

## Environmental Management

**9903-001.** Asolekar SR (Cent Env Sci Engng, Indian Inst Techno, Mumbai). **Technological options for disposal of hazardous waste.** *Indl Safety Chronicle*, **29**(4)(1999), 62-69.

A wide range of technologies exist which concentrate, destroy, or immobilize industrially generated hazardous wastes. Treatment processes for hazardous waste performs the following functions: volume reduction, component separation, detoxification, destruction, storage and material recovery. As no single process can perform all these functions, several different processes must usually be linked in series for adequate treatment.

**9903-002.** Azmi HK, Ali SZ, Zulfikar S (Dept Zoo, Shibli Natl (PG) Coll, Azamgarh 276001). **Study of animal fats as traditional drugs among tribals of Chhattisgarh (MP) - Part 1.** *Uttar Pradesh J Zoo*, **19**(1) (1999), 43-47 [13 Ref].

During the course of faunistic survey of Chhattisgarh area, covering 4 districts of M.P., available information with regard to native use of animal fats by the tribals in the treatment of chronic diseases have been recorded. The study has revealed the use of 10 sps. in the treatment of various human ailments.

**9903-003.** Batra Amal , Sardana Jyoti (Biotechno Lab, Bot Dept , Univ Rajasthan, Jaipur 302004, Rajasthan). **Jojoba : environmental surprise of the century.** *The Botanica*, **49**(1999), 59-65 [29 Ref].

Currently agricultural technologies, land utilisation water economy and dwindling natural resources are under a critical review for purposeful reshaping of the world economy. Jojoba has emerged as a potential plant species for the futures yielding a non edible oil which can serve as an alternative for the oil earlier obtained from the endangered sperm whale. Tissue culture has been playing an extremely significant role as far as recalcitrant crop system like Jojoba are concerned.

**9903-004.** Biswas Dilip (Centl Polln Contl Bd, Parivesh Bhawan, C.B.D. cum office complex, East Arjun Nagar, Delhi 110032). **Noise in the Silent Valley.** (*The Botanica*, 48 (1998), 14-19.

The noisy debate over silent valley opened up a plethora of question that need to be answered before opting for any mega-developmental project in a fragile or biodiversity-rich area. The deliberations also highlighted the fact that there is need for greater scientific understanding in the ecological concerns vis-à-vis development needs.

**9903-005.** D' souza Joe, Fernandes Evete, Kenkre Vibhavari (Dept Microbio, Goa Univ, Goa 403206). **Studies on the effects of shrimp farming on the estuaries in Goa.** *Polln Res*, **18**(4) 1999, 381-389 [8 Ref].

The two major shrimp farms on river Zuari and Chapora, indicated that the level of pollutants increased dramatically as the shrimp farming activity progressed over the period of 120- 135 days, till harvest of the shrimps. The pollution was confined not only in the pond but with time, affected the estuarine water both near the outlet points as well as at the inlet. The levels of microorganisms in water bodies rose during the progress of shrimp farming activity.

**9903-006.** Gandhi Mamta (Dept Family Resource Manag, IC Coll Home Sci, CCS HAU, Hisar 125004), **Household waste generation and disposal.** *Polln Res*, **18**(3) 1999, 297-300 [2 Ref].

A study was conducted to assess the quantity of household waste generated and disposed by 100 families of urban areas of Hisar districts of Haryana. It revealed that daily disposal of animal waste was larger followed by other wastes. Animal waste did not create any problem as most of it was reused as fuel and manure. Waste left untreated was kitchen waste resulting in permanent stinking mass, consequently a medium for spreading communicable diseases.

**9903-007.** Ghosh Bobba A (Env Canada, Natl Water Res Inst, Canada Cent Inland Waters, Burlington, ON L7R 4A6, Canada). **Application of numerical model to predict freshwater depth in islands due to climate change: Agatti Islands, India.** *J Environ Hydro*, **6**(10) (1998), 1-13 [25Ref].

Salt water intrusion is a serious environmental problem to coastal subsurface water system around the world due to climate change. A density dependent model is applied to predict freshwater depth in coastal areas of islands. A case history from a small island, Agatti Island, in the Laccadive Islands of India, is used to illustrate the current modeling methodology and mechanisms of saltwater intrusion due to climate change.

**9903-008.** Gupta KC. **General introduction to risks of technology hazards.** *Indl Safety Chronicle*, **29**(4) (1999), 23-25 [2 Ref].

In all industrial societies, there is a growing element of public anxiety about hazards, which threatens to erode the confidence and trust that people place in the most powerful institutions. People are no longer content to accept the inevitability of adverse effect as being natural or to be expected. Each event requires an explanation and fixing of responsibility. These circumstances give rise to demand for more effective policies and better research.

**9903-009.** Gupta PK (Dept Agril Bot, Ch. Charan Singh Univ, Merrut 250005, UP). **Plant genetic resources and intellectual property right for plant breeding.** *The Botanica*, **49** (1999), 25-37 [38 Ref].

The issue of conservation and sustainable use of plant genetic resources (PGRs) has been discussed in relation to plant breeding and the related intellectual property rights (IPRs). The difference between patents and plants breeders' rights (PBRs) have been outlined and their suitability under specific situation has been discussed. The options available under the 'sui generis' system as an IPR and the associated issues like national treatment and compulsory licensing have also been discussed in some detail.

**9903-010.** Kabita Bhuyan MS (Dept Family Resources Manag, Coll Home Sci, Assam Agril Univ, Jorhat 785013, Assam). **Waste management practice in rural households of Assam.** *Eco Env Conserv*, **5**(4) (1999), 395-397 [3 Ref].

The study of domestic waste management were carried out in rural households of Assam. The study revealed that the domestic solid wastes were mostly reused and recycled by rural homemakers. As regards to management of liquid wastes no methods of treatment were in practice.

**9903-011.** Katiyar VS, Singh AK, Singh SV (Centl Soil Water Conserv Res Trng Inst, Res Cent, Kota 324002). **Impact of water harvesting and recycling in south east Rajasthan.** *Indian J Soil Conserv*, 27(1)(1999), 22-25 [6 Ref].

In the study of three village ponds of south eastern Rajasthan, it was found that the pond capacity has reduced due to siltation. Recently desilted ponds were found to be economically viable. One irrigation to wheat, mustard, gram, and coriander increased the yield by 64.9, 118.1, 85.8 and 117.5 percent over no irrigation, respectively. While two irrigation increased the yield by 130, 141.4, 93.3 and 208.8 percent over no irrigation.

**9903-012.** Khoshla A (B-32, Tara Crescent, Qutab Institutional Area, New Delhi 110016). **Science and technology for sustainable development.** *Curr Sci*, 76(8) (1999), 1080-1086.

The primary function of science today has to be the eradication of poverty and regeneration of the environmental resource base. Both these goals can easily be achieved if we set up more appropriate institution for the innovation and delivery of goods and services that directly respond to the basic needs of the people.

**9903-013.** Kishore Jugal, Joshi TK, Sagar B (Cent Occupl Environ Hlth, Lok Nayak Hosp, New Delhi 110002). **Hospital waste management in India.** *Indian J Occupl Med*, 3(2) (1999), 79-84 [14 Ref].

Improper handling and collection of hospital waste could lead to spread of infection in health care workers. Hospital pays many times more to dispose of medical waste than it does for general waste. Whereas proper segregation, handling and disposal could be cost effective because this practice could minimise the waste and non-infected wastes could be recycled.

**9903-014.** Kumar Promod, Singh CP (Dept Environ Sci, Technl Edn Res Inst, PG Coll, Ravindrapuri, Ghazipur 233001, UP). **Managing solid waste: a caser study of Ghazipur city.** *Polln Res*, 18(3) (1999), 231-234 [7 Ref].

Characterization and management of municipal solid waste of Ghazipur city was studied. Analysis for various component in different socio-economic area was made. Method of disposal used was analysed to assess its impact on environment. The findings revealed various shortcomings in the present disposal system with the conclusion that rich are more wasteful. Recommendations were made to improve the disposal practices.

**9903-015.** Mauria S (Crops Div, Indian Coun Agricl Res, Krishi Bhavan, New Delhi 110001). **Biodiversity management in India: issues and views.** *The Botanica*, **49**(1999), 17-24.

International development under the Convention on Biological Diversity and General Agreement on Tariffs and Trade have opened a plethora of issues, for protection of both biodiversity and intellectual property. A brief comparison of the two Convention is the forerunner. It follows with views on the course of action for a country like India, whether as a nation or as a member of the international community.

**9903-016.** Meshram Sudhir U, Shinde GB, Shanware AS, Kamdi RR (PG Dept Microbio. LIT Campus, Nagpur Univ, Nagpur 440010, MS). **Bio-control of fish pathogens associated with polluted aquaculture.** *Polln Res*, **18**(4) (1999), 369-371 [4 Ref].

An attempt is made to expose the possibility of use of biocontrol agents in the form of biopesticides i.e. *Bacillus thuringiensis* for controlling the fish diseases in aquaculture polluted water and also to reduce the application of recalcitrant pesticides. The antagonistic microbe has spelt out eco-friendly sustainable biocontrol measures which has superseded other traditional approaches with chemical pesticides controlling the pathogens isolated from the infected parts of fishes.

**9903-017.** Mishra BP, Tripathi BDC (Polln Eco Res Lab, Cent Adv Std Bot, Banaras Hindu Univ, Varanasi 221005). **Energetics of dead body cremation on the bank of river Ganga in Varanasi : an environmental and economic approach.** *Polln Res*, **18**(1) (1999), 95-99 [8 Ref].

During recent years a number of electric crematoria have been established in the city of Varanasi for cremating human bodies and have since proved to be least polluting and most cost effective. Low cost of electric cremation and environmental awareness

about the ill effects of dead body burning are important reasons for the popularity of electric crematorium.

**9903-018.** Mustafee TP (C-2, Deepshikha Apartment, 67, Vidhyasagar Sarani, Nagendas Park, UBI Campus, Calcutta 700008). **Need for environmental protection in pesticidal usage.** *Pestology*, **23**(12) (1999), 76-78.

Toxicity of a chemical means to its harmful effects on living organism and it is generally referred to as the dose responsive relation. Environmental hazards due to misuse of persistent chemicals should be checked at the users level. It is very important to understand and educate the pesticide users as to the toxicity, safety, potential risks and disposal of the toxic materials.

**9903-019.** Panda SC, Kar RN, Patra P, Das B (Regl Res Lab, Bhubaneswar 751013). **Environmental study of a sugar factory.** *Eco Env Conserv*, **6**(1) (2000), 13-18 [12 Ref].

Paper describes the environmental study carried out at the Sakthi Sugars Ltd, Dhenkanal. The parameters studies were soil, water, air and noise. Samples were taken in three different seasons (August/February/April), analysed for agricultural parameters, heavy metals total hardness, pH, DO, BOD and SPM. Conclusion based on the data and recommendations for mitigating the adverse effects have been discussed.

**9903-020.** Patel RK (Dept Chem, Regl Engng Coll, Rourkela 769008). **Physico chemical characteristic of municipal solid wastes (MSW) in Rourkela, the industrial city of orissa.** *Polln Res*, **18**(4) (1999), 515-517 [4 Ref].

The municipal solid waste has not created any major problem in the management of MSW in Rourkela but it may create a great problem in future if it is not managed properly. The data related to quality and quantity of MSW are required for the possibility of utilization of MSW for processing, recovering and recycling.

**9903-021.** Rajesh N, Kallarackal Jose (Kerala Forest Res Inst, Peechi, Thrissur 680653, Kerala). **The eucalyptus controversy.** (*The Botanica*, **48**(1998), 52-56 [12 Ref].

Paper analysis some of the major allegations aired against eucalyptus, such as the adverse effects on soil nutrients, soil water and soil reaction in the light of recent researches. It has been concluded that it is the end use of the plantations and characteristics of the location of the plantations that are of importance and it is scientifically baseless to blame a tree as an environment hazard before weighing its merits and defects.

**9903-022.** Ramakrishnan PS (Sch Environ Sci, Jawaharlal Nehru Univ, New Delhi 110067). **Integration of human, in biodiversity science : a new paradigm in ecosystem complexity.** *The Botanica*, **49** (1999), 1-8 [24 Ref].

In a traditional approach to consideration of biodiversity, humans are often kept out of the definition of the ecosystem boundary. If humans are brought in as integral component of ecosystem function, its implications for the role of biodiversity would change drastically. The implications of this approach often leads to a drastic change in our perceptions of ecosystem function and sustainable management of natural resources with peoples' participation.

**9903-023.** Raman VK, Sharma S, Dhilon JK, Pandey RA (Natl Environ Engng Res Inst, Nagpur 440020). **Compositional characteristics of some Indian coals and their need for beneficiation.** *Indian J Environ Hlth*, **41**(1) (1999), 24-31 [23 Ref].

Coal from various parts of India were collected and analysed for its proximate and ultimate characteristics. The results indicate that some of Indian coal contain appreciable concentration of sulphur and ash. Presence of sulphur and ash deteriorate the coal quality and also cause serious environmental problems. Hence beneficiation is required for these coal prior to its utilization.

**9903-024.** Ramesh HS, Mahendran B (Dept Environ Enegy, SJ Coll Engng, Mysore 570023, Karnataka). **Assessment of subsurface water quanlity in Kalayarkoil Union of Tamil Nadu.** *Indian J Environ Hlth*, **41**(2) (1999), 135-143 [10 Ref].

Kalayarkoil Union in Sivagangai district of Tamil Nadu is located at a distance of 35 km from the Bay of Bengal and use of subsurface water in that area is on increase in recent years. Considering its proximity to sea, a study on the subsurface water quanlity has been carried out to ascertain the safe yield. The study reveals that the magnitude of annual rainfall and ground water potential show decreasing trends. Relationship between monsoon rainfall and rise in static water level are also established.

**9903-025.** Rao YN, Javed Salim (Bombay Nat Hist Soc, Hornbill House, S B Singh Road, Mumbai 400023). **POINT a freeware programme in BASIC for analysis of point centered quarter (PCQ) data.** *Int J Eco Environ Sci*, **25**(1) (1999), 51-61 [2 Ref].

POINT is a freeware programme written in BASIC for analysis of vegetation data collected by Point Centered Quarter method. The programme further calculates species diversity, richness and evenness indices which are frequently used by ecologists for comparing sites and prioritising areas for conservation.

**9903-026.** Ravi Kumar R, Shadaksharasamy N, Srinivas G (Dept Geo, Bangalore Univ, Bangalore 560056). **Impact of granite quarrying on environment in Bangalore district- with reference to socioeconomic status of workers.** *Polln Res*, **19**(1) (2000), 51-54 [6 Ref].

Environmental impact assessment of granite mining on socio-economic status of workers in quarries and crushers of Bangalore district has been made involving workers/households at random. The study reveals that 16% of workers have dust and water related diseases like TB and other respiratory ailment. Twenty four percent of workers complained about high level of noise related problems and 13% of the workers surveyed had persistent eye and lung problems. Attempt is also made to suggest a few precautionary and preventive measures to control pollution.

**9903-027.** Rengasamy VR, Subramanian V (Civil Engng Div, Hd Qrs, Dept Space, Antarishk Bhawan, Bangalore 560094). **Wastewater reclamation and reuse at various Indian Space Research Organisation centres.** *J Indian Water Work Assoc*, **31**(4) (1999), 269-274 [4 Ref].

Paper describes briefly the innovative technology developed by civil engineering division in the field of wastewater reclamation and reuse for conserving fresh water at ISRO Satellite Centre, Bangalore and Space Applications Centre, Ahmedabad. It also describes the possible areas of reuse of treated wastewater with cost economics for better appreciation.

**9903-028.** Sarat Babu GV, Arora Sujata (Ministry Env Forests. Paryavaran Bhawan , Lodi Rd, New Delhi-110003). **Biodiversity and IPR.** *J Intellectual Property Right*, **5**(2) (2000), 76-79.

Paper describes biodiversity and its important megabiodiversity countries, Convention on Biodiversity (CBD), IPR and TRIPS, and two different approaches of TRIPS and CBD to the utilization of living resources. It presents Indian argument for reconciliation of these condition in provision of TRIPS Agreement and CBD. At the end, paper highlights the recommendations of Inter-sessional meeting of the Conference of Parties to the CBD held in June 1999 to help develop a common appreciation of the relationship between IPR and relevant provision of TRIPS and CBD.

**9903-029.** Sharma SD, Panda KS (Analyt Res Lab, Chem Dept, Hindu Coll, Moradabad 244001, UP). **Use of water quality index for Ramganga river classification and pollution control strategy.** *Polln Res*, **18**(3) (1999), 335-338 [8 Ref].

Use of water quality index for the classification of Ramganga river and the pollution control strategy for a 36 Km stretch of the river at Moradabad is discussed. The 'Quality Map' and the 'Use Map' of the river for this stretch is also given. The water quality control in terms of W.Q.I. for maintaining the river usefulness is discussed.

**9903-030.** Sharma Subodh K (Min Env Forests, CGO Complex, Lodi Rd, New Delhi 110003). **Climate change - a global issue.** *(The) Botanica*, **48**(1998), 110-123 [5 Ref].

The concern for the effects of build up of greenhouse gases on global climate culminated in United Nations Framework Convention on Climate Change. The Kyoto Protocol signed on December 11, 1997 lays down provision for time frame, targets, policies and measures to achieve reduction in emission of green house gases. The Protocol aims at global reduction of 5.2 percent of green house gases. The article highlights some of the concerns and issues related to the global climate change.

**9903-031.** Singh Gurdeep, Vibha Kumari (Cent Mining Env, Indian Sch Mines, Dhanbad, Bihar). **Environmental assessment of fly ash in its disposal environment at FCI Ltd, Sindri.** *Polln Res*, **18**(3) (1999), 339-343 [6 Ref].

Environmental assessment of fly ash from steam generation plant at Fertiliser Corporation of India Ltd. Sindri is made through the analysis of leachates from open percolation leaching column experiments and effluents from the ash ponds over a period of three months. The physico-chemical characteristics of all fly ash leachates and effluents were generally well within the permissible limits for effluents discharge in the inland surface water bodies and for irrigation.

**9903-032.** Sukumarn GB, Sivakumar EKT (Dept Geo, Presidency Coll (Autonomous), Chennai 600005). **Hydrogeochemistry of river Cooum- Tamil Nadu, South India.** *Proc Inst Semin Appl Hydrogeochem, Annamalai Univ*, **1999**, 238-249 [18 Ref].

Study constitutes a detailed hydrogeology of River Cooum and some important problems pertaining to the river. The river gets polluted within the city limits by the over flow of the sewage into the river. The high degree of pollution of ground water adjoining Cooum river is also evident from the hydrogeochemical studies of the groundwater samples. Certain austerity measures should be taken immediately to prevent both pollution of the river and by the river.

**9903-033.** Sulaiman Quli SM (Dept Wildlife Manag, Fac Forestry, Birsa Agri Univ, Kanke, Ranchi, Bihar 834006). **Analysis of tiger conservastion in project Tiger Reserves.** *Zoo's Print J*, **XIV**(3-12) (1999), 165-171 [31 Ref].

The Tiger Reserves were established to facilitate a safe haven of viable populations of tigers in India. However reports on expected extinction of this magnificent cat by 2000 A.D.has prompted an urgent investigative movement to review the

performance of Tiger Reserves. Paper project the inadequacy of the Tiger reserves and offers suggestions to meet the growing challenges on this species.

**9903-034.** Tomar Manju, Neelu, Koul Monika, Narang Sarika (Environ Bio Lab, Dept Bot, Univ Delhi, Delhi 110007). **Forest fires.** (*The Botanica*, **48** (1998), 100-109 [13 Ref].

Forest fires are neither uncommon nor a recent phenomena. The seriousness of the fire from ecological point of view, depends on the vegetation, soil and local climate. Temporally and spatially, fires have different affects and recovery processess also vary accordingly. Many comprehensive detection methods, like Digital Mapping System and GIS satellite and remote sensing are now being used for fire management.

**9903-035.** Tripathy JK (Dept Marine Sci, Berhampur Univ, Berhampur 760007, Orissa). **Groundwater hydrochemistry around the salt pans north of Bahuda river estuary, Orissa.** *J Env Polln*, **6**(2&3) (1999), 197-202 [12 Ref].

Groundwater samples around the salt pans, adjoining Bahuda river estuary (Andra Pradesh-Orissa border) were analysed to determine the TDS as well as the concentration of major ions. The concentration of several parameters such as TDS, Na<sup>+</sup>, and Cl<sup>-</sup> in the groundwater nearby the salts pans exceeded the maximum permissible limits thereby making the water unfit for human consumption.

**9903-036.** Vasudeva PK (Business Sch, Punjab Univ, Chandigarh 160014). **India and other Asian countries losing in biodiversity.** *J Intellectual Property Rights*, **5**(2) (2000), 80-86.

Paper describes how the recently passed Geographical Indications Bill will help in proctecting the Indian biodiversity from piracy as so far these were not properly documented. Paper mentions a few efforts initiated in this direction in the country, and need for the electronic form of records is stressed. A detailed list of bio-pirated plants are given. A few suggestions for solving the bio-piracy are given.

**9903-037.** Vijayaraghavan N, Sathyamurthi V (219, Race Course Rd, Coimbatore 641018). **Water quality assurance- a challenging task.** *J Indian Water Works Assoc*, **31**(4) (1999), 249-252 [8 Ref].

The need of the hour is to apprise ourselves of the existing hard ground realities, technical, scientific, institutional strategies and concerted co-ordinated efforts in adopting uniform code of practice on extensive/ intensive analysis, reclamation and reuse of wastewater, on-going research, interaction for speedy implementation for sustainable development for the present and future generations.

**9903-038.** Vivekanandhan G, Vasudevan N, Lakshmanaperumalsamy P (Dept Environ Sci, Bharathiar Univ, Coimbatore 641046, TN). **Degradation of crude oil by a bacterial consortium.** *Polln Res*, **18**(3) (1999), 245-249 [15 Ref].

Hydrocarbon degrading microorganisms play a major role in the environment. In the present study crude oil degrading bacterial strains were isolated from refinery oil contaminated soil. The bacterial consortium utilized crude oil and degraded 53.55% of crude oil in 8 days. The identified bacterial strains present in the consortium belonged to the genera of *Pseudomonas*, *Bacillus*, *Acinetobacter*, *Flavobacterium* and *Corynebacterium*. *Ilution*

## **Air Pollution**

**9903-039.** Agrawal Madhoolika, Agrawal SB (Dept Bot, Banaras Hindu Univ, Varanasi 221005, UP). **Impact of atmospheric pollution on plant diversity.** *The Botanica*, **49** (1999), 38-46 [34 Ref].

The harmful impact of pollutants on growth of herbs, shrubs and trees has been documented. Air pollution can influence plant species in diverse ways and thus affect the ecosystem at various levels of organisation. Increased mortality, declining vigour and changes in genetic and species diversity are often reported around pollutant sources.

**9903-040.** Bandhyopadhyay Amitava (Dev Consultants Ltd, 24-B, Park Street, Calcutta 700016). **Air quality scenario in Korba area: a retrospective view (1990-1995).** *J Indl Poll Contl*, **15**(2) (1999), 203-225 [11 Ref].

Quantitative and qualitative evaluations of air quality on Korba area has been carried out. The major pollution sources are a number of underground and opencast mines, thermal power plants and a host of other large and medium scale industrial establishments. Results reveal that air quality has improved considering the values of SPM in the ambient air. In contrast, the quality of the area has worsened considering monitored values of SO<sub>2</sub> and NO<sub>x</sub>.

**9903-041.** Pal Shri, Kumar Naresh (Dept Bot, DAV(PG) Coll, Muzaffarnagar 251001, UP). **Effect of simulated acidic rain on yield and carbohydrate contents of green pepper (*Capsicum annuum* L).** *Adv Plant Sci*, **13**(1) (2000), 85-88 [15 Ref].

Effect of simulated acidic rain treatment has been observed on yield and carbohydrate contents of green pepper *Capsicum annuum* cv. NP -46A. Number of flowers and fruits per plant decreased in treated plants in all pH values of acidic rains. Carbohydrate contents of stem and leaf fraction were adversely affected. The effect of simulated acidic rain became more, pronounced with the increase in acidity of rain and the duration of treatments.

**9903-042.** Saquib M, Khan Fareed A (Dept Bot, Aligarh Muslim Univ, Aligarh 202002). **Air pollution impacts on the growth and reproductive behaviour of mustard.** *J Environ Bio*, **20**(2) (1999), 107-110 [26 Ref].

The air pollution stress around a thermal power complex lead to the significant reduction in photosynthetic area and pigment concentration in *Brassica juncea* Var. T-59. The resulting stresses of air pollution and reduces foliage further affected the normal growth, development, fertilization and yield of the oil crop.

**9903-043.** Singh Pratibha, Sthapak Jyoti (Dept Bot, Sarojini Naidu Govt Girls PG (Auto) Coll, Shivaji Nagar, Bhopal 162016, MP). **Reduction in protein contents in a few plants as indicators of air pollution.** *Poll Res*, **18**(3) (1999), 281-283 [15 Ref].

Attempt has been made to establish the relationship between air pollution and the protein contents in a few plants growing in the vicinity of industrial area Mandideep. The leaves of the plants passes various visible injury symptoms and were dusted with flyash particulates. The protien contents were also reduced significantly in the same locality. The reduction in total protiens can be used as indicators of air pollution.

**9903-044.** Someswara Rao N, Gunaseelan K, Prakasam NK, Srinivas DSS (Analyt Chem Sch, Andhra Univ, Visakhapatnam 530003). **Studies on the quality of ambient air and drinking water in the port town of Kakinada, Andhra Pradesh.** *Polln Res*, **18**(1) (1999), 1-12, [18 Ref].

The present environmental scenerio in respect of air and water quality of Kakinada town were assessed. It was observed that the present pollutant levels are well within the CPCB prescribed limits. The quality of surface water from the reservoirs supplied through two canals from Godavari river was assessed. It was found that most of the physico-chemical parameters are within the desirable limits except detectable concentrations of nitrites, indicating the presence of organic matter.

## Water Pollution

**9903-045.** Amlan Stanley V, Pillai KS (MS Swaminathan Res Foundation, 111 Cross, Taramani, Chennai 600113). **Dental fluorosis in an industrial area contaminated with fluoride in drinking water.** *Polln Res*, **18**(3) (1999), 305-308 [24 Ref].

Study aimed at analysing the fluoride levels in the water sources in an industrial suburb and correlated the results with the dental fluorosis in the same area. It was found that the fluoride levels were abnormally high, ranging from 0.39 to 3.5 ppm in drinking water and in water used for other purposes (other than drinking water) it was from 0.39 to 53.4 ppm. The study confirmed a great risk to the residents of the study area.

**9903-046.** Anilava Kaviraj, Das Satabdi (Dept Zoo, Univ Kalyani, Kalyani 741235). **Effect of fertilization on the deposition; partitioning and bioavailability of copper, zinc and cadmium in four perennial ponds of an industrial town.** *Indian J Environ Hlth*, **44**(1) (1999), 6-15 [22 Ref].

Concentration of Cd, Zn and Cu in water, sediment and fish of four perennial ponds of an industrial town were estimated by atomic absorption spectrophotometer. All the metals showed increased concentration during the summer and diluted during monsoon. These metals were found to concentrate in sediment at much higher rate.

**9903-047.** Banerjee SK, Banerjee Mousumi, Agarwal KM (Env Manag Dept, Indian Inst Socl Welfare Business Manag, Calcutta 700073). **Study of Tikara and Brahmani river ecosystems.** *Env Eco*, **17**(2) (1999), 296-305 [10 Ref].

Tikara and Brahmani rivers of Talcher area (Orissa) have been studied which are suspected to be polluted due to proposed 3,000 MW super thermal power plant at the confluence of the rivers. Both the rivers are not polluted at present but the diverse industrial and domestic activity may affect the ecosystems of both the rivers. Periodic study of the ecosystem of both the rivers is required to assess the gradual degradation of the ecosystems.

**9903-048.** Bangaramma Y, Rao LM, Bharatha Lakshmi B (Dept Zoo, Andhra Univ. Viskhapatnam 530003). **Frequency of occurrence of external diseases in mullets from polluted waters of Visakhapatnam harbour.** *J Environ Bio*, **20**(1) (1999), 25-27 [10 Ref].

A comparative study of the frequency of occurrence of external diseases in mullets of polluted harbour waters and relatively clear Gosthani estuarine waters near Bheemili has been made. Two species of *Liza* and one species of *Velamugil* have been observed for the external infection. The percentage frequency of occurrence of the external disease was significantly high in the specimens of the polluted harbour waters.

**9903-049.** Das B, Mehta BC, Das PK, Srivastava SK, Samanta SK (Centl Ground Water Bd, Bhubaneswar 751001). **Sources of high fluoride in ground water around Anugul, Dhenkenal district, Orissa.** *Polln Res*, **18**(1) (1999), 21-28 [8 Ref].

Hydrogeological investigations were carried out in the area around Anugul, Dhenkenal district, Orissa in the wake of the reported fluoride contamination of ground water. High fluoride content (more than 1.5mg/L) was recorded in the shallow ground water in scattered pockets, both in the basement complex in the Gondwana sedimentaries. However the fluoride content in the ground water in the immediate vicinity of effluent channels and the disposal pond of NALCO smelter plant was found within permissible limits.

**9903-050.** Dash Deepak R, Das SL, Patro Sunil K, Sahu BK (PG Dept of Marine Sci, Berhampur Univ, Berhampur 760007, Orissa). **Lead speciation in Rushikulya surface water, east coast of India.** *Polln Res*, **18**(3) (1999), 223-229 [23 Ref].

Study of lead speciation was carried out for a period of one year in Rushikulya Estuary, east coast of India. Seasonal variation of dissolved and particulate fraction of lead were found to be high probably due to precipitation in upper reaches of the estuary. The dissolved and particulate fractions of the element showed a significant behaviour in different seasons because of geochemical cycles. Further, the physico-chemical parameters indicated a significant variation in the estuary which might be due to biological production.

**9903-051.** Davina, Gonsalves V, D'Souza Joe (Dept Microbio, Goa Univ, Goa 403206). **The role of manganese reducing bacteria in manganese pollution of drinking water.** *Polln Res*, **19**(1) (2000), 61-65 [7 Ref].

Water samples were collected from the Selaulim Dam, Goa. This dam is surrounded by a number of mines exploiting manganese ore in its vicinity, from which the tailings are washed off into the lake feeding the dam. The analysis and water quality characteristics as well as the trends of the manganese leaching by the filter bed microflora were studied and are discussed.

**9903-052.** De Souza Nelson, D'Souza Joe (Dept Microbio, St Xaviers Coll, Mapusa, Goa 403525). **Use of microbial enzymes in detecting pollution in estuarine environment in Goa.** *Polln Res*, **18**(3) (1999), 315-320 [27 Ref].

Increased enzymatic activities not only indicated pollution but also showed their significant role in reducing pollution. High urease and dehydrogenase activities indicated faecal and organic pollution respectively. The analysis of the estuarine and mangrove samples, from areas disturbed by various types of pollution, are discussed. The study confirms that sediment enzymes can be used effectively as indicators of pollution besides their usual role involved in the control of pollution.

**9903-053.** Dua Virendra K, Kumari Roop, Sharma VP (Malaria Res Cent (Field Stn), BHEL Complex Ranipur, Hardwar 249403). **Application of mosquito fish *Gambusia* for reducing DDT contamination in water sediment and edible fish from rural ponds of India.** *Polln Res*, **18**(1) (1999), 89-94 [13 Ref].

Mosquito fish *Gambusia affinis* was used to reduce DDT contamination in water, sediment and edible fish from rural ponds of India. Statistically significant difference was recorded in water and sediment from ponds without fish and ponds with *Gambusia* fish. *Gambusia* fish played a major role in reducing DDT contamination in water, sediment and edible fish. Significant correlations of DDT concentration in water-fish, water-sediment and sediment-fish were observed from all categories of ponds with composite fish.

**9903-054.** Elampooranan T, Rajmohan N, Abirami L (Dept chem, Govt Coll (Men), Kumbakonam 612001) **Hydrochemical studies of artesian well waters in Cauvery deltaic area, south India.** *Indian J Environ Hlth*, **41**(2) (1999), 107-117 [6 Ref].

Artesian well waters of the deltaic area of Cauvery basin were analysed to assess the suitability of these waters for domestic use based on the WHO standards. SAR, RSC and Na% values were calculated to assess the suitability of these waters for irrigation. Most of these waters were found unsuitable for both domestic and irrigational applications.

**9903-055.** Gambhi Sanjay Kumar (2283/12A, Bokaro Steel City, Bokaro, Bihar 827013). **Physio-chemical and biological characteristics of water of Maithon Reservoir of D.V.C.** *Polln Res*, **18**(4) (1999), 541-544 [6 Ref].

The Maithon Reservoir is situated on the bank of Barakar River located in Dhanbad district. The water quality of river is getting worse with the demand of water for domestic, municipal, agricultural and industrial purposes. The discharge of toxic effluent into the river causes high-suspended solid concentration and high COD. The physico-chemical and biological analysis of the water of Maithon Reservoir calls for proper treatment of different effluents before they are discharged into the natural watercourse.

**9903-056.** Gambhi Sanjay Kumar (2283/12A, Bokaro Steel City, Bihar 827012). **A study of heavy metals in water and sediments of Maithon Dam of Damodar Valley Corporations.** *Polln Res*, **18**(4) (1999), 545-541-547 [5 Ref].

The study of heavy metals in the river sediments is necessary to estimate the extent of pollution in the river water. Heavy metal concentration of water and sediments was estimated in Maithon dam. The concentration was found to be low in water but a tendency of metal accumulation in sediments was noticed.

**9903-057.** Ganguly T, Kumar B, Sen AK, Bhunia AB (Centl Polln Contl Bd , East Zone Office, 61, P.A.S. Rd, 4th floor, Calcutta 700033). **Assessment of water quality of Damoder river through comparative analysis of bioindicators and physico chemical determinants.** *J Env Polln*, **6**(2&3) (1999), 189-196 [7 Ref].

Paper deals with the water quality of Damodar river using bioindicators as quality determinants. In addition to the scoring of biological indicators, some selected background physico-chemical parameters were also monitored. The state of water quality as revealed through the comparative analyses of biological scores and physico-chemical parameters have been discussed.

**9903-058.** George Sanil, Hari Krishnan K, Thomas Sabu, Paul Murugan R, Mundayoor Sathish, Das MR (Rajiv Gandhi Cent Biotechno, Jagathy, Tribandrum 14, Kerala), **Distribution of heavy metals in Kuttanad Wetland ecosystem of Kerala, India.** *Int J Eco Environ Sci*, **25**(1) (1999), 91-95 [6 Ref].

Heavy metals were estimated in the water and sediments of Kuttanad wetland system in Kerala during the pre-monsoon, monsoon and post-monsoon seasons to assess the accumulation of heavy metals. In water, all heavy metals except Cr and Cu had higher concentration during the pre-monsoon period. In the sediments maximum concentration of all metals except Fe occurred during the post-monsoon period.

**9903-059.** Ghose MK, Sen PK (Cent Mining Env, Indian Sch Mines, Dhanbad, 826004). **Assessment of impact on ground water quality due to the disposal of iron ore tailing.** *J Indian Water Work Assoc*, **31**(4) (1999), 237-241.

Ferrous mining sector generates huge tailing volume, which needs huge land space for accommodating it. Most of the heavy metal constituents are removed in the tailing pond and as such provision of a tailing pond is a must. But provision of a tailing pond for containment does not give full guarantee of environmental compliance. Groundwater pollution may yet be caused due to leaching. Study attempts to investigate groundwater pollution due to disposal of iron ore tailings.

**9903-060.** Gupta BK, Gupta Rekha Rani (Dept Chem, Govt Autonomous Coll, Satna 485001). **Physico-chemical and biological study of drinking water in Satna, Madhya Pradesh, India.** *Polln Res*, **18**(4) (1999), 523-525 [9 Ref].

Drinking water quality of a fast developing town (Satna) of M.P. India has been studied at 20 points, 10 dependent on river water and rest on ground water. Several parameters including hardness, fluorides, nitrates and MPN of coliforms were studied. Most of the samples have high hardness and MPN of coliforms.

**9903-061.** Gupta SC, Varshney CP (Centl Cheml Lab, Ground Water Dept, Jodhpur 342003). **Iodide concentration in ground waters of western Rajasthan.** *Indian J Environ Hlth*, **41**(1) (1999), 59-64 [6 Ref].

Iodide concentration in the range of 8 to 356 µg/l with an average value of 64 µg/l has been observed in groundwaters of Jaisalmer, Nagaur and Pali districts of Western Rajasthan. Sandstone formation yields groundwater of high iodide concentration than the other formation in the region.

**9903-062.** Gurunadha Rao VVS, Dhar RL, Jaychand T, Khoker CS (Natl Geophyl Res Ins, Hyderabad 500007). **Ground water contamination around Mathura Oil Refinery, Mathura, UP : an assessment through mass transport modelling.** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ, 1999*, 168-183 [8 Ref].

The groundwater monitoring as well as water quality monitoring was carried out at 24 observation wells in the refinery site. It was found that total dissolved chlorides and sulphate compounds are contaminating the groundwater regime. Thus combined transport of chloride and sulphate was simulate in the mass transport model.

**9903-063.** Jain Pradeep Kumar (Dept Geo, Govt Autonomous Maharaja Coll, Chhatarpur, MP). **Assessment of water quality of Khnop reservoir in Chhatarpur, MP India.** *Eco Env Conserv*, **5**(4) (1999), 401-403 [8 Ref].

Surface water quality of Khnop reservoir in Chhatarpur, M.P. India is reported. The pH ranged from 7.1 to 7.2, electrical conductivity from 645 to 665.25 micromhos/cm, total hardness from 135 to 144.5 mg/l. The average value of chlorides was 102.34 mg/l. The surface water was found to be suitable for drinking purpose as per various standards.

**9903-064.** Jain Yatish (Dept Bot, Environ Sci, Govt Sci Coll, Jabalpur, MP). **Studies on diel variations in some water quality parameters at the time of immersing idols at Hanumantal Lake, Jabalpur (MP), India.** *J Env Polln*, **6**(2&3) (1999), 95-104 [18 Ref].

Successive studies on the diel variation of some limnological characteristics in a polluted lake were carried out at the time 'Anant Chaturdashi', a Hindus festival when hundreds of idols were dropped in this lake. Temperature, pH and Secchi disc

transparency did not varied significantly, while dissolved oxygen, biochemical oxygen demand and chemical oxygen demand increased during day time, whereas free CO and bicarbonates were maximum during the nights.

**9903-065.** Kameswari K Sri Bala, Bhole AG, Paramasivam R, Muthal PL, Pande SP (Natl Environ Engng Res Inst, Nagpur 440020). **Arsenic removal from ground water by coagulation process.** *J Indian Water Work Assoc*, **31**(4) (1999), 231-235 [12 Ref].

Arsenic is well recognised as an element of public health concern. Various technologies have been reported for removal of arsenic from drinking water. In a laboratory study, alum and poly aluminium chloride (Vikram Powder PAC AC/190) have been studied as coagulants in the removal of arsenic from ground water. The findings of the studies have shown that the dose of poly aluminium chloride (PAC) is almost half that of alum for obtaining the same level of arsenic removal.

**9903-066.** Kaplay RD, Potode HS, Panaskar DB, Ayaskar SR (Sch Earth Sci, SRTM Univ, Nanded). **Influence of aquifer rock and percolating water on geochemistry of ground water of Tuppa industrial area of New Nanded.** *J Indl Polln Contl*, **15**(2) (1999), 165-173 [8 Ref].

Hydrogeochemical studies have been carried out in and around Tuppa village which is situated nearer to industrial area of New Nanded. The controlling factors of groundwater chemistry are discussed in the paper and it is concluded that the rock type of the area and to certain extent industrial effluent has its bearing on the chemistry of groundwater.

**9903-067.** Kaur P, Rudra A, Thacker NP (Natl Environ Engng Res Inst, Nehru Marg, Nagpur 440020). **ICU spectrometry for heavy metals in Mumbai water supply.** *J Indian Water Works Assoc*, **31**(4) (1999), 259-263 [3 Ref].

Inductively coupled plasma (ICP) spectrometry technique available for the trace metal analyses is free from interelement interferences and is time saver for multielemental analyses. In comparison to AAS, the sample volume and analyses time are less. Although ICP atomic emission spectroscopy (ICP-AES) technique is less sensitive than flameless AAS, it is gaining popularity because of simultaneous determination of trace elements.

**9903-068.** Koshy Mathew, Vasudevan Nayar T (Dept Chem, Bishop Moore Coll, Mavelikara). **Water quality aspects of river Pamba.** *Polln Res*, **18**(4) (1999), 501-510 [24 Ref].

Physico-chemical and biological parameters of the river Pamba were analysed by collecting water samples from ten stations, covering a distance of 176 Km. The pollution of the river is due to the Sabarimala pilgrimage, free flow of sewage, domestic waste and faecal matters into the river and intrusion of sea water.

**9903-069.** Manna BR, Chandra Bhat S, Das Gupta M, Ghosh UC\* (\*Dept Chem, Presidency Coll, Calcutta 700073). **Studies on removal of arsenic from water using hydrated zirconium oxide.** *Cheml Environ Res*, **8**(1&2) (1998), 51-56 [12 Ref].

Selective uptake of arsenic (III) and arsenic (V) from their aqueous solutions is studied separately at optimum pH by using a fixed amount of hydrated zirconium oxide HZO (100-200mesh) by batch operation method. It is found that HZO is a reusable adsorbent for the effective removal of arsenic from arsenic contaminated drinking water at West Bengal in India and also in Bangladesh.

**99203-070.** Mariappan P, Vasudevan T\*, Yegnaraman V (\*Dept Indl Chem, Alagappa Univ, Karaikudi). **Behaviour of fluoride in groundwater with respect to static water level in Salem district, Tamil Nadu - a study.** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ, 1999*, 31-46 [23 Ref].

Fluoride concentration and static water level (SWL) of groundwater in 75 borewells dispersed over the Salem district are analysed for their relationship. Linear relationship between fluoride concentration and SWL has been derived for 33 unions in the district. The developed equations may be used to ascertain the fluoride concentration with certain degree of accuracy if SWL is measured or forecast.

**9903-071.** Mehrotra Puja, Mehrotra Sangeev (Cheml Lab, Centl Ground Water Bd, Northern Region, Lucknow). **Pollution of ground water by manganese in Hindon-Yamuna doab (NOIDA area), Dist Gaziabad.** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ, 1999*, 106-112 [4 Ref].

From the heavy metal pollution point of view manganese concentrations have been found to show higher volumes than prescribed guidelines of 0.1/0.3 mg/L practically in the whole of NOIDA area. Such high manganese concentrations may be due to pollution by manganese or by reduction in redox potential caused by influx or readily oxidizable organic matter either due to natural or anthropogenic sources, the latter being more probable.

**9903-072.** Mehrotra R, Kapoor Baljeet S, Narayan Byanktresh (Civil Engng Dept, Delhi Coll Engng, Delhi). **Defluoridation of drinking water using low cost adsorbent.** *Indian J Environ Hlth*, **41**(1) (1999), 53-58 [8 Ref].

A study was conducted to investigate the possibility of removing fluoride from water using alum treated flyash. Comparisons were also made with activated charcoal. The optimum sorbent dose was found to be 3g/100 ml. It was observed that equilibrium was achieved in 10 hours and enhanced adsorption was obtained at neutral pH range (6.5-8.0). The maximum fluoride removal was observed to be 64% at optimum conditions.

**9903-073.** Mohapatra UK, Singh BC (Paradeep Phosphates Ltd, Paradeep, Orissa). **Trace metals in drinking water form different sources in the old capital city of Cuttack.** *Indian J Environ Hlth*, **41**(2) (1999), 115-120 [15 Ref].

Paper deals with a short review and determination of trace metals in drinking water from six different sources in the city of Cuttack. Trace metal were determined in Mahanadi river water, open well water, tube well water and municipal tap water. The materials and methods adopted for the determination of concentration of trace metals and the results obtained from the experimental work are discussed in the paper.

**9903-074.** Narayana Shenoy K, Lokesh K N (Dept Geo, Manipal Inst Techno, Manipal 576119). **Quality of groundwater of borewells in M.I.T. campus Manipal, Karnataka.** *Indian J Environ Hlth*, **41**(2) (1999), 144-148 [4 Ref].

From the analysis of 15 groundwater samples collected from the bore wells of Manipal Institute of Technology Campus, Manipal, it is found that the physicochemical parameters are within the maximum permissible limits of drinking water standards.

**9903-075.** Nigam Neelam (Cheml Lab, Centl Ground Water Bd, Northern Region, Lucknow). **Hydrogeochemistry of fluoride in ground water of Agra district (U.P).** *Pro Int Semin Appl Hydrogeochem, Annamalai Univ, 1999, 12-19* [8 Ref].

The occurrence and distribution of fluoride in ground water at nine selected wells from the phreatic zone situated in Agra district is studied. 67% of the water samples under investigation are found to contain fluoride beyond the permissible limit of 1.5mg/l. High concentration of fluoride are also likely to be due to the use of phosphatic fertilizers or fluorapatite which are being leached down to the aquifer by return seepage of irrigation water.

**9903-076.** Pande KS, Sharma SD (Analyt Res Lab, Chem Dept, Hindu Coll, Moradabad 244001, UP). **Distribution of organic matters and toxic metals in the sediment of Ramganga river at Moradabad.** *Polln Res, 18(1) (1999), 43-47* [13 Ref].

The stretch of Ramganga river from Agwanpur township to down stream confluence point with Gangan river a tributary of Ramganga is studied. Due to alkaline nature of river water in this stretch most of the heavy metals have precipitated and settled into river bed as carbonated oxides and hydroxides. The river receives industrial effluents from brass factories stainless steel, electroplating units etc.

**9903-077.** Pande KS, Sharma SD (Analyt Res Lab, Chem Dept , Hindu Coll, Moradabad 244001,UP). **Studies on water quality index for Ramganga river at Moradabad, Uttar Pradesh.** *Polln Res, 18(3) (1999), 327-333* [10 Ref].

The classification of river stretches for their various beneficial uses could be done more rationally and accurately through the use of "Water Quality Index" (W.Q.I.). Paper deals with the formulation of five independent indices (WQI) for bathing and swimming, public water supply, agriculture, industry and fish culture.

**9903-078.** Pillai Ajai, Pandey Pijush, Sukla Abha V (Dept Chem, Govt Art Sci Coll, Durg, MP). **Physico-chemical studies of drinking water of Durg Municipality.** *Polln Res*, **18**(1) (1999), 49-51 [8 Ref].

The drinking water quality at Durg was assessed by examining various physico-chemical and bacteriological parameters and at the consumer end in eight selected residential areas. It has been observed that there are significant variations in the physico-chemical and biological characteristics of drinking water. The study indicates that some remedial steps in the existing water supply are urgently needed as the water quality is unsatisfactory in some areas of the city.

**9903-079.** Raka VK, Agnihotri AR, Thekdi RT, Shikrolkar SB, Salunke Subash (State Pub Hlth Lab, Pune). **Efficacy of rapid field test to detect faecal pollution in drinking water.** *Polln Res*, **18**(1) (1999), 37-47 [5 Ref].

The modified field test was found to be more suitable, reliable, inexpensive, easy to perform and most useful to detect faecal contamination in drinking water within 24 hrs. It also proved suitable for routine analysis in laboratories. However it will be highly useful for screening rural water supply at village level where resources, time, manpower and laboratory facilities are not available.

**9903-080.** Rastogi Renu, Gaumat MM (Centl Ground Water Body, Northern Region, Bhujal Bhawan, Sector B, Sitapur Rd, Yojna, Lucknow 226021). **Hydrochemistry and health hazards due to chromium in ground water in some parts of Kanpur metropolis, Uttar Pradesh.** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ*, 1999, 153-159 [6 Ref].

Leather and textile are dominant industries in Kanpur. Most industries discharge their untreated or partially treated waste water either on land or in Ganga river resulting into pollution of surface and subsurface waters. Paper discusses hydrogeochemistry of chromium, sources of pollution and its distribution in ground water. The physiological effects of chromium on human health have also been discussed in brief.

**9903-081.** Sastry KV, Rathu Pratima (Dept Biosci, MD Univ, Rohtak 124001). **Groundwater quality in three villages of Rohtak district.** *J Nature Conserv*, **11**(2) (1999), 175-182 [17 Ref].

Hand pumps water used by villagers for drinking purposes was collected from three villages of Rohtak district and their physico-chemical characteristics were analysed and compared with I.S.I standards for drinking water. The results obtained reveal that out of the three hand pumps selected, water of only one hand pump in each village was near to portability.

**9903-082.** Sawant CP, Saxena GC, Shrivastava VS (RBS Coll, Agra 282002, UP). **Trace metals in and around an industrial belt.** *Eco Env Conserv*, **6**(1) (2000), 137-138 [4 Ref].

During the last one decade a large number of small scale industries have been established in Maharashtra and Gujarat without any effective safeguards against environmental pollution. These wastes have a variety of contaminants which affect the underground water resources of this region. Paper analyses the status of trace metals in well water and adjoining well water.

**9903-083.** Sharma BS, Agarwal Asha (Dept Zoo, Socl Forestry Env, Sch Life Sci, Inst Basic Sci (Khandari Campus), Dr B.R. Ambedkar Univ, Agra 282003). **Assessment of water quality of river Yamuna at Agra.** *Polln Res*, **18**(1) (1999), 109-110 [10 Ref].

Due to rapid industrialisation and urbanisation of the Agra city, the Yamuna river is contaminated with the discharge of effluents. Present study was undertaken to ascertain the quality of Yamuna water at Agra, in light of the heavy pollution in reserves. The river was found to be highly polluted.

**9903-084.** Sharma SD, Pande KS (\*Analyt Res Lab, Chem Dept, Hindu Coll, Moradabad) **Pollution studies of river Ramganga at Moradabad: determination of toxic substances.** *Cheml Environ Res*, **8**(1&2) (1999), 117-129 [2 Ref].

The pollution status of the Ramganga river in a stretch of about 25 Km around Moradabad has been studied. The pollution is caused by effluent wastes of nearly 450 electroplating plants apart from the domestic wastewaters. The samples were analysed

seasonwise for physico-chemical parameters and biological studies were performed employing standard methods.

**9903-085.** Singh Ajit Pratap, Ghosh SK (Civil Engng Group, BITS, Pilani 333031). **Water quality index for river Yamuna.** *Polln Res*, **18**(4) (1999), 435-439 [7 Ref].

Statistical approaches to water quality evaluation are applied to the river Yamuna at selected stations based on the published data of Central Pollution Control Board, New Delhi using modified Delphi method. The water quality indices calculated from different methods are also compared.

**9903-086.** Singh HP, Mishra JP, Mahaver LR (Centl Inland Captive Fisheries Res Inst, Malda 732101). **Observation on biochemical and chemical oxygen demands of certain polluted stretch of river Ganga.** *J Environ Bio*, **20**(2) (1999), 111-114 [6 Ref].

Present observation was carried out in the middle stretch of river Ganga to evaluate the impact of different types of effluents on biochemical and chemical oxygen demands. Higher values of both the factors were observed at the out fall region. Maximum values of BOD was 205.0 mg<sup>l</sup>-1 at textile discharge while chemical oxygen demand was highest (265.0 mg<sup>l</sup>-1) at tannery. BOD and COD were positively related as both are dependent on the presence of organic matter.

**9903-087.** Singh Rajendra (Dept Bot, Meerut Coll, Meerut UP). **Pollution in Abu drainage- a preliminary report.** *Adv Plant Sci*, **13**(1) (2000), 43-45 [14 Ref].

The Abu drainage in Meerut has been subjected to survey to study the status of pollution. The highly polluted water makes it unfit not only for human consumption and domestic use, rather inappropriate for irrigation. The toxicity due to the incoming heavy metals and the pesticides and hazardous pollutants bear adverse effect on establishment of mycorrhizal associations.

**9903-088.** Singh SP, Khare P, Satsangi GS, Lakhani A, Maharaj Kumari K, Srivastava SS (Dept Chem, Fac Sci, Dayalbagh Edn Inst, Dayalbagh, Agra 282005). **Rainwater composition of a remote semi-arid site of India.** *Polln Res*, **19**(1) (2000), 99-105 [39 Ref].

Rainwater samples were collected and analyzed during monsoon at Rampur, Agra (India) which is a remote site and considered as a regional representative site. pH, major cations and anions were determined in rainwater samples. The pH ranges between 5.9 and 7.4. Total sum of cations and anions were calculated. The neutralization factors were 1.63 for NH<sub>4</sub>, 1.58 for Ca and 0.19 for Mg. It indicates that major neutralization occurred by NH<sub>4</sub> and Ca.

**9903-089.** Singh TB, Bala Indu, Singh Devendra (HP State polln Contl Bd, Paonta Sahib (HP) 173025). **Assessment of groundwater quality of Paonta Sahib (H.P).** *Polln Res*, **18**(1) (1999), 111-114 [9 Ref].

The groundwater quality at Paonta Sahib, India was assessed by examining various physical, chemical and bacteriological water quality parameters in six drinking water sources for this town. The study indicates that some modification and remedial steps, in the existing water supply are needed as the water quality is unsatisfactory in most of the area.

**9903-090.** Sivakumar R, Mohanraja R, Azeez PA (Environ Impact Assess Div, Salim Ali Cent Ornithology Natural Hist, Anaikutty, Coimbatore 641108). **Physio chemical analysis of water sources of Ooty, South India.** *Polln Res*, **19**(1) (2000), 143-146 [7 Ref].

The water sources of Ooty are many lakes, man made impoundment and open wells. The physico chemical analysis of water from few lakes, open wells and streams, for two seasons was conducted. The parameters including total hardness, COD, chlorides and heavy metals were also carried out. Comparisons were made with statutory standards and mitigatory measures are suggested for improving quality.

**9903-091.** Sondhi TN, Prakash Ram (Centl Ground Water Bd, Bhujal Bhawan, Lucknow 226021). **Pollution by lead in ground water in Mathura-Brindavan area, UP.** *Proc Int Semin Appl Hydrogrochem, Annamalai Univ*, 1999, 225-228 [4 Ref].

The lead concentration in ground water of Mathura is generally low. However, studies on lead content of dug well hand pump and tube well waters in Mathura-Brindavan area revealed the interesting fact that in many cases the values exceeded the

higher concentration of 50 microgram/l suggested by BIS & WHO. This higher concentration of lead, is due to pollution from anthropogenic sources.

**9903-092.** Srinivasamoorthy K, Rammohan V, Anandhan S, Chidambaram P, Ganesh N, Manivannan R (Dept Geo, Annamalai Univ, Annamalai Nagar 608002). **A preliminary study on the distribution of major ion and trace metal concentration of the ground waters in and around Manali, Chennai.** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ, 1999, 143-152* [4 Ref].

The systematic analysis of the water samples of the major and trace ions indicated the effect of the industries on water quality without any regular pattern. The dominant cations are Na>Ca>Mg>K and anions Cl>SO<sub>4</sub>>HCO<sub>3</sub>>CO<sub>3</sub>. The trace metals Cu, Pb and Zn show abnormal values in some places.

**9903-093.** Tamta SR (Centl Ground Water Bd, Faridabad, Haryana). **Occurrence and origin of ground water salinity in Bhatinda district, Punjab.** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ, 1999, 113-122* [6 Ref].

The study indicates occurrence and origin of groundwater salinity in Bhatinda district, being largely due to simple dissolution of minerals in the aquifers, low groundwater flow, mixing of groundwater and infiltration of evaporated irrigation water along with fertilizers NO<sub>3</sub><sup>-</sup> and K<sup>+</sup> to groundwater system.

**9903-094.** Thomson Jacob C, Azariah J, Viji Roy AG (Loss Eco Authority, Govt India, 21, Bethel Illam, Parkasam Street, BV Puram, Avadi, Chennai 600054). **Impact of textile industries on river Noyyal and riverine ground water quality of Tirupur, India.** *Polln Res, 18(4)* (1999), 359-368 [23 Ref].

The impact of industries on the river Noyyal and the adjacent ground water was studied. The results have been discussed in the light of permissible standards. The physico-chemical characteristics of the river Noyyal and the ground water exceeded the permissible level for certain parameters. The new effluent released from the industry is highly hazardous both from salinity and sodicity considerations.

**9903-095.** Yazdandoost MY, Katdare MS (Dept Environ Sci Zoo, Univ Pune, Pune). **The impact of pollution on biodiversity of fish and selected arthropods in Pune rivers-India.** *Polln Res*, **19**(1) (2000), 107-112 [5 Ref].

There are many small, medium and large scale industries, located in Pune city and its suburb. These industries discharge their effluents into rivers and pollutes them physically and chemically, which eventually charge the biological production and diversity in these rivers.

## **Noise Pollution**

**9903-096.** Naik Shrikanta, Purohit KM (Dept Chem, Regl Engng Coll, Rourkela 769008). **Traffic noise pollution at Bondamunda of Rourkela industrial complex.** *Polln Res*, **18**(4) (1999), 475-478 [6 Ref].

Sound pressure level (SPL) has been measured continuously over 18 hours period at busy road traffic at Bondamunda in Rourkela industrial complex and the same measurement was repeated after a gap of six months to study how the sound pressure levels are changing. From the measured SPL hourly values, the parameters like LI0, L50, L90 Leq, Lnp and TNI were computed for that hour.

**9903-097.** Rao KV, Padmaja P (Dept Civil Engng, Govt Polytechnic, Gwalior 474009, MP). **Ambient noise level monitoring in Gwalior at various zones.** *J Env Polln*, **6**(2&3) (1999), 211-214 [4 Ref].

Ambient noise levels in various zones of Gwalior city were monitored and compared with that of standards provided by schedule III of Environment (Protection) Rules 1986. In all the zones during night as well as day time the noise level was found to be beyond the standards. Efforts are made to evaluate the reasons for this and some remedies are suggested to control.

## Ecology

**9903-098.** Anand VK, Sharma Suman (Dept Bot, Univ Jammu, Jammu 180001). **Interrelationship of zinc of submerged macrophytes, water and bottom sediments of two Shivalik lakes of Jammu.** *J Env Polln*, **6**(2&3) (1999), 215-224 [27 Ref].

Seasonal fluctuations of zinc in the water, bottom sediments and submerged macrophytes, alkaline, hardwater lakes (Mansar and Surinsar) of Jammu have been studied. Overall zinc concentration remained higher in the water of lake Surinsar than Mansar. However reverse happened in case of bottom sediment. Zinc concentration of the submerged macrophytes was much higher than the critical value recommended for a typical aquatic angiosperm, indicating to luxury consumption.

**9903-099.** Anil Kumar NC, Abdul Azis PK (Dept Aquatic Bio Fisheries, Univ Kerala, Thiruvananthapuram, Kerala 695007). **Primary production in the Anchuthengu-Kadinamkulam estuarine system, Kerala.** *Polln Res*, **18**(3) (1999), 309-314 [18 Ref].

The Anchuthengu-Kadinamkulam estuarine system was monitored for its primary productivity. Data on gross and net primary productivities at five representative stations in the estuary were studied for their variation in space and time. The relationship that exists between primary productivities and water quality parameters has been examined and discussed.

**9903-100.** Bhattacharya G, Mazumdar A, Chaudhuri PK (Dept Zoo, Univ Burdwan, Burdwan 713104). **Incidence of deformed *Chironomus* larvae in contaminated sediment of the river Damodar, West Bengal (Diptera: Chironomidae).** *Polln Res*, **18**(1) (1999), 79-82 [18 Ref].

Paper reports the occurrence of deformity in *Chironomus* larvae induced by the contaminants in the Damodar River. A cursory attempt has been made to correlate with the concomitant increase in the concentration of heavy metals in river water and sediments with that of deformity in the larvae. Index of deformity truly reflects the toxic load of the river sediment.

**9903-101.** Chidambaram Pillai S (PG Dept Bot, VO Chidambaram Coll, Tuticorin 628008, Tamil Nadu). **Cyanobacteria as indicators of power station hot water effluents.** *J Env Polln*, **6**(2&3) (1999), 157-160 [22 Ref].

Tuticorin coastal water receives huge volumes of hot water incessantly from the Thermal Power Station. The increased temperature in the effluent water supports a dense growth of thermophilic and bacteria groups. Among these populations, one strain *Lyngbya confervoides* was found to be thermotolerant and others are thermally sensitive. Their blooming nature in hot water associated with thermal pollution has been discussed.

**9903-102.** Dobriyal Anoop K, Joshi Hemant (Dept Zoo, HNB Garhwal Univ Campus, Pauri Garhwal 246001). **Faunal diversity and its determinant factors in some hillstreams of Garhwal Himalaya.** *Uttar Pradesh J Zoo*, **19**(1) (1999), 85-87 [6 Ref].

Paper deals with ichthyofaunal, periphytic and macro-zoobenthic diversity in two hillstreams of Garhwal Himalaya which have different ecological conditions due to difference in nature of their origin. The determinant ecological factors for this diversity are also discussed.

**9903-103.** Gupta AK (Dept Bot, SB PG Coll, Baragaon, Varanasi 221204, UP). **Impact assessment of physico-chemical and biotic characteristics of freshwater bodies in Varanasi under anthropogenic pressures.** *Int J Mendel*, **6**(3&4) (1999), 115-116 [8 Ref].

The inland freshwater ecosystems both lentic and lotic, are being increasingly subjected to greater stress from various human activities. Paper deals with assessment of input on physio-chemical and biological characteristics of freshwater bodies in Varanasi due to various activities of living organisms especially human beings.

**9903-104.** Hari Krishnan K, Thomas Sabu, George Sanil, Paul Murugan R, Mundayoor Sathish, Das MR (Rajiv Gandhi Cent Biotechnno, Jagathy, Thiruvanthapuram 695014, Kerala). **A study on the distribution and ecology of phytoplankton in the Kuttand wetland ecosystem, Kerala.** *Polln Res*, **18**(3) (1999), 261-269 [24 Ref].

Phytoplankton belonging to 49 species under 34 genera were observed from the Kuttanad wetland during the period of study. It was found that Bacillariophyceae was the dominant group in the three zones. Phytoplankton standing crop exhibited spatial temporal variations. Lower Kuttanad was found to be more productive with respect to phytoplankton production. The pre-monsoon period marked an increase in the density of phytoplankton.

**9903-105.** Hosmani SP, Vasanth Kumar L, Partha S (Dept Bot, Univ Mysore, Manasagangotri, Mysore 570006). **Ecological significance of biochemical parameters in certain fresh water lakes of Mysore.** *J Environ Bio*, **20**(2) (1999), 121-124 [19 Ref].

Studies on biochemical aspects of water pollution based on analysis of glycolic acid, chlorophylls, phycobiliproteins and total dissolved solids were made in twenty lakes in and around Mysore city. Four categories of water have been recognized based on the range of glycolic acid present. The high value of glycolic acid may be due to high contents of organic pollutants coupled with high intensities of light during summer that inhibit algal photosynthesis and increase the percentage of extracellular release.

**9903-106.** Kale SC, Godbole SH (Dept Microbio, YC Coll Sci, Karad 415124, Dist Satara, Maharashtra). **Isolation and enumeration of yeasts from anaerobic lagoons treating distillery waste.** *J Indl Polln Contl*, **15**(2) (1999), 187-191 [12 Ref]

In the course of study of microflora of anaerobic lagoons treating distillery waste, samples collected from lagoons of four different distilleries located in Maharashtra were subjected to isolation of and enumeration of yeasts. The average yeast population in working lagoons was 35.7 per ml where in sour lagoon it was 870 per ml. The souring of lagoon did not eliminate any of the yeast species isolated from working lagoons.

**9903-107.** Karuppasamy R, Rao Mohan Alokam, Elanchezhiyan E (Dept Zoo, Annamalai Univ, Annamalainagar 608002). **Seasonal variations of nutrients in the Uppanar estuary, Cuddalore, south east coast of India.** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ*, 1999, 269-274 [12 Ref].

Investigation on the physico-chemical factors at two different stations (I and II) in the Uppanar estuary, Cuddalore, showed seasonal variations in all the parameters

observed. Of the two stations studied, station-I recorded higher values of temperature, salinity, pH, and nutrients (PO<sub>4</sub>, NO<sub>2</sub>, NO<sub>3</sub>, and SiO<sub>2</sub>) and low dissolved oxygen, which indicating the high pollution load, mainly due to the SIPCOT industrial complex waste water discharge.

**9903-108.** Khan MA, Bhat GH (Eco Res Lab, Dept Bot, Univ Kashmir, GPO Box 726, Srinagar 190001). **Biological invasion and 'red water' phenomenon in Lake Manasabal of Kashmir Valley, India.** *Polln Res*, **19**(1) (2000), 113-117 [18 Ref].

Communication deals with the biological invasion of a protozoan (*Euglena pedunculata* Gojdics) causing 'red water' phenomenon in a monomictic, mesotrophic Lake Manasbal, Kashmir. The observations conducted indicated extensive patches and long streaks of reddish water, largely bordering wide lakeshore areas. The cumulative undesirable environmental impacts render the lake ecosystem susceptible to pollution stress.

**9903-109.** Mahanta B, Handiques R, Dutta P, Mahanta J (Regl Medl Res Cent, NE Region, Dibrugarh 786001, Assam). **Feeding behaviour of *Cx quinquefasciatus* in tea agro ecosystem of Dibrugarh district.** *Eco Env Conserv*, **6**(1) (2000), 39-43 [19 Ref].

Feeding behaviour of *Cx quinquefasciatus*, the vector of bancroftian filariasis in tea gardens of Assam was studied. Increasing areas of polluted breeding sites in the gardens like outlet drains and waste water has contributed to the increase of this vector. Feeding behaviour was significantly different between sexes and selection of substrates. It is presumed that given sufficient natural food in the environment blood feeding can be reduced.

**9903-110.** Manorama S, Paulsamy S, Manian S, Udaiyan K, Jaya Kumar M (Dept Bot, Kongunadu Arts Sci Coll, Coimbatore 641029). **Evaluation of soil recovery through certain abiotic and biotic variables in lime mined ecosystem.** *J Env Polln*, **6**(2&3) (1999), 149-155 [23 Ref].

Study was carried out in a waste land of ca 500ha, created through the deposition of open cast lime stone mine spoil by the Associated Cement Companies Ltd Madukkarai, Coimbatore district. The species diversity index of plant communities in the experimental sites were also studied. The rate of soil reclamation and the time required

for total reclamation in the degraded soil was predict through linear regression and was found that the average period required for the total reclamation of spoil could be 28 years.

**9903-111.** More YS, Nandan SN (Dept Bot, KAMP & Kai NKP Sci Coll, Pimpalner Dist, Dhule, MS). **Hydrobiological study of algae of Panzara river (Maharashtra).** *Eco Env Conserv*, **6**(1) (2000), 99-103 [12 Ref].

Paper studies the hydrobiological aspects of algae of Panzara river of Khandesh area of Maharashtra. Algal and water samples were collected at monthly intervals from three stations of river, during two years study. The most pollution tolerant genera and species of four groups of algal were recorded from three stations of river. Algal can be used as indicators of organic pollution for assessing the water quality of Panzara river.

**9903-112.** Nirmal Kumar JI, Kumar Rita N, Gohil Amit N, Hidar Kumar BS (Dept Biosci, NV Patel Coll Pure Appl Sci, Vallabh Vindyanagar 388120, Gujarat). **Preliminary investigations of plant diversity of Khatana and Waghai forests of north Western Ghats, South Gujarat, India.** *Eco Env Conserv*, **6**(1) (2000), 87-92 [20 Ref].

Paper deals with plant diversity of Khatana and Waghai forests situated on extreme north-east of Western Ghats of South Gujarat, India. These forests represents the tropical moist deciduous type. Both the study areas showed *Tectona grandis* followed by *Acacia catechu* and *Terminalia crenulata* as a dominating tree species. However, remarkable differences were also noticed between these two study areas.

**9903-113.** Pandey GC, Neraliya S, Verma RT (Dept Environ Sci, Dr R M L Avadh Univ, Faizabad 224001). **Limnological studies on Bharatkund : Numerical and volumetric variation in phytoplanktons of tropical fresh water kund.** *Himalayan J Env Zoo*, **12**(1998), 111-116 [14 Ref].

Paper describes the limnological features of fresh water Bharatkund of Faizabad district, UP. Seasonal variations in phytoplankton density was studied in three different seasons. The trends of population was: Chlorophyceae > Cyanophyceae > Bacillariophyceae > Euglenophyceae. Cyanophyceae constitutes the largest group of phytoplankton during summer where as Euglenophyceae are comparatively less in all seasons.

**9903-114.** Pandey J, Pandey Usha, Tyagi HR (Dept Environ Sci, ML Sukhadia Univ, Udaipur 313001). **The relation of algal productivity to the nature of physico-chemical environment of a fresh water tropical lake.** *Eco Env Conserv*, **5**(4) (1999), 365-368 [18 Ref].

Water quality parameters and the associated variations in algal pigments, biomass and productivity were recorded at four different sampling stations of the Baghdare lake, Udaipur. Variations in algal pigments, algal biomass and productivity were regulated, to a greater extent by N and P levels of lake water. The study provides evidence of substantial P import through bird droppings. This has important bearing for water bodies which have not been subjected to anthropogenic activities.

**9903-115.** Prakash Ishwar, Singh Partap (Desert Regl Stn, Zool Surv India, Jodhpur 342009, Rajasthan). **Species composition, relative abundance and altitudinal distribution of small mammals in the Aravalli Montane range.** *Int J Eco Environ Sci*, **25**(1) (1999), 37-49 [19 Ref].

The Aravalli range is an interesting but unexplored montane ecosystem situated in the State of Rajasthan. The study based on snap trapping small mammals in five habitats at five localities yielded 305 specimens. The most abundant species was found to be the rock-rat, *Cremnomys cutchicus*, followed by the shrew. The relative abundance and other ecological parameters of small mammal communities are compared with those found on the Abu hill.

**9903-116.** Ramakrishnan R, Perumal P, Santhanam P (Cent Adv Std Marine Bio, Annamalai Univ, Parangipettai 608502, Tamil Nadu). **Spatio-temporal variations of hydrogeographical features in the Pichavaram mangroves and Mohi Aqua farm, South east coast of India.** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ, 1999*, 197-203 [12 Ref].

The intermittent high and low rainfall pattern seemed to have direct or indirect influence on the hydrographical parameters of Pichavaram mangrove region. The high DO during monsoon could be attributed to the decreased temperature, salinity and primary production. The summer pH maximum was due to sea water penetration and biological activities.

**9903-117.** Sagar Ram, Singh JS (Dept Bot, Banaras Hindu Univ, Varanasi 221005, UP). **Species diversity and its measurement.** *The Botanica*, **49** (1999), 9-16 [15 Ref].

Species diversity is an approximate proxy for biodiversity. In addition, species diversity characterises community structure. Species diversity can be expressed at three levels: alpha diversity, beta diversity and gamma diversity. A variety of formulae have been used to calculate species diversity. Most commonly used ones are collected in this article.

**9903-118.** Sharma Anupam, Chandrashekhara Gupta TR, Prabhu HV (Dept Aquatic Bio, Coll Fisheries, Univ Agricul Sci, Mangalore 575002). **Studies on zooplankton community of the Tungabhadra river in Karnataka receiving domestic sewage from Harihar region.** *J Env Polln*, **6**(2&3) (1999), 161-166 [12 Ref].

Study deals with the impact of untreated domestic sewage on zooplankton community of Harihar region of Karnataka in a 16km stretch of the Tungabhadra river. Significant temporal and spatial variations of biomass were noted during the period of investigation while the constituent groups did not show any typical variation. Attempts are made to identify pollution tolerant species in the riverine environment with respect to its saprobic status.

**9903-119.** Sharma LL, Sharma SK, Saini VP, Vyas RN (Dept Limno Fisheries, MLS Univ, New Campus, Udaipur 313001, Rajasthan). **Some limnological aspects of seasonal pools in Ahar river, Udaipur with reference to human interference and organic waste management.** *Eco Env Conserv*, **6**(1) (2000), 81-85 [13 Ref].

A stretch of Bearch river system namely Ahar river from Thoor Ki pal to Udaisagar was studied during post monsoon period for selected water quality parameters. The results clearly evidenced impact of human interference on the water quality of upper and lower stretches of this seasonal river. Appropriate management measures have been suggested to check pollution caused by domestic wastes from nearby human settlements.

**9903-120.** Sharma MS, Liyaquat F, Barbar D, Chishty N (Dept Zoo, ML Sukhadia Univ, Udaipur, Rajasthan). **Biodiversity of freshwater zooplankton in relation to heavy metal pollution.** *Polln Res*, **19**(1) (2000), 147-157 [30 Ref].

Comparative limnological studies have been attempted to observe water quality and diversity of zooplankton in all water bodies belonging to Berach river system. Biodiversity had declining and again increasing trend depending upon heavy metal load in different water bodies belonging to Berach river system. Remarkable reduction in size of *Brachionus calyciflorus* have been observed in down stream ponds.

**9903-121.** Shivanikar SV, Patil PM, Vaidya DP, Bandela NN (PG Dept Environ Sci, NSB Coll, Nanded). **Environmental temperature fluctuation determine dissolved oxygen level in Godavari river water.** *Polln Res*, **18**(4) (1999), 415-418 [15 Ref].

The ranges of temperature from Godavari river water was 26.0°C to 36.0°C to 37.2°C and 26.8°C to 36.7°C at station A, B and C respectively. The range of dissolved oxygen was 5.60 to 8.00 mg/L, 26.9°C to 4.6 mg/L and 1.2 mg/L at station A, B and C respectively. Increases in the temperature of water in summer might have resulted in decreases of dissolved oxygen level in Godavari river water which was found at mid stream and down stream stations due to discharge of sewage.

**9903-122.** Thomas Sabu, Abdul Azis PK (Dept Aquatic Bio Fisheries, Univ Kerala, Thiruvananthapuram 695007). **Zooplankton community characteristics in the Peppara reservoir, Kerala.** *Polln Res*, **18**(3) (1999), 257-260 [16 Ref].

Higher diversity values were recorded in the lotic zones of the reservoir. The rotifer population was found to be the most diversified and species rich group. Rotifera and cladocera population recorded maximum diversity and species richness during the pre-monsoon and the post-monsoon periods respectively.

**9903-123.** Thomas Sabu, George Sanil, Hari Krishnan K, Paul Muragan R, Mundayoor Sathish, Das MR (Rajiv Gandhi Cent Biotechno, Jagathy, Trivandrum 695014, Kerala). **Spatio-temporal distribution and ecology of benthos in the Kuttanad wetland ecosystem, Kerala.** *Polln Res*, **18**(3) (1999), 235-243 [12 Ref].

The benthic fauna was studied all over the Kuttanad wetland ecosystem. Soil parameters were monitored on spatial and temporal scale and correlated with faunal abundance. Significant correlation was perceived between benthic fauna and organic carbon and nitrate. The distribution of organisms in the different zones showed the maximum benthic population during the pre-monsoon period.

**9903-124.** Tiwari DR (Dept Geo, Govt Motilal Vigyan Mahavidyalaya, Bhopal). **Physico chemical studies of the Upper Lake water Bhopal, Madhya Pradesh, India.** *Polln Res*, **18**(3) (1999), 323-326 [3 Ref].

The Upper Lake serves as the major source of water for rapidly developing township of Bhopal. This communication reports water quality of Upper Lake of Bhopal based on a short term study. Water quality was found to be suitable for irrigation and drinking based on physico-chemical factors.

**9903-125.** Yazdandoost MY, Katdara MS (Dept Environ Sci Zoo, Univ Pune, Pune). **Study of the population density of plankton with respect to physico chemical characteristics of water in Pune rivers-India.** *Eco Env Conserv*, **6**(1) (2000), 127-135 [11 Ref].

Water quality affects the abundance species composition, stability, productivity and physiological conditions of indigenous population of aquatic organisms. Phyto and zooplanktons have been studied at several points in several rivers of Pune in relation to their varying pollution status. Higher level of pollution caused a drastic drop in number and species richness of pNature and Natural Resources Conservation

**9903-126.** Banerjee SK, Sonkar SD (Eco Rehabilitation Dev, Trop Forest Res Inst, P.O. RFRC, Mandla Rd, Jabalpur 482021). **Natural revegetation and accumulation of organic matter and nitrogen in an age series of manganese mined overburden.** *J Env Polln*, **6**(2&3) (1999), 115-122 [25 Ref].

Natural revegetation and accumulation of organic matter and nitrogen in manganese mine overburdens of different ages (5, 10, 15, 25 and 353 yr old) in different microsites in Ukwa, district Balaghat, M.P. was studied. The study revealed that species growing as ground flora gradually modified the inert overburdens in respect of nutrient

status. The spoil environment which was extremely harsh just after mining was improved and changed gradually to hospitable conditions through natural succession.

**9903-127.** Banerjee SK, Sonkar SD (Eco Rehabilitation Div, Trop Forest Res Inst, P.O. RFRC, Mandla Rd, Jabalpur 482021). **Spoil characteristics and natural succession of an age series of iron mine overburden.** *J Env Polln*, **6**(2&3) (1999), 105-114 [2 Ref].

The time dependent changes of spoil characteristics and species composition in iron mine overburden spills of different ages in Dalli-Rajbara of Madhya Pradesh were studied. Coarse fragment (>2mm) decreased with age of mine spoils with corresponding increase of the finer fraction. Organic carbon, total and available nitrogen, available phosphorus and potash increased with age of mine spoil.

**9903-128.** Barooah Madhumita, Rahman SAS, Saikia K, Borthakur HP, Deka PC (Dept Agricl Biotechno, Assam Agricl Univ, Jorhat 785013, Assam). **Role of indigenous microorganisms in utilising the lighter fractions of crude oil pollutants from the vicinity of oil rigs.** *Eco Env Conserv*, **6**(1) (2000), 35-38 [15 Ref].

Soils collected from different sites within the vicinity of oil rigs of Oil And Natural Gas Commission (ONGC) in Barhola were used for isolation of microorganisms capable of utilising n-hexane extractable crude oil. Representations of the isolates suggested that fungi represented a major part of the soil microflora were able to utilise lighter fraction of the crude oil. Both fungi and bacteria utilised n-hexane extractable crude oil faster than whole crude oil.

**9903-129.** Basavarajappa S (Dept Appl Zoo, Kuvempu Univ, BR Proj, 577115). **On marsh crocodile *Crocodilus palustris* in the Kali river of Western Ghat, Karnataka, India.** *Uttar Pradesh J Zoo*, **18**(3) (1998), 153-156 [8 Ref].

The marsh crocodile *Crocodilus palustris* inhabitation and its habitatic features were varied at the Kali river basin of Western Ghat. The population and nest sites were affected at the rocky/sandy islands endowed with bamboo bushes and other varied floral composite, due to intense agriculture, fishing and human activities at the vicinity of Kali river.

**9903-130.** Bhaskar VV (Dept Bot, PSGVP Mandal's ASC Coll, Shahada 425409, Dist Nandurbar, MS). **Tribal ecology of Toranmal forest region in Satpuda hills.** *Eco Env Conserv*, **5**(4) (1999), 307-311 [11 Ref].

Agriculture and medicine of tribals of Toranmal region are reported. Ten herbal preparations of tribal medicine for diseases are also reported. The interaction of tribals with their forest environment resulted in both biodegradation of forest species and also conservation of crop species and cultivators.

**9903-131.** Bhojwani Sant S, Dennis Thomas T (Dept Bot, Univ Delhi, Delhi 110007). ***In vitro* conservation of plant genetic resources.** *The Botanica*, **49**(1999), 47-52 [5 Ref].

There is urgent need to conserve valuable wild species and the relatives and primitive cultivars of crop plants. In this regard tissue culture often has advantage over the conventional approach of germplasm conservation as seeds or field collections. Paper describes *in vitro* approaches for short-term and long-term conservation of germplasm.

**9903-132.** Chaudhury Rekha, Gautam PL (Natl Bureau Plant Genetic Resources, Pusa Campus, New Delhi 110012). **Biotechnological approaches to biodiversity conservation of multipurpose tree species.** *The Botanica*, **49**(1999), 53-58.

Biological diversity of several multipurpose tree species mainly found in forests is being lost because of drought, climate change and deforestation. To reverse the trend of loss of genetic resources an integrated strategy for resource management and maintenance of biological diversity is essential and urgent.

**9903-133.** Gupta Ashok K, Mishra SK, Khan AA (Dept Bot, PG Coll, Shahdol 484001). **Ethnobotanical studies on medicinal plants of Amarkantak forest, Shahdol district, Madhya Pradesh.** *Adv Plant Sci*, **12**(2) (1999), 451-456 [4 Ref].

Amarkantak is the place of union of two mountain ranges. Vindhya and Satpura. The area is the source of three great rivers, Johilla, Narmada and Sone. The flora and fauna of this region is not only rich but also unique. A large number of tribals live here.

Paper describes some new facts about certain plant species and their utilization by tribals.

**9903-134.** Jawahar Raj N, Kumaraswamy K (Sch Earth Sci, Bharathidasan Univ, Tiriuchirapalli). **Status of the coral reef environment of the Gulf of Mannar, South India.** *J Nature Conserv*, **11**(2) (1999), 161-168 [17 Ref].

Paper attempts to give a comprehensive picture of the status of the coral reef environment in the Gulf of Mannar area of South India by the analysis of data from several secondary sources along with the observations made during the field visit to the area. In the study area, unscientific activities have degraded the coral reef environment and the results of their efforts have also been examined. The state and the central government have passed several legislations to check the degradation.

**9903-135.** Jeevan Rao K (Dept Soil Sci Agricl Chem, Agricl Coll, (Acharya NG Ranga Agricl Univ, Mahanandi, Nadyal 518502). **Diagnosis of soil pollution.** *Eco Env Conserv*, **5**(4) (1999), 391-394 [16 Ref].

An overview of soil pollution is discussed in the paper. Important topics discussed are: sources of soil pollution, diagnosis of soil pollution, soil properties-odour, soil reaction, organic matter, heavy metals etc. Soil remediation techniques are also discussed.

**9903-136.** Khasim SM, Mohana Rao PR (Dept Bot, Nagarjuna Univ, Nagarjunanagar 522510, AP). **Medicinal importance of orchids.** *The Botanica*, **49**(1999), 86-91 [20 Ref].

Many medicinal orchids are reported to have useful alkaloids. Some of the orchids are in endangered state due to over-exploitation and habitat destruction. Conservation strategies for orchids and further studies on antimicrobial activity of orchid alkaloids have been suggested.

**9903-137.** Kumaraguru AK (Cent Marine Coastal Std, Madurai Kamaraj Univ, Madurai 625001, Tamil Nadu). **Coral reefs in the Gulf of Mannar and the conservation strategies required.** *Eco Env Conserv*, **6**(1) (2000), 1-12 [67 Ref].

Paper reports importance of Gulf of Mannar marine ecosystem in India and importance of corals and coral reefs. Disturbance and threats to these ecosystems due to pollution, coastal development, mining, tourism, blasting and other cultural purposes is discussed in detail. Socio-economic dimension of the problem and conservation measures are suggested.

**9903-138.** Muruganandam M (Centl Soil Water Conserv Res Trng Inst, Indian Coun Agricl Res, 218-Kaulagarh Rd, Dehradun 248195, UP). **Wild shrimp seed (*Penaeus monodon*) collection and estuarine biodiversity loss in Orissa coast.** *J Nature Conserv*, **11**(2) (1999), 209-216 [6 Ref].

A field observation and inferences were made on massive scale collection of wild black tiger shrimp seeds of (*Penaeus monodon*) and the concomitant destruction of target and non-target species giving extreme pressure on the Pudabalanga estuarine bio-diversity near Balasore in east coast of India. From the observation it was very evident that the intensive shrimp seed collection and destruction of rich estuarine biomass are potential threat to the loss of natural biodiversity, trophic systems and hence the whole estuarine eco-system.

**9903-139.** Nagendran N (PG Dept Zoo, Madura Coll, Madurai 625011, Tamil Nadu). **Molecular markers in biodiversity conservation - an over view.** *Eco Env Conserv*, **6**(1) (2000), 19-23 [59 Ref].

The variation within species depends on the genetic constitution and genetic variation can be measured by analysing DNA sequences. DNA finger printing is the basis of several modified molecular techniques called molecular markers, which are widely used to study variations at DNA level. Paper describes the advantages and limitations of molecular markers in biodiversity studies.

**9903-140.** Nair KKN (Div Bot, Kerala Forest Res Inst, Peechi 680053, Kerala). **Ethnobiology and its application in biodiversity conservation.** *The Botanica*, **49**(1999), 66-68.

Traditional life of the tribals is more conservative in approach, whereas their non-traditional way of living is essentially destructive to biodiversity. Therefore, promoting traditional life of the tribals inhabiting the forest areas, by improving the availability of natural products and benefits, will help conserve both the ethnic background and biological resources of the ecosystem.

**9903-141.** Rao RJ, Rao Sarda (Sch Std Zoo, Jiwaji Univ, Gwalior, MP). **Agricultural practices on the river banks and their impact on the aquatic animal habitats.** *Polln Res*, **18**(4) (1999), 527-530 [6 Ref].

Rivers are major habitats for large number of aquatic animals. Simultaneously, these river banks are also used for agricultural purposes. The extensive use of agriculture on the habitat of aquatic animals has an adverse impact on the populations. The water development programmes for irrigation also disturb the natural riverine habitat. This study examines the impact of river-bank-agriculture on aquatic habitats.

**9903-142.** Uniyal Prem Lal (Dept Bot, Univ Delhi, Delhi 110007). **Role of bryophytes in conservation of ecosystem and biodiversity.** *The Botanica*, **49**(1999), 101-115.

Bryophytes are important part of the ecosystem in temperate and tropical forests, especially in extreme environments. Several aspects of their physiological ecology, particularly drought resistance and nutrition are of special interest. The recent upsurge of interest in atmospheric pollution has revealed the bryophytes as bioindicators of pollution and accumulators of heavy metals. lanktons.

## Health and Toxicology

**9903-143.** Anti Susan T, Veeraiah K, Tilak KS (Dept Zoo, Nagarjuna Univ, Nagarjuna Nagar, Guntur 522 510). **A study on the bio-accumulation of fenvalrate, a synthetic pyrethroid in the whole body tissues of *Labeo rohita*, *Catla catla*, *Cirrhinus mirgala* (Hamilton) by gas liquid chromatography.** *Polln Res*, **18**(1) (1999), 57 -59 [20 Ref].

The three Indian major carps *Labeo rohita*, *Catla catla* and *Cirrhinus mirgala* were exposed to sublethal and lethal concentrations of fenvalrate pesticides. It was observed that *Catla catla* and *Labeo rohita* exposed to sublethal concentrations for 10 days, ie 0.0007 mg/l and 0.0011 mg/l respectively accumulated higher concentrations than in lethal concentrations. Whereas, *Cirrhinus mirgala* accumulated more in lethal concentrations (0.006 ppm) than in sublethal concentrations (0.0006 ppm).

**9903-144.** Avasan Maruthi Y, Rama Krishna Rao S, Subba Rao MV (Dept Environ Sci, Andhra Univ, Vishakhapatnam 530003). **Effect of sugar mill effluents on oxygen consumption of fresh water fish, *Channa punctatus* using flow through system.** *J Nature Conserv*, **11**(2) (1999), 227-232 [12 Ref].

Variation in the rate of oxygen uptake in the fresh water fish *Channa punctatus* against different concentrations of sugar mill effluents and at three different flow-rates, using flow-through system are discussed. The fish were exposed to 1 to 5 percent of sugar mill effluents at the 0.3048, 0.6096 and 0.9144 m/sec flow-rates and rate of oxygen consumption was studied in comparison with that of control. During the period of exposure, the rate of oxygen consumption decreased gradually with the increase of effluent concentration, flow-rate and the duration of exposure.

**9903-145.** Basheer Shabana, Vasudev V\*, Venu R, Guruprasad KP, Harish SK (\* Dept Appl Zoo, Kuvempu Univ, BR Proj, Shimoga 577115). **Toxic effect of a recently introduced carbamate pesticide, Dunet (methomyl) on *Drosophila melanogaster*.** *J Environ Bio*, **20**(2) (1999), 135-139 [28 Ref].

Dunet (methomyl) a newly introduced carbamate pesticide was analysed for its toxic effects on *Drosophila melanogaster*. It has been estimated that the LD50 is 0.117µl/100 ml. These studies have also revealed that Dunet is toxic as it has a pronounced effect on rate of development and viability.

**9903-146.** Chakravarthy Sanchita, Vass KK (Analyt Chem Div, Natl Metallurgical Lab, Jamshedpur 831007). **Heavy metal concentration in gastropods (*Thiara* sp.) of Hooghly estuary.** *Polln Res*, **18**(1) (1999), 53-55 [78 Ref].

Attempts have been made to monitor the heavy metal concentration in gastropods (*Thiara* sp.) of Hooghly estuary. Soft tissues of gastropods contain higher concentration of zinc and copper compared to hard part. Seasonal variation of heavy metals show a linear correlation with pH.

**9903-147.** Chandra P, Srivastava DR, Roy D, Srivastava Arun K (Govt Opium Alkaloid Works, Ghazipur 233001). **Studies on the effluents of GOAW, Ghazipur and their effects on some hematological parameters of a freshwater catfish, *Heteropneustes fossilis* (Blood).** *J Indl Polln Contl*, **15**(2) (1999), 287-293 [19 Ref].

The fish *Heteropneustes fossilis* were exposed to the effluents (before and after treatment) of GOAW Ghazipur for 10, 20 and 30 days and different hematological parameters. It was observed that the effluent after treatment is non/less toxic and almost safe to be discharged in aquatic systems.

**9903-148.** Dhembare AJ, Pondha GM (Dept Zoo, PVP Coll, Pravaranagar 413713, Ahmedabad). **Haematological changes in fish, *Punctius sophore* exposed to some insecticides.** *J Expt Zoo India*, **3**(1) (2000), 41-44 [11 Ref].

The experimental fishes were exposed to LC50 of some insecticides for seven days. The results were found to be a general decrease in WBC, RBC, Hb, PCV and MCH on exposure to insecticides. A profound increase in MCV and MCH were observed. Also correlation and regression equation values were calculated on the basis of percent variation over control values.

**9903-149.** Ganesh N, Gupta TRC, Kath RJ, Udupa KS (Coll Fisheries, Mangalore 575002). **Acute toxicity of copper on three life stages of common carp, *Cyprinus carpio* var *Communis*.** *Polln Res*, **19**(1) (2000), 91-93 [8 Ref].

The 96h LC50 along with the 95% confidence limits were 0.04 (0.0389-0.041), 0.1234 (0.1208-0.1261) and 0.1535-0.162) mg Cu/l for the 30 day, 60 day and the 90 day old fish respectively. It was observed that the toxicity of copper decreases with the age of fish and that in the experiments, mortalities occurred more during the initial hours than at the end hours of the experimental period.

**9903-150.** Ganesh R, Mathur Sudha R, Bora KK (Dept Plant Physio Biochem, Rajasthan Agricul Univ, RCA, Udaipur 313001). ***In vitro* evaluation of relative tolerance of moth bean cultivars to cadmium stress.** *Polln Res*, **19**(1) (2000), 119-122 [15 Ref].

Callus tissue of three cultivars of *Vigna aconitifolia* L. cv. Jaadia, and RMO-40 were screened for their growth responses and bioaccumulation of L-proline under cadmium (Cd) stress. The fresh and dry weights of callus were significantly reduced from 50 to 74 per cent in Jaadia, 12 to 64 per cent in Jwala and 29 to 49 per cent in RMO-40 during the callus growth period with the addition of Cd (0.05 mM) to media.

**9903-151.** Gautam RK, Khan Ruby (Dept Zoo, St John's Coll, Agra 282002). **Inhibition of phosphatases in liver and kidney of albino rats.** *Uttar Pradesh J Zoo*, **19**(1) (1991), 71-73 [6 Ref].

The toxic effect of copper sulphate and zinc acetate on the activity of the few enzymes like alkaline phosphatases and acid phosphatases in the liver and kidney of *Rattus rattus albino* have been analysed histochemically. Inhibited enzyme reactions suggested damage to the plasma membrane, lysosomes and endoplasmic reticulum.

**9903-152.** Geraldina P, Sarvana Bhavan P, Kaliamurthy J, Zayapragassarazan Z (Dept Anim Sci, Sch Life Sci, Bharathidasan Univ, Tiruchirapalli 620024). **Effects of dichlorvos intoxication in the freshwater prawn, *Macrobrachium malcolmsonii*.** *J Environ Bio*, **20**(2) (1999), 141-148 [46 Ref].

Juveniles of *Macrobrachium malcolmsonii* were exposed to a median lethal concentration (96 hr LC50 : 12,589 mg/L) of dichlorvos for a duration of 96 hr. Sampling

was performed on the gills, hepatopancreas and muscle of the prawns at 24, 48, 72 and 96 hr. Decline in concentrations of total glycogen, protein and lipid were noted in the test prawns in comparison to controls. The activity of acetylcholinesterase and alkaline phosphatase were found to be lower in the test prawns in comparison to controls.

**9903-153.** Govindasamy C, Azariah Azariah J, Kanan L (Dept Zoo, Univ Madras, Guindy Campus, Madras 600025). **Relationship between trace metal concentration in the mussel *Modiolus metcalfi* and in sediment.** *Polln Res*, **18**(4) (1999), 453-458 [24 Ref].

Levels of heavy metal in mussel (*Modiolus metcalfi*) and sediment of Coromandel coast, Bay of Bengal were studied. In mussel and sediment, mean concentrations of Zn and Cu and Cd, Co and Ni were high during the postmonsoon and monsoon seasons respectively. Further, the total mean concentrations were similar and were in the order Zn>Ni>Cu>Cd>Co. Among these five metals, Zn and Ni accumulated more than other metals and Cu, Co and Cd had greater concentration factor than other metals.

**9903-154.** Gunu Sherlin DM, Verma RJ, Jacob K (Dept Toxicology, Jai Res Foundation, Valvada 396108, Gujarat). **Embryotoxicity of fluoride in rat.** *Indian J Env Toxicol*, **9**(1) (1999), 27-29 [14 Ref].

Present study was devised to evaluate the embryotoxic effects of sodium fluoride on developing foetus of wistar strain rats. Sodium fluoride (NaF) at the dosages of 20, 40 and 80 mg/kg body weight was administered and the observations were compared against vehicle and untreated vehicle controls. The changes induced by NaF treatment in the visceral and skeletal system of developing foetus are discussed.

**9903-155.** Gupta BN, Kumar Pramod (Epidemiology Div, Indl Toxicology Res Cent, P.B No 80, Mahatma Gandhi Marg, Lucknow 226001). **A study of alteration in behaviour among workers exposed to cyanide.** *Indian J Occup Environ Med*, **3**(2) (1999), 90-92 [16 Ref].

Thirty-six workers exposed to cyanide fumes in electroplating and heat treatment processes and 25 control subjects from a heavy engineering industry were assessed for alteration in behaviour caused by exposure to cyanide. All the parameters studied were significantly affected in exposed workers as against the controls. The prevalence of

psychomotor defects was significantly higher among engaged in electroplating process ( $p < 0.001$ ) in comparison to that observed in workers engaged in heat treatment process.

**9903-156.** Jagadessan G (Dept Zoo, Annamalai Univ, Annamalainagar 608002). *In vivo* recovery of gill tissue of a freshwater fish *Labeo rohita* after exposure of different sublethal concentrations of mercury. *Polln Res*, **18**(3) (1999), 289-291 [9 Ref].

Studies on the histopathological effects of the three different sub-lethal concentrations of mercury on *Labeo rohita* fingerlings revealed that these metallic salts are capable of changes in its cellular levels in gills leading to the death of the fish. The intoxicated fingerlings again treated with mercury free water (up to 25 days), and recognized its organic constituents to near normal condition.

**9903-157.** Jagadeesan G Vijayalakshmi S (Dept Zoo, Annamalai Univ, Annamalainagar 608002). Effects of mercury followed by dimercaprol treatment on protein metabolism in different tissues of *Labeo rohita* (Hamilton) fingerlings. *Indian J Env Toxicol*, **9**(1) (1999), 33-35 [18 Ref].

Alterations in protein metabolism in liver, gills and muscle tissues of the freshwater fish, *Labeo rohita* fingerlings under the influence of mercury toxicant followed by antidote (dimercaprol) treatment, have been ascertained by employing biochemical techniques. Protein content showed a consistent increase in the gill tissues. In the liver and muscle following an initial drop at 24 hours, the increase in protein content was not worthy.

**9903-158.** Jagadeesan G, Vijayalakshmi S (Dept Zoo, Annamalai Univ, Annamalainagar 608002). Alterations in the behaviour patterns in *Labeo rohita* (Ham.) fingerlings induced by mercury. *Indian J Env Toxicol*, **9**(1) (1999), 45-52 [12 Ref].

Alterations in the behaviour pattern induced by different concentrations of mercury is reflected in *Labeo rohita* fingerlings to acclimatize themselves to the toxic environment. At sub-lethal concentration, absence of locomotor activity, increased opercular movements and stationary action, following four days treatment (96 hours) suggests their ability to withstand the toxic environment.

**9903-159.** Jain Rajeev, Padmaji P, Mathur PK, Gupta Priyanka (Sch Std Chem, Jiwaji Univ, Gwalior). **Quantitative analysis of mercury in fish.** *Polln Res*, **18**(3) (1999), 345-346 [1 Ref].

Mercury content in fish samples collected from different regions are analysed by CVAAS technique. Certain samples were found to contain very high concentrations of mercury where as in others collected from fresh water ponds it was low. The content of mercury in fish reveals the extent of pollution in waters.

**9903-160.** Jebakumar SRD, Barredomedina MJV, Gonzales BP, Tayaputch N, Suh Yong Tack (Dept Molecular Microbio, Sch Biotechno, Madurai Kamaraj Univ, Madurai 625021). **Fate of endosulfan in rice model system : an international report.** *Polln Res*, **18**(4) (1999), 489-492 [10 Ref].

Work done in four nations by five research groups on endosulfan degradation in rice-fish ecosystem is summarized. From the findings it has been found that the rice plants translocate the compound and even at the time of harvest, grains and hull show the presence of the pesticide. Soil acts as a sink for endosulfan residues and there is considerable breakdown products. All group fish accumulate the chemical and the residue level in the water is also relatively high.

**9903-161.** Johal MS, Sawhney AK (Div Ichthyology, Dept Zoo, Panjab Univ, Chandigarh 160014). **Mineral profile of focal and lepidontal regions of the scale of *Channa punctatus* as pollution indicator.** *Polln Res*, **18**(3) (1999), 285-287 [12 Ref].

Altered mineral profile of the cycloid scale of *Channa punctatus* (Bloch) upon exposure to malathion has been observed employing energy dispersive X-ray microanalysis (EDX) technique. The normal scale has four major elements viz., aluminium, phosphorous, calcium and iron. Statistical analysis has indicated that change in the percentage composition of calcium in different regions of scale can be used as a reliable pollution indicator.

**9903-162.** Jyothi B, Narayan G (GI, Navadaya Apartments, Plot No 79, Snehapuri, Nacharam, Hyderabad 500076). **Toxic effects of carbaryl on gonads of freshwater fish, *Clarias batrachus* (Linnaeus).** *J Environ Bio*, **20**(1) (1999), 73-76 [16 Ref].

Freshwater edible fish, *Clarias batrachus* (Linn.) was exposed to sublethal concentration of carbaryl, a carbamate pesticide. Several histological disorders occurred in gonads. Reduced gonadosomatic index of testis and ovary was observed. Besides vacuolation and necrosis other histopathological changes noticed were arrested ovarian recrudescence, cessation of spermatogenesis, interfollicular oedema in ovary and thickened basement membrane in testis.

**9903-163.** Karak Tarun, Sarkar Mukter Ahmed, Roy Sankhajit, Dutta Madhuri, Chowdhury Ashim (Dept Agricul Entomo, Bidhan Chandra Krishi Viswavidyala, Mohanpur, Nadia, West Bengal). **Analyses of different pesticidal residue in honey collected from Hooghly apiaries.** *Pestology*, **23**(12) (1999), 38-40 [4 Ref].

Ten honey samples collected from different apiaries of Hooghly district (West Bengal) and analysed to observe the pesticidal contamination. a- and b- endosulfan was found in all the samples (0.001-0.100 ppm). g-HCH was found in only two samples. DDT, DDE, Dicofol, Cypermethrin, Deltamethrin, Monocrotophos and Chlorpyrifos was not detected in any samples.

**9903-164.** Kaw JL (Indl Toxicol Res Cent, Lucknow, UP). **Impact of mineral dust on lungs : a literature review.** *Polln Res*, **18**(3) (1999), 271-274 [21 Ref].

Impact of mineral dust on lungs is discussed in this communication. Important areas covered are deposition, clearance and retention of particles in lungs, dust induced pulmonary fibrosis interaction of lung epithelial cells and mineral dust, and mineral dust inhalation and cancer development.

**9903-165.** Khan Farooq, Sami Uzma, Rizvi SJ, Ahmed Anees\* (\*Dept Chem, Aligarh Muslim Univ, Aligarh). **Effect of excitatory amino acids on the levels of gangliosides: concentration in central nervous system of albinorats.** *Cheml Environ Res*, **8**(1&2) (1999), 157-155 [11 Ref].

Excitatory amino acids were used as flavouring agents for human foods. Excitatory amino acids viz: *Asp* and *Glea* also induce changes in the levels of brain lipids, gangliosides proteins, lipid peroxidation, total SH, free-SH concentrations etc, which in turn are responsible for neurological disorders by changing normal behavioural track of the individual.

**9903-166.** Khangarot BS, Rathora RS, Tripathi DM (Fishimmuno toxicity Proj, Ecotoxicology Div, Indl Toxicology Res Cent, MG Marg, PB No 80, Lucknow 226001). **Effects of chromium on humoral and cell mediated immune responses and host resistance to disease in a freshwater catfish, *Saccobranchus fossilis* (Bloch).** *Ecotoxicology Environ Safety*, **43**(1) (1999), 11-20 [61 Ref].

The effects of subtoxic level of Cr on humoral and cell mediated immune responses, blood parameters, susceptibility to bacterial (*Aeromonas hydrophila*) infection, and macrophage activity in the freshwater air-breathing Asian catfish, *Saccobranchus fossilis*, during a 28 day exposure were examined by static bioassay test procedure. The results suggest that Cr exposure reduced the resistance of catfish to bacterial infections.

**9903-167.** Kishore ME, Bajekal SS, Deshpande MS (Dept Microbio, SGM coll, Vidyanagar 415124, Karad, MS). **Degradation of cyanide by rhodanese enzyme from *B. cereus var mycoides*.** *J Indl Polln Contl*, **15**(2) (1999), 267-273 [7 Ref].

The enzyme responsible for conversion of cyanide to thiocyanate, rhodanese was isolated from *B. cereus var mycoides*. The enzyme was partially purified and studied for typical enzymological aspects.

**9903-168.** Kothari Suresh, Bhalerao Sangeeta, Sharma SK (Sch Std Zoo, Vikram Univ, Ujjain 456010). **Effect of herbal compound on mercury induced biochemical changes in the liver of catfish.** *Indian J Env Toxicol*, **9**(1) (1999). 30-32 [21 Ref].

A hepatoprotective herbal drug, Liv52 was tested against changes in protein contents, alkaline phosphatase and alanine transaminase activities in the liver of a freshwater catfish *Heteropneustes fossilis* (Bloch) challenged with HgCl<sub>2</sub>. Metal exposure with Liv52 administration brought about changes in protein and enzyme levels to near normal values.

**9903-169.** Kulkarni BG, Roy Subhayu, Roy Aditi (Dept Marine Bio, Inst Sci, 15, Madam Cama Rd, Mumbai 400032). **Histopathological alterations in target organs of the clam *G. divaricatum* exposed to copper.** *J Nature Conserv*, **11**(2) (1999), 191-196 [19 Ref].

Lysis of epithelial cells involving severe necrosis, to the hepatopancreas, enlargement of postlateral cells and dilation of blood spaces in gills are some of the important histopathological changes observed in the intertidal clam *G. divaricatum* exposed to 25 and 10 µg/l of copper for one month.

**9903-170.** Kumar Kuldeep, Sinha YKP, Pandey AK (Centl Inst Freshwater Aquacult, Kausalyaganga, Bhubaneswar 751002). **Mercuric chloride induced alterations in the blood parameters of the climbing perch, *Anabas testudineus* (Bloch).** *J Nature Conserv*, **11**(2) (1999), 245-255 [43 Ref].

In order to record the effects of mercuric chloride on some of the blood parameters of *Anabas testudineus*, fishes were exposed to the various concentrations of mercuric chloride. Total erythrocyte count recorded a decline after an initial increase whereas total leucocyte count a haemoglobin content and haematocrit percentage registered an increase in a dose-dependent fashion. The possible causes of these haematological alterations due to mercury toxicity have been discussed.

**9903-171.** Kumar Ravindar (PG Dept Zoo, SSV Coll, Hapur 245101, UP). **Impact of ammonia stress on acetylcholinesterase (AChE) activity in blood and brain of snake headed fish *Channa punctatus* (Bloch).** *J Env Polln*, **6**(2&3) (1999), 203-205 [23 Ref].

Chronic sublethal concentration of ammonia induced changes in acetylcholinesterase (AChE) activity in freshwater teleost, *Channa punctatus* were studied. The AChE activity in blood and brain during the period of 14 and 28 days were determined. An inhibition in level of enzyme in both tissues was reported.

**9903-172.** Kumar S, Saiyed HN (Natl Inst Occupl Hlth, Meghani Nagar, Ahmedabad 380016). **Role of betelnut chewing in cancer: its toxicity and chemoprevention - an overview.** *Indian J Environ Toxicol*, **9**(1) (1999), 5-11 [68 Ref].

Communication is an attempt to correlate available reports on betelnut chewing habits in relation to the development of precancerous and cancerous lesions and also on mutagenicity of different components of betelquid. The study on chemoprevention against the adverse effects of betelquid chewing with tobacco are available and it is suggested that administration of b-carotene and vitamin A to the chewers of betelquid led to a reduction in the frequency of micronucleated buccal mucosa cells.

**9903-173.** Kumar Santosh, Singh Manju (Dept Zoo, Ch Charan Singh Univ, Meerut 250004). **Toxicity of dimethoate to a freshwater teleost, *Catla catla* (Ham.).** *J Expt Zoo India*, **3**(1) (2000), 83-88 [24 Ref].

Communication deals with the effect of dimethoate toxicity on acetylcholine content in the brain of *Catla catla* (Ham.) A significant decrease in AChE activity has been noticed. Probable reasons for this alteration has been discussed in detail.

**9903-174.** Kumaresan A, Anooja M (Sri Parasaklhi Coll Women, Courtallam 627802). **Effect of trace element addition and its impact on the quality of milk.** *Polln Res*, **18**(3) (1999), 275-279 [19 Ref].

Four trace-elements namely iron, copper, zinc and lead at two concentrations were added to milk and kept for 6 hours duration to monitor the biochemical and microbiological changes. Addition of iron and copper increased the microbial load and lactic acid. Whereas zinc and lead decreased the microbial count and lactic acid.

**9903-175.** Kumaraswamy P, Karthikeyan A (25, Chetty St, Adirampattinam 614701). **Effect of cadmium on oxygen consumption and filtration rate at different salinities in an estuarine clam *Meretrix casta* (Chemnitz).** *J Environ Bio*, **20**(2) (1999), 99-102 [12 Ref].

1 Study deals with the alteration in the rate of oxygen consumption and filtration rate of an estuarine clam *Meretrix casta*, as a result of 96 hours of exposure to sublethal concentration (1 ppm) of cadmium in different salinities. The rate of oxygen consumption

increased with the function of decreasing salinity. However the filtration rate decreased exponentially with the decreasing salinity.

**9903-176.** Margarat A, Jagadeesan G (Dept Zoo, Annamalai Univ, Annamalai Nagar 608002). **Effect of mercury chloride and the influence of penicillamine on acetylcholinesterase (AChE) activity in mice.** *Polln Res*, **18**(3) (1999), 295-296 [15 Ref].

The influence of penicillamine against mercury intoxicated has been determined in the brain and muscle tissues of mice, *Mus musculus* through enzymological parameter. A significant inhibition in AChE activity was observed in both the tissues of mice when exposed to mercury. Administration of penicillamine restored the mercury inhibited enzyme activity in both tissues.

**9903-177.** Margarat A, Jagadeesan G, Sethupathy S (Dept Zoo, Annamalai Univ, Annamalai Nagar 608002, Tamil Nadu). **Recovery of liver tissue by penicillamine in mercury poisoned mice, *Mus musculus* (Linn).** *India J Env Toxicol*, **9**(1) (1999), 24-26 [18 Ref].

Recovery effect of penicillamine against mercury poisoning has been determined in the liver tissue of *Mus musculus* through bio-chemical and enzymological parameters. A significant alteration in protein and carbohydrate metabolism observed in the liver tissue of *Mus musculus* when exposed to metal suggest the increasing energy demand to cope with mercury stress.

**9903-178.** Mary Chandravathy V, Reddy SLN (L-28, Osmania Univ Quarters Hyderabad 500007). **Effect of lead on antioxidant enzyme activities and lipid peroxidation in old male mice *Mus musculus*.** *J Environ Bio*, **20**(2) (1999), 103-106 [24 Ref].

Swiss albino mice, one year of age, were administered 16-66% mg/kg body weight of lead nitrate orally through water for 15 days. The antioxidant enzymes were impaired indicating a damage to the cellular defence system in the course of lead toxicity. Thus, during short term exposure to lead nitrate the mice suffered increased generation of free radicals, LPO and impairment of antioxidant enzyme system in the kidney and lung tissues.

**9903-179.** Mathur KC, Singh Shalini, Mathur Shubhi, Khadikar PV (Dept Chem, APS Univ, Rewa 486003). **Modelling polychlorinated biphenyl (PCB's) in environment.** *Polln Res*, **18**(4) (1999), 405-409 [14 Ref].

Paper describes modelling of polychlorinated biphenyls (PCBs) in the environment using topological index viz. Root-mean-square Wiener index (Wrms). The regression analyses of the data using the method of least-squares has indicated that excellent correlations are obtained between the logVP (25oC and 100oC) and Wrms. The results show that Wrms can be successfully used for estimating, monitoring and modelling PCBs in the environment.

**9903-180.** Meenakshi V, Indira N, Pugazhendhy K (Dept Zoo, Annamalai Univ, Annamalai Nagar 608002). **Influence of zinc sulphate on the freshwater edible fish, *Labeo rohita* (Hamilton) fingerlings.** *Uttar Pradesh J Zoo*, **18**(3) (1998), 181-183 [10 Ref].

Heavy metals present in the effluent of several industries are discharged directly into the water bodies without proper treatment. As fish constitute an important link in the food chain its pollution by industrial effluents causes a direct threat to the entire aquatic environment. The flux of protein and amino acid contents in different tissues of *Labeo rohita* fingerlings exposed to 96 h median lethal concentration are discussed.

**9903-181.** Meenakshi V, Pugazhendhy K (Dept Zoo, Annamalai Univ, Annamalainagar 608002). **Toxicity of mercuric chloride to the fingerlings of freshwater fish *Cyprinus carpio* (Linn).** *Uttar Pradesh J Zoo*, **18**(3) (1998), 145-148 [26 Ref].

The sublethal effects of mercuric chloride on the liver glycogen, muscle glycogen, blood glucose and blood lactic acid were estimated in the freshwater fish, *Cyprinus carpio* fingerlings. Fingerlings were exposed to the sublethal concentration of mercuric chloride (3.75 C 10<sup>-4</sup> mg/l) for a period of 30 days. Fluctuation observed in the metabolites of glycogen indicates the possible arrival of anaerobic condition of the exposed fingerlings.

**9903-182.** Muniyan M, Veeraraghavan K (Dept Zoo, Annamalai Univ, Annamalainagar 608002). **Acute toxicity of ethofenprox to the freshwater fish, *Oreochromis mossambicus* (Peters).** *J Environ Bio*, **20**(2) (1999), 153-155 [17 Ref].

Acute toxicity of insecticide ethofenprox to the freshwater fish *Oreochromis mossambicus* was studied using static bioassay method. Median lethal concentration for 3, 6, 12, 24, 48, 72 and 96th were 2.03, 1.95, 1.90, 1.85, 1.79, 1.76 and 1.74 ppm respectively. The signs of toxicity on the behaviour of the fish *Oreochromis mossambicus* was studied for lethal (2.849 ppm) and sublethal (1.305 ppm) concentration ethofenprox for 96h.

**9903-183.** Nandini N, Somashekhar RK (Dept Environ Sci, Bangalore Univ, Bangalore 560056). **Pollution indicator bacteria in the intestinal tract of fish.** *Polln Res*, **18**(3) (1999), 257-258 [18 Ref].

Study on the indicator bacteria like coliforms, *E. Coli* and *Salmonella* in water and intestinal tract of fish from Hebbal tank revealed severe sewage contamination. The coliform count in water as well as in fish's intestine, skin and gill were as  $16 \times 10^5/100$  ml and *E. coli* counts were  $123 \times 10^7$  DFU/100 ml. The *Salmonella* were  $94 \times 10^5$  DFU/100 ml.

**9903-184.** Nayak Lakshman (PG Dept Marine Sci, Berhampur Univ, Berhampur 760007, Orissa). **Heavy metal concentration in two important penaeid prawns from Chilka lagoon.** *Polln Res*, **18**(4) (1999), 373-376 [21 Ref].

The heavy metal concentration of iron, copper, zinc and lead were studied in two important penaeid prawns from Chilka lagoon namely - *Penaeus monodon* and *Penaeus indicus*. The maximum concentration of Fe, Cu, Zn, and Pb in skeleton of *P. monodon* was being 3.20 ppm, 0.125 ppm, 0.802 ppm and 0.123 ppm respectively and of *P. indicus* was being 2.99 ppm, 0.680 ppm and 0.120 ppm respectively.

**9903-185.** Nayak Prasunpriya, Chatterjje Ajay K\* (\*Biochem Nutrition Res Lab, Dept Physio, Univ Coll Sci Techno, Univ Calcutta, 92 APC Rd, Calcutta 700009). **Biochemical view of aluminium-induced neurohazards.** *J Environ Bio*, **20**(1) (1999), 77-84 [56 Ref].

The investigations summarized in this review demonstrate that at least in rat, ingestion of aluminium affects certain processes of central nervous system without causing generalized toxicity. The results of these investigation indicate that short-term as well as long-term exposure to aluminium can have deteriorating effects on the brain. The effects of aluminium on central nervous system those have been recognised may be linked with the pathways leading to ultimate manifestation of neurotoxicity.

**9903-186.** Obula Reddy KP, Seshalatha E, Muthuraj D, Neeraja P (Dept Zoo, Sri Venkateswara Univ, Tirupati 517502). **Changes in certain metabolic components in fry in *Cyprinus carpio* on ammonia stress.** *J Nature Conserv*, **11**(2) (1999), 147-151 [14 Ref].

Ambient ammonia effects on certain biochemical constituents have been studied in fry of *Cyprinus carpio*. Frys which are 30 days old were exposed to 2.3 ppm of liquor ammonia for 7, 14, 21 days. There was increment in total protein content in 7 days of ammonia exposed-fries while a decrement was observed in 14 and 21 days exposed fries. The possible reasons for these changes are discussed.

**9903-187.** Ouseph A, Sundarsanam D, Nainar AM, Gandheeswari P (MS Swaminathan Res Foundation, Taramani, Chennai 600113). **Frequency of chromosomal aberration in fish inhabiting polluted ecosystem.** *Polln Res*, **19**(1) (2000), 123-128 [12 Ref].

Physicochemical parameters of water were analysed and rapid chromosomal preparation on fish tissues was made following the method of Klingerman and Bloom. The control species of *M. vittatus* obtained from the culture pond reveals the diploid  $2n = 56$  chromosomes, while the species from the polluted river Cooum shows polyploidy and endoreduplication and condensed nature of chromosomal morphology irrespective of the season.

**9903-188.** Pandey AK (Dept Bot, Kutir PG Coll, Chakkey - 222146, Jaunpur, UP). **Evaluation of pesticides for possible mutagenesis in the cyanobacterium *Nostoc calcicola*.** *India J Environ Hlth*, **41**(1) (1999), 1-5 [16 Ref].

Pesticides belonging to the chemical group of herbicide and insecticide (gammexene HCH) and malathion) were tested for the probable action on the nitrogen-fixing cyanobacterium. *Nostoc calcicola* for streptomycin resistant and their mutagenic

potentials were evaluated in comparison to N-methyl-N-nitro-N-nitrosoguanidine (NTG), a known mutagen, over spontaneous frequency.

**9903-189.** Pandey GC, Neraliya S (Dept Environ Sci, Dr RML Avadh Univ, Faizabad 224001). **Impact of carbofuran on the fresh water catfish *Heteropneustes fossilis* (Bloch).** *Himalayan J Env Zoo*, **12**(1998), 249-254 [15 Ref].

Impact of carbofuran on morphological and behavioural responses following sublethal exposure of carbofuran at different time intervals have been studied in fresh water cat fish, *Heteropneustes fossilis* (Bloch). The operculum beating, linear movement, staying periods and distance travelled increased with higher dose of carbofuran.

**9903-190.** Patel Gayatri R, Rao MV (Dept Zoo, Sch Sci, Gujarat Univ, Ahmedabad 380009). **Role of ascorbic acid on mercuric chloride toxicity in vital organs of mice.** *Indian J Env Toxicol*, **9**(2) (1999), 53-55 [25 Ref].

Effects of oral administration of mercuric chloride at a dose of 1.25 mg/kg for 30 and 60 days were studied with respect to metabolism and function of liver, kidneys and adrenals in adult male mice. The mitigative role of ascorbic acid (AA; 500 mg/kg) was also studied on mercuric chloride toxicity. The results revealed an increase in glycogen in the liver of HgCl<sub>2</sub> fed mice.

**9903-191.** Pius Anitha, Apparao BV, Kartikeyan G\* (\*Dept Chem, Gandhigram Rural Inst, Deemed Univ, Gandhigram 604302, Tamil Nadu). **Role of calcium in the amelioration of fluorosis - a case study.** *India J Environ Hlth*, **44**(2) (1999), 121-125 [19 Ref].

Total intake values per day of fluoride and calcium through water and food by selected human subjects of fluorotic and non fluorotic areas of Tamil Nadu of South India were determined. The dependence of calcium intake on the prevalence of fluorosis is experimentally verified in five areas. The results reveal that the high intake of calcium through water and food leads to a reduction in the prevalence of fluorosis.

**9903-192.** Prabhakara Murthy PVS, Sudharshan Reddy B (Indl Hygiene Div, Occupl Hlth Services Res Cent, Visakhapatnam Steel Plant, Visakhapatnam 530031). **Industrial hygiene survey in captive thermal power plant of Visakhapatnam Steel Plant.** *J Indl Polln Contl*, **15**(2) (1999), 193-202 [7 Ref].

An industrial hygiene surveillance programme was conducted in captive Thermal Power Plant of Visakhapatnam steel plant. Job-study interview was conducted on 300 employees selected randomly, working at different zones of the TTP. Statistical results of Job-study interview revealed, 60% of employees complained of high noise levels, 25% complained of inconvenience caused due to coal dust, 13% complained of poor ventilation and 2% complained of inadequate supply of personal protective equipments.

**9903-193.** Pradhan Bijayendra (PG Dept Marine Sci, Berhampur Univ, Berhampur-7, Orissa). **Distribution of cobalt and nickel in water, zooplankton and seaweeds (*Enteromorpha compressa*) of the Rushikulya and Bahuda estuaries, east west of India.** *J Env Polln*, **6**(2&3) (1998), 145-148 [18 Ref].

Seasonal distribution of trace metals (Co and Ni) in water, zooplankton and seaweeds of Rushikulya and Bahuda was studied. Considerable seasonal variations were noticed in the concentration of these two metals. Co concentrations in zooplankton and seaweeds were found to be greater than that of Ni in both the estuaries. The concentration factor (seaweed/water) and (zooplankton/water) showed that Ni>Co in both the Rushikulya and Bahuda estuaries.

**9903-194.** Prakash Ram, Sondhi TN (Centl Ground Water Bd, Bhujal Bhawan, Lucknow 226021). **Distribution and effect of some trace elements on human health in ground water of Assam.** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ, 1999*, 160-167 (14 Ref).

It is essential to monitor the various health effecting parameters in the ground water before it is used for continuous long period by the people. It is observed that some trace elements viz. copper, manganese, molybdenum, lead, zinc, nickel and iron has been observed in the shallow ground water aquifer, which needs proper monitoring, awareness and removal before its use for drinking purposes.

**9903-195.** Ramachandra Mohan M (Dept Zoo, Fishery Res Lab, Bangalore Univ, Bangalore 560056). **Malathion induced changes in the ovary of freshwater fish, *Glossogobins giuris* (Ham).** *Polln Res*, **19**(1) (2000), 73-75 [6 Ref].

Results reveal that lower dosage of malathion brings about a reduction in the ovarian weight and retard the growth of the pre-vitellogenic oocytes. A higher dosage of malathion on the other hand results in the degeneration of the immature oocytes and rupture of follicular epithelium. The above findings suggest that the histopathological changes in the ovary might be a reflection of the disturbance in the endocrine/hormonal imbalance.

**9903-196.** Ramalingam V, Arunadevy R (Dept Zoo, KM Cent PG Std, Pondicherry 605008). **Effect of mercuric chloride on testicular enzymes in adult albinorats.** *Polln Res*, **18**(4) (1999), 441-444 [23 Ref].

The effect of mercuric chloride at two different doses, 2 mg/kg bw (low dose) and 4 mg/kg bw (high dose), i.p. for 15 days was investigated in the testis of adult albino rats. Acid phosphatase, alkaline phosphatase and ATP-ases were estimated in the testis extract by standard spectrophotometric methods. Acid phosphatase increased ( $P < 0.001$ ) in the high dose treated animals without significant change in the low dose treated animals.

**9903-197.** Ramalingam V, Suganthi OMA, Arunadevy R Jaya A (Dept Zoo, KM Cent PG Std, Pondicherry 605008). **Mercuric chloride-induced biochemical changes in the liver of mature male albino rats.** *Indian J Env Toxicol*, **9**(2) (1999), 56-58 [10 Ref].

Effect of mercuric chloride at two dose levels : 2 mg/kg body weight (low dose) and 4 mg/kg body weight (high dose) i.p., for 15 days, was studied in the liver of mature male albino rats. Mercuric chloride caused a marked reduction in the body weight with alteration in liver weight. Glycogen content, acid phosphatase and alkaline phosphatase activities were markedly increased in high dose treated animals without any significant change in low dose treated animals.

**9903-198.** Ramalingam V, Vimaladevi V, Narmadaraji R, Prabakaran P (Dept Zoo, KM Cent PG Std, Pondicherry 605008). **Effect of lead on haematological and biochemical changes in fresh water fish *Cirrhina mrigala*.** *Polln Res*, **19**(1) (2000), 81-84 [25 Ref].

The effect of lead acetate at a sublethal concentration of 10 mg/L, for 30 days, was studied on haematological parameters and some biochemical changes in the liver of a fresh water fish *Cirrhina mrigala*. Lead acetate produced significant haematological and biochemical abnormalities.

**9903-199.** Rana KS, Raizada Sudhir\* (\*2/237, Vishwas Khand, Gomtinagar, Lucknow 226070). **Acute toxicity of tannery and textile dye effluents on a common teleost, *Labeo rohita* : histological alterations in liver.** *J Environ Bio*, **20**(1) (1999), 33-36 [21 Ref].

Acute short term static bioassays were carried out on *Labeo rohita* with tannery and textile dye industry effluents. The 96 hour LC50 values suggest that tannery effluents were more toxic than textile dye industry effluents. Light microscopic studies exhibited severe histopathological alterations in the liver tissue of the fish exposed to the effluents.

**9903-200.** Rana SVS, Gupta S (Dept Zoo, Charan Singh Univ, Meerut 250004). **Phenobarbital alters liver and kidney functions in toluene and trichloroethylene - treated rats.** *Toxic Substance Mechanism*, **18**(1) (1999), 3-10 [35 Ref].

Effects of two widely used industrial solvents toluene and trichloroethylene-on liver and kidney function have been studied in laboratory rats after microsomal induction with phenobarbital. Higher efflux of GOT and GPT suggests that phenobarbital pretreatment stimulates hepatic toxicity of toluene in rats. However, a decline in GPT was recorded in phenobarbital and trichloroethylene treated rats.

**9903-201.** Ranjana, Muni Anand, Kumar Ravindar, Saini Hermendra Singh, Gupta AK (Environ Res Lab, PG Dept Zoo, SSV Coll, Hapur 245101). **Behavioural studies of *Channa punctatus* after exposure to pesticides -Feeding behaviour.** *J Nature Conserv*, **11**(2) (1999), 169-173 [12 Ref].

The fish *Channa punctatus* were kept in non-toxic water or at 0.5, 0.25 and 0.125 mg/l of quinalphos and 0.06, 0.03 and 0.015 mg/l of cypermethrin for 24 and 48 hr and fed with toxified and non-toxified food. Toxified food in normal water resulted in a maximum food intake, while normal food in toxified water is a minimum one. In each case, the food intake was lower as compared to control and the food intake was inversely proportional to the toxicant concentration.

**9903-202.** Ruparelia SG, Verma Yogendra, Hargan MC, Kulkarni PK (Aquatic Toxicology Lab, Natl Inst Occupl Hlth, Meghani Nagar, Ahmedabad 380016). **Studies on acute toxicity of dyes to zebra fish *Brachydanio rerio*.** *J Nature Conserv*, **11**(2) (1999), 187-190 [8 Ref].

The acute toxicity of individual dye procion red, procion yellow and soluble green XBN to zebra fish (*Brachydanio rerio*) were determined using static bioassay. The results of the study suggest that the dye soluble green XBN is least toxic to fish compare to the procion yellow and red dye. However, there was no much difference in the LC50 value of procion red and yellow dye. The toxicity of these three dyes lies in the order of procion red>procion yellow>soluble green XBN.

**9903-203.** Sahoo A, Samanta L, Das A, Patra SK, Chainy GBN (Biochem Lab, Dept Zoo, Utkal Univ, Bhubaneswar 751004). **Hexachloro cyclo-hexane induced behavioural and neurochemical changes in rats.** *J Appl Toxicol*, **19**(1) (1999), 13-18 [46 Ref].

Effect of chronic oral exposure to hexachlorocyclo hexane on open-field behaviour and activities of cerebral Na<sup>±</sup>ATPase, Mg<sup>2+</sup> ATPase and acetylcholinesterase (AChE) of rat was evaluated. Motor and grooming activities were altered, whereas vertical exploratory activity was unaffected by HCH. Activities of Na<sup>+</sup>, K<sup>+</sup>-ATPase, Mg<sup>2+</sup>ATPase and AChE were inhibited significantly by the pesticide.

**9903-204.** Saksena DN, Saxena Veena (Sch Std Zoo, Jiwaji Univ, Gwalior 474011). **Organophosphorus pesticides induced changes in the ovarian activity of a freshwater murrel, *Channa orientalis* (Schneider): a histological study.** *J Environ Bio*, **20**(2) (1999), 157-162 [31 Ref].

Freshwater murrel, *Channa orientalis* was exposed to sublethal concentrations of two organophosphorus pesticides namely. Nuvan (0.27 mg.l<sup>-1</sup>) and Dimecron (0.55 mg.l<sup>-1</sup>) for a period of 30 and 45 days. It was observed that both the Nuvan and Dimecron decreased gonadosomatic index, reduced diameter of different stages of oocytes and number of later stages of oocyte development and significant increase in the percentage of atretic follicles in ovaries of exposed animals.

**9903-205.** Santhakumar M, Balaji M, Ramudu K (Dept Zoo, KM Cent PG Std, Lawspet, Pondicherry 605008). **Adaptive changes in respiratory movements of an air breathing fish, *Anabas testudineus* exposed to organophosphate pesticide, monocrotophos.** *Eco Env Conserv*, **6**(1) (2000), 67-69 [7 Ref].

Adoptive changes in respiratory movements of an air-breathing fish, *Anabas testudineus* exposed to sublethal concentrations 1.9, 4.75 and 9.5 ppm for 21 days were studied. Significant increase ( $P < 0.001$ ) in surfacing behaviour were observed in 1.9, 4.75 and 9.5 ppm monocrotophos treated fishes compared to control. Opercular movements decreased ( $P < 0.001$ ) in all three sublethal concentrations compared to control.

**9903-206.** Sarkar SK (Dept Zoo, Netaji Nagar Day Coll, Regent Estate, Calcutta 700092). **Effects of two heavy metals (copper sulphate and cadmium sulphate) on the oxygen consumption of the fish *Cyprinus carpio* (Linn).** *Uttar Pradesh J Zoo*, **19**(1) (1999), 13-16 [13 Ref].

The fish *Cyprinus carpio*, when exposed to mixture of copper sulphate and cadmium sulphate at different ratios (1:1, 2:2, 3:3, 4:4, 5:5) exhibited less oxygen consumption than individual metals. At 0.320 and 0.317 mg/l of copper sulphate and cadmium sulphate, the oxygen consumption of fish decreased by 9 and 12% of the control respectively.

**9903-207.** Sesha Srinivas V, Balaparameswara Rao M (Dept Aquacult, Nagarjuna Univ, Nagarjuna Nagar 522510, AP). **Chromium induced alterations in the oxygen consumption of the freshwater fish, *Labeo rohita* (Hamilton).** *Polln Res*, **18**(4) (1999), 377-380 [17 Ref].

Attempt is made to assess the effect of 96h LC 50 concentration of hexavalent chromium (39.40 mg/l) on the oxygen consumption of the widely cultured freshwater fish, *Labeo rohita*. Alterations are observed in the metabolic rate of the fish exposed to chromium and the metal is found to be a potential respiratory inhibitor.

**9903-208.** Sharma MS, Selvaraj CS, Chisthy N, Sharma Ranu (Dept Zoo, Coll Sci, ML Sukhadia Univ, Udaipur 313001, Rajasthan). **Heavy metal toxicity to fresh water zooplankters in relation to temperature variations.** *Polln Res*, **19**(1) (2000), 159-163 [24 Ref].

Water temperature variations are found to influence sensitivity of fresh water, zooplankton to heavy metal toxicants. Static short term bioassay exposing representative fresh water zooplankters to different concentrations of zinc, lead and cadmium revealed that sensitivity of *Daphnia* to metal and thermal stress was higher than cyclops and cypris. The most resistant planktonic animal against varying metal concentrations and different water temperatures was observed to be cypris.

**9903-209.** Shobha Rani A, Sudharsan R, Reddy TN, Reddy PUM, Raju TN (Dept Zoo, Osmania Univ, Hyderabad 500007, AP). **Effect of sodium arsenite on glucose and glycogen levels in freshwater teleost fish *Tilapia mossambica*.** *Polln Res*, **19**(1) (2000), 129-131 [11 Ref].

Study evaluates the effect of sodium arsenite on glucose and glycogen levels in various tissues subjected to sub-lethal concentration for the period of 24, 48, 72 and 96 hours. A significant depletion in glucose and glycogen levels ( $P < 0.005$ ) in various tissues of *Tilapia mossambica* was observed in the present study. The change in glycogen and glucose contents was found to be tissue specific and time dependent. The present data revealed that sodium arsenite has a role in the depletion of carbohydrates, a major fuel of the organism.

**9903-210.** Singh Purnima, Gregory Mary Ann, Sharma Rajeshwar, Kiran Ravi (Dept Biochem, Punjab Univ, Chandigarh 160014). **Effects of Orpiment ( $As_2S_3$ ) toxicity on the kinetic and thermodynamic parameters of some brush-border membrane enzymes of rat intestine.** *Polln Res*, **18**(1) (1999), 75-78 [12 Ref].

Oral orpiment administration (50 mg/kg b.wt.), caused significant decreases in the rat intestinal brush-border membrane (BBM) associated sucrase (52%), maltase (28%) lactase (29%) and the alkaline phosphatase (21%). The Vmax of these enzymes was lowered but the Km remained unaltered. Orpiment also caused a shift in the transition temperature and the energy of activation was changed, both below and above the transition temperature.

**9903-211.** Sonawane Smita R (Dept Zoo, Dr Babasaheb Ambedkar Marathwada Univ, Aurangabad 431004, MS). **Influence of pH on the acute toxicity of sumithion to *Lepidocephalichthys thermalis* (C and V).** *Polln Res*, **18**(4) (1999), 425-428 [15 Ref].

The fishes exposed to lethal concentrations for a short term exposure to sumithion in relation to the lower and higher range of pH was studied. The mortality rate at LC50 under different hydrogen ion concentrations was recorded.

**9903-212.** Sracek Andra, Bhattacharya Prosun\*, Jacks Gunnar, Chatterjee Debashis, Larsson Maria, Leiss Andrea (Div Land Water Resources, Royal Inst Techno, SE 10044, Stockholm, Sweden). **Ground water arsenic in the Bengal delta plains: a sedimentary geochemical overview.** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ*, 1999, 47-56 [24 Ref].

Arsenic contamination in groundwater has been envisaged as an critical issue in the perspective of human health in West Bengal and Bangladesh. Several million inhabitants in the region are known to use groundwater with arsenic concentration as high as 3.7 mg/l for drinking purposes.

**9903-213.** Sujatha TV, Hegde MJ (Dept PG Std Res Bio Sci, Mangalore Univ, Mangalagangot 574199). **In-vivo genotoxicity of trichloroethylene (TCE)-an industrial chemical, in laboratory mice.** *Indian J Env Toxicol*, **9**(1) (1999), 15-19 [24 Ref].

Genotoxic effect of trichloroethylene (TCE) an industrial chemical was investigated by employing three cytogenetic end point i.e. chromosomal aberration (CA) analysis, micronuclei (MN) analysis and sperm shape abnormally (SSA) assay. Cyclophosphamide was taken as positive control. TCE showed a positive MN response.

**9903-214.** Tiwari RR, Zodpey SP, Deshpande SG, Ughade SN, Vasudeo ND (Dept Preventive Socl Med, Govt Medl Coll, Nagpur). **Respiratory morbidity in handloom weavers.** *Indian J Occupl Environ Med*, **3**(2) (1999), 71-73 [13 Ref].

Study compares the prevalence and pattern of respiratory morbidity among registered handloom weavers and comparison group and studies epidemiological factors associated with respiratory morbidity. The overall prevalence of respiratory morbid conditions among handloom weavers and comparison group was 12.22% and 5.95% respectively ( $p < 0.05$ ). Significantly higher prevalence of respiratory morbidity was observed in handloom weavers, which in part can be attributed to their occupational exposure.

**9903-215.** Vaid Sandhya, Mishra IM (Dept Cheml Engng, Univ Roorkee, Roorkee 247667, UP). **Recovery of diazinon and quinalphos induced toxicity in fish brain.** *Indian J Environ Hlth*, **41**(2) (1999), 126-129 [11 Ref].

Simultaneous determination of diazinon and quinalphos have been done by reversed-phase HPLC technique in fish brain homogenates. Administration of Macraberin Forte (0.55ml/100 g body weight) in the intoxicated fish after 96h exposure shows a remarkable recovery against their toxicity.

**9903-216.** Veerappan N, Manikadan KP (Cent Adv Std Marine Bio, Annamalai Univ, Parangipettai 608502). **Seasonal variation in heavy metals (Fe, Zn, Cu and Mn) concentration in the *Scylla tranquebarica* from the vellar estuary (Southeast coast of India).** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ, 1999*, 204-209 [12 Ref].

The fates and behaviour of the heavy metals in the marine environment are of extreme importance due to their impact on the entire ecosystem. Further, heavy metals accumulation in the marine organisms is directly influenced by the changes in the hydrographical features. Study evaluates the seasonal variation in heavy metals concentration in different organs of the mud crab *Scylla tranquebarica*.

**9903-217.** Verma Vivek, Gaunekar Manish, Ferreira AM (Inst Safety, Occupl Hlth Env, Panaji, Goa). **Skin lesions amongst workers at petroleum products distribution outlets in Goa.** *Indian J Occupl Environ Med*, **3**(2) (1999), 101-103 [3 Ref].

A study was conducted to determine the prevalence of skin lesions and associated risk factors amongst workers engaged with petroleum products at their distribution outlets in Goa. Clinical examination and laboratory investigations were carried out to arrive at a diagnosis. The study showed a prevalence of skin lesions in about 68.7% of the workers. The relevance of the associated risk factors is discussed.

**9903-218.** Vijayamohanan, Nair GA\* (\*Easwari Vilas, Sasthamangalam, Thiruvanthapuram 695010, Kerala). **Impact of titanium dioxide factory effluent on the biochemical composition of the freshwater fishes *Oreochromis mossambicus* and *Etroplus maculatus*.** *Polln Res*, **19**(1) (2000), 67-71 [25 Ref].

Studies on the muscle and liver of the freshwater fishes *Oreochromis mossambicus* and *Etroplus maculatus* exposed for seven days in three sub-lethal concentrations of titanium dioxide industrial effluent revealed alterations in their water content, glycogen, protein, lipid and ash. A reduction in the pH and oxygen of the effluent-mixed media was evident when compared with the normal freshwater. A positive correlation was observed between concentrations of the effluent used and the ash content of fishes.

**9903-219.** Vinod KR, Naik YM (Dept Toxicol, Jai Res Foundation Valvada 396108, Gujarat). **Effect of lead acetate on the chromosomes of the Indian bull frog *Hoplobatrachus tigerinus* (Dandin 1803).** *Indian J Env Toxicol*, **9**(2) (1999), 59-61 [12 Ref].

Study deals with the effect of sublethal concentrations of lead acetate on the bone marrow chromosomes of the frog *Hoplobatrachus tigerinus*. Results revealed that no significant increase in chromosome aberrations was recorded after the ip administration of lead acetate with both doses for 6 hrs and 24 hrs or after exposure to both the concentrations for seven days. Frequency of aberration was however, found significant after 48 hrs with the high dose and also after exposure of frogs to the higher dose of solution for 14 days.

**9903-220.** Virk S, Sharma RC (Dept Fisheries, Punjab Agricul Univ, Ludhiana 141004, Punjab). **Biochemical changes induced by nickel and chromium in the liver of *Cyprinus carpio* L.** *Polln Res*, **18**(3) (1999), 217-222 [13 Ref].

The biochemical components of the liver of *Cyprinus carpio* L. were significantly reduced as compared to control following 60 days of exposure to safe and sublethal concentration of nickel (7.50, 15.00 mg/l) and chromium (10.00, 20.00 mg/l) during various reproductive phases. The sublethal concentration of both the metals caused more deterioration of liver than the safe concentration.

**9903-221.** Yadav Ravindra, Lal Nanda, Yadav KDS (Dept Chem, Univ Gorakhpur, Gorakhpur 273009). **Effect of carbendazim on the activity of extracellular phosphatase of *Aspergillus fumigatus*.** *Indian J Environ Hlth*, **41**(1) (1999), 49-52 [8 Ref].

Effect of carbendazim on the activity of *A.fumigatus* phosphatase has been reported. Carbendazim inhibits the phosphatase activity irreversibly. The effect of carbendazim activity pH profile and activity-temperature profile of the enzyme have been reported.

**9903-222.** Yazdandoost MY, Katdare M (Dept Environ Sci Zoo, Univ Pune, Pune). **Toxicity effect of some selected chemicals on fish *Tilapia mossambicus*.** *Polln Res*, **18**(4) (1999), 539-540 [5 Ref].

Effect of various toxic chemicals is studied on the fish *Tilapia mossambicus*. The results indicate the toxicity in the order of HgCl<sub>2</sub> >CuCl<sub>2</sub> >PbNO<sub>3</sub> >CdCl<sub>2</sub> >ZnSO<sub>4</sub> >MnSO<sub>4</sub> >BHC >H<sub>2</sub>SO<sub>4</sub>. A study has also been carried out on the toxicity of various chemical substances on the fish *Tilapia mossambicus*.

**9903-223.** Yellamma K, Venkatakrishna Reddy P, Sreehari U (Dept Zoo, Sri Venkataswara Univ, Tirupati). **Impact of cadmium chloride on the cholinergic system in the brain of rat.** *Polln Res*, **19**(1) (2000), 55-59 [12 Ref].

The cholinergic system of different brain areas showed variable sensitivity to cadmium chloride stress. In both acute and chronic dose studies the enzyme acetylcholine esterase was inhibited significantly in all the areas. During acute dose

studies maximum inhibition was noticed at 12th in all the brain areas, while in chronic dose studies peak inhibition was noticed on 7th day and recovery towards normalcy was noticed in all the areas after 11th day onwards.

**9903-224.** Zaman Najmuz, Sinha US (Dept Zoo, Coll Comm, Patna 800020). **Evaluation of toxicity of cythion on a fresh water air breathing teleost *Clarias batrachus* (Linn).** *Int J Mendel*, **16**(3-4) (1999), 111-112 [8 Ref].

LC50 dose for 24 hours and 48 hours duration of cythion on *Clarias batrachus* was determined by static bio-assay method. The quantity of cythion required was 17.16 mg/l and 15.6 mg/l for the two duration. The safe concentration was 5.63 mg/l.

## Wastes

**9903-225.** Bandyopadhyay Amitava (Dev Consultants Ltd, 24- B, Park Street, Calcutta 700016). **Treatment of acid pickling waste of metals.** *J Indl Polln Contl*, **15**(2) (1999). 239- 247 [2 Ref].

During pickling, operation scales and corrosion products are chemically removed from the metal surface using inorganic acid solutions either alone or in combination. Waste water is generated during pickling, rinsing and fume scrubbing operations, etc. The methods recommended in the World Bank Environment Guidelines have been discussed in this article.

**9903-226.** Bhatnagar Ashish (Dept Microbio, Maharshi Dayanand Saraswati Univ, Ajmer 305009). **Development of r and K selection model in the waste stabilization pond system.** *J Environ Bio*, **20**(2) (1999), 115-120 [14 Ref].

It is widely accepted now that unpredictability and instability of environments conform to r-selection whereas predictable and stable ones to K- selection. The study was undertaken to develop this model to differentiate polluted sites assuming that treated sewage going out of the waste stabilization ponds (WSP) might present a more predictable environment than the raw, untreated sewage entering it. A comparison of stability, diversity of organisms, grazing pressures and size distributions of various algae in these subsystems established that treated and untreated sewage could represent K-selection and r-selection, respectively.

**9903-227.** Chaudhuri BK, Biswas DK (Centl Polln Contl Bd, Parivesh Bhawan, East Arjun Nagar, Delhi 110032). **Anaerobic degradation of toluene by a mixed culture and inhibition by thiocyanate.** *J Indian Water Works Assoc*, **31**(4) (1999), 279-286 [24 Ref].

Under anaerobic condition toluene was degraded into carbon dioxide and methane. The toluene degradation was improved by enrichment of the mixed culture and optimisation of culture medium. The growth of sulphate reducers was predominant over the methanogens. The average toluene degradation rate was observed to be in the range of 250 to 260 mg/l in batch study.

**9903-228.** Choudhury S, Manthan M, Sahoo N, Rohella RS (Regl Res Lab, Coun Scient Indl Res, Bhubaneshwar 751013, Orissa). **Anaerobic treatment of pulp and paper mill effluent - a case study.** *Indian J Environ Hlth*, **41**(1) (1999), 74-75.

Batch and on-line experiments were carried out using fixed film technology for treatment of effluent from M/s Konark Paper Industries Ltd, Mayurbhanj, Orissa, a medium scale pulp and paper mill utilising rice straw and sabai grass for pulping. The typical physico-chemical characteristics of the effluents collected over a number of times at different seasons of the year are presented.

**9903-229.** Das AK, Chakraborty R, Goswami D (Dept Chem, Univ Burdwan 713104, West Bengal). **Multielemental characterization of fly ash: a review.** *Cheml Environ Res*, **8**(1&2) (1998), 5-50 [240 Ref].

The pretreatment selective extraction and digestion techniques applied to fly ashes before carrying out metal determination have been highlighted. The microwave assisted digestion conditions for fly ash dissolution have been carefully reviewed. The instrumental techniques used for the determination of various metals in fly ash have also been mentioned.

**9903-230.** Dutta SK, Boissya CI (Dept Bot, Nowgong Coll, Nagaon 782001). **Effect of paper mill effluent on growth yield and N, P, K contents of transplanted rice (*Oryza sativa* L var Mahsuri).** *J Environ Bio*, **20**(1) (1999), 29-32 [21 Ref].

Effect of paper mill effluent on growth and yield of rice plant was explored at Nagaon Paper mill area, Jagiroad, Assam. The study revealed that nitrogen, phosphorus and potassium contents of rice plants from effluent affected areas showed significantly difference in their growth and productivity from that of non-affected (control) rice plant. Plant samples from ten different paddy cultivated sites were analysed to find out the NPK contents of grain and straw.

**9903-231.** Gadhia Mohini, Gadhia PK (Dept Aquatic Bio Biosci, South Gujarat Univ, Surat 395007). **Assessment of pond viability for fish culture in treated wastewater of Oil and Natural Gas Corporation (ONGC).** *J Indl Polln Contl*, **15**(2) (1999), 249-257 [14 Ref].

Three varieties of commercially important edible fresh water fishes namely *Catla catla* (catla), *Labeo rohita* (rohu) and *Cirrinus mrigala* (mrigal) were stocked for fish culture for fifteen months. The fish *Labeo rohita* showed maximum growth and was most suitable for culture in ONGC pond. Observations of the study suggested that fishes were fit for human consumption and absolutely normal as grown in any other pond.

**9903-232.** Hymavathi V, Aruna P, Rao LM (Dept Zoo, Andhra Univ, Visakhapatnam 530003). **Impact of organic pollution due to slaughter house wastes on Mudasarlova stream near Visakhapatnam,** *Polln Res*, **18**(1) (1999), 83-87 [22 Ref].

Study deals with the effects of slaughter house wastes pollution on the water qualities and fish fauna of the local stream Mudasarlova. Various parameters have been studied. The stream at the point of slaughter house wastes release and downwards shows heavy B.O.D and C.O.D. The ammonical nitrogen concentration is also high. The results are presented and their effects on the fish fauna are discussed.

**9903-233.** Karunaruthi T, Anand G, Maria Francis, Sabarathinam PI (Dept Techno, Annamalai Univ, Tamil Nadu). **Treatment and reuse of industrial waste waters by synthetic membrane process.** *Proc Int Semin Appl Hydrogeochem, Annamalai Univ, 1999*, 256-268 [6 Ref].

Wide scale acceptance and usage of membrane processes for water and wastewater treatment is a recent development. Reverse osmosis and electrodialysis could be used in both municipal and industrial wastewater treatment as single elements in the train of unit processes for recycling and / or treatment of water prior to disposal or reuse.

**9903-234.** Kaur Manpreet (Dept Pharma Sci, Guru Nanak Dev Univ, Amritsar 143005). **Adsorption of dyes on unconventional adsorbents.** *J Env Polln*, **6**(2&3) (1999), 173-179 [13 Ref].

The effluents from dyestuff manufacturing industries contains small proportions of dyes, which in addition to colour impart undesirable characteristics . Different adsorbents from wastes like bagasse, *Eichhornia* plants, egg shell, bottom ash, cow, dung rice husk etc are used to study their applicability for colour removal from aqueous dye solutions.

**9903-235.** Khandkar UR, Gangwar MS, Srivastava PC (Dept Soil Sci, GB Pant Univ Agric Techno, Pantnagar 263145). **Effect of flyash waste on some properties of an acid soil, elemental composition and yields of crops.** *Polln Res*, **18**(1) (1999), 101-107 [27 Ref].

The effect of soil application of a thermal power station fly ash (2 to 20 per cent of soil weight) was investigated on properties of an acid soil, elemental composition and yields of rice, soybean and blackgram crops. The application of fly ash altered the soil texture and increased water holding capacity, pH and electrical conductivity and extractable amount of P, Ca, Mg, S, Mn, An, Cu, B and Al but decreased soil particle density and available soil N. Soil application of fly ash increased the concentration of all the nutrients.

**9903-236.** Kishore ME, Trivedy RK (Dept Microbio, SGM Coll, Karad 415125). **Studies on microbial degradation of cyanide wastes: a brief literature review.** *J Indl Polln Contl*, **15**(2) (1999), 259-265 [32 Ref].

The paper discusses toxicity of cyanides, generation and hazards of cyanide containing wastes and review of studies on treatment of cyanide containing wastes by chemical and biological methods.

**9903-237.** Kumar Alok, Tewary BK (Tree Bio Div, Natl Botl Res Inst, Lucknow 226001). **Biomonitoring of atmospheric metal deposition with moss (*Funaria hygrometrica*).** *Indian J Env Toxicol*, **9**(1) (1999), 1-4 [15 Ref].

*Funaria hygrometrica* has been used for biomonitoring of the trace metals. Their levels and possible sources of emission have been identified in the study area. Metals such as Pb and Zn were primarily being contributed by industries and traffic. The study presents *Funaria hygrometrica* as a good bioindicator and biomonitor of metal deposition from the atmosphere.

**9903-238.** Mahesh S, Gowda Chitra, Sujana Reddy P (Dept Environ Engng, Sri Jayachamarajendra Coll Engng, Mysore 570006). **Colour tannin removal from coffee curing industrial effluents using adsorbents- IGGAC and ACS.** *Polln Res*, **18**(1) (1999), 13-19 [13 Ref].

The adsorption of colour tannin on Industrial Grade Granular Activated Carbon (IGGAC) and Activated Coconut Shell (ACS) has been investigated. Due to the effect of agitation in batch reactors, percent removal increases with increase in adsorbent dose providing greater net adsorption sites for adsorption. The results indicate ACS having a better adsorption capacity than IGGAC. Column studies indicate better colour removal at lower flow rates and the data had a reasonable fit to the Langmuir equation with (Q<sub>o</sub>) and (b) values 0.896 and 0.305 respectively while the dimensionless constant separation factor (R<sub>l</sub>) is 0.21.

**9903-239.** Nair G, Pati AK, Naik ML (Sch Std Life Sci, Pt Ravishankar Shukla Univ, Raipur 492010). **Temporal organization in population density of protozoans in septic tank sewage.** *Curr Sci*, **76**(8) (1999), 1128-1134 [25 Ref].

Variation in the population density of protozoans of a septic tank sewage from a boy's hostel located within the premises of Pt. Ravishankar Shukla University, Raipur, was studied over two consecutive years. Results reveal that rhythmic patterns in population density of various species of sarcodines appear to be highly synchronized with peaks occurring in between mid March and the first week of July.

**9903-240.** Nanda Kumar K, Ramamurthy S, Rajarajan A, Savarimuthu E (Dept Phys, Gandhigram Rural Inst, Gandhigram 624302, Tamil Nadu). **Effect of cadmium enrichment of municipal sewage sludge on the nutrient uptake of sorghum.** *Polln Res*, **18**(3) (1999), 301-304 [6 Ref].

The effect of enrichment of Dindigul town's sewage sludge with different levels of cadmium, on the nutrient content of sorghum plants has been investigated. The study reveals that the mixing of Cd enriched sewage sludge to the soil increases the uptake of the essential micronutrients by sorghum plants and the safe level of Cd content of Dindigul sewage sludge for very good growth of sorghum is 5.0 ppm.

**9903-241.** Panday GC, Neraliya S, Dwivedi BK (Dept Environ Sci, Dr Ram Manohar Lohia Avadh Univ, Faizabad 224001). **Phytotoxic effect of distillery effluent on the *Allium cepa*.** *Indian J Env Ecoplant*, **2**(3) (1999), 265-267 [11 Ref].

Pager studies the phytotoxic effect of distillery effluent on morphological, cytological and biochemical parameters of *Allium cepa*. The parameters increased with increased concentrations of distillery effluents (10-20%), following which reverse trend was observed at 96 hours. The effluent used at higher concentrations (>30%) elicited deleterious effect on the growth of *A. cepa*.

**9903-242.** Panesar PS, Marwaha SS, Rai R (Sant Longowal Inst Engng Techno, Longowal, Punjab). **Methanogenesis of black liquor of pulp and paper industry using UASB reactor in biphasic system.** *J Indl Polln Contl*, **15**(2) (1999), 157-163 [13 Ref].

Present investigation was carried to find the suitability of black liquor of pulp and paper mill for methanogenesis in continuous biphasic system. The different hydraulic retention times (HRT) using upflow anaerobic sludge blanket (UASB) reactors were studied. A maximum methane content of 61.45% and COD reduction of 64.64% was observed at a HRT of 3d.

**9903-243.** Prasad Vijay Kumar, Trivedi RN (MUPG Res Cent, 194 B, SK Puri, Patna 800001). **Environment characterization of solid waste of the hospital - a study.** *Int J Mendel*, **16**(3&4) (1999), 129-130 [3 Ref].

Study is aimed at characterization of the solid waste generated from Indira Gandhi Institute of Medical Sciences, Patna. The quantitative and qualitative aspects of solid waste generated in 300 bed special hospital were investigated and the results of the same are reported.

**9903-244.** Rahman KSM, Vasudevan N, Lakshmanaperumalsamy P (Dept Environ Sci, Bharathiar Univ, Coimbatore 641046). **Enhancement of biosurfactant production to emulsify different hydrocarbons.** *J Env Polln*, **6**(2&3) (1999), 85-93 [23 Ref].

Biosurfactants of microbial origin have been recognized as partial or total substitutes for synthetic surfactants for the oil industry, since they are biodegradable and often non-toxic. Bacteria able to synthesize surfactants constitutively, seem to be a good choice for microbial enhanced oil recovery. In the present study the *Pseudomonas* sp. MR-3, isolated from the refinery waste water, was tested for the production of biosurfactant.

**9903-245.** Rai AK, Kumar Surendra (Dept Cheml Engng Techno, Inst Techno, Banaras Hindu Univ, Varanasi 221005, UP). **Treatment of chromium bearing waste water by adsorption on brick kiln ash and fly ash.** *Indian J Environ Hlth*, **41**(1) (1999), 65-73 [31 Ref].

Suitability of brick kiln ash and fly ash for removing chromium (VI) from waste water has been investigated. Both adsorbents exhibited fairly good sorption potential for chromium (VI) with a maximum at pH 1.3. Effects of concentration of Cr (VI) (10.0-50 mg/l), particle size (124-853 mm), rpm (100-200 s<sup>-1</sup>) and temperature (25-50oc) have been studied.

**9903-246.** Rai Ramesh Kumar, Verma Sangeeta, Goyla Maya (Lab Algal Physio Biochem, Cent Adv Std Bot, Banaras Hindu Univ, Varanasi 221005). **Growth and biochemical profile of two cyanobacteria affected by carpet industry effluent.** *Polln Res*, **18**(1) (1999), 71-74 [16 Ref].

The mesophilic cyanobacteria *Anabaena flos-aquae* and *Synechococcus cedrorum* were grown in various concentrations of carpet industry effluent collected from Bhadohi district of U.P., India. The changes in growth and biochemical profile were studied. The effluent was stimulatory for the growth of both the cyanobacteria when used between 5% to 50% concentrations. These two species of cyanobacteria could be grown even in 100% concentration, but the growth was very poor.

**9903-247.** Rajkumar M, Dharmaraj K (Cent Environ Std, Anna Univ, Chennai 600025). **Reuse of agro-wastes for culture of oyster mushroom *Pleurotus citrinopileatus* (Fr.) Singer.** *Indian J Environ Hlth*, **41**(2) (1999), 130-134 [11 Ref].

Utility of agricultural wastes, namely paddy straw, sugarcane bagasse and coconut coirwaste for culturing the oyster mushroom, *Pleurotus citrinopileatus* has been evaluated. The maximum growth rate and yield of mushroom was recorded by cultures grown on paddystraw + bagasse medium. Maximum protein and aminoacid contents were recorded in mushrooms grown on paddystraw. The investigations offer an economical and useful option for utilization of selected wastes.

**9903-248.** Rengaraj S, Arabindoo Banumathi, Murugesan V (Dept Chem, Anna Univ, Chennai 600025). **Sorption characteristics of parachlorophenol on activated palm seed coal carbon.** *Indian J Environ Hlth*, **41**(1) (1999), 16-23 [22 Ref].

Batch shaking adsorption studies were carried out to evaluate the potentiality of activated carbon prepared from palm seed coat in the removal of p-chlorophenol from aqueous solution. The percentage removal of p-chlorophenol was studied by varying experimental conditions. It was found that more than 90% removal was achieved under optimal conditions.

**9903-249.** Saseetharan MK, Kuppusamy D, Seshadri S, Rajgopal (Dept Civil Engng, Govt Coll Techno, Coimbatore, Tamil Nadu). **Modelling of thickener area for domestic activated sludge.** *Indian J Environ Hlth*, **41**(1) (1999), 32-42 [6 Ref].

The experimental study on domestic sludge was carried out to arrive at mathematical models for the design of secondary settling tank in activated sludge process, keeping initial MLSS concentration, recycling ratio and desired underflow concentration as influencing parameters. The results of the analysis were used to develop mathematical models by multi-regression method. These mathematical models can be used as a tool for the design of secondary clarifiers.

**9903-250.** Shankar M, John Kennedy, Sekaran G, Shanmugasundaram KA, Mariappan M (Dept Environ Techno, Central Leather Res Inst, Adyar, Chennai 600020, Tamil Nadu). **Photocatalytic treatment of secondary biologically treated effluent for reuse.** *J Env Polln*, **6**(2&3) (1999), 123-132 [24 Ref].

The applicability of the photocatalytic degradation of chromophoretic dye and tannin compounds that escaped the secondary biological treatment unit is discussed. The half life time required for colour and COD removal were 117.1 and 277.6 minutes respectively. The leather produced from the photocatalytically treated wastewater was of comparable in quality to leather produced by using the potable water.

**9903-251.** Sharma Pragya, Kaur Amarjeet, Markandey DK, Choudhry BK (Dept Environ Sci Engng, GJ Univ, Hisar Haryana). **Comparative adsorption efficiency of various low cost adsorbents for decolourization of methylene blue - a lab scale investigation.** *J Indl Polln Contl*, **15**(2) (1999), 175-180 [9 Ref].

Adsorptive capacity of five different low cost adsorbents (baggase pith, orange peel, saw dust, *Eichhornia* roots and shoot) has been tested for the decolourization of waste water containing methylene blue. The adsorption capacity of each adsorbent has been determined and this adsorption capacity was compared with activated carbon. *Eichhornia* plant is found to be a best adsorbent than other materials studied for the purpose.

**9903-252.** Sharma RK, Srivastava S (Durga Sewa Sadan, Vill-Dostpur, PO Dariyapur, Dist, Bulandshahr 203001, UP). **Role of constant release disinfectant filter material in the removal of heavy metals.** *Polln Res*, **18**(1) (1999), 29-35 [19 Ref].

Oligo-dynamic heavy metal on a porous solid support (activated alumina ) was found to be effective to remove iron and lead in the aqueous medium. In the experiments with metals separately iron showed better reduction efficiency than lead in comparison with activated alumina in which reduction efficiency was found to be 63.98% and 7.13% in the column experiments.

**9903-253.** Shrivastava AK, Ningarajit HJ, Jain Neeraj (Dept Civil Engng, Univ Roorkee, Roorkee 247667, UP). **Coagulation studies on ossein wastewater treatment.** *Indian J Environ Hlth*, **41**(2) (1999), 90-97 [3 Ref].

Experiments were conducted to study the performance of various coagulants in removing various pollution parameters of the ossein wastewater. The results indicted that lime is an economical coagulant removing 55% of COD and 76% of suspended

solids at a dose of 300 mg/L. However, alum in conjunction with lime (fixed dose 1200 mg/L) gave 55% of COD and 79% of suspended solids removal at a dose of 300 mg/L.

**9903-254.** Shrivastava VS (Environ Res Lab, PG Dept Chem, GTP Coll, Nandurbar 425412, M.S.). **A relation between COD and BOD for the textile dyeing and printing effluent at GIDC area of Surat city.** *J India Water Works Assoc*, **31(4)** (1999), 275-277 [6 Ref].

A linear relation of the form  $BOD = a + b(COD)$  has been proposed to predict the values of BOD as a function of COD for the textile, dyeing and printing industrial effluents. The values of the empirical parameters are found to be  $a = -0.1248$  and  $b = 0.4674$ . When the BOD and COD are expressed in g/p, this empirical relation shows fairly good agreement with the available data.

**9903-255.** Singh Gurdeep, Minj Vikram B (Indian Sch Mines, Dhanbad, Bihar). **Ammonia treatment of fertiliser plant effluents by using amberlite LA-2.** *J Indl Polln Contl*, **15(2)** (1999), 181-185 [5 Ref].

Amberlite LA-2, which is a secondary amine was studied for developing a treatment methodology to contain ammonia from nitrogenous fertilizers effluent. The ammonium ions removal was achieved by hydrogen-exchange cycle. The pH range 6.2-8.3 was found to be suitable for adsorption.

**9903-256.** Sreenivasulu A, Sundaram EV, Komal Reddy M (Dept Chem, Univ Coll, Kakatiya Univ, Warangal 506009, AP). **Defluoridation studies using activated carbon prepared from umbels of *Prangos pabularia* Lindl.** *J Indl Polln Contl*, **15(2)** (1999), 227-237 [26 Ref].

Fluoride ions adsorption on carbon, prepared from umbels of *Prangos pabularia* Lindl. in an aqueous medium was conducted by means of batch technique as a function of contact time, fluoride concentration, temperature and solution pH. The results indicate that adsorption completed within ca. 90 minutes and that the steady state values of sorption at different concentrations agree well with Langmuir isotherm model.

**9903-257.** Trivedy RK, Nakate SS (Dept Polln Std, YC Coll Sci, Karad 415110). **Aquatic weeds based wastewater treatment plants in India.** *J Indl Polln Cotl*, **15**(2) (1999), 275-279 [9 Ref].

Aquatic plants based wastewater treatment systems are becoming popular in India and performance for two constructed water hyacinth systems was studied for one year. A very high degree of reduction was obtained in suspended solids, BOD and COD, nitrogen, phosphorus and oil and grease. These plants are constructed at extremely low cost.

**9903-258.** Verma Babita, Shukla NP (Cheml Engng Dept, HB Technol Inst, Kanpur 208002). **Electrolytic separation of chromium from chrome tannery wastewater.** *Indian J Environ Hlth*, **41**(1) (1999), 43-48 [11 Ref].

Chromium reduction from the chrome tannery wastewater was studied electrolytically, using a stainless steel plate as cathode and a graphite rod as anode. The chromium reaction was found to be directly proportional to the chromium concentration in the solution. The concentration as well as the removal rate decreased with time. Almost 100% chromium reduction was observed. The chromium reduction in tannery wastewater was observed to be 1-6% less than the synthetic wastewater.

**9903-259.** Verma Yogendra, Hargan MC, Ruparelia SG, Kulkarni PK (Aquatic Toxicol Lab, Natl Inst Occupl Hlth, Meghani Nagar, Ahmedabad 380016). **Toxicity testing of tannery effluents using duckweed *Lemna minor*, bioassay.** *Polln Res*, **18**(4) (1999), 497-500 [10 Ref].

Duckweed, *Lemna minor* has been used in this study as an aquatic vascular plant model for laboratory toxicity testing. The study was based on growth of the plant selecting the frond count and dry weight (biomass) as an index parameters of growth. The results have shown the reciprocal relationship between growth and concentrations. The results of the study suggest that duckweed can serve as promising bio-indicator as it is highly sensitive to environmental pollutants.

## Forestry and Environment

**9903-260.** Nirmal Kumar JI, Kumar Rita N, Hirenkumar BS, Gohil Amit N (NV Patel Coll Pune Appl Sci, Vallabh Vidyanagar 388120 Gujarat). **Biodiversity and socio-culture status of Khatana and Waghai forests, South Gujarat, India.** *Eco Env Conserv*, **5**(4) (1999), 335-340 [20 Ref].

Paper deals with biodiversity and socio-cultural aspects of Khatana and Waghai forests of Gujarat. The relationship and interaction between biodiversity and socio-cultural aspects are well-narrated. It has been further noticed that Khatana forest with reference to its biowealth is much disturbed and interrupted as compared with Waghai forest. On the contrary flourishing flora and fauna perhaps reveal undisturbed nature of Waghai forest.

**9903-261.** Radha Krishnan L (Dept Econ, Pondicherry Univ, Pondicherry 605014). **The impact of industrial captive plantation on biodiversity and environment in the Western Ghats of Karnataka.** *Eco Env Conserv*, **6**(1) (2000), 25-33 [12 Ref].

This study analyses the ethical values of the forest dependent on natural forests and industrial captive plantations and their environment. The study is based on both primary and secondary data pertaining to Shimoga and Uttar Kannada districts of Karnataka. Local people argues that if the industries were given lease for raising plantation of their choice for longer period, this may change the entire land use pattern and agricultural labourers will also be displaced leading to unemployment and poverty in this region. In addition, this trend will further lead to extinction of much wanted hardwood species besides flora and fauna in the Western Ghats of Karnataka in another few decades.