India Industrial Exhibition are selected for the spirometric studies. Selected subjects were administered the ATS Questionnaire. Their lung efficiency is spirometrically studied. Analysis of variance, multiple comparison test, student-t-test and normal curve test were used for statistical analysis. Study reveals a direct relation between polluted air and respiratory morbidity.

0203-208. Bhalchandra Waykar, Lomte VS (Dept Zoo, Rashtriya Arts, Sci, Comm Coll, Chalisgaon, Dist-Jalgaon 424101). Carbaryl induced alterations in the enzyme secretory activity of hepatopancrease of fresh water bivalve, *Parreysia cylindrica*. *J Aquatic Bio*, 17(1) (2002), 65-68 [19 Ref].

Fresh water bivalve, *Parreysia cylindrica* were exposed to acute and chronic doses of carbaryl. Progressive decrease in amylase, invertase and lipase activity in the hepatopancrease was observed in carbaryl exposed bivalve. The protease activity was increased after carbaryl stress which can be due to the increased lysosomal protease.

0203-209. Chandran M, Rajkumar A (Dept Zoo, Aayya Nadar Jannaki Ammal Coll, Sivakasi 626124, Tamil Nadu). Morbidity and mortality among quarry and stone crusher workers of Madurai south taluka. *Nature Env Polln Techno*, 1(2) (2002), 217-220 [21 Ref].

Occupational health hazards study was conducted among the quarry and stone crusher workers from four selected places near Madurai Kamaraj University, Madurai. The results obtained indicated that the workers who have been engaged in these industries for more than five years, are mostly affected by respiratory disorders like asthma, wheezing troubles, dry cough and other discomforts such as chest pain, abdominal pain, skin dryness and eye irritation.

0203-210. Chattopadhyay BP, Saiyed HN, Alam Jane SK (Regl Occupl Hlth Cent, (Eastern), ICMR, Block DP, Sector V, Sal Lake City, Kolkata 700091). Assessment of ventilatory pulmonary function abnormalities amongst aluminium smelter plant workers. *Indian J Occupl Environ Med*, 6(2) (2002), 59-65 [20 Ref].

The Ventilatory Pulmonary Function abnormalities were assessed in one of the largest integrated aluminium producing plants of the country. Pulmonary Function Test (PFT) results were presented according to different age groups, duration of exposures and smoking habits. The exposure wise PFT values of cast house and other category showed decrement with the increase of exposure, however the carbon area and pot room did not follow the pattern. It has been found that the restrictive type of impairments was much more among smelter plant workers than the obstructive type of impairment.

0203-211. Das Snehalata, Patro Sunil K, Sahu BK (Dept Marine Sci, Behrampur Univ, Berhampur 760007, Orissa). Biochemical changes induces by mercury in the liver of penaeid prawns *Penaeus indicus* and *P. monodon* (Crustacea : Penaeidae) from Rushikulya estuary, east coast of India. *Indian J Marine Sci*, 30(4) (2001), 246-252 [22 Ref].

The biochemical components of the liver of two important penaeid prawns were significantly reduced, following six days of exposure to 0.005 ppm and 0.01 ppm of mercuric chloride during various reproductive stages. Liver protein recorded highest in contrast to lipid and carbohydrate irrespective of the species, sex and medium and exposure. The effect of mercury was more in *Penaeus indicus* than that of *Penaeus monodon*, the female species and prespawning stage.

0203-212. Dash Bhagirathi, Kapoor SK, Singh B (Dept Entomo, Punjab Agricl Univ, Ludhiana 141004, Punjab). Persistence of malathion residues on/in bell pepper (*Capsicum annum* Linn.). *Pesticides Res J*, 13(1) (2001), 99-102 [8 Ref].

Spray of malathion @ 500 and 1000 g a.i. ha⁻¹ resulted in initial deposits ranging from 4.65 to 4.83 mg kg⁻¹ and 10.00 to 10.09 mg kg⁻¹, respectively. About 91 to 97% initial concentrations were found to be dissipated in 6 d after its application. A waiting period of 5 d has been suggested for the safe consumption of bell pepper following application of malathion at the recommended dosage.

0203-213. Dube BK, Sinha Pratima, Chatterjee C (Bot Dept, Lucknow Univ, Lucknow 226007, UP). Changes in spinach (*Spinacea oleracea* L.) metabolism by excess cadmium. *Nature Env Polln Techno*, 1(2) (2002), 225-229 [27 Ref].

The effect of excess Cd on spinach (*Spinacea oleracea* L.) cv. Bannarsi grown in pot culture with an Inceptisol Pessament type soil collected from District Lucknow is studied. The visible symptoms of excess Cd (40 mg kg⁻¹ soil) were initiated on spinach as chlorosis of young leaves later changing to necrosis with depression in growth. The concentration of Cd increases in plants with an increase in Cd up to 40 mg Cd kg⁻¹ soil.

0203-214. Gautam RK, Gautam Kalpana (Dept Zoo Entomo, St John's Coll, Agra 282002). Biological and haematological alterations in *Channa punctatus*. *Aquacult*, 3(1) (2002), 33-36 [7 Ref].

Investigation is made on the biology and haematology of fish *Channa punctatus* after exposure to endosulfan and diazinon. The toxic effects of these pesticides made ill effects on the biology and haematology of fishes. A significant decrease in the body and tissue weights were observed. A reduction in number of leucocytes shows immunological response due to the toxic effects of these pesticides.

0203-215. Ghousia Nisha A, Dawood Shareif S, Dawood Nausheen, Noorjahan CM (Sch Environ Sci, PG Res Dept Zoo, The New Coll, Chennai 600014). Effect of the three halogenated mercuric compounds on the oxygen consumption of the fish *Oreochromis mossambicus* (Trewavas, 1982). *Indian J Environ Toxicol*, 11(2) (2001), 68-70 [12 Ref].

Experiments were conducted to study the effect of mercuric chloride, mercuric bromide and mercuric iodide on the oxygen consumption of fish *Oreochromis mossambicus*. Oxygen consumption of fish was found to be decreased in all the three halogenated mercuric compounds when compared to the control. Halogenated mercuric compounds inhibited the respiratory activity of the fishes.

0203-216. Gupta Atri, Upadhyay Ravi Kant*, Saxena PN (*Dept Zoo, Inst Basic Sci, Khandari Campus, Agra 282002, UP). Toxicity evaluation of zectran on certain blood biochemical parameters in *Passer domesticus* (Linnaeus). *J Scient Indl Res*, 60(8) (2001), 668-674 [28 Ref].

The toxicity of zectran has been evaluated on the basis of blood biochemical changes, especially concerning sublethal doses for acute and subchronic treatment. The LD₅₀ of zectran in house sparrows has been observed to be 37.3 45 mg/kg body weight

and shows dose dependent mortality in *Passer domesticus*. Zectran also formidably shows effect on glucose and lipid metabolism.

0203-217. Gupta RC, Sharma Garima (PG Dept Zoo, Hindu Coll, Moradabad 244001). Effect of azo dyes on some organic parameters of the liver and kidney of *Rattus norvegicus*. *Himalayan J Env Zoo*, 15(1) (2001), 7-11 [12 Ref].

Experiments were conducted to study the variation in the glucose, protein and cholesterol level in the liver and kidney of albino rat *Rattus norvegicus* for different time intervals. The level of protein and cholesterol was found to deplete in both-liver and kidney while the glucose level enhanced in liver, but retarded in kidney.

0203-218. Haider S, Ahmed M* (*Dept Bio Chem, Fac Life Sci Aligarh Muslim Univ, Aligarh 202002). Incidence of multiple drug resistance in *E.coli* isolated from sewage and riverine systems. *Cheml Environ Res*, 10(1&2) (2001), 147-154 [18 Ref].

A total of 45 *E. coli* isolates from the Ganges river at Narora and sewage water of Aligarh were examined for resistance against 11 commonly used antimicrobial agents. These findings are an alarm signal towards the spread of multiple drug resistance in the microbial system, to which all inhabitants of this region are bound to get exposed in their daily life.

0203-219. Hameed Sulaiman SM, Augustine Selvaseelan D, Satish Kumar B (Dept Environ Sci, Tamil Nadu Agricl Univ, Coimbatore 641003). Aeromicrobial survey of polluted habitats of Coimbatore and Ooty cities. *J Ecobio*, 14(3) (2002), 211-215 [3 Ref].

Aerobacteriological and aeromycological surveys were conducted over seven identified polluted habitats as compared to unpolluted environment in and around the city limits of Coimbatore and Ooty. With regard to the aerofungal load, the dominant species found over the polluted waterbody at Coimbatore were *Aspergillus* and *Neurospora* whereas *Fusarium* and *Diplodia* were dominant over polluted waterbody, garbage dumping site and industrial areas of Ooty.

0203-220. Joshi Namita, Kumar Sarvesh (Dept Environ Sci, Kanya Gurukul Mahavidyalaya, Gurukul Kangri Univ, Hardwar). Acid and alkaline phosphatases activity

in different tissues of fresh water crab, *Paratelphusa masoniana* (Henderson) to pesticide exposure. *Himalayan J Env Zoo*, 15(2) (2001), 101-104 [13 Ref].

A significant increase in the activity of acid phosphatases was observed under the sublethal and lethal exposures of the crabs to monocrotophos, aldrin and carbaryl. On the other hand the activity of alkaline phosphatases was inhibited by all the three pesticides.

0203-221. Kamble SM, Mohekar AD, Bhagwan HK, Kulkarni DA (Dept Zoo Fishery Sci, SDMM Coll, Kallam, Dist-Osmanabad, Maharashtra). Effect of sublethal concentration of sevin (carbamate) on total protein and total free amino acids content in ovaries of fresh water fish, *Barilius bendelisis* and *Barilius burna*. *J Aquatic Bio*, 17(1) (2002), 61-63 [13 Ref].

Changes in the total protein and free amino acids in the ovaries of two freshwater fishes, *Barilius bendelisis* and *B. burna* by subjecting them to increasing sub-lethal concentration and duration of exposure to sevin were studied. The results are discussed in relation to the concentration of the most commonly used pesticide in this region.

0203-222. Kanabur VV, Sannadurgappa D (Environ Sci Lab, Dept Zoo, Karnataka Univ, Dharwad 580003). Acute toxicity of phenol and cresol to a freshwater fish *Oreochromis mossambicus*. *Env Eco*, 19(4) (2001), 756-758 [8 Ref].

Static renewal bioassay tests were conducted to determine the lethal toxicity of phenol and para-cresol to a freshwater fish, *Oreochromis mossambicus*. The 24, 48, 72 and 96-hour LC₅₀ values for phenol were found to be 42.0, 39.0, 37.0 and 35.0 mg/liter, respectively. The 24, 48, 72 and 96-hour LC₅₀ values for para-cresol were found to be 32.0, 30.0, 29.0 and 28.0 mg/liter, respectively. The oxygen consumption of the fish decreased significantly in both the toxicants at higher concentrations.

0203-223. Kanjilal Saikat, Joshua Shejoy, Joseph Bobby (Dept Community Hlth, St John's Medl Coll, Bangalore 560034). The health status of women workers in a quarry. *Indian J Occupl Environ Med*, 6(2) (2002), 56-58 [3 Ref].

With the objective of highlighting the health and social problems faced by the women quarry worker, the study enrolled 80 women who were concurrently working in

the quarry. The investigations revealed poor availability of and access to maternal and child health services. Based on the results obtained suggestions have been made as what changes can be made in the quarrying industry to improve the health and welfare of the workers.

0203-224. Kaur Tejinder, Saxena PK (Dept Zoo, Punjab Agricul Univ, Ludhiana 141004). Impact of pollution on the flesh of some fishes inhabiting river Satluj waters – a bio chemical study. *Indian J Environ Hlth*, 44(1) (2001), 58-64 [29 Ref].

The impact of grossly polluted waters of the Budha Nallah (BN) on the flesh quality of a few fish species inhabiting river Satluj following its confluence with the river has been studied. The results have shown a significant decline in the extractable proteins content, carbohydrates and total lipid contents in the flesh of these fish species collected from region.

0203-225. Kumari Beena, Kumar Rakesh, Kathpal TS (Dept Entomo, CCS Haryana Agricul Univ, Hisar 125004). An improved multiresidue procedure for determination of pesticides in vegetables. *Pesticides Res J*, 13(1) (2001), 32-35 [5 Ref].

A cost effective, less time consuming and effective analytical technique for estimation of multiresidues of 30 insecticides have been reported by introducing modifications at extraction and clean up stages, by using GC equipped with SPB-5 and HP-1 columns and appropriate oven temperature programming.

0203-226. Kumari Beena, Madan VK, Kumar R, Kathpal TS (Dept Entomo, CCS Haryana Agricul Univ, Hisar, Haryana). Monitoring of seasonal vegetables for pesticide residues. *Environ Monit Asses*, 74(3) (2001), 263-270 [12 Ref].

Market samples (60) of six seasonal vegetables were monitored to determine the magnitude of pesticidal contamination. The tested samples showed 100% contamination with low but measurable amounts of residues. Among the four chemical groups, the organophosphates were dominant followed by organochlorines, synthetic pyrethroids and carbamates. About 23% of the samples showed contamination with organophosphorous compounds above their respective Maximum Residue Limits values.

0203-227. Maheshwari UK, Maheshwari N, Sharma A, Das RC, Hussain Z, Sharma PP, Singh AJ, Raj B (Centl Inst Fisheries Edn, Indian Coun Agricl Res, 30 'GN' Block, Sector IV/V, Salt Lake City, Kolkata 700091). Toxicity of an organophosphate pesticide triazophos on an air breathing fish *Clarias batrachus* (Linn) and species related MATC in the aquatic environment. *J Environ Res*, 11(2) (2001), 97-100 [16 Ref].

The use of organophosphate pesticides in crop fields are highly toxic to the aquatic organisms including fish. In the present study, LC₅₀, LC₉₉, LT₅₀ and maximum allowable toxicant concentration (MATC) to the related species of a broad spectrum pesticide triazophos has been evaluated at 96 hours using the fish *Clarias batrachus* as a test animal.

0203-228. More, Bhaskar C, Khan AK* (*Dept Zoo, Dr. Babasaheb Ambedkar Marathwada Univ, Aurangabad 431004). Effect of hydroxytryptamine and dopamine on the testes of fresh water crab, *Barytelphusa cunicularis*. *J Aquatic Bio*, 17(1) (2002), 51-54 [19 Ref].

Male fresh water crabs, *Barytelphusa cunicularis* received injection of 5 – HT (serotonin), the crab shows dose – dependant testicular maturation. dopamine dose not shows significant change in testis growth. The results supports the hypothesis that 5-HT exerts the stimulatory effect on the testis indirectly by triggering GSH release.

0203-229. Nanda P, Panigrahi S, Nanda B, Behera BK (Dept Zoo, LN College, Jharsuguda 768202). Toxicity of paper mill effluent to fishes. *Env Eco*, 20(2) (2002), 496-498 [9 Ref].

Air breathing fishes were exposed to paper mill effluent to study the toxicity level. The 96-hour LC₅₀ values were found to be 63.09, 80.35 and 8128% for *Anabas testudineus*, *Channa punctatus* and *Clarias batrachus*, respectively.

0203-230. Padmaja T, Ramana Devi ChV*, Reddy PP (*Dept Bio Chem, Coll Sci, Osmania Univ, Hyderabad 500007, AP). Serum biochemical alterations in factory workers exposed to alumag and cupronickel dusts. *Indian J Environ Toxicol*, 11(2) (2001), 82-83 [11 Ref].

Serum samples of mint factory workers who were exposed to dusts and fumes of metal alloys as alumag (aluminium and magnesium) and cupronickel (copper and nickel) were analysed and compared with control group of unexposed persons belonging to comparable age and socioeconomic status. The study revealed a significant increase in the concentration of these metals in the exposed group when compared to controls.

0203-231. Pathak Shipra, Sharma Subhasini*, Mathur Neera, Krishanetry Richa, Sharma Shweta, Saxena Pratibha (*Dept Zoo, Univ Rajasthan, Jaipur 302004). Effect of textile dye wastewater effluents on biochemical parameters in swiss albino mice after short term exposure. *J Expt Zoo India*, 5(2)(2002), 245-248 [21 Ref].

The toxic effect of textile printing effluents on some biochemical parameters on albino mice has been analysed. Impact of these effluents on SGOT, SGPT, urea, creatinine and blood glucose have been studied. Increase was noticed in SGOT, SGPT ($p < 0.05$), urea and creatinine increase ($p < 0.01$). However, blood glucose level decreased ($p < 0.01$).

0203-232. Prasad Bijay Bhushan, Singh Krishna Mohan, Rani Mamta (Dept Zoo, SNS Coll, Motihari 845401, East Champaran, Bihar). Dimethoate and monocil toxicity on the concentration of protein and amino acid in the serum and liver of *Channa marulius* (Ham.). *Nature Env Polln Techno*, 1(2) (2002), 147-150 [15 Ref].

Effect of dimethoate and minocil (commercially formulated pesticides) on the protein and amino acid concentration in serum and liver in *Channa marulius* (Ham.) exhibited notable alterations. Dimethoate and monocil pesticides caused significant increase in protein and decrease in amino acid concentrations in serum and liver of the fish.

0203-233. Praveen Mahira, Kumar Santosh (Dept Biosci, Fac Life Sci, Barkatullah Univ, Bhopal 462026, MP). Effects of dichlorvos on acetylcholinesterase in brain of rats. *Indian J Environ Toxicol*, 11(2) (2001), 75-77 [11 Ref].

The LD₅₀ of dichlorvos in male rates (*Rattus norvegicus*) was found to be 21.4 mg/kg b.wt. The brain acetylcholinesterase activity decreased at all the dose levels with the maximum decrease (71.26%) at 7 mg/kg. b.wt. dose. Dichlorvos toxicity caused a significant increase in ACh content in all the animals. Behavioural changes and signs of

toxicity characterised by salivation and tremors were also observed and these started within 24 hrs post treatment.

0203-234. Rana BA, Desai PV (Dept Biosci, South Gujarat Univ, Udhana-Magdalla Rd, PB No.49, Surat). Biodegradation of J-acid and benzediene disulfonic acid by Pseudomonads. *Indian J Environ Toxicol*, 11(2) (2001), 62-64 [11 Ref].

An extensively used dye intermediate J-acid and BDSA, was studied for its degradation by *Pseudomonas* isolated from the effluent waste. Amongst the dye intermediates J-acid was degraded by the isolates when added at 0.5g% in synthetic medium, where as BDSA was less acted upon by the *Pseudomonas*.

0203-235. Rana RA, Yeragi SG, Koli VA (Dept Bio, KJ Somaiya Coll Sci Comm, Vidhyavihar, Mumbai 400077). Effect of pesticides on alkaline phosphatase activity in mudskipper *Boleophthalmus dussumieri*. *J Aquatic Bio*, 17(1) (2002), 59-60 [7 Ref].

There was a significant decrease in alkaline phosphatase activity by cupermethrin and fenvalerate exposure in muscles. The hepatic alkaline phosphatase activity was reduced on pesticide treatment. The decrease in alkaline phosphatase activity of liver and muscle was more with increase in period of exposure.

0203-236. Rastogi SK (Epidemiol Sec, Indl Toxicol Res Cetrn, P.O. Box 80, MG Marg, Lucknow 226001). Environmental factors and physiological strain in workers employed in brick kilns. *Indian J Environ Occup Med*, 6(2) (2002), 66-70 [22 Ref].

Physiological responses and the prevalence of heat related illnesses were investigated in 35 brick kiln workers (Pakaiwallas) who worked near the brick kilns in baking the clay bricks for 8 to 10 hours a day. The physiological responses (pulse rate) exhibited incomplete recovery thereby indicating cardio-vascular stress in the heat exposed workers. This was further supported by increased cardiac cost of work under the existing hot conditions near the kilns in this industry adding to circulatory stress in these workers.

0203-237. Reddy MN, Srivastava Vibha, Patil Veena (Dept Biosci, South Gujarat Univ, Surat 395007). Effect of cadmium, lead and zinc on growth of some cyanobacteria. *J Ecobio*, 14(3) (2002), 161-167 [21 Ref].

Effect of heavy metals on the growth of four cyanobacteria namely *Chlorogloea fritschii*, *Synechocystis* sp. (UN), *Synechocystis* sp. (A1) and *Anabaena azollae* were studied. All the three metals were found to affect the growth. Cadmium was found to be most toxic, lead shows moderate toxicity and zinc appears to be least toxic.

0203-238. Ruparelia SG, Verma Yogendra, Hargan MC (Aquatic Toxicology Lab, Natl Inst Occupl Hlth, Meghani Nagar, Ahmedabad 380016). The evaluation of toxicity of industrial effluents from pesticide industries using short term fish bioassay. *J Environ Res*, 11(2) (2001), 129-132 [7 Ref].

The eighteen untreated and nineteen treated effluent samples from seven pesticide industries were collected and tested for their toxicity exposing the zebra fish (*Brachydanio rerio*) to determine the toxicity factor (TF) value. Study revealed that the primary and secondary treatment to the effluent has helped to some extent in reducing the toxicity. Paper suggests that the treated effluent samples from some of the pesticide industries were still toxic to fish and requires further treatment/dilution for the survival of the fish.

0203-239. Samant PK, Senapati HK (Dept Agricul Chem, Orissa Univ Agricul Techno, Bhubaneswar 751003, Orissa). Residues of quinalphos in greengram and blackgram. *Pesticides Res J*, 13(1) (2001), 90-91 [4 Ref].

A field experiment was conducted to study the residues of quinalphos in green gram and blackgram. It was applied @ 0.5 and 1 kg a.i. ha⁻¹ one month after sowing and at pod initiation stage. The safe waiting period of 18 to 23 d in greengram and 17 to 22 d in blackgram, respectively, is reported.

0203-240. Saxena Prabhu N, Kumar Kaushalendra* (*Toxicology Lab, Dept Zoo, Sch Life Sci, Dr. B.R. Ambedkar Univ, Khandari Campus, Agra 282004). Assessment of liver lipid profile in female rats after diazol intoxication. *Indian J Environ Toxicol*, 11(2) (2001), 71-72 [17 Ref].

Liver lipid profile has been assessed after acute (6 mg/kg b.wt.) and subacute (0.3 mg/kg b.wt./day) treatment of diazol. A significant increase in liver triglycerides, phospholipids and free fatty acids reflected liver dysfunction causing alteration in lipid metabolism in female rats.

0203-241. Sharma Ranjan, Thakur RN, Singh Suresh (Dept Pharmacy, GSVM Medl Coll, Kanpur). Review of chemicals used in skin care. *J Environ Res*, 11(1) (2001), 65-66 [10 Ref].

The chemical formulations are designed to penetrate deep into the skin to work for skin's own revitalising and rejuvenating process to give a naturally firm glowing skin. Paper reviews the chemicals used in skin care and suggests the methods to enhance the natural function of the skin as each ingredient has its own specific role on the skin care system of the body.

0203-242. Sharma Yashodhara (Dept Zoo, KN Govt (PG) Coll, Gyanpur 221304). Stress effect of tannery effluents on the ovarian cycle of commercial carp *Cirrhinus mrigala* (Ham.). *J Expt Zoo India*, 5(2) (2002), 173-179 [55 Ref].

Histological changes induced by the tannery effluents on different stages of ovarian cycle of *Cirrhinus mrigala* (Ham.) has been investigated. During different developmental phases of ovary, tannery effluents caused profound changes in the developmental programming. It is concluded that tannery effluents containing variety of chemical and heavy metal chromium affect the ovarian development at different stages.

0203-243. Shukla Vineeta, Rathee Pratima, Sastry KV (Dept Biosci, MD Univ, Rohtak 124001, Haryana). Effect of toxicants on the intestine transport in fishes. *Himalayan J Env Zoo*, 15(2) (2001), 129-136 [26 Ref].

The effect of sublethal concentration of cadmium, zinc and pesticides on the rate of uptake of glucose, fructose and amino acid tryptophan by the intestine of the freshwater teleost fish *Channa punctatus* and *Heteropneustes fossilis* has been studied. Fishes exposed to sublethal concentration of cadmium and zinc (1.12 and 4.0 ppm, respectively) showed decrease in the rate of transport of glucose and fructose, which was more marked after 30 days as compared to 15 days in the two fishes.

0203-244. Singh AK, Varma NK, Sahay N, Ahmad I (Centl Mining Res Inst, Dhanbad 826001). Effects of radiation on coal mine environment – a critical review. *J Inst Engrs (Environ Engng)*, 82(Sept) (2001), 17-21 [12 Ref].

The predominant source of natural radiation present in coal mines is the radon gas. Paper describes the origin of radon and its radiological hazards. An attempt has been made to review the status of the problem likely to be caused by different radioactive elements present in Indian coal, coal ash and allied coal-based industries.

0203-245. Sinha AK, Dasgupta P, Chakrabarty S, Bhattacharyya G, Bhattacharjee S* (*Analy Chem Div, Natl Metallurgical Lab, Jamshedpur 831007). Bio-accumulation of heavy metals in different organs of some of the common edible fishes of Kharkai river, Jamshedpur. *Indian J Environ Hlth*, 44(2) (2002), 102-107 [13 Ref].

Gill, liver, kidney, intestine and muscle of some of the common edible fishes captured from Kharkai river were analysed for their iron, zinc, nickel, lead, copper, manganese, chromium and cobalt contents. Kharkai river is one of the principal tributaries of river Subarnarekha and is considered as one of the most polluted rivers in the Chotanagpur plateau.

0203-246. Sri Lakshmi P, Prabhakara Rao Y* (*Div Anim Physio Toxicol, Dept Zoo, Andhra Univ, Visakhapatnam). Evaluation of cadmium toxicity on survival, accumulation and depuration in an intertidal gastropod, *Turbo intercostalis*. *Water Air Soil Polln*, 134(1-4) (2002), 229-238 [35 Ref].

The effect of cadmium on tolerance, accumulation and depuration was studied in an intertidal gastropod, *Turbo intercostalis*. The fractional retention coefficients were also calculated and they showed a gradual increase with exposure time indicating more retention of metal in the tissues. However, depuration of the metal followed a similar trend of increase in all the tissues.

0203-247. Thacker NP, Katkar SL, Rudra A (Natl Environ Engng Res Inst, Nagpur 440020). Evaluation of mass-transfer coefficient of free fall – cascade-aerator. *Environ Monit Assess*, 74(1) (2002), 1-9 [12 Ref].

The mass-transfer coefficient of a free-fall cascade-aerator unit of 15 million litres per day was evaluated for its efficiency in the removal of a class of volatile organics, the trihalomethanes (THMs). These compounds are carcinogenic and occur as a result of chlorination of natural waters. Due to the volatile nature of the THMs, the efficiency of aeration as a potential technique for their removal has been studied.

0203-248. Thacker NP, Titus A Pande SP (Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). Polychlorinated biphenyls in compost amended soil of a landfill site. *Indian J Environ Hlth*, 44(1) (2002), 19-23 [6 Ref].

A survey of an abandoned landfill site has been conducted in a fast developing industrial city Nagpur (India) to assess the degree of environmental contamination with PCBs. The purpose was to determine if any of the mixture of PCBs, Aroclor 1254 and Aroclor 1260 are retained in the compost amended soil of the site. The samples analysis showed the presence of Aroclor 1254 and Aroclor 1260 upto the levels of 0.55 and 0.80 mg/g respectively.

0203-249. Verma BP, Sinha AP, Nomani MMR (Dept Zoo, MKS Coll, Chandanna Darbhanga 846004). Effect of methyl mercuric chloride (MMC) on ovarian cycle of *Clarias batrachus*. *Aquacult*, 3(1) (2002), 17-27 [16 Ref].

Attempt has been made to study the ovarian cycle throughout the year at 15 days interval in both control and 0.06 mg l⁻¹ MMC exposed *Clarias batrachus*. Fortnightly quantification of the biochemical constituents denoted significant decrease in glucose and protein contents of ovary and marginal decline in its lipid content during most of the periods of the ovarian cycle in the exposed fish.

Cross References

Health impact of air pollution see 0203-287

Wastes

0203-250. Biniwale Rajesh, Rayalu Sadhana, Hasan MZ (Natl Environ Engng Res Inst. Nehru Marg, Nagpur 440020). Cost estimates for production of flyash based zeolite-A. *J Scient Indl Res*, 60(7) (2001), 574-579 [10 Ref].

National Environmental Engineering Research Institute (NEERI) has developed a process to manufacture zeolite-A using flyash as a substitute for conventional raw materials viz. sodium silicate and aluminate. The process appears to be cost-effective

wherein the cost of production is about 25-30 percent less than the commercial zeolite-A. Further reduction in cost is envisaged due to reuse of mother liquor in the process itself.

0203-251. Chitdeshwari T, Savithri P, Mahimairaja S (Tamil Nadu Agricl Univ, Dept Soil Sci Agricl Chem, Coimbatore 641003). Effect of sewage biosolid composts on the yield of crops. *Indian J Environ Prot*, 21(10) (2001), 911-912 [2 Ref].

The effect of sewage biosolid composts as a nutrients source for the food and non food crops was studied under green house condition with varying levels of composts, namely 0, 22.7, 45.5 and 91.0 gm composts pot⁻¹. The results showed that increasing levels of compost addition increased the yield of all the crops.

0203-252. Chitdeshwari T, Savithri P, Mahimairaja S (Tamil Nadu Agricl Univ, Dept Soil Sci Agricl Chem, Coimbatore 641003). Trace metal availability in sewage biosolid composts as influenced by composting. *Indian J Environ Prot*, 21(10) (2001), 913-914 [2 Ref].

The effect of composting processes on the extractability of trace metals in the compost mixtures of raw biosolid, coir pith and green leaf manure was studied by composting the mixtures upto 75 day. Among the trace elements, Fe was the most dominant element extracted followed by Cu, Zn and Mn.

0203-253. Ghose MK, Sen PK (Cent Mining Env, Indian Sch Mines, Dhanbad 826004). Assessment of effective design of tailing pond for safe disposal of iron ore tailings. *J Scient Indl Res*, 60(11) (2001), 883-889 [29 Ref].

Physico-chemical characteristics of the tailings of an iron ore beneficiation plant and the effectiveness of tailing pond for the removal of toxic pollutants are discussed. To carry out the effective design of tailing pond, settling characteristics of tailings were carried out. The results reveal that the optimum area required for the containment of the tailings should be much less, in comparison to the area utilized for the tailing pond.

0203-254. Hazarnavis MR, Bhide AD (Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). Removal of copper by adsorption on fly ash. *J Scient Indl Res*, 60(7) (2001), 564-573 [12 Ref].

Describes the studies on removal of copper from mixed metal solution of Cu, Cd, Mn, Ni and Zn by adsorption on fly ash at room temperature. The removal of copper is observed to increase with contact time. The adsorption on fly ash follows Langmuir adsorption isotherm. Maximum percentage of copper removal is observed at a pH of 5.0. The results show more than 75 per cent removal of copper.

0203-255. Kousar Nikhath, Singara Charya MA (Dept Bot, Environ Microbio, Kakatiya Univ, Warangal 506009). Decolourisation of textile and dye amended soils by fungi. *Indian J Environ Hlth*, 44(1) (2002), 65-70 [19 Ref].

Four fungi viz. *Aspergillus niger*, *Curvularia lunata*, *Fusarium oxysporum*, *Mucor mucedo* isolated from textile and dye contaminated soils were tried for their efficiency in colour removal. *A. niger* and *M. mucedo* were resistant in the soils and also efficient (92 percent) in decolourisation and in the enzyme production. *C. lunata* and *F. oxysporum* though occurred abundantly were not so successful in the process of colour removal or in enzyme secretions.

0203-256. Malik Abdul, Ahmad Masood (Dept Agricl Microbio, Fac Agricl Sci, Aligarh Muslim Univ, Aligarh 202002). Seasonal variation in bacterial flora of the wastewater and soil in the vicinity of industrial area. *Environ Monit Assess*, 73(3) (2002), 263-273 [25 Ref].

Heavy metal contents of sewage in the industrial estate of Aligarh (U.P.) have been determined by atomic absorption spectrophotometry. The analysis of samples collected from six different locations revealed significantly high levels of Fe, Zn, Cu, Cr and Ni. Total bacterial count, total coliform, fecal coliform and fecal streptococci were found to be lowest in all the samples of industrial wastewater compared to those in domestic sewage and soil systems. The soil however, contained highest total culturable bacterial population.

0203-257. Nandy Tapas, Kaul SN (Natl Environ Engng Res Inst, Nagpur 440020). Status of sewage treatment plants in India. *J India Assoc Environ Manag*, 28(2)(2001), 84-91 [2 Ref].

Paper highlights the findings on the status of sewage treatment plants (STPs) in India based on evaluation studies of select STPs, associated management problems, and delineates suggestions for improvement in the performance of the plants in general.

0203-258. Rayalu S, Labhassetwar NK, Hasan MZ (Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). Process for synthesis of sodalite from flyash. *Cheml Environ Res*, 10(1&2) (2001), 155-161 [13 Ref].

Flyash based sodalite (FAS) having silica to alumina ratio of 0.9-1.5 is prepared from a reaction mixture of flyash and caustic soda. A caustic soda to flyash ratio greater than 1.2 yields exclusively sodalite product at fusion temperature of 550-600°C and crystallization time of 4-10hrs. The surface area and exchange capacity indicates their uses as a low-cost ion exchangeer, water softener and conditioner etc.

0203-259. Sharma SK, Kalra Naveen, Singh GR (Natl Physl Lab, Dr KS Krishnan Marg, New Delhi 110012). Flyash incorporation effect on soil health and yield of maize and rice. *J Scient Indl Res*, 60(7) (2001), 580-585 [17 Ref].

Field experiments were conducted in villages around National Capital Power Project (NCP), Dadri, Uttar Pradesh, to evaluate flyash incorporation effects on soil health and growth and yield of maize (*Zea mays L.*) and rice (*Oryza sativa L.*). The grain yield of maize increased in flyash added plots, whereas rice yield was similar to flyash treated plots.

0203-260. Sharma SK, Kalra Naveen, Singh GR (Natl Physl Lab, KS Krishnan Marg, New Delhi, 110012). Fly ash characteristics and its incorporation effects on germination of maize and rice. *J Scient Indl Res*, 60(12) (2001), 951-952 [5 Ref].

Pot culture experiments were conducted to evaluate the effect of fly ash addition in soil on germination and stand establishment of maize (*Zea mays L.*) and rice (*Oryza sativa L.*). Fly ash was added to soil at 0, 5, 10, 15, or 20 per cent levels, respectively, for both the crops. The changes in physical and physico-chemical characteristics of soil, due to fly ash addition were analyzed.

Cross References

- Industrial effluent see 0203-092
- Drug industry effluent see 0203-096
- Distillery effluent see 0203-104, 137
- Coke oven effluent see 0203-110
- Iron ore effluent see 0203-111
- Biological wastes see 0203-290

Forestry and Environment

0203-261. Gill AS, Lal B (Natl Res Cent Agroforestry, Jhansi 284003). Linkages between agriculture and forestry. *MyForest*, 37(2) (2001), 429-437 [7 Ref].

Agricultural system incurs a heavy loss from nutrient depletion, severe soil and water erosion, heavy leaching of nutrients to the deeper horizons. While agriculture possess threat to our environment, forest ecosystem is known to balance it as there is very little loss from the system either in the form of soil erosion or nutrient loss. Forest ecosystem also helps in ameliorating the environment by balancing CO₂ in the atmosphere and controlling biodiversity.

0203-262. Kusuma Kumari T (Biotechno Res Cent, Tirupati 517507). Soil fertility survey of forest soils of Guntur district. *Indian J Environ Prot*, 21(9) (2001), 850-851 [6 Ref].

The soil test is the practical application of soil science for increasing production. Study evaluates the fertility status of forest lands of three Forest Ranges viz. Venukonda, Macherla and Repalli of Guntur district.

0203-263. Manjunath BK, Krishna V, Maruthi KR, Nagaraja YP (Dept Biotechno, Kuvempu Univ, Jnana Sahyadri Shankaraghatta 577451). Analysis of vegetational pattern in Lakkavalli reserve forest of central Western Ghats, India. *Env Eco*, 19(4) (2001), 948-955 [22 Ref].

The vegetation pattern of Lakkavalli reserve forest of Bhadra Wild Life Sanctuary in Karnataka state was analysed for frequency, density, abundance, A/F ratio, IVI value, concentration of dominance, probability of interspecific encounter index and similarity index parameters. *Helecteres isora* L. and *Terminalia paniculata* Roth. are the dominance species exhibited regular distribution in all the transects of the sampling sites.

0203-264. Patiram, Bhadauria SBS, Avastha RK (ICAR Res Complex, NEH Region, Sikkim Centre, Tadong, Gangtok, Sikkim). Restoration of Sikkim Hill resources vis-à-vis watershed planning. *Indian Forester*, 127(11) (2001), 1263-1273 [12 Ref].

The Teesta and its tributaries are divided into many natural micro-watersheds by predominant streams, can be effectively utilized on integrated watershed basis to protect the natural resources for the ecological balance of Sikkim hills. It is a multidisciplinary holistic approach to improve the living standard of people by diversifying mountain economy through amalgamation of local wisdom and latest scientific knowhow.

0203-265. Raina AK, Jha MM, Pharasi SC (Forest Soil Land Reclamation Div, Forest Res Inst, Dehra Dun). Forest soil : vegetation relationship in Mussorie Forest Divison (Uttaranchal). *Indian Forester*, 127(8) (2001), 883-890 [15 Ref].

Soil formation in relation to forest vegetation were studied in seven blocks of Raipur range of Mussorie Forest Divison, Uttaranchal. The physical and chemical attributes of the soils under different forest covers were related to various vegetational parameters. The results showed that organic matter content was generally higher in different forest vegetation at high attitudes than at lower ones.

0203-266. Ramnath Madhu (Both ENDS, Amsterdam, Netherlands). Conflicting perspective of forest management in Bastar, Central India. *Natural Resources Forum*, 25(3) (2001), 245-256 [18 Ref].

Article enters the debate on shifting cultivation and tropical forests, and the role of the State forest departments in managing these regions. It focuses on the adivasi (indigenous) people and their use of forests in the Bastar region of Madhya Pradesh in Central India. It examines the different landscape, resulting from human interaction, in order to observe the vegetative changes and progressions in their characteristics.

0203-267. Savithri G, Sujathamma P (Sri Padmavathi Mahila Visvavidhyalayam, Dept Sericulture, Tirupati 517502). Tasar culture for environmental improvement. *Indian J Environ Prot*, 21(9) (2001), 789-791.

Tasar culture is an ideal forest based industry attuned to the nature and the need of our socio-economic milieu. In recent years, this tribal tradition has assumed importance and attention at the national level and now has acquired a status of viable and vital industry of great potentialities.

0203-268. Sulaiman Quli Sm (Dept Extn Socl Forestry, Fac Forestry, Birsa Agricl Univ, Kanke, Ranchi, Jharkhand). Agroforestry for NTFP conservation and economic upliftment of farmers. *Indian Forester*, 127(11) (2001), 1251-1262 [12 Ref].

Paper attempts to illuminate the new dimension of agroforestry, through which the effective conservation of NTFPs can be achieved with simultaneous economic improvement of the farmers. The paper highlights the alarming level of the loss of forest cover. Keeping in view the potentials of the agroforestry, appropriate schemes have been formulated to conserve the NTFP resources along with simultaneous improvement of the economic condition of the farmers.

0203-269. Bisht SS (Proj Elephant, Min Env Forest, CGO Complex, Lodi Rd, New Delhi 110003). A history of wildlife laws in West Bengal. *Indian Forester*, 127(10) (2001), 1107-1120 [25 Ref].

Over the years the philosophy of wildlife management has changed and now principles of conservation, rather than those of sport and economics, govern the management of wild animals. This change has also influenced the laws pertaining to wildlife. Although most of the wildlife laws were framed by the Central Government, yet a notable exception remains the Rhinoceros Preservation Act passed by the Bengal Government in 1932. Enforcement of wildlife laws, particularly in areas outside the forests, is still a problem in West Bengal.

0203-270. Bisht SS (Proj Elephant, Min Env Forest, CGO Complex, Lodi Rd, New Delhi 110003). An overview of elephant conservation in India. *(The) Indian Forester*, 128(2) (2002), 121-136 [16 Ref].

Attempts for the conservation of elephants got a big boost in February 1992 when Government of India launched Project Elephant. As a result of various conservation measures, elephants now enjoy a comprehensive legal support. Habitats and corridors of elephants are under tremendous pressure in many States on account of deforestation, encroachment and other biotic factors. Human-elephant conflict has become a serious issue and the people are turning hostile to elephants and the forest staff.

0203-271. Joshi Ritesh, Joshi BD (Elephant Ecobio Unit, Dept Zoo Environ Sci, Gurukul Kangri Univ, Harwar 249404). Stray behaviour of elephants (*Elephas maximus*) around Rajaji National Park area, India. *Himalayan J Env Zoo*, 15(1) (2001), 81-85 [10 Ref].

The rapid agricultural extension and decreasing number of fodder trees has forced the elephants to move outside the park area which is the cause of man-elephant conflict. Movement of elephant was noted outside the park area generally in late evening hours and in the night period, but occasionally after mid-day. Stray behaviour has been more common from last two years as compared to previous years.

0203-272. Madhusudan MD, Ullas Karanth K (Cent Ecol Res Conserv, 3076/5 IV Cross Gokulam Park, Mysore 570002). Local hunting and the conservation of large mammals in India. *Ambio*, 31(1) (2002), 49-54 [32 Ref].

Paper surveyed two protected areas – Kudremukha and Nagara-hole – southern India to assess the impacts of local hunting on large mammals. Impacts of hunting were assessed by comparing large-mammal abundance in adjacent sites differing in their vulnerability to hunting. Data underscore the importance of preservationist programs in the conservation of large mammals in a context of extensive local hunting.

0203-273. Marak TTC (Off Chief Conservator of Forests, Meghalaya, Shillong, Meghalaya). Status distribution and conservation of the Asian Elephant (*Elephas maximus*) in Meghalaya. *(The) Indian Forester*, 128(2) (2002), 155-160 [6 Ref].

There is need for extending reserve areas as elephants need large areas for movement as also to increase the staff and shifting cultivation has also to be checked and existing crops to be replaced by such crops as may be unattractive to elephants.

Local people have to be involved and Development Committees framed with them on profit sharing basis.

0203-274. Marcot BG, Kumar A*, Roy PS, Sawarkar VB, Gupta A, Sangma SN (*Wildlife Inst India, Dehra Dun, Uttaranchal). Towards a landscape conservation strategy : Analysis of jhum landscape and proposed corridors for managing elephants in south Garo Hills district and Norkrek area, Meghalaya. (*The Indian Forester*, 128(2) (2002), 207-216 [7 Ref].

In the south Garo Hills District and Nokrek area of Western Meghalaya, statistical analyses suggest very low elephant densities and greatest declines of elephants in areas with >10% bamboo and secondary forest (6-10 years old) and >10% scrub and abandoned jhum fields. To maintain elephant populations in the South Garo Hills District and Nokrek area, paper suggest official delineation of seven elephant habitat corridors having low degree of fragmentation of forest cover and a high proportion of contiguous, semi-evergreen and evergreen forest cover.

0203-275. Melkani VK (Proj Tiger, Kalakad, Mundanthurai Tiger Reserve, Tirunelveli, Tamil Nadu). Tiger conservation in India : past present and future. *Indian Forester*, 127(10)(2001), 1081-1097 [19 Ref].

During the first seven decades of the last century, the population of tigers in Indian jungles drastically dwindled. Sincere efforts have been made to ensure a safe habitat to the tiger in the wilderness of Indian jungles. Unfortunately, the threats to the individual and its habitat persist even today. The ongoing efforts need further strengthening with effect control and improved co-ordination among all who are concerned for the survival of tiger.

0203-276. Ramkumar K, Manimozhi K, Paulraj S (Dept Zoo, AVC Coll, Mayuram, Tamil Nadu). Status of the elephant corridors in and around Mudumalai wildlife sanctuary, Tamil Nadu, southern India. (*The Indian Forester*, 128(2) (2002), 197-206 [11 Ref].

A study on the status and biotic pressure of corridors located in an around Mudumalai Wildlife Sanctuary and Sigur Reserve Forest of Tamil Nadu, Southern India was studied. Elephants intensively used Masinagudi-Singara corridor. The greater attraction of elephants to this corridor is availability of bamboo and perennial water

sources. Followed by Masinagudi-Moyar corridor, which was moderately, used by elephants.

0203-277. Seetharaman Ramya (Natl Law Sch India Univ, PO Bag 7201, Nagarbhavi, Bangalore 560072). The law on wildlife and protected areas in India: an analysis. *Indian J Environ Law*, 2(1) (2001), 61-84 [154 Ref].

Article seeks to evaluate the Wildlife Act, and the policy behind wildlife conservation in India, critique the existing policy framework, and to look at alternate strategies of conservation. Towards this end, approaches in international environmental law have also been examined.

0203-278. Singh HS (Gujarat Ecol Edn Res Foundation, Gandhinagar, Gujarat). Antelopes and gazelles : distribution and population status in Gujarat. *Indian Forester*, 127(10) (2001), 1098-1106 [9 Ref].

Blackbuck chinkara (Indian gazelle), bluebull and fourhorned antelope, belonging to subfamily Anttilopinae, are found in the Indian plateau, and all these four species also occur in Gujarat. Loss of habitat and hunting were main causes for decline of population of the Antelopes. Trend reversed after implementation of conservation measures and population of blackbuck and bluebull increased manifold in some areas, causing problems to farmers.

0203-279. Srivastava Rajiv K (Dept Monit Evaluation, Indian Coun For Res Edn, Dehra Dun, Uttaranchal). Biotic interferences and other problems faced by the elephants in the most crucial corridors of Eastern Ghats. (*The Indian Forester*, 128(2) (2002), 169-176 [13 Ref].

Elephants (*Elephas maximus*), the most important wild animal found in the Eastern Ghats facing mounting problems by the way of biotic interference. In this paper biotic interference, other problems and their effects in two most crucial corridors (Vethalakkal-Badanavadi, RF and Vethalakkal-Marandahalli) of elephants in the Eastern Ghats have been studied in detail. Adverse impact faced by the elephants in these corridors of monoculture, fragmentation and poaching have also been studied.

0203-280. Swain Debabrata (Dept Forest Utilisation, Cuttack, Orissa). Man and wild elephant conflict in Orissa. *Indian Forester*, 127(10) (2001), 1134-1142 [22 Ref].

Crop raiding of elephants and human deaths due to elephants in Orissa have been discussed. The causes of man-wild elephant conflict are encroachment of elephant lands by human, conflict due to migration of elephants, delicacy of crops and intoxication of elephants due to brewed rice and mahua flower and shortage of water inside the forested area.

0203-281. Swain Debabrata, Patnaik Saroj Kumar (Orissa Forest Dev Corpn Ltd, Sambalpur (Comm Zone), Orissa). Elephants of Orissa : conservation issues and management options. (*The Indian Forester*, 128(2) (2002), 145-154 [9 Ref].

The causes of decline in elephant population are shifting cultivation, encroachment, poaching, mining, forest fire, scarcity of water during dry season, increase in human population, man-elephant conflict, mortality due to diseases, electrocution, legal and administrative inadequacies, etc. A network of elephant corridors has been suggested for conservation of their population on a long term basis.

0203-282. Syam Prasad N, Reddy KS (Office Conservator Forests, Chittoor West Div, Chittoor, Andhra Pradesh). Man-elephant conflict and mitigation – Koundinya Wildlife Sanctuary, Andhra Pradesh. (*The Indian Forester*, 128(2) (2002), 137-144 [2 Ref].

With advent of Joint Forest Management practices, development programmes including Project Elephant scheme are implemented mostly through peoples participation in Koundinya Wildlife Sanctuary. Gap planting, water harvesting structures, plugging of entry across vulnerable borders, awareness campaign and good communication facilities yielded encouraging results in mitigating man-elephant conflict and increased elephant population year after year.

0203-283. Vijayan S, Pati BP (Wildlife Div, Gir Natl Park Sanctuary, Gujarat). Impact of changing cropping pattern on man-animal conflicts around Gir P.A with specific reference to Talala Taluka. *Indian Forester*, 127(10) (2001), 1121-1133 [5 Ref].

Large-scale cultivation of sugarcane and mango orchard in peripheral villages of Gir National Park and Sanctuary has given rise to a thick growth of an artificial dense

cover. This attracts large carnivores like Lion (*Panthera leo persica*) and Leopard (*Panthera pardus*) to take shelter, raise their young and stalk domestic animals as well as wild animals. This study reveals that in Talala Taluka 72% (13 incidences) and 59% (16 incidences) of the total attacks by lions and leopards respectively took place in farmland. More and more requests are received by the Wildlife Rescue Team of the Forest Department for capturing and relocating the big cats from farmlands to its forest areas of the farmers.

Wildlife

0203-269. Bisht SS (Proj Elephant, Min Env Forest, CGO Complex, Lodi Rd, New Delhi 110003). A history of wildlife laws in West Bengal. *Indian Forester*, 127(10) (2001), 1107-1120 [25 Ref].

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0203-270. Bisht SS (Proj Elephant, Min Env Forest, CGO Complex, Lodi Rd, New Delhi 110003). An overview of elephant conservation in India. *(The) Indian Forester*, 128(2) (2002), 121-136 [16 Ref].

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Paper surveyed two protected areas – Kudremukha and Nagara-hole – southern India to assess the impacts of local hunting on large mammals. Impacts of hunting were assessed by comparing large-mammal abundance in adjacent sites differing in their vulnerability to hunting. Data underscore the importance of preservationist programs in the conservation of large mammals in a context of extensive local hunting.

0203-273. Marak TTC (Off Chief Conservator of Forests, Meghalaya, Shillong, Meghalaya). Status distribution and conservation of the Asian Elephant (*Elephas maximus*) in Meghalaya. *(The) Indian Forester*, 128(2) (2002), 155-160 [6 Ref].

There is need for extending reserve areas as elephants need large areas for movement as also to increase the staff and shifting cultivation has also to be checked and existing crops to be replaced by such crops as may be unattractive to elephants. Local people have to be involved and Development Committees framed with them on profit sharing basis.

0203-274. Marcot BG, Kumar A*, Roy PS, Sawarkar VB, Gupta A, Sangma SN (*Wildlife Inst India, Dehra Dun, Uttaranchal). Towards a landscape conservation strategy : Analysis of jhum landscape and proposed corridors for managing elephants in south Garo Hills district and Norkrek area, Meghalaya. *(The) Indian Forester*, 128(2) (2002), 207-216 [7 Ref].

In the south Garo Hills District and Nokrek area of Western Meghalaya, statistical analyses suggest very low elephant densities and greatest declines of elephants in areas with >10% bamboo and secondary forest (6-10 years old) and >10% scrub and abandoned jhum fields. To maintain elephant populations in the South Garo Hills District

and Nokrek area, paper suggest official delineation of seven elephant habitat corridors having low degree of fragmentation of forest cover and a high proportion of contiguous, semi-evergreen and evergreen forest cover.

0203-275. Melkani VK (Proj Tiger, Kalakad, Mundanthurai Tiger Reserve, Tirunelveli, Tamil Nadu). Tiger conservation in India : past present and future. *Indian Forester*, 127(10)(2001), 1081-1097 [19 Ref].

During the first seven decades of the last century, the population of tigers in Indian jungles drastically dwindled. Sincere efforts have been made to ensure a safe habitat to the tiger in the wilderness of Indian jungles. Unfortunately, the threats to the individual and its habitat persist even today. The ongoing efforts need further strengthening with effect control and improved co-ordination among all who are concerned for the survival of tiger.

0203-276. Ramkumar K, Manimozhi K, Paulraj S (Dept Zoo, AVC Coll, Mayuram, Tamil Nadu). Status of the elephant corridors in and around Mudumalai wildlife sanctuary, Tamil Nadu, southern India. (*The Indian Forester*, 128(2) (2002), 197-206 [11 Ref].

A study on the status and biotic pressure of corridors located in an around Mudumalai Wildlife Sanctuary and Sigur Reserve Forest of Tamil Nadu, Southern India was studied. Elephants intensively used Masinagudi-Singara corridor. The greater attraction of elephants to this corridor is availability of bamboo and perennial water sources. Followed by Masinagudi-Moyar corridor, which was moderately, used by elephants.

0203-277. Seetharaman Ramya (Natl Law Sch India Univ, PO Bag 7201, Nagarbhavi, Bangalore 560072). The law on wildlife and protected areas in India: an analysis. *Indian J Environ Law*, 2(1) (2001), 61-84 [154 Ref].

Article seeks to evaluate the Wildlife Act, and the policy behind wildlife conservation in India, critique the existing policy framework, and to look at alternate strategies of conservation. Towards this end, approaches in international environmental law have also been examined.

0203-278. Singh HS (Gujarat Ecol Edn Res Foundation, Gandhinagar, Gujarat). Antelopes and gazelles : distribution and population status in Gujarat. *Indian Forester*, 127(10) (2001), 1098-1106 [9 Ref].

Blackbuck chinkara (Indian gazelle), bluebull and fourhorned antelope, belonging to subfamily Antilopinae, are found in the Indian plateau, and all these four species also occur in Gujarat. Loss of habitat and hunting were main causes for decline of population of the Antelopes. Trend reversed after implementation of conservation measures and population of blackbuck and bluebull increased manifold in some areas, causing problems to farmers.

0203-279. Srivastava Rajiv K (Dept Monit Evaluation, Indian Coun For Res Edn, Dehra Dun, Uttaranchal). Biotic interferences and other problems faced by the elephants in the most crucial corridors of Eastern Ghats. (*The Indian Forester*, 128(2) (2002), 169-176 [13 Ref].

Elephants (*Elephas maximus*), the most important wild animal found in the Eastern Ghats facing mounting problems by the way of biotic interference. In this paper biotic interference, other problems and their effects in two most crucial corridors (Vethalakkal-Badanavadi, RF and Vethalakkal-Marandahalli) of elephants in the Eastern Ghats have been studied in detail. Adverse impact faced by the elephants in these corridors of monoculture, fragmentation and poaching have also been studied.

0203-280. Swain Debabrata (Dept Forest Utilisation, Cuttack, Orissa). Man and wild elephant conflict in Orissa. *Indian Forester*, 127(10) (2001), 1134-1142 [22 Ref].

Crop raiding of elephants and human deaths due to elephants in Orissa have been discussed. The causes of man-wild elephant conflict are encroachment of elephant lands by human, conflict due to migration of elephants, delicacy of crops and intoxication of elephants due to brewed rice and mahua flower and shortage of water inside the forested area.

0203-281. Swain Debabrata, Patnaik Saroj Kumar (Orissa Forest Dev Corpn Ltd, Sambalpur (Comm Zone), Orissa). Elephants of Orissa : conservation issues and management options. (*The Indian Forester*, 128(2) (2002), 145-154 [9 Ref].

The causes of decline in elephant population are shifting cultivation, encroachment, poaching, mining, forest fire, scarcity of water during dry season, increase in human population, man-elephant conflict, mortality due to diseases, electrocution, legal and administrative inadequacies, etc. A network of elephant corridors has been suggested for conservation of their population on a long term basis.

0203-282. Syam Prasad N, Reddy KS (Office Conservator Forests, Chittoor West Div, Chittoor, Andhra Pradesh). Man-elephant conflict and mitigation – Koundinya Wildlife Sanctuary, Andhra Pradesh. (*The Indian Forester*, 128(2) (2002), 137-144 [2 Ref].

With advent of Joint Forest Management practices, development programmes including Project Elephant scheme are implemented mostly through peoples participation in Koundinya Wildlife Sanctuary. Gap planting, water harvesting structures, plugging of entry across vulnerable borders, awareness campaign and good communication facilities yielded encouraging results in mitigating man-elephant conflict and increased elephant population year after year.

0203-283. Vijayan S, Pati BP (Wildlife Div, Gir Natl Park Sanctuary, Gujarat). Impact of changing cropping pattern on man-animal conflicts around Gir P.A with specific reference to Talala Taluka. *Indian Forester*, 127(10) (2001), 1121-1133 [5 Ref].

Large-scale cultivation of sugarcane and mango orchard in peripheral villages of Gir National Park and Sanctuary has given rise to a thick growth of an artificial dense cover. This attracts large carnivores like Lion (*Panthera leo persica*) and Leopard (*Panthera pardus*) to take shelter, raise their young and stalk domestic animals as well as wild animals. This study reveals that in Talala Taluka 72% (13 incidences) and 59% (16 incidences) of the total attacks by lions and leopards respectively took place in farmland. More and more requests are received by the Wildlife Rescue Team of the Forest Department for capturing and relocating the big cats from farmlands to its forest area.

Energy and Environment

0203-284. Abbasi SA, Khan FI, Abbasi Naseema, Ramesh N (Cent Polln Contl Energy Techno, Pondicherry Univ, Kalapet, Pondicherry 605014). Wind energy source and its environmental impacts. *Cheml Environ Res*, 10(1&2) (2001), 163-190 [10 Ref].

Paper discusses the origins, potential, and technology of wind energy. An assessment of environmental impacts of wind energy utilization as large-scale centralized systems and as small-scale but widely used dispersed systems, is also presented.

0203-285. Ingole NW, Bhole AG (Dept Civil Engng, Coll Engng Badnera Amravati). Activators and temperature on biogas production from water hyacinth. *J Indian Assoc Environ Manag*, 26(2) (2001), 141-143 [6 Ref].

Water hyacinth powder was biodegraded in batch type digester and the effects of ammonium chloride, ammonium sulphate, and urea on biogas production were studied at 27°, 35° and 45°C. It is concluded that ammonium sulphate is the best activator and may be used in minute quantity to activate the anaerobic process and to increase the gas yield. The optimum temperature for maximum gas production was found to be 35°C.

0203-286. Ingole NW, Bhole AG (Dept Civil Engng, Coll Engng, Badnera, Amravati). Biogas from water hyacinth by triphasic digestion process. *J Inst Engrs (Env Engng)*, 81(Sept) (2000), 13-16 [10 Ref] (Late Recd).

Triphasic digestion is the process in which three reactions of the system are separated in each reactor. Production of biogas from water hyacinth has been studied. The nature of water hyacinth feed has influenced the digestion and gas production. Homogenized or powdered water hyacinth is easily digested. The maximum gas production at room temperature is found to be 124.2 l/kg of dried water hyacinth.

0203-287. Jana S, Chakrabarty NR, Sarkar SC (Adv Cent Cryogenic Res, PO Jadavpur Univ, PB No 170005, Kolkata 700032). Removal of carbon dioxide from biogas for methane. *J Energy Southern Africa*, 12(3) (2001), 412-414 [5 Ref].

Paper makes an experimental study on the feasibility of enrichment of methane in biogas using indigenously developed coconut shell based active carbon on a gas adsorption system, specially designed for the purpose. It is shown that it is feasible to increase the calorific value of biogas following the method and the adsorbent.

0203-288. Mathur AN (Agricl Univ, Coll Techno Agricl Engng, Udaipur 313001). Renewable energy for rural development to protect environment pollution from energy sources. *Indian J Environ Prot*, 21(9) (2001), 778-783.

To meet the growing energy requirement of rural areas through the conventional energy sources will cause serious harmful effect on the environmental pollution. Paper discusses about renewable energy sources to be adopted in place of conventional energy sources.

0203-289. Raheman H (Agric Food Engng Dept, Indian Inst Techno, Kharagpur 721302, West Bengal). A mathematical model for fixed dome type biogas plant. *Energy*, 27(1) (2002), 25-34 [5 Ref].

Paper describes the development of a mathematical model for determining the dimensions of a fixed dome type Deenbandhu model biogas plant. This will help the designers to determine the dimensions of various capacities of a Deenbandhu model biogas plant for different hydraulic retention times to suit the local climatic conditions.

0203-290. Raizada Neena, Sonakya V, Anand Vanita, Kalia VC* (*Cent Biocheml Techno, Coun Scient Indl Res, Delhi Univ Campus, Mall Rd, Delhi 110007). Waste management and production of future fuels. *J Scient Indl Res*, 61(3)(2002), 184-207 [10 Ref].

Anaerobic degradation of biological wastes to useful products like energy rich fuel gases can stabilize them and also serve as renewable energy source. Microbial production of methane from different biological wastes has been studied on a wide range of wastes. Thus, wastes utilization, rather than its treatment emphasizes upon shifting the process from reducing the potential for pollution to synthesis of useful products, like gases and chemicals.

0203-291. Veera Bhadram K (Dept Environ Std, Coll Engng, Gandhi Inst Techno Manag (GITAM), Visakhapatnam 530045, AP). Industrial waste as a potential alternative fuel. *Nature Env Polln Techno*, 1(2) (2002), 93-96 [2 Ref]

Industrial waste product maize husk and activated carbon (used) were taken from the glucose manufacturing factory and checked for calorific value after blending with starch have been tested as an alternate fuel. The tested composite sample has given a positive result and it contains calorific value more than that of wood (brown) and coal.

Plant and Pollution

0203-292. Annie Pritima R (PG Dept Zoo, The American Coll, Madurai 625002, TN). Study on the effects of paper-mill effluents on the growth and chlorophyll content of *Pennisetum typhoideum*. *Nature Env Polln Techno*, 1(2) (2002), 127-130 [8 Ref].

Untreated, treated and enriched effluents of a paper-mill were analysed to find out the quality of suspended solids, pH, chlorides, sulphates and others. These were

highly reduced in treated and enriched effluents. Biochemical and chemical oxygen demands decreased considerably. Plants irrigated with treated and enriched effluents showed greater shoot, total length and higher chlorophyll (*a*, *b* and total) content, indicating the importance of treatment and enrichment of effluents.

0203-293. Gavali Jitendra, Saha Deepa, Krishnayya NSR (Eco Lab, Dept Bot, Sci Fac, MS Univ, Vadodara 390002). Difference in sulphur accumulation in eleven tropical tree species growing in polluted environs. *Indian J Environ Hlth*, 44(2)(2002), 88-91 [11 Ref].

Study was aimed to find out the differences in sulphur accumulation in eleven tropical tree species exposed to air pollution containing higher levels of sulphur dioxide. The results revealed a positive correlation between the atmospheric sulphur dioxide concentration and foliar sulphur content. The paper discusses about the trees which could be planted as sulphur accumulators.

0203-294. Katiyar Vinita, Dubey PS (Dept Civil Engng, Indian Inst Techno, Delhi, New delhi). Sulphur dioxide sensitivity on two stages of leaf development in a few tropical tree species. *Indian J Environ Toxicol*, 11(2) (2001), 78-81 [15 Ref].

Old and young leaves of four tropical tree species, viz., *Butea monosperma*, *Cassia siamea*, *Dalbergia*, *sissoo* and *Eucalyptus rostrata* were analysed before and after sulphur dioxide exposure at the concentration of 260 mg m⁻³ to determine the leaf age dependent responses. The pattern indicated that under sulphur dioxide stress, young leaves have the ability to reduce sulphur dioxide toxicity to some extent.

0203-295. Murali M, Sridevi Y (Dept Environ Std, Coll Engng, GITAM, Visakhapatnam 530045). Adsorption studies on removal of nickel by *Cassia occidentalis*. *Nature Env Polln Techno*, 1(2) (2002), 159-160 [9 Ref].

Removal of Ni⁺² from aqueous solution by adsorption process was investigated using *Cassia occidentalis* leaf powder. The effect of concentration of nickel at different contact times and rpm was studied in batch experiments. The removal was most effective at lower doses of adsorbent.

0203-296. Rai Upendra N, Sinha Sarita (Ecotoxic Bioremediation Lab, Environ Sci Div, Natl Botl Res Inst, PB No 436, Lucknow 226001). Distribution of metals in aquatic edible

plants: *Trapa natans* (Roxb.) Makino and *Ipomoea aquatica* Forsk. *Environ Monit Assess*, 70(3) (2001), 241-252 [23 Ref].

Study assesses the metal concentration of edible part of plants which was collected from various water bodies used for cultivation of these crops. Despite varying levels of metals found in various fruit parts of *Trapa natans*, the metal accumulation in kernel was alarming. However, metal content decreased significantly in various parts after boiling the fruit. Similarly *Ipomoea aquatica* also accumulated significantly higher amounts of these metals in leaves, however the metal accumulating potential varied considerably depending upon level of metal contamination in the water body in which they were growing.

0203-297. Rampal Raj Kumar, Sharma Deepshikha (Dept Environ Sci, Univ Jammu, Jammu). Impact of stone crusher dust on leaves of *Magnifera indica* L. and *Psidium guajava* L. in Jammu. *Himalayan J Env Zoo*, 15(1) (2001), 75-79 [15 Ref].

Study has been carried out to investigate the impact of stone crusher dust on the qualitative and quantitative micro-morphological features of leaves of *Magnifera indica* L. and *Psidium guajava* L.

0203-298. Ranjit Singh AJA, Padmalatha C (Dept Zoo, Rani Anna Govt Coll, Gandhigram 627008). Cytogenetic study on the effects of distillery effluents in *Allium cepa*. *Env Eco*, 20(1) (2002), 75-77 [7 Ref].

The effect of different concentrations of raw distillery effluent on root growth, cell division, chromosome structure and nuclear material in root meristematic cells of *Allium cepa* was studied. Of the different concentrations of distillery effluent, namely. 0.1, 0.5, 1, 5, 10, and 20%, no marked aberrations were observed in root growth and cells division at 0.1%. But in the other concentrations of effluents, the onion developed reduced root growth and several cytogenetic irregularities.

0203-299. Salgare SA, Pathak Sanchita (Dept Bot, Inst Sci, Mumbai 400032). Effect of heavy metal (mercuric chloride) on the rate of loss in pollen germinability and tube growth of successive flowers of white-flowered cultivar of *Catharanthus roseus* – a critical review. *Himalayan J Env Zoo*, 15(2) (2001), 123-127 [32 Ref].

Effect of mercuric chloride on the rate of loss in pollen germinability and tube growth of F and F-24 series of white-flowered cultivar of *Catharanthus roseus* was evaluated. Mercuric chloride stimulated the rate of loss in the germinability of pollen as well as tube growth of either series throughout the experiment.

0203-300. Salgare SA, Phunguskar KP (Dept Bot, Inst Sci, Mumbai 400032). Monitoring of pesticide (Dimethoate) toxicity by using pollen as indicators – pollen of *Catharanthus roseus* – a critical review. *Himalayan J Env Zoo*, 15(2) (2001), 147-150 [27 Ref].

Paper deals with the effect of dimethoate on the pollen germination and tube growth of successive flowers i.e. F and F-24 series of pink and white-flowered cultivars of *Catharanthus roseus*. All the different concentrations of dimethoate tried, proved to be toxic for the pollen germination of F-24 series of either cultivars.

0203-301. Saxena Dinesh K, Saxena BK, Saxena HS, Shankar N, Kamakshi, Goswami A (Dept Bot, Bareilly Coll, Bareilly 243005). Need for a bryophyte bank for environmental monitoring in India. *J Environ Stud Policy*, 4(1) (2002), 53-55 [12 Ref].

The ability of bryophytes to accumulate metals has their use as biomonitoring agents of environmental quality. Since they lack a transportation mechanism, minerals absorbed by bryophytes are preserved within the cell without loss during storage. This potential has been used to determine changes in atmospheric quality by analysing bryophyte specimens preserved in herbariums.

0203-302. Singh AK (Cent Adv Std Bot, Banaras Hindu Univ, Varanasi 221005). Effect of trivalent and hexavalent chromium on spinach (*Spinacea oleracea* L.). *Env Eco*, 19(4) (2001), 807-810 [9 Ref].

A pot culture experiment was conducted to study the effect of trivalent and hexavalent chromium on yield accumulation of chromium by spinach (*Spinacea oleracea* L.). Chromium content in spinach leaves increased from nil in control to 2.8 and 3.14 mg/kg due to 135 mg/kg Cr(III) and Cr (IV). Chromium (VI) applied at 30 mg/kg reduced the spinach yield to a greater extent than Cr (II).

0203-303. Sudhakara Reddy M, Babita K, Gay G, Ramamurthy V (Thapar Inst Engng Techno, Sch Biotechno, Patiala 147004). Influence of aluminium on mineral nutrition of

the ectomycorrhizal fungi *Pisolithus* sp. And *Cantharellus cibarius*. *Water Air Soil Polln*, 135(1-4) (2002), 55-64 [27 Ref].

The influence of aluminium on the growth and mineral nutrition of two ectomycorrhizal fungi *Cantharellus cibarius* and *Pisolithus* sp. was studied *in vitro*. The mycelial biomass of both fungi decreased as the concentration of Al increased in the culture medium but *C. cibarius* was more resistant than *Pisolithus* sp.