PREFACE
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Water is one of the broadly spread Natural resource all over the surface of earth occurring in the form of oceans, rivers, lakes, springs and streams. In addition there is groundwater too, which lie down under the earth crust. Groundwater act as reservoir by good quality of large holes space in earth material, as a behavior, can transport water over long distance. While moving, it dissolve number of salts and mineral of host rocks through it moves and become testy as well as potable. However, in many parts of India as well as in Maharashtra state, growth are there all over India and this growth has played very important role in speeding an industrial culture in the hinterland of the state. This has further laid to an emergency of many fields of industrial activities like pharmaceuticals, textile, distilleries, paper and pulp, dairies etc. in the urban and rural areas of the state. These industries, especially in Maharashtra hold the key position in governing the economy, education and politics of the state, due to the industrial revolution it had adverse effect on the quality groundwater which becomes unsuitable for drinking and other purposes due to the industrial activities (effluents) and man made pollution. A biological contamination is also occurs due to human activities (domestic waste) along with industrialization effluents in urban as well as rural parts of the state.

Since independence, India has experienced a process of rapid industrialization and urbanization. This changes has helped the country positively in its economic stability and growth but on the other hand the negative aspects caused numerous problems like lack of fresh air, safe drinking water, decrease the soil fertility due to inadequate of quality and huge quantity of waste disposal. The migration of the villagers to urban areas for searching for jobs causing
increased population concentration and multiplying the problems which already exist in the urban society. This increased congestion and consequent pollution coupled with deterioration in basic services in the urban setting and has resulted into poor quality of life.

Aurangabad is considered as an industrial city in Maharashtra state since three decades along with Mumbai, Pune and Nasik therefore it is threatened by environmental pollution.

Aurangabad district situated in the central part of Maharashtra state and it is an elevated land, which has been incised by the Godavari river and its tributaries in the southern part. Except for small portion in the north and northwest, which belongs to the Tapi drainage, the entire district falls in the Godavari basin and due to its situation near Godavari river it attract many industries and many large and small scale industries have been started in the recent past. Maharashtra industrial development corporation has developed industrial estates at Aurangabad, Waluj. Aurangabad area is 10107.00 squar Km and has a population of 36737 in 1931 that means approximatilty four person per square kilometer, it reached to 880864 according to 2001 census 87 person per square kilometer and it reached 15,46378 according to 2011 census 153 person per square kilometer.

The main factors responsible for the rapid growth of Aurangabad city, during last 3 decades, can be attributed to the (i) rapid expansion of its industrial sector and (ii) growth of educational facilities. Hence, now it is a million-plus emerging city in the State of Maharashtra and therefore is facing threatening by environmental pollution (air, surface water, groundwater and soil).

Many issues responsible for the environmental pollution (air, surface water, groundwater and soil). These issues can be as follow:
The first issue of total environmental pollution in general and specially water pollution is after the Indian independence, Indian got themselves in front of a very big challenges of developments in all the aspects of life that is education, industrialization, health, economy and other so many difficulties and challenges, but due to the reality of the Indian aspire to reach to the modern civilization like other developed nations in a very short period so the huge and fast development in the industrialization, agriculture, education, information revolution etc. which lead the Indian economy to be stable that is due to right planning in the all life aspects. Now a days India now is struggling to be with those nations standing on the top of the world triangle this industrialization revolution resulted in the form of industrial pollution (untreated effluents) water, air, soil pollution due to dumping of the industrial waste on or in the land subsequently so an need has arise to review and take awareness of the other associated problems of environment like air, soil, and water pollution etc. Recently, identified severe stress on natural water in rural and urban areas.

The second issue is rapidly, tremendously, randomly increasing of population along with the huge industrial effluents lead to more attention in front of the government where in all these cases both drainages and industrial effluents scientifically planned network are very important so that Strict implementation of environmental laws is only the solution which will definitely decrease the side affect of such activities. No doubt these will be so costly and very difficult, 

The third issue is the spread of the urbanization horizontally more than vertically that will go ahead to consume more ground water basins and at the same time also it emerge more sewage pollution due to more quantity of sewage to the soil leading both soil and water
pollution. Resulted of this issue killing the agricultural lands and destroying the green areas associated with other environmental problems.

Sewer system in Aurangabad city is of both types, that is underground as well as open drainage (nallas, Sukhna and Kham river) which becomes a source of domestic effluents. The layer which lay underground the sewer, and this sewer which is also surrounds some localities of the city, and also the river banks which is passing near by the ground water basins is absolutely threatens the ground water and the surface water in the city it self and the surrounding areas and the small societies and villages situated near the sewer banks Aurangabad district.

The industrial development and disposal of wastewater emerging from these industries with or without proper treatment has been cause of deterioration of surface and groundwater, and soil quality.

Fifth issue is that since the geographic fature of Marathwada region including the capital Aurangabad three all the rivers (Godavari, Kham, and Sukhna) can be polluted if there is no applying attention to these issues.

The adversely affecting unsuitable water supply for agricultural use will definitely affect on the soil fertility, the widespread relation of chemistry of surface as well as on groundwater and soil, study has been carried out by a few number of workers since last few decades in the rural part of Marathwada regio of Maharashtra state. However, limited data are available regarding the effect of industrial effluent on the groundwater, soil quality. Taking into account, several factors, affecting the water and soil quality in the urban area and since there is no previous, study has been done related to the impact of industrial
waste water from Waluj on groundwater quality and also domestic &
industrial waste water from Aurangabad city itself where these waste
is going to Waluj through effluents stream. In Marathwada district
during last three decades where the industrial activities was
established, no one can imagined that in Waluj industrial area the
number of factories are 2750 situated on just 13.6 square km because
of all these issues the present investigation was undertaken to assess
the impact of industrial waste on the of groundwater quality and soil
from Walju industrial area to create data base in this regard. The work
includes the physico-chemical and biological aspects including heavy
metals investigation, sampling and collection of the ground water, soil
and effluents physicochemical characteristics, spatial variation,
hydrochemical facies, quality of water for different use and water
properties in relation to soil.

Therefore, taking into account several factors attacking the
water quality and also the dependence of rural population on
groundwater quality as a chief source for drinking water and
agriculture, the present investigation is carried out to assess the
impact of different industries on the ground water and soil form the
Aurangabad industrial zone in Maharashtra state.

In hydro geological investigation a short account of geology
and hydrology of area under study is given. Similarly, well inventory
of the dug wells has been conducted during study period from the
area to know the diameter, depth of water table and depth of well and
number of lined and unlined wells which was essential for
understanding the groundwater movement in the area under study.

The planning of sampling was done by knowing the
topography, agricultural practice (pattern), environmental behavioral
pattern of the area.
In all 10 sampling stations (dug well/bore wells) were selected from Waluj stations and samples were collected seasonally during the year 2006-2007, 2007-2008 and 2008-2009 for analysis. However, soil sample were collected only two times during the study period.

All samples were subjected to physicochemical analysis by referring the standard methods to determine pH, Electrical Conductivity, Total Dissolved Solids, Hardness, Alkalinity, Dissolved Oxygen, Biological Oxygen Demand, Chemical Oxygen Demand, Chlorides, Sulphate and Nitrates etc. Results obtained after analysis were correlated with each other to find out spatial and temporal variations of chemical constituents in turn and hydro-chemical facies. The result (values) of chemical parameters are used to assess the quality of water by correlating with standards and adapting indexes like Sodium Absorption Ratio, Residual Sodium Carbonate, Kelloy’s Index, Soluble sodium Percentage, Scholler Index and salinity hazard diagram. Correlation matrix of soil and groundwater (water used to irrigate same soil) was done and the impact of water on soil was assessed. Similarly, attempt has been made to categorize soil in different types on the basis of Exchangeable Sodium Percentage with spatial variations.

The work on different aspects has been presented in the form of thesis, which includes preface, introduction, material and methods, results and discussion with reference to quality of water and soil properties in relation with water summary & conclusion and references, with the hope that the finding arrived in this work will be valuable to others who will carry subsequent investigations in different areas.
Elsewhere more details from different angles, the findings may have some practical importance in planning and management of water and soil for various purposes, particularly in the industrial areas.

In order to understand the environmental impact of urbanization, one must try to understand the relationship between land and man. This is the medium on which the super-structure of human settlements is created in other words, human interaction both brings about a change in the organic relationship and hastens the pace of change. When land is properly managed, it generally tends to be where human activities tend to be agricultural, pastoral and forestry based, the ecological system tends towards equilibrium. Where, however, land is mismanaged and exploited, there is environmental degradation. Even without a comparison to the ecological balance, which exists in a state of nature, one can gauge the imbalances, which have overtaken the system by comparing the even tenured, finely balanced of the not too distant past and the situation, which prevails today.