
The analyses and monitoring were conducted to evaluate the impact of different types of chemical, electroplating, textile and dyeing industry waste water on the river and ground water. Water samples from the localities located on the side of Yamuna river and other areas in Delhi and industrial effluents of different types of industries were collected and analysed. Water quality parameters were very poor, except the samples collected from upstream.


Physico-chemical and micro-biological studies of sugar mill effluent polluted ground water in Eraiyur area of Permbalur District, Tamil Nadu indicated that EC, TDS, total hardness in terms of CaCO₃, BOD, COD ions level values are on the higher side of permissible limits of WHO standards. Microbiological studies revealed the presence of specific fungal species which are capable of growing in higher concentrations of bicarbonate and nitrates which in turn serve as indicator organism of such pollutants.


The chemical characteristics of the breeding habitat of amphibia in Nagaland were analysed to see the possible role of water chemistry in the distribution pattern of amphibian fauna. Early life history stages of amphibian are vulnerable to various contaminants that accumulate in the water body. Samples of 100 potential amphibian habitats were analysed and distribution pattern of 24 species of amphibian has been discussed.

Arsenate uptake of aquatic plant water lettuce (*Pistia stratiotes* L.) was studied in the laboratory condition to investigate a low cost natural aquatic treatment system for pollutant removal. Bioaccumulation was noticed to be both concentration and duration dependent. The results show that the plant could effectively absorb arsenic between a range of 0.25 to 5.0 mg/l to the extent of 82.0 to 22.8% for a biomass of 20g/l at pH 7.0 after 144 hours. The effect of biomass quantity has also been investigated along with some metabolic parameters.


The addition of effluents from urbanized Bangalore city has changed the characteristics of the Bellandur Lake from being a natural ecologically healthy lake to an artificial reservoir of domestic sewage and industrial effluents. The DO of the Bellandur Lake water ranged from 3.8-6.3 mg/l. The Bellandur Lake water BOD ranged from 89-99 mg/l due to absorption of pollutants by aquatic flora in lake system.

Analysis of physico-chemical parameters of Loco tank, a reservoir in Asansol town, West Bengal. *Nature Env Polln Techno, 2*(2)(2003), 171-172 [5 Ref].

Paper deals with the analysis of physico-chemical parameters of a reservoir, called Loco tank in Asansol. The sewage from the surrounding areas continuously mixes with the waterbody. The effluents from various small-scale industries are also dumped into this reservoir. A significant level of variation was found in respect to these parameters. The results clearly indicate that the water of the reservoir is severely degraded.


Adsorption of Pb and Cd individually as well as from mixture of metal ions in aqueous medium on coal fly ash has been investigated. Column studies were
conducted and the effect of various parameters affecting the adsorption has been determined. The maximum adsorption took place at pH 4.5-5.0 for Pb and at pH 3.1 for Cd. Among Pb and Cd, coal fly ash has higher affinity to adsorb Pb.


Photocatalytic reduction of Pb(II) over semiconducting manganese dioxide was carried out. The progress of reaction was observed spectrophotometrically. The effect of variation of different parameters like pH, concentration of Pb(II), amount of photocatalyst, particle size, light intensity, etc. on the rate of photocatalytic reduction was observed. A tentative mechanism for this reaction has been proposed.


To ensure that the intake water derived from surface and ground water is clear and suitable for drinking the final water quality at Delhi have been evaluated. The final water supply of four treatment plants and 80 tubewells at Delhi were surveyed for heavy metals. The levels of manganese, copper, selenium and cadmium were found marginally above the Indian Standards (IS) specification regulated for drinking water. The data was used to assess the final water quality supplied at Delhi.


The photosynthetic bacteria and cyanobacteria (*Pseudomonas, Oscillatoria rubescens*) were utilized for water quality improvement and detoxication of cyanotoxin, microcystin (MC) level for eutrophicated Maqubara pond under laboratory conditions. The mixed cultured bacteria were found to be more efficient in reducing MC level, pH, DO, BOD, free-CO₂ and sulphate than single cultured bacteria. *Oscillatoria rubescens* was found better in reducing the level of N, P and N/P ratio as compared to *Pseudomonas* singly and also in combination with *Pseudomonas*.

0303-064. Fokmare Anil K, Musadiq Mohammad (PG Dept Microbio, Shri Shivaji Coll, Akola 444001, MS). **Physiological responses of some bacteria to chromium from water bodies.** *Eco Env Conserv, 9*(1)(2003), 85-89 [19 Ref].
Physiological responses of some bacteria to chromium from water bodies has been worked out by using various parameters by micrometry, putrefaction and total viable count. Response of few bacteria to selected concentration of chromium varied. High concentration of chromium inhibited growth rate bio-chemical characteristics, enzyme activity and total viable count.


A study on precipitation of lead acid storage battery industry wastewater was conducted. Results show that precipitation of lead as carbonate is more effective as compared to sulphide and hydroxide precipitations.


Comparative study of various ground water samples taken from Khetri copper smelter zone show an increasing and very conclusive postulate in regards to the increase in conductivity, chloride, and sulphate. Total hardness and decrease in pH causing pollution, due to seepage of effluent or other relevant causes. Even recycling process is unable to check the increasing trends of above parameters.


Three lentic water resources of Bhopal viz. Upper lake, Lower lake and Shahpura lake were studied for their limnochemical and biological characteristics. By adding different concentrations of urea, in microcosms developed from these reservoirs, an effort has been made to evaluate the effect of nitrogen on hydrobiological parameters. On treatment with urea, microcosmal waters exhibited erratic fluctuations in the amount of total kjeldahl nitrogen. Concentration of nitrate was more in treated microcosms than the controlled ones.

The modern approach to improved water supply is to offer drinking water facilities together with sanitation facilities like latrines, drainage and hygiene education. Even simple messages of hand washing, disinfection of water, proper storage and withdrawal from container of drinking water and maintenance of water source and latrines and good street sanitation communicated with proper spirit have positive impact on health status.


Investigation is aimed to calculate Water Quality Index (WQI) of ground water and to assess the impact of pollutants due to agriculture and human activities on its quality. Ten physico-chemical parameters were monitored for calculation of WQI. The results varied from 35.338-224.358 mg/L indicating level of nutrient load and pollution in the hand pumps. The existing results revealed that waters of the study area was not safe for human use.


Arsenic-rich waste is forming constantly due to decontamination of arsenic from the contaminated groundwater using coagulation-filtration and surface adsorption techniques. In order to manage the waste, an attempt has been taken on applying the chemical leaching followed by precipitation methods. It has been found that 0.5 (M) solution of either NaOH or KOH is sufficient to leach arsenic to the maximum extent from the wastes.


Water pollution by surfactants in detergent formulation has become an environmental problem. Surfactant levels in waste water, surface water and subsurface water in and the surrounding areas of Tirupati, a famous pilgrim town in South India, has been studied. Results showed the presence of anionic alkylbenzene sulfonate (LAS) surfactants in appreciable amount in sub-surface water.

The treatment efficiency of four aquatic plants, namely, water hyacinth, cattail, hydrilla and algae, for treatment of domestic wastewater has been compared. A batch study was conducted to determine the nutrient removal capacity of aquatic plants and to elucidate the uptake rate constants for four aquatic plants. It is concluded that water hyacinth has the highest treatment efficiency of domestic wastewater and has nutrient removal efficiency greater than the other aquatic plants tested.


Paper studies the level of fluoride in bore well, open well and in hand pump water of different places of Salem district and also to analyse other water quality parameters like alakalinity, electrical conductivity, hardness, pH, phosphate, solids, temperature and turbidity. The analysis shows a low fluoride level of 0.46 mg/l and high level of 1.52 mg/l in Salem district.


Attempt is made to understand the implications of chemical fertilizers on ground water quality of Nanded. The mean sulphate, phosphate and nitrate concentration were studied. The mean recorded values of sulphate, phosphate and nitrate levels were found 10.26 – 34.83 mg/l, 0.052 – 0.194 mg/l and 3.43 – 11.37 mg/l, respectively. Sulphate and nitrate levels were within permissible limits but phosphate levels higher than the permissible limits.

0303-075. Jakher Ganga Ram, Rawat Mamta (Dept Zoo, Jai Narain Vyas Univ, Jodhpur 342005). Correlation of nitrate and most probable number for a sewage fed pond, Gulab Sagar at Jodhpur city. Oikoassay, 16(1)(2003), 13-14 [11 Ref].

Gulab Sagar, a sewage polluted pond at the mid of Jodhpur city was studied for two parameters – nitrate and most probable number (MPN). The relationship between both the parameters was noted as highly significant. The correlation co-efficient for nitrate
and MPN was found to be 0.91 and the empirical parameters were determined to be $a = 46.25$ and $b = 12.48$.


A field survey was conducted to study the coastal water quality of the Sagar Island, which plays a decisive role in coastal resource management. Some physico-chemical parameters and nutrients of the coastal water during the postmonsoon season were studied. Coastal waters associated with mangroves represented salinity range of 4 to 7 $\%_0$. More than average values of dissolved oxygen (5.84 mg/l) are observed in the mangrove patches. In the mangrove regions, high nitrate concentration is related to the decomposition of mangrove leaf litter.


A pot culture experiment was carried out to elucidate an appropriate dilution of dyeing factory effluent for irrigating agricultural crops and to assess the changes in soil pH, electrical conductivity and organic carbon during dyeing factory irrigation. Results showed that the effluent could be safely used for irrigation at proper dilutions (25 and 50%) in combination with NPK.


Fishes (Heteropneustes fossilis) were exposed to water pollutants of municipal sewage of Guwahati city for a period of 165 days. The muscle carbohydrate content was analysed at every 15 days interval and compared that with control. Data revealed decline in carbohydrate concentration during the study period influenced by adverse environment.

Heavy metal pollution in the water of major canals originating from the river Yamuna in Haryana was studied. All these metals except Zn were found to be present in the Western Yamuna Canal (WYC) exceeding the maximum permissible limits. Concentrations of the metals were, however, relatively less in the highly eutrophicated waters of Agra canal and Gurgaon canal as compared to that in WYC but Fe concentration were much higher.


The physico-chemical characteristics of the wastewater generated by the vast population of Amravati has been analyzed. Though, the majority of the parameters were found within permissible limits, the sodium concentration in the wastewater exceeded the standards recommended by CPCB or WHO. Potassium concentration was found to be present in investigated water, can to some extent nullify the hazardous effects of sodium.


Removal of hexavalent chromium by adsorption technique from aqeous solution using neem bark (Azadirachta indica), subabul charcoal (SC, Leucina leucocephala) has been studied and the results are compared with powdered activated charcoal (PAC). The adsorption efficiency of PAC and SC for Cr(VI) was maximum at pH 2.0 and for NB it was maximum at pH 6.0.


The pH variation and the chemical characteristics of rainwater have been studied during monsoons at Hyderabad, a city in south-central India. The pH varied from 5.5 to 7.2 with an average of 6.4 which is in alkaline range considering 5.6 as the neutral pH of cloud water with atmospheric CO₂ equilibrium. Out of 28 rain events, only two events were observed in acidic range (<5.6) which occurred after continuous rains.

The reduction of the level of chromium and chemical oxygen demand (COD) in waste chrome liquor from tannery industry has been investigated. The chromium reduction achieved by groundnut shell powder (GNSP) treatment is 63-66% at pH 7.70. The total chromium and COD of the effluent after treatment with GNSP using batch reactor and anaerobic baffled reactor has been reduced to 99.9% and 93% respectively.


Distillery effluent contains a large amount of dissolved organic matter and causes a severe damage to the aquatic life. The abundance of phytoplankton has been affected by highly polluted condition of river water, as indicated by decreasing trends in phytoplankton population in the study area. Multiple regression analysis has been made to establish the inter-relationships between the physico-chemical and biological conditions in river waters.


Adsorbing of phenol on granulated activated carbon, based on Bed depth and Service time as principle methods has been investigated. In pilot column studies, granular activated carbon beds are fixed in the columns and used for trickling (in trickle bed reactor) flows continuously under defined conditions. The exhaustion of granulated activated carbon is measured as a function of treated phenolic wastewater.


Out of the 61 different borewell samples analysed, selected from different areas of Davanagere taluk, 26% of the samples are found to contain fluorides less than 0.50 PPM (lower safe limit prescribed by BIS) and 11.5% of the samples are found to contain more than 1.5 PM of fluorides (higher safe limit prescribed by BIS). Further, 16.00% of the borewell samples analyzed were found to contain more than 100.00 PPM of nitrates (measured as NO₃ mg/L, safe limit prescribed by BIS). The values of fluorides and nitrates observed in different samples were in the range of 0.19-2.06 PPM and 0.08-308 PPM, respectively.

Paper studies the sugar industrial effluents toxicity to aquatic fauna and human health. The pH of the effluent is 4.00 and the observed concentration is 43000 mg/l for B.O.D. and 89760 mg/l for C.O.D. These are beyond the tolerance limit of the water causing shifting of the algal forms towards more tolerant zone leading to decrease in biodiversity. Total solids, total dissolved solids and suspended solids were also considerably high.


It was observed that the test individuals died more rapidly at 45% and 50% of the effluent solution. The sugar industrial effluents was found to be highly toxic to the freshwater crabs, as the Lc 50 values for 24, 48, 72 and 96 hours are 6.784%, 5.709%, 5.257% and 4.845% respectively. The direct co-relation of toxicity to the concentration of the effluent was observed. It was also found that more than 0.5% of the effluents concentration is hazardous to the normal life and growth of these animals.


A study on the bacterial quality of water along with seasonal analysis of certain important physico-chemical parameters of some temple tanks in Kerala were done. The overall analysis indicates poor quality of water of temple tanks with organic pollution of faecal contamination. The details of the findings are enumerated.


Study was aimed at assessing the coliform MPN/100 mL and *E. coli* level of ground water (open wells, bore wells) in various parts of Mysore city. The values of MPN/100 mL were found to vary from 3 to = 2400/100 mL. The high values of *E. coli* were observed in north and east parts of city. The large amount of unplanned
release of sewage water into subsurface water is largely responsible for bacteriological pollution of ground water in area.


Batch adsorption studies were conducted to determine the effects of contact time and stirring rate on fluoride removal by burn brick clay powder as an adsorbent. The fluoride removal by burnt brick clay powder was found to be function of contact time, stirring rate and dosage of adsorbent. The fluoride removal increased with increase in contact time, with increase in stirring rate and with increase in dosage of adsorbent.

0303-092. Muralidhar M, Gupta BP, Krishnani KK, Nagavel A (Centl Inst Brackishwater Aquacult, 75, Santhome High Rd, RA Puram, Chennai 600028). **Heavy metal and pesticide levels in shrimp culture areas of Nellore (Andhra Pradesh) and Tuticorin (Tamil Nadu).** *Aquacult, 4*(2)(2003), 153-159 [29 Ref].

In order to assess the levels of heavy metals and pesticides in shrimp farms, water samples were collected from commercial shrimp ponds and sea in Tuticorin area of Tamil Nadu. The concentration of heavy metals and pesticides in water were below detection level except for zinc, mercury and hexachloro cyclohexane (HCH). Low level of mercury concentration was noted in sea water at Tuticorin shrimp farm and Krishnapatnam creek water.


A number of selected wetlands of Patna, Vaishali and Muzaffarpur district of North Bihar were surveyed. Fishes, soil and water samples were collected from the various test zones for the assessment of pesticidal accumulation in water, soil and fish muscles respectively. A comparative analysis of the toxic status of different selected wetlands based on pesticidal accumulation were done. Various organochlorine group of pesticides incurred were aHCH, bHCH, ?HCH, aldrin, endosulfan, DDE, DDT etc.

study of river Yamuna fish *Wallago attu* (Bl. & Schn.). *Sci Total Env*, 309(1-3)(2003), 105-115 [47 Ref].

Various oxidative stress biomarkers in gill, kidney and liver tissues in the Indian freshwater fish *Wallago attu* (Bl. & Schn.) were investigated. Fish were collected from two sites along the river Yamuna, which differ in their extent and type of pollution load. A comparison was made between the biomarker responses and general water chemistry at the two sites. The findings of the present investigation provide a rational use of oxidative stress biomarkers in aquatic ecosystem pollution biomonitoring.


Paper deals with study of some physico-chemical parameters of chemical and dairy effluents, which were dumped near agriculture fields of Bhavnagar. These effluents contain number of elements, which were useful for crops. Chemical effluent contains high amount of metals like Fe, Cu, Zn, Mn, Bo, Cd, Cr and Se, while they were absent in dairy effluents. It is suggested that the dairy effluent is not hazardous for using in irrigation after proper dilution.


A survey was carried out around major industrial cities to study the level of contamination of different polluting elements in water-soil-plant system. The industrial effluents collected from different cities were found contaminated with all major polluting element. It contained TSS, COD, BOD above standard permissible limits for irrigation. The well water from Bharuch site was mainly contaminated with Cr and Mn whereas these from Ankleshwar site contained Fe above the standard limit for irrigation. The well water have shown salinity and alkalinity hazards.


Studies were undertaken for microbiological analysis of drinking water samples from some hotels and schools in Karad, Maharashtra for ‘Most Probabale Number’ (MPN)
for coliforms and water borne enteropathogenic bacteria. Enteropathogenic bacteria like *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Staphylococcus aureus*, *Shigella* species and *E.coli* were commonly found in school and hotel drinking water samples. More than 40% samples showed MPN more than 240 coliforms/100 mL and pathogenic isolates showed resistance to many antibiotics of common use.


Lake Ambegosale shows periodic infestation by *Pistia* sp. for last two-three years. The phosphates were always to be higher (0.0476 mg/l to 0.264 mg/l). Lower values of phosphates coincided with full growth of *Pistia* sp. while higher values coincided with decaying of *Pistia* sp. and its sinking with rainfall. Dissolved oxygen drops down to zero with full growth of *Pistia* sp. but calcium, silicates and hardness do not show any relation with growth of *Pistia* sp. in the lake.


The water quality of different water resources at Sheopurkalan was studied for the assessment of its suitability for drinking purpose. Water samples, collected in rainy, winter and summer seasons, were analysed for various water quality parameters. In urban areas, people mainly depend upon municipal water supply, which often gents contaminated with domestic sewage, resulting in the outbreak of serious waterborne diseases.


Bellary nala which flows through Belgaum city carrying sewage and effluent water of Belgaum which was once a freshwater stream and now turned into a waste stream has been selected for detailed water quality analysis. The study revealed that the surface water flowing through the Bellary nala is completely deteriorated as indicated through dissolved oxygen concentration. It is observed that in industrial patches and adjoining areas of nala flows, there is an increase in salinity content that may turn into saline water in years to come if proper measures are not taken.

The effects of chrome liquor from tannery effluents on the oxygen consumption of the larvivorous fish, *Poecilia reticulata* was studied. Results showed that maximum reduction of oxygen consumption was observed in 60% concentration of the tannery effluent. Further a decrease occurred in oxygen uptake as the concentration of tannery effluent increased.


Water quality variables were monitored at a downstream location in the Tamiraparani river. The presence of monotonic trend in all the water quality variables was confirmed, however, with independent direction of change. The changes induced in river flow by the addition of a stabilizing reservoir, the influence of seasonal and spatial pattern of monsoon rainfall across the river basin and the increased agriculture appear causative factors for the water quality trends seen in the Tamiraparani River system.


Paper discusses the direct and indirect factors affecting microbial fauna of the two water bodies of Jodhpur region. On the basis of the results, interpretation was made that the waters were considered to be unsatisfactory for drinking and other purposes throughout the year. The coliform number was maximum in June and July at Gulab Sagar and Takhat Sagar respectively, Also a tend of the fall of coliform number in winters, rise in summers and again maximum in rains were observed at both the reservoirs.

The studies conducted by NEERI revealed that the condition of the lake is hypereutrophic and the various human activities continue to pollute the lake. Paper describes the status of lake based on the water quality assessment carried out for a period of one year. The condition of the lake is observed to be hypereutrophic and its restoration may take long time because of accumulated nutrients in bottom sediments and continued addition of pollution load.


The presence of acute and prolonged toxicity is inclusive of all the biochemical changes in Sarotherodon mossambicus conducted to assess the precise mechanism of mode and action of Temephos. The LC₅₀ value of Temephos was determined and the biochemical parameters such as SGOT, SGPT, LDH and ACHE has been studied as diagnostic tools. Dose dependent increase in SGOT, SGPT and LDH was noticed in the results obtained. ACHE was inhibited by Temephos.


The application of three hydrophytes, Elchornia, Hydrilla and Vallisnaria, is explored in desalination of desert water as a cheap biotechnological solution to improve the quality of the resource. Hydrilla is found to efficiently reduce the salinity (EC, TDS) by bringing down Na⁺, K⁺, Ca⁺ and SO₄⁻. Vallisnaria too was effective by bringing down Ca⁺, Mg⁺ and Cl⁻. The role of Eichornia in reducing the salinity of water was very efficient through uptake of Na⁺, K⁺, Cl⁻ and SO₄⁻.


The depletion of dissolved oxygen content in tap water and in effluent concentrations caused a stress and altered the normal oxygen consumption. The increase in the rate of oxygen consumption due to depletion of dissolved oxygen was statistically significant (P<0.05). With the increase in effluent concentration, a decrease in oxygen consumption by Labeo rohita was observed but this decrease was not statistically significant (P>0.05).

A hydrochemical study has been carried out on the fresh groundwater resources of Potharlanka, Krishna Delta, India. Extremely low HCO₃/Cl and variable high Mg/Ca (molar ratios) indicated the transformation of the fresh groundwater aquifer systems to saline. A high percentage of the mixed water types indicates the possibility of simultaneous fresh groundwater dilution activity along with a seawater ingestion/intrusion process. Low rainfall and excessive withdrawal of groundwater has caused the increase the saline water intrusion.


Water quality of Hathli stream in Hamirpur district of Himachal Pradesh in lower Himalayan region was monitored. The study reveals that the water in the stream is heavily polluted. The major water quality parameters that exceed the permissible limits are BOD, TDS, hardness and alkalinity. The presence of coliforms is in excessive numbers.


From the analysis of water samples collected from natural springs in Hamirpur area of Himachal Pradesh, it is found that the physicochemical parameters are within the maximum permissible limits of drinking water standards. However, low fluoride and iron is observed in all the spring water samples. The study also reveals that water of the area is very hard and highly alkaline and is dominated by bicarbonate anion with calcium and magnesium cations.


Iron oxide coated activated alumina was tested for its effectiveness as an adsorbent for As(III). The As (III) adsorption was strongly dependent on pH and a maximum
removal of 98% was observed at a pH of 12. It was observed that time taken to attain equilibrium was independent of initial concentration but percentage removal decreased with increasing initial concentration.


In parts of seventy-three blocks and eleven municipalities of eight districts of West Bengal, arsenic has been found to occur in groundwater above permissible limit of 0.05 mg/l. The scientific community is of the opinion that the source of arsenic in groundwater is geological, being derived from various sources within the Bengal Basin both in the Himalayas and in the Peninsular India. But the hypothesis of geological source of arsenic has certain drawbacks, which have been highlighted and an alternative anthropogenic source of arsenic has been discussed.


Attempt has been made to ascertain the present water quality condition of river Ami in relation to paper mill effluent discharge. The samples were collected from the upstream and downstream of the flow-path of the river from point source of pollution by the mill. The high degree of water quality degradation is reflected by the changes in values of BOD, COD, DO, nitrogen contents and chlorides etc in downstream.


Water quality of the river Ambarampalayam has been studied for physical qualities including suspended solids, dissolved solids and electrical conductivity and chemical qualities including the study of pH, carbonates, bicarbonates, alkalinity, etc. In addition, nutrient content of the river was also determined and correlated with the physico-chemical parameters.

Toxicity of tannery effluent to aquatic animals was studied by the standard static biasay procedure. *Cyprinus carpio* (1 g) is the most sensitive and the hindlimb stage *Rana tigrina* is the most tolerant of all the tested animals. Eggs of *Mesogomphys lineatus* and *Culex pipiens quinquefasciatus* were equally sensitive to the effluent. The air-breathing fish *Channa striatus* was the least sensitive among the tested fishes. Sensitivity of the fish to effluent decreased with increasing body weight.


Sanitary land filling, composting and incineration are few of the best-known disposal methods for solid waste. Various physico-chemical characteristics of water collected from in and around dumping yards in the Visakhapatnam city are analysed. The results obtained from the analysis show a significant increase in iron concentration.


The enormous quality of domestic sewage waste water are continuously being added into Gomti river causing changes in the composition of water and ultimately life form of water bodies. This has been indicated by various parameters discussed in this paper. The problem can be controlled by using various mechanical treatments and by product of this treatment can be used to manufacture fertilizer.


Paper deals with the concentration of heavy metals in the highly polluted Hussainsagar Lake. Surface water samples from six spots were collected throughout the lake and heavy metals analysed were manganese, chromium, zinc, molybdenum, lead, cobalt, cadmium and iron. The results have shown that the concentration of iron, zinc, and cobalt is high as compared to WHO and ICMR. The values of other heavy metals are found within permissible limits.

Experiments were conducted on three species of fishes using 5, 10 and 20% volume of Jeedimetla nallah wastewater and were observed for the signs of survival within the specified period of time. The TLm value for 96 hours test period was found to be 17%. Similarly toxicity studies were carried out on Hussainsagar lake water with dilution varying from 10-100%. Absence of mortality during 96 hours of test period indicates that there is no acute toxicity of Hussainsagar lake water to fishes.


In the study area, situated in the Ranga Reddy district, Andhra Pradesh, the concentrations of fluoride in the groundwater vary from 0.7 to 4.80 mg/l and from 0.4 to 4.20 mg/l during the pre and post-monsoon seasons respectively. By contrast, the fluoride concentration in many places was relatively high during the post-monsoon period. This indicates contamination of groundwater from surface pollutants.


Hydrogeochemical investigation were carried out in the south-eastern part of the Ranga Reddy district, Hyderabad, India, to assess the quality of groundwater for its suitability for domestic and irrigation purposes. The results showed that the concentrations of these ions are above the permissible limits for drinking and irrigation purposes. The pollution with respect to NO₃⁻, Cl⁻, and F is mainly attributed to the extensive use of fertilizers and large-scale discharge of municipal wastes into the open drainage system of the area.


Among the environmental pollutants, cadmium merits a special reference as a potentially toxic element. This leads to potential health hazard to men and animals. Several techniques are available for the removal of heavy metals from aqueous medium. Paper deals with the investigation on the use of Artocarpus heterophyllus (jack fruit) bark for the removal of heavy metals.

Municipal wastes and industrial effluents contribute number of heavy metals to the aquatic environment. Heavy metals and persistent chemicals and survival of aquatic organisms exposed to heavy metals depends upon their tolerance capacity. The work investigates the effects of copper sulphate on physico-chemical and biological parameters and also on the diversity of algae and protozoa of sewage stabilization ponds under laboratory conditions.


Groundwater samples in and around Bhanja Bihar were analysed to determine their total dissolved solids as well as the concentration of major ions. Analysis results show that the groundwater is fit for human consumption as far as their major ions are concerned and the said ions are within the permissible limits, set by ISI, ICMR and WHO. The Cl⁻/HCO₃⁻, and Mg⁺⁺ / Ca⁺⁺ values clearly indicate that the aquifers are free from any salt water ingress from the sea as is the case with several localities along the coast.


Twenty-nine dug well samples have been collected from the Gambhir River basin in the Bharatpur District of Rajasthan State in India for hydrogeochemical study to understand the sources of dissolved ions and assess the chemical quality of the water. The groundwaters have a chemical composition within the permissible limits suggested for drinking water. Nitrate is higher than the acceptable limit in some samples, due to the use of fertilizers.


Salinity is the most common pollutant in groundwaters near coastal areas. Intrusion of saline water occurs where it displaces or mixes with freshwater in an aquifer. The phenomenon can occur in deep aquifers with the upward advance of saline waters of
geologic origin. The possibility of encroachment of seawater in coastal areas of Visakhapatnam has been studied.


Water is a natural resource of fundamental importance. The quality of water depends upon the location of the source and the state of environmental protection in a given area. For water to be potable it should be of right quality, i.e. safe and wholesome. A ground water quality survey has been carried out in and around Shivajipalem, a solid waste dump yard to assess the extent of ground water pollution and the suitability of water of use.

**0303-128.** Varadarajan N, Purandara BK (Natl Inst Hydro, Regl Cent, Hanuman Nagar, Belgaum 590001, Karnataka). *Hydrochemical characteristics of groundwater: a case study. Eco Env Conserv, 9(3)(2003), 253-262 [8 Ref].*

The chemical characteristics of groundwater in Malaprabha Sub-basin of Belgaum District, Karnataka have been studied during the pre-monsoon and post-monsoon seasons to evaluate the suitability of water for domestic and irrigation purpose. The quality of groundwater in the upstream region of the sub basin is quite acceptable for both the uses, whereas in the downstream region various parameters exceed the acceptable limits due to excessive irrigation by excess application of fertilizers and pesticides. In addition to this fluoride is observed in excess along the downstream region of the sub basin.


Experiments were carried out in a batch process for removing color of methylene blue, a basic dye, from its aqueous solution by adsorption technique using boiler bottom ash as an adsorbent. The operating variable studied were initial concentration and adsorbent dosage. Up to 100% color removal was obtained at lower initial concentration of less than 15 mg/l.

Paper deals with pollution of water from an oil mill processing soybean seeds for production of refined soya oil. The effluent samples were analyzed for several physico-chemical characteristics to analyze the extent of water pollution. The results show that the effluent coming out of oil processing is heavily polluted and required proper treatment before it is discharged on land or utilized in horticulture and agriculture.


Physico-chemical studies regarding the water quality assessment of some villages of Behror Tehsil was conducted. The value of these parameters shows the water quality is totally unfit for drinking purpose because all the water bodies were found to contain high levels of inorganic salts, nitrate, fluoride and hardness which is harmful for the health of the consumer.