SYNTHESIS AND FORMULATION OF NEW EPOXY BASED ANTICORROSIVE PAINTS FROM INDIGENOUS SOURCES AND COMMERCIALLY AVAILABLE POLYMERIC PAINTS AND THEIR CHARACTERIZATION

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This paper assesses the existing pollution status of water quality of the 14 major drains entering in the river Yamuna at Delhi, during the calendar year of 1999-2000. Season-wise physico-chemical characteristics were performed as per APHA-AWWA standard methods viz. pH, temperature, color, conductivity, dissolved oxygen, biological oxygen demand, chemical oxygen demand, total dissolved solids, suspended solids, chloride ions, residual chlorine, turbidity, sulfates, total hardness, calcium and magnesium hardness, salinity, chlorosity, refractive index and the free carbondioxide. The quantitative determination of heavy metals i.e.Cd, Cr, Cu, Fe, Ni, Pb and Zn was also carried out. The pH values of drains water on annual basis varies from 6.60 to 7.83, temperature from 12 to 26, TDS from 0.21 to 2.98 mg/l, the turbidity from 1.2 to 37.7 NTU, conductivity ranges from 0.42 to1.62 mS/cm at 250C and dissolved oxygen from 0.30 to 8.26mg/l. The chloride contents varies from 20.2 to 385.9 mg/l and the total hardness from 114 to 580 mg/l. The alkalinity ranges from 10 to 70 mg/l. The salinity from 0.032 to 0.045 mg/l. The concentrations of the heavy metals were above the permissible limits through out the stretch under study.

Introduction

In the closing decades of the 20th century environmental pollution emerged as a major concern for the survival and welfare of mankind through out the world. Modern civilization, armed with rapidly advancing technology and fast growing economic system is under increasing threat from its own activities causing water pollution. Water is the basic component of life and therefore its vital importance (IJEH 1989).

The river Yamuna, is the largest tributary of river Ganga originated from Yamunotri glacier of Himalayas, and has been one of the most sacred river of India, used for irrigation and industrial purpose (POLL Res. 18 1 109-10 1999). The river enters Delhi near Palla Village after traversing a route of about 224 km. The National capital Territory of Delhi covers an area of 1483 km2 of this 797.66 km2 is rural and remaining 685.34 km2 urban (IJEP 26 2000). The industrial development in Delhi has emerged in a

haphazard manner. The effluent released by technologies activities of mankind pose a serious threat for the environment (Env Poll. 113 2001). Any change in the environment leads to the variation in the plankton population with reference to their tolerance, dominance and diversity. (Asian j of Micro biotech 2 3-4 2000 145-149). The river Yamuna is trapped at Wazirabad through a barrage for drinking water supply to Delhi. In the down stream of Wazirabad the water flows is the untreated or partially treated domestic and industrial waste water contributed through 19 major drains. Drains 1-15 meet river Yamuna upstream of Okhla barrage whearas drains 16 and 17 are discharged in Agra canal . The primary and untreated effluent from Okhla sewage plant meets river Yamuna downstream of Okhla barrage and the municipal waste from Shahdara drain which meets river Yamuna out side the union territory of Delhi.

The total waste water generation in Delhi is estimated at about 2160 mld against the water supply as 2700 mld . The growth of industries in Delhi after independence has closely followed the rise in the population. The total number of industries in Delhi was around 18500 in the year 1961 which steeply increased to about 93000 by 1993 (cpcb NAAQM/8/1996-97) .

In the metropolis cities with rapid industrialization and urbanization produces the huge quantities of waste water (IJEP 1991 POLL Res 1999) which is regularly discharged into the Yamuna river through various drains (IJEH 1984). In India, about 40% sewage and domestic waste water is disposed off on land is the most important human activity that contaminate the soil and aqueous stream with large quantities of toxic metals (Seaword crc prees 1990), and the remaining is drawn into different water bodies with or without little treatment (Mohan Rao 1973 & Oriental j of chem. 1999).

The sewage can find its way into the river Yamuna only through the 19 storm water drains, either open or closed, laid in different parts of Delhi. The sewage drain which carries industrial and community wastes do not actually enters the Yamuna, but are discharged themselves into the   trunk and outfall sewers which go to the sewage treatment plants. Afrter treatment the water is used for irrigation because it is rich in organic matter, used as fertilizers (Lunt 1963 day Trucker 1977). The pollution of drain water increased in the rainy season as the distance of travel of storm water increases (IJEP 1997).

Keeping these facts in mind we propose to study the water quality of 14 major drains of National capital territory of Delhi, for a period of two years 1999-2000.

Methods and Materials

The water samples were collected from the different drains in a routine manner from all the 14 sampling stations during winter, summer and rainy seasons of year 1999-2000 before they discharged their contents into the river. The drains were monitored on its 22 km stretch from Wazirabad barrage to Okhla barrage. Locations of the sampling spots are shown in fig 1. The pollution stretch covers the critical zone of heavy pollution where various drains of city and outlets from the factories fall into the river. The samples were collected in thoroughly cleaned polyethylene bottles ensuring proper preservation as per the standard methods (APHA). For BOD the samples collected in a BOD bottles.

Various physico-chemical characteristics were analyzed according to the laboratory standard methods. The heavy metal concentration was determined by digesting the water samples with concentrated HNO3 and then analyzed by Atomic Absorption Spectroscopy (AAS).

Result and Discussion

The various physico-chemical parameters determined for samples collected season-wise i.e. winter from November to Feburary, summer from March to june and rainy season from July to September from 19 sampling stations are given in Tables 1-2.

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Table I hysico-chemical characteristics of Rainy Season							
Parameters	Najafgarh	Magzine Road	Khyber pass	Metcalf House	Kudesia bagh	Delhi gate	Sen Nurshing home
	3.2	10.74	120	22	0.986	1.515	0.752
BPEAU-6	2.9	9.68	110	18	0.989	1.516	0.761
BPEAU-8	2.6	8.42	106	13	0.991	1.519	0.768