

## Environmental Management

**0101-001.** Alexander Sharon Ann, Jeyakar Chellaraj DA, Princy Merlin J, Rajendran A (Bishop Heber Coll, PG Res Dept Chem, Trichi 620017). **Formulation of new water quality index – HWQI2.** *Indian J Environ Prot*, **19**(11) (1999), 842-845 [10 Ref] (Late Recd).

New Water Quality Index- HWQI2 has been formulated using four important parameters, namely DO, pH, nitrate and total solids similar to the Water Quality Index (WQI) formulated by National Sanitation Foundation (NSF, USA) and Heber Water Quality Index (HWQI1) which use nine parameters. This index is less time consuming and reliable in gauging the overall quality of a water sample. In this work, physico-chemical and biological analysis of 31 water samples collected around Trichi area was carried out and statistical tests have been used to compare NSF-WQL and HWQI2 as well as HWQI1 and HWQI2.

**0101-002.** Arun Nagendran N, Baskaran R, Lakshmanan L, Sivanarumugan M (PG Dept Zoo, Madura Coll, Madurai 625001). **A study of Malaiyur village ecosystem of Madurai District Tamil Nadu (India).** *J Environ Bio*, **22**(1) (2001) 43-45 [14 Ref].

The interaction between man and environment in Malaiyur, a hilly village of Madurai District (Tamil Nadu) was studied during year 1998. The village is sustained on agriculture labour and hence occupies the lowest hierarchy with traditional occupation and the people may be categorised as 'ecosystem people'. The study suggests that the people has to be changed as 'Biosphere people' to protect the environmental degradation due to human activities.

**0101-003.** Bal AS, Dhagat NN (Natl Environ Engng Res Inst, Nehru Marg , Nagpur 440020). **Upflow anaerobic sludge blanket reactor-a review.** *Indian J Environ Hlth*, **43**(2) (2001) 1-83 [336 Ref].

Development, selection, and application of appropriate technology for wastewater treatment is an important criteria to be set for the development of such

appropriate environmental protection technologies and methodologies. The criteria for selection of wastewater treatment technologies is presented.

**0101-004.** Banerjee SK, Bagchi Kanshiki (Gharzi Eastern Ltd, Env Div, 16, Mahanirban Rd, Calcutta 700029). **Hospital solid waste and its management approach- a cast study of a hospital in Calcutta.** *Indian J Environ Prot*, **19**(12)(1999), 932-938 [7-Ref] (Late Recd).

Calcutta is a very important city, but very few hospitals, nursing homes and pathological laboratories take care of the wastes and are unscientifically disposed off. The characteristics of the solid wastes have been discussed. Efforts have been made to establish the status of the solid waste generating from the hospital. Probable impact has also been discussed. A hospital waste management plan for the city has been given.

**0101-005.** Baruah BK, Das M (Eco Lab, Dept Zoo, Cotton Coll, Guwahati 781001). **Impact of paper mill pollution on the neighbouring people.** *Polln Res*, **19**(3) (2000) 427-430 [3 Ref].

Communication deals with pollution impact of Nagoan paper mill on the neighbouring areas. Study revealed that 13 villages with 5644 acres of cultivable land area along with a population numbering 7281 were under pollution impact of Nagoan paper mill. The fish yield in nearby Elenga beel (wetland) receiving the Nagoan paper mill effluent had been reduced considerably. The study emphasized more effective treatment of released effluent of the mill to minimize toxicity for the alleviation of the hardship of the people of neighbouring areas of Nagoan paper mill.

**0101-006.** Borse TR (Dept Literary Infn Sci, North Maharastra Univ, Jalgaon 425001, MS). **Environmental awareness of the villagers.** *Eco Env Conserv*, **6**(4) (2001), 479-483 [19 Ref].

Study reveals the present status of environmental awareness of the villagers and verifies the hypothesis whether the villagers have been awarded by their Grampanchaytas (i.e. Local Governments) about the conservation of environment by implementing the information extension programmes on different subjects related to rural scenario and if so, which method did they adopt to conserve the total environment.

**0101-007.** Deshpande VP, Kaul SN (Natl Environ Engng Res Inst, Nagpur 440020). **Environment, ecology and sustainable development.** *Eco Env Conserv*, **6**(4) (2000), 493-496 [6 Ref].

Industrialization is considered as a measure of development of the country. Since we are at developing stage we cannot stop industrialization nor we can afford growing levels of pollution generated by the industries. This can be achieved by aiming at sustainable development so that our basic necessities are fulfilled without adversely affecting the ecological integrity and bio productivity.

**0101-008.** Giri AK, Bhathacharya AK (Jawaharlal Nehru Univ, Sch Env Sci, New Delhi 110067). **Environmental problems associated with solid waste generated in Wazirpur industrial area of Delhi.** *Indian J Environ Prot*, **19**(12) (1999), 915-920 [22 Ref] (Late Recd).

The study was conducted to evaluate some of the environmental problems associated with the solid wastes generated in Wazirpur Industrial area of Delhi. It revealed that the generated solid wastes were hazardous in nature, thereby creating severe environmental problems in the industrial sites. The fate of these solid wastes generated in the industrial area were critically examined with respect to topographic location, natural drainage systems, present disposal practices of the industrial and residential units. It was also realized that lack of public awareness continued to play havoc.

**0101-009.** Giri TK, Agrawal KM, Roy M (Regl Cent, Natl Afforestation Eco Dev Bd, Jadavpur Univ, Calcutta 700032). **Environmental management plan for a coal mine area.** *J Indian Assoc Environ Manag*, **27** (2000) 195-199 [5 Ref].

Paper suggest an EMP where step by step all the activities, viz. project description. objectives, assessment of likely impacts on different components of environment due to mining activities, the alternative technology, legal provisions and sensitive issues if any, are discussed. Besides, the need for stringent enforcement of statutory provisions for EMP during all stages of mining project has been emphasised.

**0101-010.** Goswami D, Das AK (Univ Burdwan, Dept Chem, Burdwan 713104). **Preparation of some useful substances utilizing flyash.** *Indian J Environ Prot*, **19**(12)(1999), 928-931 [3 Ref] (Late Recd).

The sample of flyash, collected from NTPC/Farakka, for the preparation of ferric alum, utensil washing powder and black board chalk have been studied. The preparation condition and concentrations of different constituents have been reported.

**0101-011.** Ibrahim, Zaheeruddin, Moinuddin (Dept Electrical Engng, Fac Engng Techno, Jamia Millia Islamia, New Delhi-110025). **Impact of computer technology on environmental studies.** *Cheml Environ Res*, **9**(1&2) (2000), 145–157 [17 Ref].

Paper describes the worldwide fast growing environmental pollution problems and their effects on human being. As computer industry including software technology is widely attracting even the national governments, the applications of computers in their most effective fashion to solve one of the most complex systems i.e. environment system involving the monitoring, modelling and analysis of these systems have been outlined comprehensively.

**0101-012.** Ingle ST, Mali DS (Dept Environ Manag, Chh Shahu Central Inst Business Edn Res, Univ Rd, Kolhapur 416004). **Solid waste management system for Kolhapur city - Maharashtra,** *Polln Res*, **19**(2) (2000) 185-189 [15 Ref].

The characteristics of municipal solid waste generated in the slum, commercial and residential area were studied. The variation were noted in the physical and chemical characteristics of refuse generated in the different areas of city. The forecasting of refuse load and the energy content in the refuse was calculated. The basic data on quality and quantity of municipal solid waste will help in deciding the effective solid waste management system for the city.

**0101-013.** Iqbal Ali S, Ayub Sohail (Dept Environ Engng Aligarh Univ, Aligarh), **Plastics waste management.** *J Indian Assoc Environ Manag*, **27**(2000), 154-162.

Paper attempts to introduce science of plastics, possible sources of waste, identification and separation of plastics and various possible ways of disposal.

**0101-014.** Jalan Ramesh Kumar (Core Consultants Pvt Ltd, 77/4, Krishna Nagar, Safdarjung Enclave, New Delhi-110029). **Solid waste generation and recycling for energy recovery and other uses.** *Indian J Environ Prot*, **19**(12) (1999), 902-914 [27 Ref] (Late Recd).

Study involves analysis of various specific sectors involved in solid waste management system. The present model is relatively simple and user friendly. The model for waste management could be utilized for source segregated, centrally segregated and non-segregated municipal solid waste and also various types of industrial wastes. The above model has been developed for municipal solid waste. However, it could be easily adapted by changing the parameters for industrial solid waste.

**0101-015.** Jeyaraman B, Ranganathan KR (Loss Eco (Prevention Payments Compensation) Authority, 148 Peters Rd, Chennai 600086). **Approach in economic evaluation of loss of ecology.** *J India Assoc Environ Manag*, **27**(2000), 85-88 [2 Ref].

Judicial pronouncements have, in the recent past, laid down that polluters should compensate for even past environmental damage caused by them. Assessment of the environmental damage in monetary terms is a pre-requisite to determine the compensation to be recovered from the polluters. Applicability of such of those methods in the environmental damage assessment are discussed.

**0101-016.** Kataraiya HC (PG Res Lab, Dept Chem, Govt PG Coll, Pipariya 461775). **Preliminary study of drinking water of Pipariya township.** *Polln Res*, **19**(4) (2000), 645-648 [22 Ref].

Physico-chemical analysis of drinking water has been done to assess the water quality of borewells of Pipariya. The borewells near sewage and low lying areas are chosen for study. Fluctuation and variations in physico-chemical parameters were recorded due to waste water of soyabean plants and municipality sewage, the percolation of the sewage water may reach in groundwater through the soil.

**0101-017.** Kumar A, Sawant AD (C/o Dr. R.K. Kumar, NEERI, Zonal Lab, 89-B DR. A.B. Rd, Worli, Mumbai 400018). **Phytoremediation: A new tool for remediation of soils spoiled by hazardous waste.** *Eco Env Conserv*, **6**(4) (2000) 405–408 [8 Ref].

Many cases of land degradation due to effluent disposal from tanneries, chemical and other allied industries have been reported. The area degraded is mostly left unused mainly due to unavailability of expertise for cleaning the toxic chemicals, accumulated in the soil or due to lack of funds and interest. Paper describes the economical and technological feasibility of phytoremediation technology for remediating the soil spoilt by hazardous waste. The limitations and advantages of this technology are also described in details.

**0101-018.** Lakshmi K, Unni PN, Neelakandan N, Harikumar PS (Centl Water Analysis Lab, Cent Water Resouces Dev Manag, Calicut 673571, Kerala). **Environmental status of the mangrove ecosystem in Valapattanam river basin, Kerala.** *Eco Env Conserv*, **6**(4) (2000) 363-371 [24 Ref].

Baseline study of the aquatic environment of the mangrove ecosystem of Valapattanam river basin, Kerala was studied. The physicochemical and biological quality of water and sediments of mangrove and non-mangrove areas were assessed. The presence of high amount of nutrient was a salient feature of the mangrove sites. Medicinally important plants were also recorded among mangrove associates. Very high nutrient content, optimum salinity, pH and tidal action in the mangrove environment favours their development and distribution in the river basin.

**0101-019.** Mary Ashalatha M, Raghavaswamy (Natl Remote Sensing Agency, Balanagar, Hyderabad 500037). **Remote sensing and GIS based study on "Air quality and land used/cover hot spot characterisation" in Hyderabad city, Andhra Pradesh, India.** *NNRMS Bull*, Sept (2000), 30–36 [7 Ref].

Land use/cover information, its spatial distribution and change plays a major role in environmental monitoring and to understand the various forces behind the change. Paper discusses the results of the identification of air quality and land use/cover hot spots in Hyderabad city and its environs using remote sensing and GIS Technologies supported by ground measured data.

**0101-020.** Mhaisalkar VA (Dept Environ Engg. Visvesvaraya Regl Coll Engng, Nagpur 440011). **Future concerns of higher engineering education institutions for meeting environmental challenges on 21st century.** *J Indian Assoc Environ Manag*, **27** (2000), 178–183 [15 Ref].

The modern environmental engineer is expected to meet challenges that cut across various disciplinary bonds. There is a felt need for industries to depend on technical institutions for R and D, supply of qualified and skilled manpower, and retraining the industrial workforce. Science and Technology Park based on the theme of environment could be considered as one of the means to resolving industrial problems related to environmental pollution.

**0101-021.** Narain S, Chauhan Rajeev (PG Dept Zoo, Janta Coll, Bakewar (Etawah), UP 206124). **Water quality status of river complex Yamuna at Panchnada (Distt. : Etawah, U.P., India). I : an integrated management approach.** *Polln Res*, **19**(3) (2000) 357-364 [16 Ref].

Paper urges for a need to explore this aquatic habitat as it is full of natural resources and preserving many rare and endangered species of the world including about 60 species of fishes, nine species of fresh water turtles out of which 6 are endangered, two species of crocodilians, about 205 species of birds (including migratory birds), river dolphine (*Platanista gangetica*) and very rare *Lutra perspicillata*.

**0101-022.** Padma B, Rao S, Ram Babu P (Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). **Environmental audit process - an opportunity for cleaner production systems.** *Indian J Environ Prot*, **19**(10) (1999) 758–761 [6 Ref] (Late Recd).

Environmental audit (EA) is an effective tool for effecting continuous improvements in environmental quality and ensuring mainstreaming of the environment in an industrial organization. This is underutilized and used mainly to monitor compliance to permitting (consent) conditions. The realization of ineffectiveness of end of pipe treatment methods has dawned the updation/modification of regulations/guidelines/policy framework regarding environmental audit. This article suggests inclusion of Cleaner Production System Audit/Environment Management Systems Audit in an EA study.

**0101-023.** Pandey JS, Kumar R, Kulkarni VS (Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). **A case study of terrestrial ecosystem for suggesting modifications in the carrying capacity studies.** *J Indian Assoc Environ Manag*, **27**(2000), 175–177 [10 Ref].

A case study of Tapi Estuary Region has been analysed with special reference to its terrestrial ecosystem modifications in the methodologies for Carrying Capacity Studies undertaken in India. As an illustration modifications have been carried out in the earlier model for quantifying sink potential index (SPI). Need for similar modifications have been stressed for other components of the environment too. The modified model for terrestrial ecosystem has been quantified for Vyara and Mandvi forest subregions of Gujarat state in India.

**0101-024.** Rai RK (Govt Coll Engng, Dept Civil Engng, Karad, Satara 415124). **Simplified method for determination of BOD's constants.** *Indian J Environ Prot*, **20**(4) (2000), 263–267 [6 Ref].

Paper intends to provide a simple analytical method for the analysis of a time series of BOD data that does not require any special charts or graphs. The results obtained by the proposed method compared very well with those by the least squares method. In addition, it provides an alternate method for the analysis of BOD data and will be an addition to the various methods already in practice.

**0101-025.** Rajitha I, Vatsala R (Dept Textiles Clothing, Coll Home Sci, Saifabad, Hyderabad 500004). **Evaluation of pesticide penetration rate through different fabrics.** *Indian J Environ Toxicol*, **10**(2) (2000), 71–73 [7 Ref].

Fourteen different fabrics suitable for suiting / shirting and commonly preferred by the workers exposed to different pesticides when tested for the pesticide penetration properties, showed that polyester / cotton (63:33) drill fabric and polyester / viscose (80:20 and 52:48) plain weave allowed very little pesticide to penetrate through and thus were considered to be the most suitable protecting clothing for pesticide workers.

**0101-026.** Ramadass M, Rathakrishnan L (Acad Staff Coll, Community Coll, Pondicherry Univ, TAC Campus, Lawspet, Pondicherry 605014). **Sustainable development of tribals in the Andaman and Nicobar Islands : an approach.** *Eco Env Conserv*, **6**(4) (2000) 471–477 [35 Ref].

Paper assess the existing situation of resource use and the possibility for sustainable development of tribals in Andaman and Nicobar Islands. The study relied mainly on secondary data for a period of four decades from 1950 to 1990. Statistical techniques have been employed to analyse the collected data.

**0101-027.** Ravi Shankaran D, Sriman Narayanan S (Dept Analyt Chem, Univ Madras, Guindy Campus, Chennai 600025.) **Amperometric determination of sulphur dioxide at a nickel hexacyanoferrate modified electrode.** *Res J Chem Env*, **4**(2) (2000) 13–16 [15 Ref].

A new and simple method using nickel hexacyanoferrate modified electrode for amperometric determination of sulphur dioxide has been proposed. The modified electrode is prepared by mechanically immobilising nickel hexacyanoferrate on the surface of a parafin impregnated graphite electrode. Such a modified electrode could be used for the determination of sulphur dioxide after absorbing it in sodium hydroxide solution.

**0101-028.** Sarin SM, Singh Anil, Sharma Niraj, Sharma Kirh, Shanmugum (Environ Rd Traffic Safety Div, Centl Rd Res Inst, New Delhi 110020). **Evaluation of emission characteristics and compliance of emission standards for in-used petrol driven vehicles in Delhi.** *Indian J Environ Hlth*, **43**(1) (2001), 1-20 [17 Ref].

The tail pipe CO (Carbon monoxide ) and HC (hydrocarbon) emission characteristics of in-use petrol driven vehicles were evaluated in Delhi. Approximately 90% of the total vehicles meet the prescribed CO emission standards even without following routine I/M practices. The age of the vehicles appeared to have influence on the emission characteristics. The observed high compliance levels indicate that existing tail pipe emission standards are lenient and need to be reviewed. The emission standards are proposed for different categories of in-use petrol driven vehicles.

**0101-029.** Sharma SP, Bassin JK (NEERI Zonal Lab, CFC-1, Malviya Indl Area, Jaipur 302017). **Analysis of cylindrical tanks with dome foundations for effluent treatment plants.** *J Indian Assoc Environ Manag*, **27**(2000), 76–78 [1 Ref].

Software for accurate analysis for an economic design of cylindrical tanks comprising single or twin coaxial cylinders used in effluent treatment plants developed earlier runs on main frame computers generally not accessible to smaller design offices. It was restructured to run on small PCs in DOS environment within the 640 KB limitation of basic memory. Only the briefest details are included for evaluation of the approach. An illustrative example is presented. The software is available with the National Environmental Engineering Research Institute (NEERI), Nagpur.

**0101-030.** Shashikala M, Surendra VHH, Sudarshan MK, Gangaboraish (Dept Community Med, KIMS, Bangalore 560004). **Screening in occupational health : viscose rayon factory : a report.** *Indian J Occupl Environ Med*, **4**(2) (2000) 86–88 [6 Ref].

The occupational health survey involves screening for morbidity and possible occupational morbidity, methodology includes survey of entire factory and interview (oral questionnaire) and medical examination of the employees (161) of processing unit (all male employees) of viscose rayon factory. Investigations involved routine blood and urine examination and urine for Iodine-Azide test.

**0101-031.** Shukla GR, Sharma Rekha Rani, Manohar Ram (Dept Zoo, DAV Coll, Muzaffarnagar 251001). **Impact assessment of industrial pollution on Krishna river.** *Aquacult*, **1**(1) (2000) 69–90 [31 Ref].

An impact assessment of industrial waste on river Krishna has been studied with reference to the physico-chemical and biological charactersitics. This study has been carried out at nine sampling stations fixed at 65 kms stretch. The higher number of protozoans, chironomids and maggots and decrease in the number of molluscs can be recorded as the Index for pollution, because of their abundance in polluted stations.

**0101-032.** Sreenivasa Rao A, Ramamohana Rao P (Dept Inorganic Analyt Chem, Sch Chem, Andhra Univ, Visakhapatnam 530003). **Environmental impact of aquaculture on Kolleru Lake.** *Indian J Environ Toxicol*, **10**(1) (2000), 1-4 [11 Ref].

Kolleru lake is the largest natural fresh water lake of Andhra Pradesh (India). The fishponds around the lake are filled by the Kolleru lake water. The aquaculture effluents are directly discharged into the lake. The water samples were collected from selected fishponds and analysed for different physico-chemical parameters to assess the impact of aquaculture on the quality of lake water and on the lake ecosystem and also to assess the quality of water from fishponds. An increase was recorded in the nutrients and heavy metal concentration in lake water which in turn would accumulate in body of the fish thus participating in human food chain.

**0101-033.** Thussu JL (Geol Surv India, Central Region, Nagpur). **Impact of environmental hazards on various landforms in Haryana.** *J Indian Assoc Environ Manag*, **27**(2000), 67–75 [13 Ref].

Haryana State located on vast stretches of quaternary alluvial plains between the rocks of Delhi Supergroup in the south and west and Siwalik in the northeast. Based on the geological, geomorphological, and geochemical studies, it has been possible to conclude that the potential environmental hazards distinctly differ in each landform. Effective management controls have been suggested to mitigate the natural hazards and proper planning measures to control biotic hazards.

**0101-034.** Venkateswarlu M, Sharath Chandra V, Majunath, Bharathi, Latha (Kuvempu Univ, Dept PG Std Res Appl Zoo, BR Proj, 577115, Shimoga). **Environmental impact assessment of an integrated iron and steel factory.** *Indian J Environ Prot*, **20**(4) (2000), 272–274.

First hand information of working conditions of Vishweswaraya Iron and Steel Limited is procured by making personal visits to different plants units of VISL factory. Health status of workers attached with different factory units was enquired through questionnaire. Present working condition of different plants, hazards associated and future measures to be taken are presented.

## Air Pollution

**0101-035.** Chelani Asha B, Phadke KM, Hasan MZ (Air Polln Contl Div, Natl Environ Engng Res Inst, Nagpur 440020). **Prediction of sulphur dioxide concentrations using multivariate models.** *J Indian Assoc Environ Manag*, **27**(2000), 111–116 [8 Ref].

Paper demonstrates the utility of ARMA (Autoregressive moving average) and ARX (Autoregressive with exogenous input) models based on univariate and multivariate analysis for short term forecasting. The analysis is based on ambient air sulphur dioxide concentration data. The study focuses on the methods involved in the selection of model and inadequacy of regression analysis to handle the autocorrelations of the data set.

**0101-036.** Dayal HV, Nandini SN (Tata Energy Res Inst, Bangalore 560052) **Vehicular emissions and ambient air quality in Bangalore city.** *Polln Res*, **19**(2) (2000), 205–209 [8 Ref].

Vehicular pollution is one of the main sources of air pollution in Bangalore city. A study of the ambient air was carried out for 10 congested areas in the city for a period of 14 days, in each place. The main parameters measured include suspended particulate matter, oxides of nitrogen and sulphur dioxide. The results indicate that in six of the 10 congested areas, the SPM values are above the limit. While both nitrogen oxides and sulphur dioxides are within the prescribed limit in all the areas, the concentration of nitrogen oxides is found nearing the World Health Organisation (WHO) limit in some places.

**0101-037.** Ghosh MK, Banerjee K (Cent Mining Env, Indian Sch Mines, Dhandbad 826004). **Impact on air environment due to a large coalwashery project of BCCL.** *Indian J Environ Hlth*, **42**(4) (2000) 176–184 [15 Ref].

One large coal washery of Bharat Coking Coal Ltd. (BCCL) has been surveyed. Justifications for the selection of monitoring stations and methodology adopted for the collection of samples and analysis have been described. The results obtained at different seasons have been discussed to assess the impact on air environment. Factual analysis techniques have been developed to evaluate the actual dust from a thermal power point to the coal washery complex.

**0101-038.** Hati SK (Dev Consultants Ltd, 24–B, Park Street, Calcutta 700016). **Fuzzy optimization of air pollution control system having multiple objectives.** *Indian J Environ Prot*, **19**(7) (1999) 493–503 [23 Ref] (Late Recd).

A procedure is described for fuzzy optimization of an air pollution control system in thermal power plants having multiple objectives. The objective functions and constraints in the fuzzy problem are characterized by their respective membership functions and the fuzzy feasible space is formed by the intersection of membership functions of the constraints and those of the objective functions. The degree of membership of any design vector to the fuzzy feasible space is determined by its minimum level of satisfaction to all the objectives and constraints.

**0101-039.** Jayshree J (Dept Chem, St Xaviers Coll, Thumba, Thiruvananthapuram 695586). **Automobile pollution in Thiruvananthapuram city.** *Polln Res*, **19**(3) (2000), 395–397 [8 Ref].

Air pollution is a major environmental problem faced by many Indian cities. One important factor that brings air pollution is automative emissions. Attempts to identify the various types of pollutants emitted by automobiles in Thiruvananthapuram city are done. Low speed limit in the city and various operating modes of vehicles influence the amount of pollutants realeased by them.

**0101-040.** Thomson Roy, Saha BP, Ganesh I, Bhattacharjee S, Mahajan YR, Khaja MMK (ARC Int, Hyderabad 500005). **Diesel catalytic converter for euro norms.** *J Indian Assoc Environ Manag*, **27** (2000), 129–132 [8 Ref].

Diesel catalytic converter system with reticulated foam coated with combustion catalyst followed by honeycomb supports coated with three-way catalyst have been developed indigenously. The converter was evaluated on engine and chassis dynamometer for its performance using high sulfur (0.25 to 0.3%) content diesel used in India. Test results have revealed good performance of the system.

**0101-041.** Joshi Gunwant, Jain Chandresh\* (\*Sch Energy Env, Devi Ahily Vishwavidyalaya, Indore, MP). **Suspended particulates in the ambient air at the road sides of Indore city.** *Polln Res*, **19**(3) (2000), 365–367 [9 Ref].

Total suspended particulate matter and respirable dust concentration in the ambient air from the roadsides of Indore city is estimated. High particulate matter concentration, both respirable and non respirable, are found to exceed the permissible limits at most of the locations. The bad road conditions and high density of vehicular movement are the main causal factors for high concentrations of particulates which gradually builds up due to high rise buildings on either sides of the road in the city area in contrast to open areas located in the outskirts of the city.

**0101-042.** Kamavisdar A, Sirociya RS (Centl Fuel Res Inst, Nagpur Unit, Nagpur). **Assessment of sulphur content of coal from Saoner Coal Mines.** *India J Environ Hlth*, **42**(3) (2000) 138–141.

Coal samples from the Saoner coal mines situated near Nagpur city, M.S., India were analysed for the determination and speciation of sulphur. Most of the coal samples were found to contain high percentage of pyretic sulphur. The results indicated that environmental problems i.e. acid rain may be noticed in the study area in near future, if some precautionary steps are not taken to reduce the sulphur content of these coal prior to its utilization.

**0101-043.** Khare Mukesh, Gupta Sanjeev (Dept Civil Engng, Indian Inst Techno, Hauz Khas, New Delhi 110016). **Indoor air pollution.** *J Indian Assoc Environ Manag*, **27** (2000) 103-110 [10 Ref].

Paper present various sources of indoor air pollutants, their effects on human, and indoor/outdoor relationships. Control measures such as source management., exposure control and contaminant control to maintain a better indoor air quality are also discussed. Discussion on indoor air pollution modelling and different types of monitoring techniques are important features of this paper.

**0101-044.** Murali Krishna MVS, Vara Prasad CM, Venkata Raman Reddy Ch (Dept Mech Engng, Chaitanya Bharathi Inst Techno, Gandipet, Hyderabad 500075). **Studies on control of carbonmonoxide emission in spark ignition engine using catalytic converter.** *Eco Env Conserv*, **6**(4) (2000), 377–380 [7 Ref].

Investigations are carried out on control of carbonmonoxide (CO) content in the exhaust of variable compression ratio spark ignition (SI) engine using catalytic converter. Sponge iron and manganese ore are used as catalysts in the converter. The air-fuel ratio, speed and load of the engine have shown greater influence in the emission of CO where as, the void ratio, mass of the catalysts, temperature of injected air has shown significant influence on control of CO in the exhaust. Catalytically, sponge iron is found to be more efficient than manganese ore.

**0101-045.** Sidhartha, Goyal P, Bandyopadhyay TK (Indian Inst Techno, Cent Atmospheric Sci, Hauz Khas, New Delhi 110016). **An assessment of air pollution in Agra using cleaner fuels in industrial and domestic sectors.** *Indian J Environ Prot*, **19**(7) (1999), 512–518 [11 Ref] (Late Recd).

A study of alternative fuels, used in the industrial and domestic sectors in Agra, has been made. The receptor oriented Gaussian Plume model has been used to calculate the concentrations of SO<sub>2</sub>, SPM and NO<sub>x</sub> at five vulnerable places. It has been shown that the main sources of SO<sub>2</sub> and SPM were those industries who have been using the coal/coke as a source of fuel. But if the industries were to switch over to natural gas, the only sources of SO<sub>2</sub> and SPM would be the vehicular traffic.

## Water Pollution

**0101-046.** Aggarwal TR, Singh KN, Gupta AK (Dept Sci Techno, New Mehauruli Rd, New Delhi 110016). **Impact of sewage containing domestic waster and heavy metals on the chemistry of Varuna river water.** *Polln Res*, **19**(3) (2000) 491–494 [13 Ref].

To study the impact of sewage on the chemistry of Varuna river water, four study sites were selected along the Varuna river corridor to evaluate the impact of sewage on the chemistry of Varuna river water. Results indicate that the sewage discharged into the river increases the temperature, pH, alkalinity, BOD, COD, chlorides, nitrates, phosphate, potassium, calcium and heavy metals contents. The dissolved oxygen and transparency decrease due to the mixing of sewage into the river water.

## Noise Pollution

**0101-096.** Das DB, Arya P, Bakre PP, Bhargava A, Gupta AB (Malaviya Regl Engng Coll, Dept Civil Engng, Jaipur 302007). **Environmental noise: A psychological, physiological and ambient assessment at industrial, residential and commercial places of an urban area in Rajasthan.** *Indian J Environ Prot*, **19**(7) (1999), 481-487 [26 Ref] (Late Recd).

Monitoring of noise levels was carried out at 16 sites consisting of 7 residential, 5 commercial and 4 industrial areas in Jaipur. The noise data indicated that the highest levels occurred at residential areas [97.4 dB (A)] followed by commercial [94.2 dB (A)] and industrial areas [66.0 dB (A)]. A comparison with the prescribed standards showed that the noise levels exceeded the allowed values at all commercial and residential areas except for one location of residential category.

**0101-097.** Mohan Surinder, Dutta Nabonita, Sarin SM (Env Rd Traffic Safety Div, Centl Rd Res Inst, Mathura Rd, New Delhi 110020). **Multiple regression analysis of road traffic noise data of different density zones of New Delhi.** *J Indian Assoc Environ Manag*, **27**(2000), 117-121 [6 Ref].

Paper deals with multiple regression analysis of the variation of the existing road traffic noise levels in different residential density zones (i.e. > 100 to (800-1000) persons/hectare) of New Delhi. Noise data (L10, Leq and L90) are measured as a function of traffic volume, speed of vehicles and different distances of the observation point from the road. Depending on these parameters, an approximate predictive equation has been formulated by regression method, and coefficients of correlation are calculated.

**0101-098.** Krishna Murthy V, Rajmohan HR, Rajan BK, Raghavan S, Kakde V (Regl Occupl Hlth Cent (South), Indian Coun Medl Res, Lib Infn Cent Block, Bangalore Medl Coll Campus, Bangalore 560002). **Noise level monitoring in diesel engine power plant in Bangalore.** *Indian J Environ Prot*, **19**(7) (1999), 508-511 [3 Ref] (Late Recd).

This survey reports the noise level measurements in power house where the Diesel Generator Engines plant generate electricity in Bangalore, Karnataka. There were a total of six diesel engines and four were in operation (66.7%) during the survey. In the plant area, a maximum level of 108.6 dB (A) was recorded near the control panel board of the diesel engine. The noise levels ranged from 101.1 – 108.6 dB (A) in the plant area of the Power House. In all the spots measured in the plant area, noise levels were more than 90 dB (A).

**0101-099.** Madhu S, Ravichandran C (Tata Energy Res Inst, 10/1, LN Complex, Palace Rd, Bangalore 560052). **Occupational health hazards in industries due to noise pollution.** *Indian J Environ Prot*, **19**(7) (1999), 504-507 [5 Ref] (Late Recd).

A study was carried out to assess the noise levels in some of the large scale and small scale industrial units and its impact on the health of the employees working in this environment. It was found out that many employees were working in a high noisy environment. Quite often, in most of the sampling sites the noise levels peaked upto 100 dB (A). The incidences of occupational health hazards, are high among the employees working in this noisy environment.

**0101-100.** Mohan Surinder, Dutta Nabonita, Sarin SM (Centl Road Res Inst, Dept Environ Rd Traffic Safety, New Delhi). **Subjective reaction to road traffic noise of residents living in Delhi City.** *Polln Res*, **19**(3) (2000), 353-356 [3 Ref].

The survey shows that people living up to the distance of 30m from road feel too much annoyance due to traffic and residents living at all the floors in multi-storeyed apartments feel too much annoyance. The impact of traffic noise is so much high that 80% of the residents always keep their doors and windows closed. Traffic is so much annoying that 70% of residents want to live away from road irrespective of the existing facility.

**0101-101.** Ravichandran C, Edwin Chandra Sekaran G, Vijaya Kumar M (PG Res Dept Environ Sci, Bishop Heber Coll, Tiruchirapalli 620017). **Noise pollution assessment in Pudukkottai, Tamil Nadu.** *Polln Res*, **19**(3) (2000), 431-434 [6 Ref].

The ambient noise levels were measured at selected places representing silence zone, residential zone and commercial zone to assess the extent of noise pollution in these places. Minimum, maximum, Leq L10 L50 and L90 noise levels were computed. Noise of the places recorded noise levels within the prescribed limits set by the Central Pollution Control Board. Vehicular traffic with air horns was found to be the main reason for these high noise levels.

**0101-102.** Prasant S, Arora HL, Verma AK (Natl Occupl Hlth Serv Cent, Bhilai Steel Plant, Bhilai, MP). **Occupational noise exposures in iron ore mines.** *Indian J Occupl Environ Med*, **4**(2) (2000), 69-70 [8 Ref].

Study quantifies exposure to noise among heavy earth moving equipment operators (HEEO), working in integrated iron ore mines. The average daily noise exposure was 89-98 dB(A) for heavy HEEOs. The main source of noise to which HEEOs are exposed are rotary drill, vehicle engines and the muffler exhaust system usually located near the operator. The presence of insulated cabin such as those found in power shovel, application of wet drilling and better maintenance significantly reduces the operator's exposure to noise.

## Ecology

**0101-103.** Aggarwal TR, Singh BN, Gupta AK (Dept Sci Techno, New Delhi – 110016). **Effect of domestic wastes on physico-chemical characteristics of soil at Varuna river corridor.** *Polln Res*, **19**(2) (2000), 303-305 [9 Ref].

Paper deals with the study of changing physico-chemical characteristics of soil of the Varuna river corridor with respect to mixing of domestic wastes. The result indicates that pH, temperature, electrical conductance, organic carbon (%), nutrient content and heavy metal content all show higher values at the point of mixing of domestic wastes. Due to mixing of domestic wastes the soil loses its natural properties and favours the growth of characteristic plants.

**0101-104.** Ansari KK, Prakash S (Ichthyo Lab, Dept Zoo, MLK (PG) Coll, Balrampur 271202). **Limnological studies on Tulsidas Tal of Tarai region of Balrampur in relation to fisheries.** *Polln Res*, **19**(4) (2000), 651-655 [24 Ref].

Limnological studies of Tulsidas Tal were conducted to find out its physico-chemical conditions and its impact on planktonic population. The study revealed that the water of the Tal is nutrient rich and conducive to high fish production.

**0101-105.** Azeez PA, Nadarajan NR, Mittal DD (Bombay Natural Hist Soc, Hornbill House, Bombay 400023). **The impact of a monsoonal wetland on ground water chemistry.** *Polln Res*, **19**(2) (2000), 249-255 [16 Ref].

The study examines influence of the Keoladeo National Park wetland on chemistry of ground water and watertable. Wells in villages close to the boundary of the Park and inside the Park were analyzed for physico-chemical characteristics and select metals. Most well water samples were sodium and mixed anionic type while a few were chloride type. High EC and the anionic and cationic ratios suggests long residence time of the ground water.

**0101-106.** Biswas BK, Konar SK (Floodplain Wetlands Div, Centl Inland Captive Fisheries Res Inst (ICAR), Ganes Bhawan, Rajgarh Rd, Guwahati 781007, Assam). **Impact of waste disposal on plankton abundance and diversity in the river Ganga at Hathidah (Bihar).** *Polln Res*, **19**(4) (2000), 633-640 [14 Ref].

A distillery and a tannery were discharging effluents directly into the river Ganga at Hathidah in Bihar. On the opposite bank (Simariaghat), effluents from a refinery were discharged through a pipeline. An investigation was carried out to assess the influence of waste disposal on plankton abundance and diversity in different seasons. Changes in the plankton community structure at outfall zone site indicated polluted nature of the river. Some pollution tolerant planktonic forms were also identified.

**0101-107.** Dongre PN (Dept Bot, KN Govt PG Coll, Gyanpur (Sant Ravidas Nagar) U.P.). **Floristic composition and phytosociology of low land ecosystems of Varanasi.** *Eco Env Conserv*, **6**(4) (2000), 401-404 [12 Ref].

Phytosociological analysis of low land plant communities of Varanasi was carried out at two low land sites, representing crop ecosystem and representing waste land ecosystem. Soils of the two sites differed from each other in physico-chemical properties. In all 32 species were recorded from both the study sites. Total number of species occurring at the two sites was 21 and 25 respectively. Out of these, 14 species were common to both sites. The number of species decreased from rainy to winter season.

**0101-108.** Dutta SPS, Sharma Jyoti (Dept Environ Sci, Univ Jammu, Jammu 180006). **Ecology of zooplankton of sewage fed Farooq Nagar Pond, Jammu.** *J Nature Conserv*, **12**(1)(2000), 71-82 [55 Ref].

Zooplankton was studied both qualitatively and quantitatively in Farooq Nagar pond, Jammu. Qualitative and quantitative analysis has shown the predominance of rotifera. Total zooplankton recorded annual maximum count in August and lowest in October. Analysis of co-efficient of correlation of zooplankton with various abiotic characteristics and phytoplankton has shown insignificant results.

**0101-109.** Hans RK, Farooq M (Indl Toxic Res Cent, Lucknow 226001). **Dissipation and accumulation kinetics of lindane in soil and earthworm *Pheretima posthuma*.** *Polln Res*, **19**(3) (2000), 407-409 [9 Ref].

Kinetics of lindane dissipation in soil and bioaccumulation in earthworm was studied by soil pot exposure method in a controlled environmental chamber. The half life of lindane in soil was found 43 days and the daily uptake by earthworm was 2307 ppb, indicative of an increase in residue build up and positive cumulative toxic effects.

**0101-110.** Karmegam N, Daniel Thilagavathy (Dept Bio, Gandhigram Rural Inst, Deemed Univ, Gandhigram 624302). **Effect of bio-digested slurry and vermicompost on the growth and yield of cowpea *Vigna unguiculata* (L.) Walp. variety CI.** *Env Eco*, **18**(2) (2000), 367-370 [14 Ref].

The effect of biodigested slurry (BDS) and vermicompost (VMC) on the fresh weight and dry weight of the whole plant, and yield performance of the plant *Vigna unguiculata* (L.) Walp. variety CI were recorded in pot culture level. The manurial characteristics of the BDS and VMC were also analyzed. *V. unguiculata* grown in VMC mixed soil showed best growth and yield.

**0101-111.** Kavitha, Hilda NS, Eswari (Cent Adv Std Bot, Univ Madras, Guindy Campus, Chennai, 600025). **Hydrolysis of feathers from different poultry strains by two species of *Aspergillus*.** *Polln Res*, **19**(3) (2000), 331-335 [20 Ref].

To assess the hydrolysis of feathers from different poultry strains two species of highly potent saprophytic fungi namely *Aspergillus flavus* and *A. terreus* were used. With the help of ecofriendly technology the culture filtrate was analyzed for the release of catabolic products such as proteins and keratinase production along with the concomitant release of pH. Among the two fungi used, *A. flavus* was more effective than *A. terreus* for poultry feather degradation.

**0101-112.** Krupadam RJ, Anjaneyulu Y (Cent Env, Inst PG Std Res, Jawaharlal Nehru Techno Univ, Mahavir Marg, Hyderabad – 500028, AP). **Cycling of nutrients in Gautami-Godavari estuarine ecosystem, Bay of Bengal – east coast of India.** *Res J Chem Env*, **4**(2) (2000), 55-70 [12 Ref].

The distribution and cycling of nutrients and seasonal profiles of temperature, salinity, pH and dissolved oxygen in the Gautami-Godavari estuary were examined. The oxygen concentration was closely related to biological activity and hence to seasonal changes in pH and bears an inverse relation with salinity structure.

**0101-113.** Kumar Arindam (JMDPL Mahila Coll, Madhubani, Bihar). **Reclamation of soil polluted by industrial effluents using herbaceous flora.** *Adv Plant Sci*, **13**(2) (2000), 427-430 [12 Ref].

Evaluation of herbaceous flora growing dominantly on soil polluted by carbonaceous sugar mill effluent was carried out with a view to find out species tolerant to the pollutants. It had been found that *Commelina benghalensis*, *Commelina longifolia*, *Alternanthera sessilis*, *Eichhornia crassipes*, and *Sagittaria sagittifolia* showed natural dominance at a particular site every year and the adaptation ability to survive and grow under stress of carbonaceous sugar mill pollutants. These naturally selected species are tolerant and recommended for restoration of soil polluted by industrial effluents.

**0101-114.** Mukhopadhyay SK, Chatterjee A, Gupta Ranjan, Chattopadhyay Buddhadev (Hooghly Mohsin Govt Coll, Chinsurah 712101, West Bengal). **Rotiferan community structure in a tannery effluent stabilization pond in east Calcutta wetland ecosystem.** *Cheml Environ Res*, **9**(1&2) (2000), 85-91 [16 Ref].

Nine rotifer species were observed to thrive in a fishpond fed by tannery effluents. Several Brachionoids were observed to be highly tolerant to different adverse physico-chemical conditions. Correlations between the populations of different rotiferan species and physico-chemical factors were noted. Different indices for the rotifer community structure were calculated. Stressful physico-chemical conditions apparently regulated the population size as well as species diversity.

**0101-115.** Naik ST, Neelannavar TN, Patil DK (Dept Forest Prot, Coll Forestry, Univ Agricl Sci, Dharwad 581401). **Influence of tree crops on soil micro-organisms.** *Myforest*, **36**(2) (2000), 99-104 [8 Ref].

Soils under tree species in natural forest and agricultural field were tested for their influence on soil micro-organisms. Highest fungal population was found under *Eucalyptus* (14.5 x 10<sup>3</sup>/g of soil), highest actinomycetes population was found under

natural forest (241 x 10<sup>3</sup>/g) while highest bacterial population was observed under *Acacia auriculiformis* (3.3 x 10<sup>3</sup>/g of soil).

**0101-116.** Pandey AC, Gopal Krishan, Pandey AK (Dept. Fisheries, Narendra Deva Univ Agricul Tech, Kumarganj, Faizabad 224229). **Pollution and fish physiology: a review.** *Aquacult*, **1**(1) (2000), 1-8 [26 Ref].

Harmful impact of different heavy metals, biocides, dyes etc. on the various life activities of fishes has been discussed. Most of pollutants have been found to induce mortality, genotoxicity and histopathology, and impair respiration, metabolism and enzyme activities in affected fishes. Studies are restricted to few species of fishes, majority of them being air-breathers.

**0101-117.** Pandit BR, Pandya Ushma, Prasannakumar PG (Bhavnagar Univ, Bhavnagar 354002). **Studies on biomass magnitudes in the wastelands of the Bhavnagar district (Gujarat).** *Advt Plant Sci*, **13**(2) (2001), 447-455 [24 Ref].

A study on biomass magnitude of wastelands of Bhavnagar district was conducted. Almost all the sites showed maximum AGB (above ground biomass) values in July but found a general trend of constant fall in the values from July to October. The BGB (below ground biomass) values had constant rise up to August and then declined up to October except some localities. The peak ANP (above ground net production) could occur during July but BNP (below ground net production) could not show any particular trend.

**0101-118.** Petare RK, Khodake SP, Jahagirdar VG (Kamps Coll, Pimpalner, Dhule). **Nitrogen metabolism in monocot and dicot plant in relation to external nitrogen source – vermicast.** *Eco Env Conserv*, **6**(4) (2000), 485-488 [11 Ref].

Vermicast/vermicompost is a rich source of nitrogen as well as it provides the best media for bio-degradation of various chemicals. Present work is undertaken to find out the activity of vermicast, which helps in synthesis of building blocks in the plants.

**0101-119.** Piska Ravi Shankar, Divakara Chary K (Fisheries Lab, Dept Zoo, PG Coll Sci, Osmania Univ, Saifabad, Hyderabad 500004). **Impact of trophic nature of reservoir on the reproductive capacity of cat fish, *Mystus bleekeri* (Day).** *Eco Env Conserv*, **6**(4) (2000), 447-452 [25 Ref].

Study deals with the effect of trophic nature of reservoirs on the reproductive capacity of a freshwater cat fish, *Mystus bleekeri* (Day). Three reservoirs are selected for this study, an oligotrophic reservoir – Osmansagar, a mesotrophic reservoir – Mir Alam reservoir and eutrophic reservoir – Huassainsagar. The absolute and relative fecundities declined significantly ( $P < 0.05$ ) in eutrophic and increased significantly ( $P > 0.5$ ) in mesotrophic reservoir. This indicates that the trophic nature of reservoir plays a pivotal role on reproductive capacity of the fish.

**0101-120.** Prasannakumari AA, Arathy MS, Ganga Devi T (Dept Bot, Univ Coll, Thiruvananthapuram 695034, Kerala). **Bio-geo-chemical studies of a temple pond with special reference to macroflora.** *Polln Res*, **19**(4) (2000) 623-631 [35 Ref].

Month wise and season wise studies on physico-chemical parameters of water and bio-chemical components of associated macroflora and sediment have been carried out in order to elucidate their interrelationship in a lentic water body (Subrahmonia Swamy Temple pond). Analytical data revealed that the macrophytes showed variation in their chemical composition although the hydrological conditions were the same.

**0101-121.** Prasanthan V, Vasudevan Nayar T (Div Marine Chem, Dept Aquatic Bio Fisheries, Univ Kerala, Karyavattam (P.O.), Thiruvananthapuram 695007). **Impact assessment – hydrological studies on Parvathyputhen AR.** *Polln Res*, **19**(3) (2000), 475-479 [10 Ref].

Hydrological parameters were measured for a period of six months at five different stations along Parvathyputhen Ar. The data on DO revealed that the ecosystem is a reducing environment. The results on micronutrients suggests that the Parvathyputhen Ar is polluted with high load of nitrite and phosphate. In general, the Parvathyputhen Ar is highly polluted with nutrients.

**0101-122.** Ravikumar R, Shadaksharaswamy N, Somashekar PK (Dept Geo, Bangalore Univ, Bangalore, 560056). **Soil fertility status of land around granite quarries and crushing sites of Bangalore district.** *Eco Env Conserv*, **6**(4) (2000), 467-469 [8 Ref].

Paper attempts to know the fertility of soils around quarries and crushing sites. Seventy soil samples were collected and analyzed for different soil fertility parameters. An assessment is made based on the intensity of quarrying and by comparing the analytical data of soil sample with the fertility-rating chart. Soil properties around mechanized and semi-mechanized quarries are affected compared to that around manual quarries.

**0101-123.** Sharma RK, Rathore Vinitha (PG Dept Zoo, Janta Coll, Bakewar, Etawah 206124, UP). **Pollution ecology with reference to commercially important fisheries prospect in a rural based water body: the lake Sarsai Nawar, Etawah in (U.P.) (India).** *Polln Res*, **19**(4) (2000), 641-644 [21 Ref].

Some abiotic parameters were studied to assess the degree of pollution in a lake of Etawah (U.P.). Physicochemical analysis revealed higher pollution in summer. This is further confirmed by the presence of pollution indicator in the lake. The lake also contained a variety of fishes including commercially important species.

**0101-124.** Shastri Yogash (Dept Bot, MSG Coll, Malegaon Camp, Dist Nasik, Maharashtra). **Algal diversity of river Mosam.** *Eco Env Conserv*, **6**(4) (2000) 491-492 [9 Ref].

Investigation deals with diversity of algae in a river Mosam, Malegaon, Dist-Nasik, Maharashtra. In all 141 algal taxa comprising of 33 cyanophyceae, 41 chlorophyceae, 44 bacillariophyceae and 23 euglenophyceae have been recorded. The diatoms dominated over other classes of algae.

**0101-125.** Shekhawat C, Tripathi GT (25, Garnett Place, Norwood, NJ 07648, USA). **Impact of environmental factors on some soil nematodes.** *Indian J Environ Sci*, **4**(2) (2000) 117-123 [18Ref].

Various environmental factors influence the distribution of soil nematodes in different parts of the globe. The main climatic factors responsible for the geographical

distribution of nematodes are temperature and precipitation. Sometimes they have been used to forecast the possible spread of nematode pests in agricultural fields. Present review provides a comprehensive and useful description on the environmental control of soil nematodes for the benefits of agricultural and environmental scientists.

**0101-126.** Shrivastava VS, Dusane Abhay B (Dept PG Std Res Chem, GTP Coll, Nandurbar 425412, MS). **Changes in nitrogen and phosphorus status under general and waste irrigation.** *Polln Res*, **19**(2) (2000), 297-301 [14 Ref].

Soil samples have been collected from Nandurbar to Taloda and Shahada towns of the Satpura region where various crops were cultivated. The nitrogen and phosphorus status beneath the crops has been evaluated. The soil profile of the above area was open and semi-sandy in texture. The soil beneath the cultivated crops were enriched in nitrogen and phosphorus. The concentration of nitrate-N, available-P and total -P has been observed in soil extracts.

**0101-127.** Sidharthan M, Umamaheswara Rao M, Prabhaker ChV, Chandramohan P (Dept Bot, Andhra Univ, Visakhapatnam 530003). **Studies on water quality and microalgae of the industrial sea water intake site at Visakhapatnam.** *Polln Res*, **19**(2) (2000), 237-239 [13 Ref].

Studies were made on the water quality and microalgal abundance of the sea water intake site at North Western Arm (NWA) of the Visakhapatnam harbour from where the fertilizer and petrochemical industries draw sea water for cooling purpose. The free floating cosmopolitan species *Skeletonema* was also seen abundantly in the water samples of this area. Magnitude of pollution in the study site when compared to those of unpolluted regions of Visakhapatnam coast and its relation to microalgal fouling are discussed.

**0101-128.** Sondhia Shobha (Dept Org Chem, Centl Inst Fisheries Edn, 30, GN Block, Salt Lake, Calcutta 700091). **Status and study of physio-chemical parameter and potentiality of Nalban sewage fed fisheries, Salt Lake, Calcutta.** *Aquacult*, **1**(1) (2000), 9-12 [21 Ref].

The analytical work on sewage fed fisheries is conducted to assess the water quality, production and potentiality in terms of fish prawn culture in Nalban sewage fed

fisheries project for 90 days. It was observed that the physio chemical parameters of the water body was within the normal range. The heavy metal concentration are in the normal range except chlorides and sodium which showed the higher value 42 mg/1 and 55mg/1 respectively and oil and grease, phenols, are present in low concentration.

**0101-129.** Souza JD, Fernandes EH, Kenkre V (Goa Univ, Dept Microbio, Taleigao Plateau, Goa 403206). **Studies on the effects of shrimp farmers on the estuaries in Goa.** *Indian J Environ Prot*, **19**(10) (1999), 721-728 [8 Ref] (Late Recd).

The pollution which was confined in the pond, with time, affected the estuarine waters both near the outlet points as well as the inlet. It was also noticed that the levels of microorganisms in water bodies rose during the progress of shrimp farming activity. The rise in the level of the chemicals and bacteria not only put stress on the shrimp population in the farm, but also in the wild, thus making them prone to infections and resulting in epidemics.

## **Nature and Natural Resources Conservation**

**0101-130.** Basu Ram Sankar (Bot Dept, Achhruram Memorial Coll, Jhalda 723202, Dt Purulia, West Bengal). **Exotic American plants employed as ethnomedicine in Purulia district of West Bengal.** *Adv Plant Sci*, **13**(2) (2000), 521-523 [3 Ref].

On an ethnofloristic survey of Purulia district 12 species of exotic plants are known to have been used by tribals as ethnomedicinal plant species. Besides 23 indigenous plant species also are used . Many of these uses are not known outside the tribal community.

**0101-131.** Bhaskar V, Nandini D, Shivaprakash HB, Anjanappa M (Reg Cent, Natl Afforestation Eco Dev Bd, UAS, GKVK, Bangalore 560065). **Tree diversity and regeneration status in Devarakadu (sacred groves) of Kodagu district, Karanataka.** *Myforest*, **36**(2) (2000), 105-120 [10 Ref].

Devarakadu or sacred groves in Kodagu district are of special nature as they have remained in near virgin state and in the climax form and probably constitute the

only representation of the type of forest that existed in the region. Regeneration of primary species in Devarakadu was found to be influenced by the extent area of Devarakadu and biotic interference. Some strategies have been suggested for conservation and improvement of Devarakadu.

**0101-132.** Gopi Sundar KS, Kaur Jatinder, Choudhury BC (Wildlife Inst India, PB 18, Chandrabani, Dehradun 248006). **Distributor, demography and conservation status of the Indian sarus crane (*Grus antigone antigone*) in India.** *J Bombay Natl Hist Soc*, **97**(3) (2000), 319-339 [29 Ref] .

A district-level survey to determine the distribution, demography and status of the Indian sarus crane (*Grus antigone antigone*) was carried out. The distribution range of the sarus crane in India has been drawn. The sarus crane population in India was seen to have an overall low percentage of breeding pairs in the population, and few juveniles, suggesting low recruitment. Factor significantly affecting the breeding are discussed. Changes in land use patterns are presumed to affect habitat use by sarus cranes. The implications of the above factors on the conservation of the species are discussed.

**0101-133.** Maruthi KR, Krishna V, Manjunatha BK, Nagaraja YP (Dept Life Sci, Kuvempu Univ, Shankaraghatta 577451). **Traditional medicinal plants of Davanagere district, Karnataka with reference to cure of skin diseases.** *Env Eco*, **18**(2) (2000), 144-446 [14 Ref].

Davanagere district in Karnataka, is bestowed with diverse range of vegetation. A medico botanical survey on this area revealed some information about the use of plants to cure various cutaneous diseases like, leprosy, eczema, scabies gonorrhoea, ringworm, boils, sore eyes and wounds. Paper documents the mode of preparation and application of drugs from 30 angiosperm species.

**0101-134.** Nanda Kumar NV, Vijaya Lakshmi KM, Rajasekhar M, Ameer Basha S, Rama Krishna T (AP Forestry Proj, Dept Zoo, SV Univ, Tirupati 517502). **Survey of golden gecko, habitat analysis and conservation in Tirumala Hills.** *Eco Env Conserv*, **6**(4) (2000), 435-439 [4 Ref].

A survey was made in Tirumala Hills of Seshachalam range near Shilathoranam area (Natural Bridge) in the rock boulders. About 24 golden geckos (*Calodactylodes*

*aureus*) were cited in different rock boulders present within 1-km distance from Shilathoranam area. It is an endemic and endangered animal and the oldest rock formations are of great ecological value, which provide habitat for golden gecko. This habitat is partly destroyed due to construction of buildings and quarrying. Remedial measures are suggested.

**0101-135.** Parandiyal AK, Samra AJS, Singh KD, Singh Ratan, Rathore BL (Centl Soil Water Conserv, Res Trng Inst, Res Cent, Kota 324002). **Floristic diversity of Chambal ravines under varying levels of protection.** *Indian J Soil Conserv*, **28**(2) (2000), 160-166 [27 Ref].

Natural vegetation of Chambal ravines at Kota (Rajasthan) was studied for assessing the impact of varying levels of biotic disturbances on the phytosociological characters of the flora. Three different sites viz., protected, partially disturbed and unprotected ravine forests were sampled from top, slope and bed by quadrant method. Species richness and overall plant density in the woody layer increased with decreasing biotic pressure. Species richness varied from 4 to 16 in less protected to protected sites in the woody layer, the overall plant density varied from 1780 to 11380 ha<sup>-1</sup> in the woody layer comprising of trees and shrubs.

## Health and Toxicology

**0101-136.** Annadurai G, Rajesh Babu S, Murugan T (Anna Univ, Dept Cheml Engng, Alagappa Coll Techno, Chennai 600025). **Studies biodegradation of a o-chlorophenol by *Pseudomonas putida* (NICM 2174).** *Indian J Environ Prot*, **19**(10) (1999), 744-747 [13 Ref] (Late Recd).

*Pseudomonas putida* were used to protect the microbes from confronting shock loads of concentrated o-chlorophenol. The parameters chosen for the study of biodegradation of o-chlorophenol were concentration of o-chlorophenol, pH and temperature. The degradation followed the Box-Behnken design model and analysis of variance have been applied to the experimental degradation studies. Response surface

methodology was used as an experimental design for allocation of treatment combinations.

**0101-137.** Avasn Maruthi Y, Ramakrishan Rao S (Dept of Environ Sci, Andhra Univ, Visakhapatnam 530003). **Effect of sugar mill effluent on organic reserves of fish.** *Polln Res*, **19**(3) (2000), 391-393 [14 Ref].

The physico-chemical characteristics of sugar mill effluent, discharged from Tummapala sugar factory, Anakapalli (Andhra Pradesh), and their impact on local fish, *Channa punctatus* were observed. High values of (COD) reveal the presence of high concentration of biodegradable organic matter in the effluent. The harmful effects of effluent was also studied with respect to survival of fish. The consequential demand on organic reserves is analyzed and established.

**0101-138.** Balasubramani V, Regupathy A (Dept Entom, Tamil Nadu Agricul Univ, Coimbatore 641003, Tamil Nadu). **Evaluation of dietary intake of HCH and DDT in Coimbatore district, Tamil Nadu.** *Indian J Environ Toxico*, **10**(1) (2000) 23-25 [16 Ref].

To estimate the intake of HCH and DDT as residues in food, duplicate portions of food samples were collected from volunteers and analysed by gas chromatography. Out of the five food groups viz., cereals and pulses, fruits and vegetables, milk and milk products, non vegetarian items and water and beverages, the fatty acid like milk, milk products egg and meat were the main source of these insecticide residues. These items contributed for more that 50 per cent of the total dietary intake.

**0101-139.** Bohra NK, Purohit DK (Arid Forest Res Inst, Jodhpur, Rajasthan). **Fungal toxins-their adverse effects on living organism.** *Indian J Environ Sci*, **4**(2) (2000) 163-168 [25 Ref].

The toxic syndromes induced by the ingestion of mycotoxin contaminated food and feeds are referred to a primary Mycotoxicosis. Mycotoxins may also pass through the food chain into animal products such as milk or meat and illness caused by the consumption of these products is called as secondary Mycotoxicosis. About 160 mould species are known to produce Mycotoxins and other metabolities.

**0101-140.** Dahiya Anju, Saxena Prabhu N (Sch Environ Sci, Jawaharlal Nehru Univ, New Delhi 110067). **Effect of nitric oxide on lung hydrolytic enzymes of *Sciurus palmarum* Linn.** *Polln Res*, **19**(2) (2000), 267-270 [20 Ref].

The hydrolytic enzymes have been examined in the lungs of squirrels exposed to fresh air (control); 25 ppm and 35 ppm nitric oxide for 5, 10 and 20 days at one hour/day. There was a parallel decrease in the content of total protein below control values at 25 ppm and 35 ppm respectively. These alterations are suggestive of possible mechanisms of lung injury due to the gas in question.

**0101-141.** Dahiya S, Kaur Amarjeet (Guru Jambheshwar Univ, Dept Environ Sci Engng, Hisar 125001). **Studies on removal of fluoride by coconut coir pith carbon.** *Indian J Environ Prot*, **19**(11) (1999), 811-914 [10 Ref] (Late Recd).

Activated carbon prepared by carbonization of coconut coir pith carbon (CPC) in presence of sulphuric acid was used for defluoridation without any chemical treatment as well as after impregnation with different (1% and 2%) alum dose. The defluoridation capacity of CPC becomes approx. 1.5 and 2.0 times, after impregnation with 1% alum dose and 2% alum dose, respectively. 10 gm/L of CPC impregnated with 2% alum could remove upto a maximum 78.8% fluoride from standard fluoride solution of 2.5 ppm, after a contact period of 12 hrs.

**0101-142.** Dahiya Sudhir, Kaur Amarjeet, Jain Nalini (Dept Environ Sci Engng, Guru Jambheshwar Univ, Hisar 125001, Haryana). **Prevalence of fluorosis among school children in rural area, district Bhiwani - a case study.** *Indian J Environ Hlth*, **42**(4) (2000) 192-195 [6 Ref].

A survey was conducted in schools of Juai Kalan village of district Bhiwani to assess the prevalence of fluorosis among school children. A total of 1014 individuals were examined and out of them, 916 children were affected by this dental lesion at various stages. Children in all age groups were affected by dental fluorosis. There was slightly higher percentage of this problem among male children than that of female children.

**0101-143.** Das Satabdi, Kaviraj Anilava\* (\*Dept of Zoo, Univ Kalyani, Kalyani 741235, West Bengal). **Effectiveness of single superphosphate to control the toxicity of cadmium in aquatic ecosystem.** *J Nature Conserv*, **12**(1) (2000), 37-43 [19 Ref].

Short term (96h) and long term (120d) bioassays were made respectively in the laboratory and in outdoor artificial enclosures to test the effectiveness of single superphosphate to control the toxicity of cadmium in aquatic ecosystem. A dose of 10 mg/1 single superphosphate could reduce the susceptibility of common carp fry, a copepod plankton and an oligochaete worm to acute doses of Cd. Accumulation of Cd in different tissues of common carp following exposure to 2.5 mg/1 Cd was also significantly reduced by single superphosphate.

**0101-144.** David CV, Shrivastava VK (PG Res Cent, Dept Zoo, St Thomas Coll, Trichur 680001). **Cadmium chloride, lead nitrate and mercuric chloride induced changes in hypothalamic gamma-aminobutyric acid and glutamate levels in male mice, *Mus musculus* (P).** *Polln Res*, **19**(2) (2000), 311-314 [25 Ref].

A single intraperitoneal injection of cadmium chloride and mercuric chloride were administered to male mice *Mus musculus* (P) and the hypothalamic gamma-aminobutyric acid (GABA) and glutamate levels were quantified on 31st and 61st day. The GABA levels were significantly increased in all the treated groups after 30 and 60 days of treatment. But insignificant elevation was noticed in Pb NO<sub>3</sub> after 30 days of exposure.

**0101-145.** Dhanapakiam P, Ramasamy VK (6/1037 Sakthinagar, Kalinga Rayon Palayam, Mettupalani Andawar Koli (St.) Bhavani – 638301, Dist Erode, Tamil Nadu). **Toxic effects of copper and zinc mixtures on some haematological and biochemical parameters in common carp, *Cyprinus carpio* (Linn.).** *J Environ Bio*, **22**(2) (2001), 105-111 [29 Ref].

biochemical parameters in fish. *Cyprinus carpio* at sublethal level over the period of 30 days. Heavy metal significantly decreased total RBC count, haemoglobin, haematocrit (Hct) (except copper after 10 days exposure). The WBC count was increased significantly in all the treated fish. The MCH, MCHC, MVC were increased

depending upon the exposure period; declined PVC was noticed at 1% level of significance after 30 days on all the treated fish.

**0101-146.** Dutt Dev, Kumar P, Acharya Shveta (Alok Vigyan Mahavidhyalaya, Kekri, Ajmer 305404). **Mercury contamination in *Puntius sophore*: accumulation and metabolic disorder.** *J Nature Conserv*, **12**(1) (2000), 57-63 [21 Ref].

The accumulation of mercury (Hg) and metabolic disorder as changes in phosphatases activity were observed in different tissue of a fresh water fish *Puntius sophore* induced of 1/5th fraction of 96 hrs LC50 of HgCl<sub>2</sub> and CH<sub>3</sub> HgCl after exposure of 5, 10 and 15 days. The mercury accumulates and operates as physical toxicant disrupting the integrity of cellular structures without which vital process fail to proceed adequately.

**0101-147.** Goswami K, Bandopadhyay A, Banerjee SK, Bhattacharya B (Dept Biochem, Vivekananda Inst Medl Sci, 99 Sarat Bose Rd, Calcutta 700026). **Enzymes in lead smelting factory workers: effect of ascorbic acid supplement.** *Indian J Occupl Environ Med*, **4**(2) (2000), 83-85 [9 Ref].

Different bio-chemical parameters of 44 male lead smelting factory workers exposed to the fumes and dust of lead for the last 10 to 25 years in Calcutta of West Bengal were analysed before and after ascorbic acid therapy and were compared with 22 controls matched for age and economic status. These results suggest that lead toxicity augments free radical generation, lipid peroxidation and promotes decline in antioxidant enzymes, which could not be totally recovered by the administration of ascorbic acid.

**0101-148.** Gupta VK, Sharma JP, Verma AK (Rural Dev Unit, Regl Res Lab (CSIR), Canal Rd, Jammu 180001). **Effect of some fertilizers on the early developmental stages of *Cyprinus carpio* Linn.** *Polln Res*, **19**(3) (2000), 369-375 [29 Ref].

The toxic effects of these agrochemicals (fertilizers) on the percentage of hatching and development of larval abnormalities has been recorded and LC50 values worked out. The study suggests the both DAP as well as MOP exert significant ( $P < 0.01$ ) biological effects on the eggs and larvae of this fish species. A comparison of LC50 values indicate that larvae are more sensitive than eggs to the toxic effects of these

fertilizers and the possible reasons for the changes in the said parameters have been discussed.

**0101-149.** Jain Amita, Agarwal Meetu, Rai Kavita, Shrivastava Rohit, Dass Sahab (Dept Chem, Fac Sci, Dayalbagh Edn Inst, Dayalbagh, Agra 282005). **Physico-chemical studies on fluoride sorption by alluvial soil.** *Polln Res*, **19**(4) (2000), 585-589 [21 Ref].

Fluoride sorption studies were performed on composite soil and two soil separates i.e. coarse fraction and fine fraction. Fine fraction characterized by predominance of colloidal particles and strong association with organic matter exhibited maximum sorption of fluoride. The fluoride sorption results obtained at pH  $4.2 \pm 0.31$  was maximum and decreased at high pH of  $7.4 \pm 0.23$  and  $9.2 \pm 0.36$ . The equilibration period of 1 h yielded a maxima for sorption data in most of the cases.

**0101-150.** Joia BS, Battu RS (Dept Entom, Punjab Agricl Univ, Ludhiana 141004). **Occurance of DDT and HCH residues in breast milk in Punjab (India).** *Indian J Environ Toxicol*, **10**(11) (2000), 16-18 [12 Ref].

Breast milk collected from rural areas of two districts of Punjab viz., Ludhiana where DDT is sprayed in public health programme, and Sangrur where HCH was used for this purpose, were analyzed for the presence of DDT and HCH residues. Both DDT and HCH were detected in all the 121 samples examined. The average levels of DDT and HCH residues in samples from DDT sprayed areas were 0.70 and 0.21 mg kg<sup>-1</sup>, respectively. For samples from HCH sprayed areas, these values were 0.44 and 0.29 mg kg<sup>-1</sup> respectively.

**0101-151.** Kabila V, Saravana Bhavan P, Geraldine P (Dept Zoo, Govt Coll Women, Kumbakonam 612001). **Induction of metal-binding protein in the freshwater prawn *Macrobrachium malcolmsonii* following exposure to nickel.** *J Nature Conserv*, **12**(1) (2000), 95-101 [40 Ref].

Juveniles of the economically important freshwater prawn, *Macrobrachium malcolmsonii* were exposed to 1/6th (180 µg/L) of the 96 h LC<sub>50</sub> of nickel (1.08 mg/l) for a period of 21 days. Both the gills and hepatopancreas of test prawns contributes the synthesis of metal binding protein and play a role in detoxification during nickel toxicity.

Such induction of metallothionein is regarded as responses that protect other subcellular components from the toxic effects of excessive concentrations of free nickel in the body of *M. malcolmsonii*.

**0101-152.** Karmakar Sneha, Saxena Anupama, Verma Ramendra G, Karmakar Sanjay, Mathur Keshav, Mathur Subhi, Singh Shalini, Khadikar Padmakar (Res Div, Laxmi Fumigation Pest Contl Pvt Ltd, 3-Khatipura, Indore 452007). **Determining environmental behaviour and biological activity of RDX and related compounds.** *Polln Res*, **19**(3) (2000), 337-344 [28 Ref].

Paper attempted to derive structure property relationships using topological indices for predicting selected properties of RDX and related compounds used as explosive and propellants. In addition, paper proposed topological method for estimating these compounds. The topological indices used being Szeged (Sz)-, Wiener (W)-, normalized Szeged (Sz/N<sup>2</sup>)- and Wiener (W/N<sup>2</sup>)-indices.

**0101-153.** Karuppasamy R (Dept Zoo, Annamalai Univ, Annamalainagar 608002). **Short and long term effect of phenyl mercuric acetate on protein metabolism in *Channa punctatus* (Bloch).** *J Nature Conserv*, **12**(1) (2000), 83-93 [25 Ref].

Protein and total free amino acid content in liver, muscle, intestine, kidney, gill and brain of *Channa punctatus* intoxicated with high and low concentration of phenyl mercuric acetate (PMA) during short and long term exposure, respectively, have been studied. The observed results are the reduced level of protein content and elevated level of total free aminoacids in all the tissues of the fish in both periods and concentration.

**0101-154.** Karuppasamy R (Dept Zoo, Annamalai Univ, Annamalainagar 608002). **Effect of phenyl mercuric acetate on the succinic and lactic dehydrogenase activities in the tissues of fish, *Channa punctatus* (Bloch).** *J Expt Zoo India*, **4**(1) (2001), 81-91 [17 Ref].

Succinic and lactic dehydrogenase activities in the brain, liver, gill, muscle, intestine and kidney of *Channa punctatus* exposed to high and low sublethal concentration of phenyl mercuric acetate, respectively, for short term exposure have been studied. The observed result indicates that inhibition of succinic and elevation of lactic dehydrogenase activities in all the tissues of both concentration and period of

exposure, the maximum being in the low concentration of long term exposure over high concentration of short term exposure.

**0101-155.** Khunyakari Rupesh P, Tare Vrushali, Sharma RN (Entomo Sec, Natl Chem Lab, Pune 411008). **Effects of some trace heavy metals on *Poecilia reticulata* (Peters).** *J Environ Bio*, **22**(2) (2001), 141-144 [13 Ref].

Three trace heavy metals viz., nickel, copper and zinc were studied for their toxic action against *Poecillia reticulata* (Peters). Among these, copper was found to be most active followed by zinc and nickel. Accumulations of these metals as well as behavioural studies were carried out after exposing fish to sub-lethal concentration of LC20. It was found that the highest quantity of nickel was accumulated in the fish body followed by zinc and copper.

**0101-156.** Kulkarni JR, Patel SS, Shrivastava VS (Dept PG Std Res Chem, GTP Coll, Nandurbar 425412, MS). **Heavy metals estimation by plasma atomic emission spectrometry and their correlation regression study.** *Polln Res*, **19**(4) (2000), 669-672 [21 Ref].

The industrial waste water and amended soil samples were collected from Sachin and Pandesara, GIDC Surat. The concentration of heavy metals like Ni, Cu, Zn, As, Cd, Pb and Hg were determined by inductively coupled plasma atomic spectrometry. The correlation and regression study have also been carried out. COD and some of the heavy metals established fair correlation with each other.

**0101-157.** Kumar Prakash, Srivastava Anjali (Natl Environ Engng Res Inst, Mumbai Zonal Lab, 89/B, Dr AB Rd, Worli, Mumbai 400018). **Health impacts of municipal solid waste composting facilities in India.** *J Indian Assoc Environ Manag*, **27** (2000), 151-153 [8 Ref].

Safe distances of municipal waste composting facilities from residential and sensitive areas using mathematical simulation, in view of aesthetic (odour) and health impact due to emission of VOCs and odourous gases have been suggested. The areas having only odour impact and health impact have been delineated based on Odour Threshold Values and OSHA Threshold level values.

**0101-158.** Kumar S, Verma Yogendra, Gautam AK (Natl Inst Occupl Hlth, Meghani Nagar, Ahmedabad 380016). **Possible use of Allium test in environmental monitoring.** *Polln Res*, **19**(4) (2000), 555-560 [38 Ref].

Paper describes the usefulness of Allium test system for monitoring the toxic and genetic effects of environmental chemicals. The available data suggests that Allium test can be very well used in monitoring the toxicity of pure chemicals, complex mixture of chemicals, effluents of various industries, river water and also contamination in drinking water etc. alongwith other test systems for initial screening purposes.

**0101-159.** Kumar Ravindar (PG Dept Zoo, SSV (PG) Coll, Hapur – 245101). **Chronic ammonia induced histopathological changes in Indian subtropical freshwater murrel *Channa punctatus* (Bloch).** *Polln Res*, **19**(4) (2000), 611-613 [11 Ref].

The effect of chronic exposure to a test concentration (70 ppm) of ammonia has been observed in kidney of teleost fish *Channa punctatus* (Bloch). In kidney, proximal tubules were highly affected. The nucleus in all the tubular cells was pycnotic and cytoplasm was granular. It was observed that changes at 28 days was more gradual in comparison to 14 days of ammonia intoxication.

**0101-160.** Kumarasamy P, Kartikeyan A, Senthilmurugan S (PG Dept Zoo, Khadir Mohideen Coll, Adirampattinam, 614701, Tamil Nadu). **Effect of sublethal concentration of cadmium on oxygen consumption and biochemical constituents in different salinities in an estuarine hermit crab *Clibanarius infraspinus* (Hilgendorf).** *Indian J Environ Sci*, **4**(2) (2000), 153-156 [10 Ref].

*Clibanarius infraspinus* was exposed to the sublethal concentration of 1 ppm of cadmium at different salinities for 96 hrs. The rate of oxygen consumption of the crab and the biochemical constituents were analyzed. The rate of oxygen consumption increased with decrease in salinity. The amount of free sugar and protein increased when the animals were exposed to low salinities, whereas the amount of lipid decreased with decrease in salinities.

**0101-161.** Leela Siva Parvathi M, Chandra Sekhara Reddy D, Nadamuni Chetty A (Dept Fishery Sci Aquacult, SV Univ, Tirupati 517502). ***In vivo* recovery and long term effect of phosalone on total lipid and triglycerides in freshwater fish, *Tilapia mossambica* (Peters).** *Polln Res*, **19**(3) 2001, 345-351 [19 Ref].

Two different size groups *Tilapia mossambica* (Peters) were selected and each size group divided into three subgroups. Total lipid and triglyceride content of liver, muscle and gill were measured. Both size groups of control fish exhibited a positive correlation between total lipid biomass and triglycerides biomass. Statistically significant difference was found between control vs long term and short term exposed fishes of both size groups. Phosalone effect was more in liver when compared to muscle and gill. Early recovery in gill from phosalone stress was noticed in both sizes of fish.

**0101-162.** Mandal Om Prakash, Mandal TN, Singh BK (Dept Bot, TP Coll, Madhepura, Bihar). **A review on pesticides toxicity: boon or curse.** *Polln Res*, **19**(2) (2000), 315-317 [6 Ref].

Pesticides form an important tool in today's agriculture as a plant protection agent for boosting production. But their indiscriminate use, apart from being an occupational hazard in developing world, is today posing a serious threat to human health. Various toxicity surveys conducted on the living world and few hazardous impacts and specific factors involved in the same are furnished.

**0101-163.** Margarat A, Jagadeesan G (Dept Zoo, Annamalai Univ, Annamalai Nagar 608002). **Effect of *Tribulus terrestris* extract on mercuric chloride poisoning in mice, *Mus musculus* – a biochemical study.** *Indian J Environ Toxicol*, **10**(1) (2000), 14-15 [11 Ref].

Effect of oral administration of mercuric chloride on mice was observed at sublethal dose for 45 days. Brain tissue showed decreased level of AchE and SDH activity and increased level of LDH activity during the period of mercury exposure. Treatment with benzene extract of *Tribulus terrestris* gave early recovery in comparison to ethyl acetate extract.

**0101-164.** Margarat A, Jagadeesan G (Dept Zoo, Annamalai Univ, Annamalai Nagar 608002). **Influence of penicillamine on reduced glutathione level (GSH) in liver tissue of mercury intoxicated mice.** *Polln Res*, **19**(4) (2000), 571-573 [27 Ref].

Studies on the reduced glutathione (GSH) effects of the sub-lethal dose of mercury on mice, *Mus musculus* revealed that these metallic salts are producing severe changes in its cellular levels in liver leading to the death of the mice. The mercury intoxicated mice again treated with penicillamine (upto 30 days) restoring the tissue to reorganize its GSH level to near normal level/a little over untreated control.

**0101-165.** Mary Chandravathi V, Rajendra Kumar G, Pratap Reddy\* (\*Dept Zoo, Univ Coll Sci, Osmania Univ, Hyderabad 500007). **Lead induced oxidation stress and antioxidative enzyme responses in lungs and brain of mice.** *Indian J Environ Toxicol*, **10**(2) (2000), 55-57 [21 Ref].

The level of lipid peroxidation, XOD, SOD, GSH-PX, GST, GR, G-6-PDH and catalase activities in the lungs and brain were estimated in lead toxicity in Swiss albino mice of 25 – 30 days of age. The XOD and LPO levels in lungs and brain on 7th and 15th day were significantly increased. The anti-oxidant enzymes like SOD, GSH-PX, GST, GR, G-6-PDH and catalase level progressively decreased in lungs and brain on 7th and 15th day.

**0101-166.** Mary Chandravathi V, Rajendra Kumar G, Pratap Reddy K\* (\* Dept Zoo, Univ Coll Sci, Osmania Univ, Hyderabad 500007). **Nociceptive response in mice following exposure of lead nitrate.** *Indian J Environ Toxicol*, **10**(2) (2000) 51-54 [16 Ref].

Study reports the pain sensitivity in swiss albino mice on 20,40 and 60 days, after sublethal dose (50 mg/kg/ body wt.) of lead nitrate. A significant increase in sensitivity in tail flick test, hot plate test and formalin test in experimental mice was observed at 20, 40 and 60 days showing hyperalgesic response, whereas the allodynia and writhing responses were significantly decreased showing hypoalgesic response.

**0101-167.** Mathews KT, Sukanya N, Selvanayagam M (Loyola Coll, PG Res Dept Zoo, Chennai 600034). **Studies on *Gambusia affinis* (Baird and Girard) in relation to chromosomal aberration on exposure to fenvalerate.** *Indian J Environ Prot*, **19**(10) (1999), 741-744 [14 Ref] (Late Recd).

The genotoxic effect was induced in *Gambusia affinis* exposing the experimental fish to pesticide fenvalerate. The chromosomal aberrations like sticky plates, ploidy, endoreduplications and breaks were observed. The 96 hr LC50 value of fenvalerate on *Gambusia affinis* was found to be 0.005 µg/L. The aquatic fauna like fish in such waters get exposed to toxic chemicals in natural environment due to agricultural practices for a long period of time.

**0101-168.** Melwanki MB, Seetharamappa J (Dept Chem, Karnataka Univ, Dharwad 580003). **Spectrophotometric determination of trace amounts of selenium (IV) using trifluoperazine dihydrochloride.** *Cheml Environ Res*, **9**(1&2) (2000), 59-62 [6 Ref].

A rapid method of the spectrophotometric determination of micro amounts of selenium (IV) using trifluoperazine dihydrochloride has been proposed based on the formation of a red radical cation having maximum absorption at 502 nm in HCL medium. The optimum reaction conditions are evaluated. The proposed method is applied to determine selenium content in alloys.

**0101-169.** Mitra Jayati, Banerjee Samir, Sarkar Nirmal Kumar (Dept Zoo, Univ Calcutta, Kolkata 700019). **A study of food-chain transport and haematotoxicity of lead.** *Polln Res*, **19**(3) (2000), 403-406 [12 Ref].

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

**0101-170.** Mohanty KC, Behera BC, Ahemad MJ (Dept Zoo, Salipur Coll, Salipur, Cuttack). **Genotoxic effect of mosquito repellent (Goodknight) in mice *in vivo* system.** *Polln Res*, **19**(3) (2000), 387-390 [13 Ref].

Goodknight, a mosquito repellent has been evaluated for mutagenicity by chromosome aberration assay and sperm head abnormality in mice *in vivo* system. A group of mice were exposed to smoke of Goodknight mat for different hours in an inhalation chamber. Bone marrow chromosomal and sperm slides were prepared after

whole body exposure. Statistical evaluation of the results indicated possible mutagenic effect of Goodknight mat.

**0101-171.** Mukherjee A, Mukherjee G (Krishnanagar Rd, PO Nabapally, Dist Barasat, 24 Parganas (N), 743203, West Bengal). **Ventilatory function in a group of primary school children within Calcutta metropolitan area (CMA).** *Polln Res*, **19**(3) (2000), 457-459 [9 Ref].

The work compares between the ventilatory function of two groups of primary school children, one within CMA and another in an area with better ambient air qualities. The observation are indicative of a slight but statistically significant impairment of lung function in the former group exposed to higher concentration of pollutants in the ambient air. The findings warrant long term prospective studies to assess the possible risk of developing obstructive lung disease in such children at later age.

**0101-172.** Muruganadam M, Arockia Raj A Jesu, Marimuthu K, Haniffa MA (Cent Aquacult Res Extn., St Xaviers Coll, Palayamkottai 627002). **Supplementary effect of methionine on the growth and survival of *Channa striatus* fry.** *J Expt Zoo India*, **4**(1) (2001), 71-72 [6 Ref].

The effect of supplementary methionine was studied in *Channa striatus* juveniles. Maximum growth was observed in fourth diet containing 3% of supplementation. Minimum length and weight was recorded in control diet which has no supplementary methionine. The results show that increasing amount of supplementation stimulate the growth and survival of the fry.

**0101-173.** Nagalakshmi R, Priya GK, Nagarajan Prabavathi, Venkataraman G, Samidas S (Bharat Heavy Electricals Ltd, Welding Res Inst, Tiruchirapalli 620014). **Strategies of environmental friendly shielded metal arc welding.** *Indian J Environ Prot*, **20**(4) (2000), 257-282 [6 Ref].

Paper highlights the studies on sampling and analysing welding fumes in the breathing zone and the work area. It is reported that in general carbon steel electrodes during usage produce less pollutants when compared to the alloy steel electrodes. The complexities involved vary with the type of electrodes and welding conditions. The fume

levels in different welding conditions have been evaluated along with the possible ways of controlling their levels.

**0101-174.** Nagar RN, Bhattacharya Lata (Sch Std Zoo, Vikram Univ, Ujjain, MP). **Effect of mercuric chloride on testicular activities in mice, *Musculus albinus*.** *J Environ Bio*, **22**(1) (2001), 15-18 [9 Ref].

Impaired testicular function was observed after an exposure of swiss albino mice (30 ± 2 g) to mercuric chloride. A sublethal chronic exposure (0.5 ppm for 21 days) resulted in regressed histological and histochemical properties of the testis. The changes observed were degenerated tunica albuginea, abnormal configurations of seminiferous tubules, deformed primary and secondary spermatocytes, hypertrophy and vacuolization in interstitial cells and Sertoli cells.

**0101-175.** Naruka Kavita (Dept Zoo, Jai Narayan Vyas Univ, Jodhpur 342001). **WR-2721 protection in spleen against gamma radiation.** *Indian J Environ Sci*, **4**(2) (2000), 175-178 [18 Ref].

Adult swiss albino mice, were exposed to 10 Gy of gamma rays in the presence and absence of the drug WR-2721 and they were sacrificed at various intervals from 12 hours to 28 days. The spleen was examined histologically and it was observed that WR-2721 (300 mg/kg body weight) provides protection to spleen against radiation injuries. It is concluded that this drug accelerates erythropoiesis in spleen to compensate the peripheral blood loss when the capacity of the cell production of other hematopoietic organs is partially or completely lost due to irradiation.

**0101-176.** Niphadkar PV, Pandya V (Sir Harkisonadas Narrotamdas Medl Res Soc, Raja Rammohan Roy Rd, Mumbai 400004). **Chronic obstructive pulmonary disease among taxi drivers – an occupational hazard.** *Indian J Occupl Environ Med*, **4**(2) (2000), 75-77 [8 Ref].

Vehicle population is increasing at an alarming rate in Mumbai. Study investigates the effect of pollution on lung function of taxi drivers who are considered the major contributors to the menace of pollution. A detailed questionnaire was used by which 105 taxi drivers were randomly selected by health officials. Evidence of small

airway obstruction was evidenced in majority i.e. 81% of which are taxi drivers and 14.3% had large airway obstruction.

**0101-177.** Persis VT, Kalaiarasi JMV (Centl Marine Fisheries Res Inst, PB 1603, Tatapuram PO, Cochin 628014). **Histopathological responses of *Mystus vittatus* to chronic sublethal and acute lethal toxicity of an organophosphate pesticide.** *J Expt Zoo India*, **4**(1) (2001), 103-108 [20 Ref].

The fresh water catfish, *Mystus vittatus* was subjected to chronic sublethal and acute lethal toxicity of an organophosphate pesticide. LC50 values ranged between 11-13.5 ppm. It was seen that chronic sublethal toxicity was less than acute toxicity. Histopathology revealed that defence reactions were produced in the fish exposed to chronic sublethal toxicity, which shows that the fish is resistant to the pesticide.

**0101-178.** Prasad SK, Vyas Suchita (Sch Std Zoo, Vikram Univ, Ujjain 456010). **Health problems among workers of iron welding machines: an effect of electromagnetic fields.** *J Environ Bio*, **22**(2) (2001), 129-132 [22 Ref].

The possible effects of EMFs on 100 workers were studied by means of structured interview and rating of subjective symptoms. As control, 41 sewing machine operators and assembly workers were chosen, interviewed and likewise tested. The present Indian ceiling value of 250 Tesla for the equivalent power density was exceeded in more than 50% of the machines. The highest leakage fields for EMFs were found near machines, which gave a high exposure to the hands. Eye irritation complaints were reported by 40% of the workers. The fertility outcome did not show any significant result.

**0101-179.** Praveen M (Dept Bot, Chaitanya Degree PG Coll, Warangal 506001). **Effect of acephate on *Cladophora crispata* (Roth) Kuetz.** *J Nature Conserv*, **12**(1) (2000), 123-127 [11 Ref].

*Cladophora crispata* was grown in Chu 10 medium and were maintained at  $21 \pm 1^\circ\text{C}$  temperature receiving alternate 16 hrs light and 8 hrs dark period. The culture subjected to growth were separately treated with insecticides for 12 and 24 hours using six different concentrations. The observation showed a decreasing trend with the increasing concentrations of the acephate except at lower concentrations. At 100 ppm

concentration, survival percentage completely decreased and hence the concentration was lethal.

**0101-180.** Rai Kavita, Agarwal Meetu, Dass Sahab, Shrivastava Rohit (Dept Chem, Fac Sci, Dayalbagh Edn Inst, Dayalbagh, Agra 282005). **A study on fluoride mobility in aluminium and calcium loaded soil.** *Polln Res*, **19**(3) (2000), 467-469 [13 Ref].

The effects of aluminium and calcium, present in soil, in affecting the mobility vis-à-vis fixation of fluoride (F) in soil (Entisol) have been investigated. The study has been performed under laboratory controlled conditions employing soil columns of appropriate dimensions. The study indicates that loading soil with Ca lowers F mobility significantly and the decrease is in a regular linear fashion.

**0101-181.** Rajendiran K (Dept Bot, Arignar Anna Govt Arts Coll, Karaikal 609605). **Cytotoxicity of aqueous extracts of *Parthenium hysterophorus* on *Helianthus annuus*.** *Polln Res*, **19**(2) (2000), 261-265 [8 Ref].

Paper works out the cytotoxic effects of water extracts of root, stem, leaf and inflorescence of *Parthenium hysterophorus* on *Helianthus annuus*. All extracts brought about changes in normal mitotic cycle decreasing the mitotic index with increasing concentrations and durations of the treatment, whereas chromosomal abnormalities increased rapidly, the highest being with leaf extract followed by inflorescence, stem and root. Various chromosomal aberrations were recorded in all extract applications.

**0101-182.** Ramraj, Afshan Athiya, Halappa Gowda TP, Karanth NGK (Dept Environ Engng, Sri Jayachamarajendra Coll Engng, Mysore 570006). **Sorption of copper (II) and lead (II) by microbial cultures during growth.** *Indian J Environ Hlth*, **42**(3) (2000), 95-99 [12 Ref].

Sorption of Cu(II) and Pb(II) by one yeast species and two gram-negative bacterial strains during their growth was investigated. The affinity with respect to binding followed Pb(II)>Cu(II) which obeys the Irving and Williams formula. The growth conditions for maximum removal of the metal ions from the medium were studied. A batch kinetic model was developed to determine the initial specific rate of reduction for Cu(II) and Pb(II) from the metal contaminated solution. *Pseudomonas* strain PTM is found to be an effective organism in the removal of Cu (II) and Pb(II).

**0101-183.** Rao LM, Hymavathi V (Dept Zoo, Andhra Univ, Visakhapatnam 530003). **Effect of slaughter house pollution on the haematological characters of *Channa punctata*.** *Polln Res*, **19**(2) (2000), 195-198 [39 Ref].

A detailed study on the haematology of *Channa punctata* from the Mudasarlova stream of Visakhapatnam in relation to slaughter house pollution has been undertaken. Most of the haematological parameters were observed to decrease due to pollution effect while WBC, MCV, MCH and cholesterol were observed to increase when compared to those of unpolluted waters. The results are tabulated and the possible reasons for these variations are discussed in detail.

**0101-184.** Rao LM, Manjula Sree Patnaik R (Dept Zoo, Andhra Univ, Visakhapatnam 530003, AP). **Heavy metal accumulation in the cat fish *Mystus vittatus* (Bloch) from Mehadrigeedda stream of Visakhapatnam, India.** *Polln Res*, **19**(3) (2000), 325-329 [15 Ref].

The concentration of zinc, lead and cadmium in alimentary tract, gill, muscle, kidney and liver of the fish *Mystus vittatus* from Mehadrigeedda stream were determined. Different organs were selected as the affinities of heavy metals vary with different organs. Among the three heavy metals, concentration of zinc was high in all the organs followed by lead and cadmium. The concentration of heavy metals from the natural habitat was also analysed and there is some evidence that accumulation in different organs is influenced by the variations in pH and it was more in acidic pH.

**0101-185.** Rao LM, Ramaneswari K (Dept Zoo, Andhra Univ, Visakhapatnam 530003). **Variations in acute toxicity of endosulfan and monocrotophos to *Labeo rohita*, *Mystus vittatus* and *Channa punctata*.** *Polln Res*, **19**(3) (2000), 461-465 [18 Ref].

The 96 hr LC50 values of pesticides endosulfan and monocrotophos to *Labeo rohita*, *Mystus vittatus* and *Channa punctata* have been evaluated. The calculated LC50 values of endosulfan to *Labeo rohita* was 1.404 µg/l, to *Mystus vittatus* was 1.652 µg/l and to *Channa punctata* was 2.148 µg/l. The calculated LC50 values of monocrotophos to *Labeo rohita* to *Mystus vittatus* and *Channa punctata* were 3.558 mg/l, 2.274 mg/l and 3.285 mg/l respectively.

**0101-186.** Rao Mandava V, Patil Gayatri R (Dept Zoo, Sch Sci, Gujarat Univ, Ahmedabad 380009). **Mitigative role of ascorbic acid and glutathione combination in mercuric chloride toxicity in mice: a biochemical study.** *Indian J Env Toxicol*, **10**(1) (2000), 11-13 [20 Ref].

The mitigative role of glutathione (GSH 2.5 mg/kg) and ascorbic acid (AA 500 mg/kg) combination was studied on mercuric chloride toxicity in adult male mice. Liver phosphatases, ascorbate system and phosphorylase levels were affected by mercury feeding. On the contrary, glycogen and lipid peroxidation increased both in shorter and longer duration study, showing its altered metabolism and function. Similarly, kidneys and adrenal tissues were also influenced.

**0101-187.** Rawat Dinesh Kumar, Agarwal NC, Bais VS (Environ Bio Lab, Dept Zoo, Dr Harisingh Gour Vishwavidyalaya, Sagar 470003). **Alterations in endosulfan and triazophos toxicity on *Heteropneustes fossilis* (Bloch.) in relation to pH and hardness of water.** *J Nature Conserv*, **12**(1) (2000), 51-56 [24 Ref].

Bioassay tests for the determination of LC50 values of an organochlorine (endosulfan) and an organophosphate pesticide (triazophos) were commenced on a cat fish, *H.fossilis* (Bloch) using 10 concentrations of each pesticide at different pH and hardness levels. The results were observed after 24, 48, 72 and 96 hrs. Dramatical changes in the physical behaviour of fish were recorded in each of pesticide when the concentration, exposure period and pH and hardness of test water were concerned.

**0101-188.** Reethamma KV, Hari Kumaran Nair R, Kesavachandran C, Shashidhar S\* (\*Physiol Chem Res Lab, Sch Bio Sci, Mahatama Gandhi Univ, Priyadarshini Hills, Kottayam 686560, Kerala). **Effect of wood dust on lung function.** *Polln Res*, **19**(4) (2000) 693-699 [23 Ref].

Study is carried out to investigate the functional status of lung in workers exposed to wood dust and the effects of exposure duration. The study includes 75 male wood workers and 125 controls matched for age, sex and height. A significant decrease was observed in relation to VC, IVC, FVC, FEV0.5, FEV1 and MVVInd in more than 20 years exposure group. A negative correlation was observed in VC, IVC, FVC, FEV0.05, FEV1 and MVVInd with duration of exposure.

**0101-189.** Sangli A Banu, Kanabur VV (Environ Sci Lab, Dept Zoo, Karnataka Univ, Dharwad 580003). **Lethal toxicity of cyanide and formalin to a freshwater fish *Gambusia affinis*.** *Env Eco*, **18**(2) (2000), 362-364 [6 Ref].

The lethal toxicity of sodium cyanide and formalin to freshwater fish *Gambusia affinis* were conducted by static renewal bioassay tests. The 24, 48, 72 and 96 hour LC50 values determined for sodium cyanide were 0.90, 0.70, 0.60 and 0.50 mg/liter and for formalin were 100, 97, 94 and 90 mg/liter respectively. The oxygen consumptions rate of the fish varied as the period of exposure and concentrations of toxicants increased.

**0101-190.** Santhakumar M, Balaji M, Ramudu K (Dept Zoo, KM Cent PG Std, Lawspet, Pondicherry 605008). **Effect of monocrotophos on plasma phosphatase activity of a fresh water fish, *Anabas testudineus* (Bloch).** *Polln Res*, **19**(2) (2000), 257-259 [15 Ref].

The fresh water fish *Anabas testudineus* was exposed to sublethal concentrations 1.9 ppm and 9.5 ppm of monocrotophos for 1,7, 14 and 21 days. A significant increase in the activities of acid and alkaline phosphatase were observed. The impact on phosphatase activity was high in the fishes exposed to the highest of the two sublethal concentrations.

**0101-191.** Santhakumar M, Balaji M, Ramudu K (No 3, 4th Cross Street, Thilagar Nagar, Pondicherry 605009). **Gill lesions in the perch, *Anabas testudineus*, exposed to monocrotophos.** *J Environ Bio*, **22**(2) (2001), 87-90 [13 Ref].

Histopathological effects of sublethal doses of monocrotophos on the gills have been studied by exposing the fish for a period ranging from ten to twenty days. The extent of damage to gills was dependent on the dose and duration of exposure. Histopathological changes in the gills observed were characterized primarily by hemorrhage in the primary and secondary gill lamellae. Degeneration and necrosis of epithelial cells were very prominent.

**0101-192.** Sarala Nair S (Dept Zoo, NSS Hindu Coll, Changanacherry 686012, Kerala). **Toxic effect of mercury on the haematological parameters of *Oreochromis mossambicus* (Peters).** *Polln Res*, **19**(3) (2000), 399-402 [14 Ref].

The effects of sublethal concentrations of mercury on the haematology of *Oreochromis mossambicus* were monitored. Very low concentrations of mercury induced significant changes in the haemogram of the fish. TEC, Hb & MCHC recorded higher values in heavy metal exposed fishes. The major toxic effects are increased erythropoiesis and microcytosis.

**0101-193.** Sharma Sangeeta, Saxena SK (Dept Zoo, Lucknow Univ, Lucknow 226007). **Effect of trypanosomes infection on blood ascorbic acid and serum aldolase levels on the fresh water fishes, *Clarias batrachus* and *Heteropneustus fossilis*.** *J Environ Bio*, **22**(1) (2001), 75-77 [18 Ref].

The trypanosomes presence has been found to decrease blood ascorbic acid levels in fishes, *Clarias batrachus* and *Heteropneustus fossilis* by 55.7% and 54.70% respectively. The infection also showed significant increase in serum aldolase level of these fishes by 50.19% and 48.06% respectively.

**0101-194.** Shobha Rani A, Sudharsan R, Reddy TN, Reddy PUM, Raju TN (Physio Sec, Dept Zoo, Osmania Univ, Hyderabad 500007). **Alterations in the levels of dehydrogenases in a fresh water fish, *Tilapia mossambica* (Peters) exposed to arsenite toxicity.** *Indian J Environ Hlth*, **42**(3) (2000), 130-133 [20 Ref].

The fish when exposed to the sublethal concentration of sodium arsenite for a period of 24, 48, 72 and 96 hours showed inhibition of pyruvate dehydrogenase, succinate dehydrogenase and malate dehydrogenase ( $P < 0.5$ ) while the lactate dehydrogenase activity was increased ( $P < 0.5$ ) in some selected tissues of *Tilapia mossambica*.

**0101-195.** Shobha Rani A, Sudharsan R, Reddy TN, Reddy PUM, Raju TN (Physio Sec, Dept Zoo, Osmania Univ, Hyderabad 500007). **Effect of arsenite on certain aspects of protein metabolism in fresh water teleost, *Tilapia mossambica* (Peters).** *J Environ Bio*, **22**(2) (2001), 101-104 [17 Ref].

The sublethal toxicity of sodium arsenite on protein metabolism was investigated in teleost fish, *Tilapia mossambica* at the end of 24, 48, 72 and 96 h of exposure. Total protein content, free amino acid content and activities of the enzymes aspartate amino transferase (AAT) and alanine amino transferase (ALAT) in liver, gill, brain and muscle exhibited significant ( $P < 0.05$ ) alterations throughout the investigation in relation to that of control. It is suggested that the fish is able to respond to the stressful situations by gearing up the metabolic activity as revealed by the elevated protein, amino acid content and the activities of AAT and ALAT.

**0101-196.** Shrivastava Sanjay M, Shrivastava Vinoy K (Endocrino Unit, Dept Biosci, Barkatullah Univ, Bhopal 462026). **Histopathological studies in pituitary of carbaryl treated male *Mus musculus*.** *J Nature Conserv*, **12**(1) (2000), 137-142 [12 Ref].

Adult animals were exposed to 375 ppm of carbaryl through drinking water for 15, 30, 45 and 60 days. After termination of experimental period, all the animals were sacrificed and their pituitary were dissected out. Pituitary were processed for normal histopathological studies. Necrosis and degeneration of pituitary cells were seen in a time dependent manner. This suggests that carbaryl may be involved directly or indirectly in malfunctioning of hypophysis.

**0101-197.** Singh Amarjit, Paul Dharam, Sharma Rajeshwar (Dept Biochem, Punjab Univ, Chandigarh 160014). **Biochemcial evidence on hepatocarcinogenicity of dimethoate in rat.** *Polln Res*, **19**(4) (2000), 561-564 [18 Ref].

Rats given 100 ppm dimethoate in drinking water for 60 days showed significantly lower liver microsomal cholesterol content and glucose-6-phosphatase activity. The RNA/protein and RNA/PL ratios of the dimethoate treated rat liver microsomes were also markedly low in comparison to the untreated rats. The results indicate possible carcinogenic potential of dimethoate in rat liver due to its ability to induce microsomal degranulation.

**0101-198.** Singh DV, Singh IJ, Ram RN (Coll Fishery Sci, GB Pant Univ Agricul Tech, Pantnagar 263145). **Ovaprim induced maturational and ovulatory responses in *Heteropneustes fossilis* in aerated and cythion contaminated water.** *J Expt Zoo India*, **4**(1) (2001), 33-42 [27 Ref].

Investigation was conducted to evaluate the potency of economically effective dose (0.1 ml/fish) of ovaprim (OPm) with regard to ovulatory and maturational responses under varied environmental conditions i.e. aeration and contamination with 10 & 20 ppm of pesticide, cythion, in water. In OPm injected fish kept in water without aeration, with aeration and 10 ppm of cythion, ovulation was 60%, 85% and 70% respectively. Number of ovulated eggs/fish was increased significantly in aerated and cythion contaminated water as compared with fish group maintained in normal water.

**0101-199.** Singh PK, Bhati DPS (Dept Zoo, Sch Life Sci, Inst Basic Sci, Khandari Camps, Dr BR Ambedkar Univ, Agra 282002). **Effects of sulphur dioxide exposure on haematological parameters in *Columba livia* Gemelin.** *Indian J Environ Toxicol*, **10**(1) (2000), 34-35 [11 Ref].

Alterations in certain haematological parameters of *Columba livia* were studied after exposure to 50, 100 and 200 ppm sulphur dioxide. Total erythrocyte count, haemoglobin concentration, packed cell volume and mean corpuscular volume were decreased while erythrocyte sedimentation rate and mean corpuscular haemoglobin concentration were increased after sulphur dioxide exposure.

**0101-200.** Singh Purnima, Sharma Rajeshwar, Kiran Ravi (Dept Biochem, Sector 14, Punjab Univ, Chandigarh 160014). **Modification of orpiment (As<sub>2</sub> S<sub>3</sub>) toxicity by dietary protein status in rats.** *Polln Res*, **19**(3) (2000), 411-415 [17 Ref].

Studies on liver and lung MFO enzyme activities show that high dietary protein (30%) protects against orpiment toxicity whereas low dietary protein (8%) potentiates orpiment toxicity in rats. The results imply that protein mal-nourished sections of the population using orpiment as drug might be more vulnerable to its toxic effects.

**0101-201.** Singh Seram Raghmani, Singh Nameirakpam Irabanta (Computer Sci Cent, Opp Main Gate Manipur Univ, Canchipur 795003). **The mycoflora of dusts from different niche in fruits and vegetable store cum sales shops in Imphal-a source of fungal biopollutants population in indoor air.** *Polln Res*, **19**(4) (2000), 517-521 [28 Ref].

The mycoflora of dust from different niche within the fruits and vegetables store cum sales shops, depend on the nature and type of the dust. Fungi potentially

pathogenic to fruits and vegetables occur in the dust from different source. They are known biodeteriogens on allergens to human beings, and act as source of bio pollution in the indoor air.

**0101-202.** Singh Bhawana, Patel Geeta, Vardia Jitendra, Ameta Suresh C (Dept Chem, Coll Sci, Sukhadia Univ, Udaipur, 313001). **Photodegradation of dodecyltrimethylammonium bromide in presence of semiconducting titanium dioxide powder.** *Polln Res*, **19**(2) (2000) 219-224 [10 Ref].

The photocatalytic degradation of dodecyltrimethylammonium bromide over photocatalyst titanium dioxide has been carried out. The effect of various parameters like pH, variation of pH with time, concentration of surfactant, amount of semiconductor, effect of particle size, light intensity, etc. on the rate of this photocatalytic degradation has been observed. A tentative mechanism has been proposed for the photocatalytic degradation of dodecyltrimethylammonium bromide.

**0101-203.** Sreenivasa Rao A, Ramamohana Rao P (Dept Inorganic Analyt Chem, Sch Chem, Andhra Univ, Visakhapatnam 530003, AP). **Study on pesticide residues in vegetables.** *Polln Res*, **19**(4) (2000), 661-664 [13 Ref].

Pesticide residues in vegetables that collect from market of Vijayawada of Andhra Pradesh were estimated by using gas chromatograph. The total of 127 vegetables samples were analyzed for "-BHC, (-BHC, malathion, chlopyrifos, isodrin, endosulfan, dieldrin and p.p' DDT and out of this 54 (42.5%) of samples were contaminated with pesticides residues. The concentrations of pesticide residues exceeded tolerance limits in 14 (11%) vegetable samples.

**0101-204.** Sunil K, Gautam AK, Saiyad HN (Div Reproductive Toxicity, Natl Inst occupl Hlth, Meghani Nagar, Ahmedabad 380016). **Occupational exposure and male reproductive dysfunction: a growing concern.** *Indian J Occupl Environ Med*, **4**(2) (2000), 89-95 [57 Ref].

A number of chemical such as lead, dibromochloropropane, mercury etc and also physical agents such as intense heat, ionizing radiation are having adverse effect on male reproductive system of human. In addition to the effects on male reproductive system, there is every possibility of adverse effect on young ones if the father was

exposed to the environmental chemicals or physical agents at higher doses during the critical time period of spermatogenesis before conception. There is a need to monitor the reproductive health of the workers regularly during occupation.

**0101-205.** Tripathi G, Panwar KR, Bhardwaj P, Verma P (Dept Zoo, JNU Univ, Jodhpur 342001). **Fenvalerate induced cellular and subcellular changes in liver and kidney of *Funambulus pennanti*.** *J Expt Zoo India*, **4**(1) (2001), 21-24 [5 Ref].

The acute treatment of the synthetic pyrethroid fenvalerate induced various cellular and subcellular changes in the liver and kidney of squirrel, *Funambulus pennanti*. There were loosening and enlargement of hepatocytes with shrunken Golgi complexes in response to fenvalerate. The effect of fenvalerate were highly toxic to mammalian species at cellular and subcellular levels.

**0101-206.** Vasanthi M, Lakshmanaperumalsamy P (Sri Ramkrishana Coll Arts Sci Women, Dept Microbio, Coimbatore 641044). **Copper accumulation by *Pseudomonas* sp, VL-61.** *Indian J Environ Prot*, **20**(4) (2000), 280-283 [13 Ref].

Three copper resistant bacterial strains (*Vibrio* sp., VL-59 *Moraxella* sp., VL-60, *Pseudomonas* sp., VL-61) were isolated from the sediment of Bhavani river which receives various industrial effluents. Although all the three isolates showed good growth in the different copper salts, namely CuSO<sub>4</sub>, 5H<sub>2</sub>O, CuC<sub>12</sub>, Cu (NO<sub>3</sub>)<sub>2</sub> 3H<sub>2</sub>O (upto 300 ppm), *Pseudomonas* sp. VL – 61 exhibited higher growth. The ability of *Pseudomonas* sp. VL–61 to accumulate copper in the liquid medium was determined at two day interval upto 10 day and it accumulated 24.6% of copper.

**0101-207.** Verma Kalpana, Ghosh TK (Ecotechno Div, Natl Environ Engng Res Inst, Nagpur 440020). **Impact of toxic sediments on aquatic ecosystem.** *J Indian Assoc Environ Manag*, **27**(2000), 89-97 [51 Ref].

Various contaminants in sediments of aquatic bodies have a wide range of availability depending on different factors. Paper reviews the sources of sediment pollution in India. The phenomenon of exchange, toxicants in sediment–water interface, mobilisation of contaminants and gap of knowledge in this area of research.

**0101-208.** Vinod Kumar A, Tripathi RM, Raghunath R, Suseela B, Sastry VN (Environ Assess Div, Bhabha Atom Res Cent, Trombay, Mumbai 400085). **Trace metal speciation studies of Mumbai soils.** *Res J Cheml Env*, **4**(2) (2000), 43-48 [15 Ref].

Leaching characteristics of different trace metals from Mumbai soils from traffic junction and residential area using different leaching agents are compared with the same for lake sediments from nearby area. Pb and Cu content were highest in the traffic junction soils and lowest in residential soils. As and Mn were highest in the sediment samples. Fe, Cr, Co were highest in the residential soils.

**0101-209.** Vinod KR, Naik YM (Dept Zoo, The Maharaja Sayajirao Univ Baroda, Baroda 390002 Gujarat). **Comparative effect of three metallic chloride on the chromosomes of frog *Hoplobatrachus tigerinus*.** *Indian J Environ Toxicol*, **10**(2) (2000), 58-62 [14 Ref].

Clastogenic effects of three metallic chloride (mercuric, cadmium and nickel) were studied in the Indian frog (*Hoplobatrachus tigerinus*) after intraperitoneal injection in two sublethal (1.5 and 3.0 mg/kg body weight) concentrations. A comparative effect of these salts revealed that the HgCl<sub>2</sub> is most toxic followed by CdCl<sub>2</sub> and NiCl<sub>2</sub>. However occurrence of increase in dicentric chromosomes after NiCl<sub>2</sub> treatment, breaks and hypodiploidy after HgCl<sub>2</sub> treatment and pulverization after CdCl<sub>2</sub> treatment became evident from data analysis.

**0101-210.** Yellamma K, Venkata Krishna Reddy P, Sreehari U (Dept Zoo, SV Univ, Tirupati 517502). **Changes in aminergic and serotonergic neurotransmitters in rat brain following cadmium chloride intoxication.** *Polln Res*, **19**(2) (2000), 221-218 [14 Ref].

The results reveal that the levels of all monoamine neurotransmitters were decreased during acute and chronic dosage with cadmium chloride. But they were depleted differentially in different brain areas showing the area specific effect of cadmium chloride. In chronic dose studies a progressive decrease in the levels of epinephrine, norepinephrine and dopamine was noticed till 7th day in all the areas But in case of serotonin a slight elevation was noticed on first day following cadmium chloride treatment and there after its level was depleted in a progressive manner till 7th day.

## Wastes

**0101-211.** Anjaneyulu Y, Hima Bindu V (Cent Env, IPGSR, JNT Univ, Masab Tank, Hyderabad 500028). **Application of waste biomass for the removal of coloured organics from industrial effluents.** *Cheml Environ Res*, **9**(1&2) (2000), 105–119 [25 Ref].

The application of the waste biomass (*Aspergillus niger*) was tested for its suitability as an adsorbent for the removal of acidic and basic dyes and other coloured organics from industrial effluents. Both acidic (pH between 2-3) and basic (pH between 7-8) dyes can be removed using waste biomass and the removal efficiency increased with increase in initial concentration and particle size.

## Forestry and Environment

**0101-267.** Negi MS, Dhiman RC (Forest Res Inst, P.O. New Forest, Dehradun, 248006, Uttaranchal). **Biomass estimation of teak plantation from Terai region of Uttar Pradesh.** *Indian J Soil Conserv*, **28**(2) (2000), 157-159 [14 Ref].

Wide variation was observed in growth and biomass parameters in 11 different aged teak plantations (from 10 to 39 years age) raised in Terai Region (Central Terai forest division and Haldwani forest division) of Uttar Pradesh. Biomass in bole, bark, leaf, twig, branch, above ground and below ground parts and total tree varied from 51.83 to 489.0 kg, 10.44 to 53.33 kg, 6.33 to 25.81 kg, 6.14 to 21.77 kg, 7.60 to 91.26 kg, 95.50 to 681.10 kg, 18.54 to 199.30 kg and 106.2 to 800.4 kg respectively. Regression equations were developed for predicting biomass and growth of different tree components based on age and DBH as independent variables.

**0101-268.** Sanjaya (Tree Improvement Propagation Div, Inst Wood Sci Techno, Malleswaram, Bangalore 560003). **Electrophoresis technique- a tool for forestry research.** *Myforest*, **36**(2) (2000), 139-146 [7 Ref].

Isoenzyme analysis is a useful technique for the study of genetic variation. It has been successfully used in examining relationships among many different species, both

plants and animals. The technique make use of the enzymes. Paper describes the importance and different steps involved in the isoenzyme analysis.

**0101-269.** Swaminath MH (Aranya Bhavan, Malleshwaram, Bangalore 560003). **Sustainability criteria for forest management.** *Myforest*, **36**(2) (2000), 81-86.

The new forest management approach like participatory management (JFM) has laid more emphasis on the sustainable development while meeting the local needs of the people. In this background the development of sustainability indicators is very essential. Attempt has been made to develop indicators based on certain theoretical assumptions and also to discuss some ways of defining and achieving sustainability.

## Wildlife

**0101-270.** Gupta AK, Chivers David J (Wildlife Inst India, PB No-18, Chandrabani, Dehra Dun 248006). **Feeding ecology and conservation of the golden langur (*Trachypithecus geei* Khajuria) in Tripura, north east India.** *J Bombay Natl Hist Soc*, **97**(3) (2000), 349-362 [29 Ref].

Feeding ecology of an introduced group of the golden langur (*Trachypithecus geei*) in Sepahijala Wildlife Sanctuary is discussed with special reference to its conservation in its new habitat. The ability of the golden langur to survive on fast-growing exotic plantation species, to use food resource on the ground, and to share resource with user groups, has helped it to survive in the wild. These qualities make the conservation of the golden langur feasible in its range, where shifting cultivation and plantations of exotic species are common.

**0101-271.** Jayson EA, Mathew DN (Div Wildlife Bio, Kerala Forest Res Inst, Peechi 680653, Kerala). **Diversity and species abundance distribution of birds in the tropical forests of Silent Valley, Kerala.** *J Bomboy Natl Hist Soc*, **97**(3) (2000), 390-399 [42 Ref].

Diversity and species- abundance distribution of birds was studied in the evergreen and moist deciduous forests of the Silent Valley, Kerala. Diversity index of birds in the evergreen forest of Silent Valley and moist deciduous forests of Mukkali was 3.45 and 3.30 respectively. Evaluation of the area showed the rich and undisturbed bird community at Silent Valley and Mukkali, which is comparable to tropical forests of other countries. Considering this, it is recommended that this area be added to the existing Silent Valley National Park.

**0101-272.** Thomas Jerry, John De Britto A, Johnson JA, Sridhar S (Bot Dept, St Xaviers Coll, Palayamkottai 627002). **A preliminary study on the biodiversity of Koonthankulam bird sanctuary in Tamil Nadu.** *Indian J Environ Sci*, **4**(2) (2000), 135-142 [16 Ref].

Recently Koonthankulam in Tirunelveli district of Tamil Nadu has been declared as a bird sanctuary by the Department of Forest. It is an important wetland habitat of

aquatic and semi-aquatic birds. Considering its importance, a preliminary study on the physico-chemical characteristics of water, soil and its biodiversity were made. Problems and suggestions are discussed.

**0101-273.** Yoganand K, Davider Priya (Wildlife Inst India, P.B. No 18, Chandrabani, Dehra Dun 248001). **Habitat preferences and distributional status of some forest birds in Andaman Islands.** *J Bombay Natl Hist Soc*, **97**(3) (2000), 375-380 [8 Ref].

The habitat preferences of species of forest birds were studied in Baratang Island in the Andamans, India. The relationship between habitat preferences and large-scale patterns, such as biogeographical distribution of each species on the continent of Asia and distributional status within the Andaman Islands was analysed. The habitat preferences of these 30 species showed no association with either the biogeographical distribution or with status, suggesting that large-scale distributional patterns are not related to habitat preferences.

## Energy

**0101-274.** Jat Mahesh Kumar, Kumar Sudhir, Poonia MP (Civil Engng Dept, MR Engng Coll, Jaipur). **Methane, carbon dioxide and nitrous oxide reduction through the application of bio-gas technology.** *Indian J Environ Hlth*, **42**(3) (2000), 117-120 [8 Ref].

The anaerobic digestion of organic waste is recognized as an effective method for disposal of waste and production of bio-gas. The use of biogas reduced the carbon dioxide emission through a reduction of demand for fossil fuels. According to the investigation, the trace gases namely methane and nitrous oxide will more than double the warming effect of CO<sub>2</sub> in the years to come. It is estimated that approximately 0.34 kg/kWh of CO<sub>2</sub> and 49000 tonne N<sub>2</sub>O per year can be reduced by the use of bio-gas technology.

**0101-275.** Mondal Chanchal, Biswas GK (Jadavpur Univ, Dept Cheml Engng, Calcutta 700032). **Studies on bio-methanation of vegetable market wastes.** *Indian J Environ Prot*, **19**(12) (1999) 921-923 [3 Ref] (Late Recd).

The vegetable residues available from the municipal markets constitute potential source of bio-energy giving yield of methane-rich biogas with energy yield of 4.2 MJ per kg dry matter. Biomethanation is greatly influenced by digestion temperature retention time, particle size, concentration and pH of the slurry. A systematic study of the effect of these parameters on bio-gas yield has been made elaborately.

## **Plant and Pollution**

**0101-276.** Augusthy PO, Mani Ann Sherin (Dept Bot, St Thomas Coll, Pala, Arunapuram 686574). **Effect of factory effluent on seed germination and seedling growth of *Vigna radiatus* L.** *J Environ Res*, **22**(2) (2001), 137-139 [10 Ref].

Physico-chemical analysis of the rubber factory effluents revealed high amounts of total suspended and dissolved solids. Sulphate, phosphate, total nitrogen were also present in significant amounts. At higher concentration (above 50%) of effluent, the seed germination percentage was retarded. Diluted effluent (upto 50%) favoured seedling growth. Length of root system, shoot system and number of lateral roots were increased by low concentrations of effluent.