

Iron in the Environment

R. K. Kamble, M. G. Thakare and A. B. Ingle

Sardar Patel Mahavidyalaya, Department of Environmental Science, Chandrapur - 442 402

Iron is the second most abundant metal in the earth's crust, of which it accounts for about 5 %. Iron is most commonly found in nature in the form of its oxides. Iron concentration at 0.3 ppm is essential in drinking water whereas elevated concentration causes adverse impacts on aesthetic quality. An attempt has been made to record the presence of iron in different environmental matrices, such as air, water, soil, food, its effects on plants, animals including human beings.

KEYWORD

Iron, Mineral, Trace element, Heavy metal, Metal, Haematite.

Micro-Level Evaluation of Hydrogeological Studies and Groundwater Prospects in and Around Pendlimarri Area, Kadapa District by Using Remote Sensing and GIS

G. Sudarsana Raju and M. Ravikumar

Yogi Vermana University, Department of Geology and Geoinformatics, Kadapa - 516 003

Micro-level evaluation of hydrogeological studies of pendlimarri area has been carried out by using IRS 1D LISS 111. The hydrological conditions of the lithological units form the base for this study. In fact, the lithology controls the ground water in terms of formation of aquifers, porosity, both primary and secondary and the quality. The area is mostly composed of quartzites, shales and limestones. Most of the lithological units are aquifuge and aquitard in nature. There is no primary porosity. It is only the secondary porosity in the form of lineaments that have helped in the infiltration of water.

Sulphate-Induced Heave in Non-Swelling Soil in Acidic Environment

B. Guru Prasad

Irrigation and Command Area Development Department, Andhra Pradesh

Sulphate in acidic environment can cause abnormal volume changes in red earth, rich in non-swelling kaolinite mineral, due to mineralogical alterations. Sulphuric acid solutions of varying concentration are used to induce sulphate content in acidic environment, which is a very common cause of acid sulphate soil contamination. Unexpected swell is observed due to prolonged interaction of specimens with inundated sulphuric acid solutions in oedometer under nominal surcharge. Disruption of H-bonding between successive sheets of kaolinite and formation of new minerals are responsible for the observed non-hyperbolic nature of time swell relationships. The important mineralogical change in kaolinitic soil is the formation of rozenite, an iron sulphate mineral, as established by x-ray diffraction studies. Further, the mineralogical and morphological changes are confirmed by scanning electron microscopy and energy dispersive analysis of x-ray studies.

KEYWORD

Clays, Contaminated land, Mineralogy, Soil/structure interaction, Laboratory tests, Consolidation, Microscopy.

A Study on the Impact of Industrial and Urban Development in Bongaigaon Town, Assam Based on Water Quality Index of the Tunia River

Dhwajendra Nath Das, A.K. Barua, M.L. Das and Pradip Sharma
Pollution Central Board, Assam, Bamunimaidan, Guwahati - 781 021

The water quality of the Tunia river is being gradually deteriorated due to adverse impact of industrial and urban development in the Bongaigaon town in the lower Assam region. Various industrial and commercial units, such as refinery, tea, coke, hotel and restaurant, hospital and nursing homes, automobile repairing and service centers alongwith other tertiary units discharges their treated and untreated effluents into the Tunia river which is finally debouch into the mighty river Brahmaputra through the Champamati river. The river also receives wastewater from the Bongaigaon town and railway colony area alongwith sewages from the New Bongaigaon Railway Junction. The water quality is evaluated on basis of the National Sanitation Foundation Water Quality Index (NSFWQI). The index value shows the impact of industrial and urban developments which are directly affecting the physico-chemical and bacteriological quality of river water and subsequently, altering the whole river eco system.

KEYWORD

Tunia river, Effluent, Physico-chemical, Bacteriological, Pollution, Water quality index.

Assessment of Water Harvesting Potential of Bhima River Basin

P. S. Rajpoot

Mahatma Gandhi Chittrakoot Gramodaya Vishwavidyalaya, Department of Geology, Faculty of Science and Environmental Science, Chittrakoot-485 780, Satna

Bhima river is the tributary of Krishna river and covers area of 52200.29 km² of Maharashtra. Bhima river basin is the part of Deccan plateau and parental rock is volcanic igneous. Solapur district is situated in Bhima river basin and facing water scarcity problem in maximum part of year. Annually rainfall of this area is 561.78 mm. Surface runoff of Bhima river basin is 11041.78x10⁶ CM annually which is a huge amount. So we can say that basin has a good potential of water for harvesting which can be used for different purposes as domestic, agricultural and industrial and harvesting structure will help to increase the recharging capacity of area.

KEYWORD

Bhima river, Water harvesting, Runoff, Relational method, Solapur.

Environmental Mercury Pollution in Waters due to Rapid Urbanization - A Case Study

K. Jayaprakash and R. Anandan

Karpaga Vinayaga College of Engineering and Technology, Department of Biotechnology, Kanchipuram-603 308

Mercury is a toxic metal element. Industrial development and human activities have been increased the discharge of mercury in environmental media. The environmental mercury is transformed into poisonous organic methyl species by soil microorganisms. Methyl mercury is the easily observed form of chemical substances by the aquatic animals. Now the rapid urbanization have also been contributed significant mercury pollution, due to the leaching of mercury from e-waste dumping. The aim of this present study is determination of mercury pollution in a lake water where large number of CFL bulbs are dumped. The water samples and bio tissue samples of certain aquatic organisms habited in this lake had shown an elevated level of mercury in their tissues. The results have exhibited that the tissues of crab had 1.76 mg.Hg/1 kg dry mass weight against the control water crabs (0.81 mg.Hg/1kg dry mass weight) likewise the other aquatic species studied in this work, such as water beetles, tad pole, fishes and crane have also shown similar trend of mercury bioaccumulation in their tissues. This would suggest that e-waste may be the determinant factor for the mercury contamination. The results are discussed with safe disposal of spent bulbs in the interest of environmental protection.

KEYWORD

Mercury discharge from CFL spent bulbs, Mercury contamination due to e-waste, Bioaccumulation of mercury due to e-waste, Biomagnifications of mercury through e-waste dumping.

Villagewise Studies on Lineament and Groundwater Potential in and Around Pendlimarri Area, Kadapa District

G. Sudarsana Raju

*Yogi Vemana University, Department of Geology and Geoinformatics,
Kadapa - 516 003*

Villagewise lineaments studies of Pendlimarri area has been carried out by using IRS 1D LISS 111. Lineaments are very important in the analysis of ground water, as they act as secondary porosity in the rocks that are of aquifuge or aquitard nature. The degree of intensity of lineaments depends up on the lithology of the rock. In most of the cases, the lineaments are easy to recognize in a satellite image or in a topographical map. In the later case, the drainage in most of the cases is the reflection of lineaments as it is controlled by the structure.

Life Cycle Assessment of Buildings

M. Viswanadham and S. Eshwariah

A. P. State Housing Corporation Ltd., Hyderabad-500 029

In this paper an effort is made to analyse the requirements of green buildings. The conflict between the building industry and the concern for the environment are discussed. The various steps followed in making life cycle assessment of the buildings are discussed. It is focussed on how LCA is used to evaluate the environmental impact assessment of the Buildings.

Developing Participatory Hygiene Education Material

Ashok Dhariwal

Jai Narain Vyas University, Department of Civil Engineering, Faculty of Engineering, M.B.M. Engineering College, Jodhpur - 342 011

Water supply and sanitation programmes generally aim to improve public health through the reduction of diseases that are water and sanitation related. Hygiene education has increasingly become an important and inseparable component of any water and sanitation programme especially in developing countries. Hygiene education seeks to encourage a target audience to utilise the resources available to them to achieve optimum health. It also serves to empower people to initiate programmes or activities that will ultimately improve their health. The use of visual aids promotes the impact of this process.