

**ASSESSMENT OF POLLUTION LOAD IN MARBLE WASTE
WATER AND THEIR UTILIZATION**



**A thesis submitted to Bahria University, Islamabad in partial fulfillment of the
requirement for the degree of BS in Environmental Sciences**

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DEDICATION

I would like to dedicate my thesis to my beloved Parents Mr and Mrs Dr. Ameer Haider my brother Adnan Haider and venerable faculty members who supported me and their unceasing encouragement and cooperation helped me to complete this task and throughout my academic career and my friends whose unexhausted efforts and collaboration made thesis compiled and assisted in the completion of this degree

ABSTRACT

The current research was conducted to investigate pollution load in marble wastewater of marble industries in Khairabad District Nowshera Khyber Pakhtun Khwa (KPK) Pakistan and role of marble industries to pollute river kabul passing through Jehangira and Khairabad District Nowshera KPK. Also this study includes possible utilization for marble waste and control of marble waste. For this purpose water sample are taken from different locations along the length of river kabul and from marble industries. Physical parameter like pH, temperature, colour , electrical conductivity were analysed on field and some other parameters like Total Suspended solids (TSS) and Total Dissolved Solids (TDS) were analysed in laboratory using standard methods. The results were compared with standard values of National Environmental Quality Standards (NEQS).Settling tank were constructed in marble industry for collection of TSS. TSS is then removes from settling tanks and dry in sun light which is then converted into powder form. Mixing of marble powder in different ratio with cement and concrete and made different products like construction blocks and decoration pieces. The results show that almost all physical parameters were found under permissible limit of NEQs of Pakistan except electrical conductivity and TSS in some industrial effluents. Comparison of results of sample collected from river before marble industries and after industries shows a little difference in pH, Temperature, Electrical conductivity and in TSS. Mixing of waste marble powder with cement, concrete in different ratio has positive result in construction blocks. According to current research suggested that marble waste powder can be easily utilized in construction blocks. However detailed study should be conducted for more utilization options of marble waste and analysis of heavy metals in marble industries effluents.

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ABRIVATIONS

EC	Electrical Conductivity
MOE	Ministry of Environment
ND	Not Defined
NEQS	National Environmental Quality Standards
NWP	National Water Policy
PCRWR	Pakistan Council of Research in Water Resources
PEPA	Pakistan Environmental Protection Agency
SOE	State of Environment
SOP	Standard Operating Procedures
PSQCA	Pakistan Standard Quality Control Authority
TDS	Total Dissolved Solids
TS	Total Solids
TSS	Total Suspended Solids
WHO	World Health Organization
$\mu\text{S/cm}$	Micro Siemens per centimetre
mg/L	Milligrams per litter
WMD	Waste Marble Dust

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