

GENERAL INTRODUCTION OF WATER IN DISTRICT HANUMANGARH (RAJASTHAN)

Satveer Singh

Research Scholar

Department of Chemistry

OPJS University, Churu, Rajasthan

Dr. Satyavir Singh

Professor

Department of Chemistry

OPJS University, Churu, Rajasthan

ABSTRACT

Water is a important Planning, development and prime natural national & global perspectives precious resource, country, the availability from a basic human need and a by national need to be governed. Water is a most common liquid. It plays important role on this planet (Earth) for the existence of life. Therefore water and waste water has become increasingly important for many reasons. Accordingly a rapid and systematic examination of them is necessary.

KEYWORDS: Water, earth

INTRODUCTION

Water is a very important inexhaustible natural resource, it is not only makes up to 70 to 90% of weight of most form of life but also represents the continuous phase of living organisms. Water is essential for the life and growth of human, animals, and plants. It maintains the body fluid and regulates the body temperature. It helps in removing the body’s waste in the form of sweat and Urine. Water is essential for multiplicity of purposes, viz., drinking, cooking, and bathing, washing laundering ablution, domestic sanitation, agriculture, power generation, transportation and waste disposal. In the chemical process industrial water is used as a reaction medium, a scrubbing medium and a heat transfer agent. This is the important point to note that in early time’s habitation used to be near rivers, lakes and springs without water there would have been no life.

Different forms of water on earth are given below in the table:-

S.No.	Different form of water on Earth	Availability in
1	Water vapour & clouds	Sky
2	Sea water	Ocean
3	Iceberg	Polar Ocean
4	Glaciers	Mountains
5	Fresh and salt water lakes, river & aquifers	Ground

Water is a chemical compound consisting of one volume of Oxygen and two volumes of hydrogen. In the form of water vapour, it is very pure, but when it comes on the earth in the form of rain, it arrests atmospheric and surface impurities. It is very good solvent therefore, it is polluted easily and is never found in absolutely pure form. Our existence totally depends on water.

Some Hydrophilic and Hydrophobic substances are given below in the table:-

Hydrophilic(water-loving)	Oxygen, Carbon dioxide, Acids, Alkalis, sugar, salts etc.
Hydrophobic(water-fearing)	Fats & Oils etc.

1. Availability of water on the earth:-

- 97.61% water is amassed in the oceans.
- 2.08% water is locked up in polar ice and glaciers.
- 0.31% water is in lakes, surface rocks and soils, rivers and atmosphere.

2. The time of hydrologic or water cycle within hydrosphere:-

However the availability of fresh water is virtually tremendous because of its rapid renewal time; for example. The renewal time is just 12-20 days for rivers, 300 years for ground water and up to 100 years for fresh water lakes (Kayastha S.L. 1981). On earth the availability of fresh water through precipitation is 105000 km. Out of this one third reaches the oceans through rivers, 2/3 is returned back to atmosphere by evaporation and transpiration of plants.

3. Classification of water:-

Water is usually classified as “Hard” and “Soft” according the concentration of magnesium and calcium ions. These ions when present in high concentration, the capacity to water to lather with soap is reduced and such waters are generally termed as “Hard water”. A soft water is one which produces lather easily with the soap. The degree of hardness, however, is indicated by the term, moderately hard, hard and very hard.

4. Other forms of water:-

A water in which calcium salts predominant is called “calcareous” and if these are exclusively carbonate, then the water is “carbonated”.

When magnesium salts predominant it is “Magnesia” water.

If magnesium is present as magnesium sulphate then the water is referred “sulphated”. The term “Saline” is applicable to waters containing sodium chloride present in more than usual quantities. When nitrates are present in unusual amounts. The water is said to be “Nitrated”.

If iron is present in amount discernible by taste, then the water is termed as “Ferruginous”.

In the present day, Public Health Engineering Department (PHED) is taking care to make water safe for consumption by doing chlorination and filtration. The water treatment facility is not available at rural levels. Further, The availability in sufficient quantities of treated water in the urban areas is limited and compelling the peoples to the use other water sources, such as bore wells, step wells, conventional cylindrical wells etc. to meet their potable water requirement. This necessitates the examination of the waters of these sources for their quality determination in respect of chlorides, harmful gases, hardness, nitrates, total dissolved solids, Iron, fluorides and bacterial counts etc.

In Rajasthan, owing to the scarcity of drinking water and the use of the same water sources for verities of purposes, the source itself gets heavily polluted. These jackpots of disease carrying pathogens and other pollutants then wrought havoc in the human communities depending on the affiliated water sources-further; the dubious claims made by health authorities about the safety of drinking water create complication in the public health management.

WATER SCENARIO IN INDIA

Water is a important Planning, development and prime natural national & global perspectives precious resource, country, the availability from a basic human need and a by national need to be governed. As per the latest asset. management of water the ground topographical and other the total precipitation resources about 58% water is put at 1869 442 cubic assessment, out of, including snowfall, of billion of around 4000 of i.e. 670 billion this constraints, metre from surface and replenish able Availability water billion cubic metre from billion ground water, can be put to beneficial cubic metre in surface water of water is highly Precipitation is mm in the western cubic metre. Because and use. Uneven month Rivers and under year and in both space and time.

The substantial proportion is from resource has become ground water irrigation due to higher yields drinking water and food security in ground water irrigated areas. This an important for domestic use source of for teeming millions of the country. It provides and industrial areas. 80 percent of water in

rural areas and about strengthened the 50 Revolution and also percent of water for urban The significant water as dependable source contribution made for Green as primary reliable the importance and source of irrigation during drought years has further treated as an essential environment people's faith in utilization of ground. Water precious national resource is part of a larger ecological attached to the fresh water, system. Realizing scarcity it has to be for sustaining all life forms. Water environmentally conserved and managed is a , and on an integrated scarce such sound basis, keeping in economic aspects and needs view and to be planned, developed, and as the socio- of the States.

It is one of the most crucial the manage this important century, efforts to develop elements in developmental planning. As resource in a sustainable country guided by the vast Out of 40 million hectare of national transcending state boundaries have perspective droughts affect areas of has entered the 21st, conserve, utilize and manner affect an area is drought-prone, to be. Floods and the country,. One-sixth tons in the fifties of food grains has area of the country floods. the flood prone million tons, of around 7.5 million area in the 50 million increased drinking water needs the have to be tons in the country, on an average around hectare per year. Production to be met.350 about 208 million year 2025 AD. The people and livestock have also from around to Year 1999-2000. This will rise to by Domestic and industrial water demand in rural areas needs have largely been concentrated in or near development programs major cities. However, the is expected to increase sharply for hydro and thermal as the improve economic conditions of the rural uses is also increasing masses. Demand for water power generation and a scarce resource, will become for other industrial substantially. As a the need for the utmost result, water, which is already even scarcer in future. This of utilization and a public awareness the importance of its conservation underscores efficiency in water.

Pollutants are being added to the waste from industrial units is being groundwater system through and is subjected to human activities and natural processes. Solid dumped near groundwater level. The percolating the factories, reaction with percolating constituents and reaches rainwater and reaches the water picks up groundwater. The problem of a large amount of dissolved the aquifer system has become so acute that and contaminates the groundwater pollution in several groundwater resources may be parts of the country unless urgent steps for large number of individual abatement are taken, damaged. The quality of groundwater depends on hydrological physical, chemical and biological factors.

Generally higher proportions water because of greater interaction of dissolved constituents are found in geologic strata. The in groundwater than in surface of ground for drinking water with various materials water used purpose should be free living and nonliving organism from any toxic elements, and excessive amount of extremely essential to humans minerals that may be hazardous to health. Some of quantities of them may cause physiological the heavy metals are, for example, groundwater by heavy metals has Cobalt, Copper, etc., but large disorders. The due to significance during recent behavior their toxicity contamination of assumed years and accumulative great. These elements, contrary to biological cycle in most pollutants, are not biodegradable and undergo a global environmental research the concentration eco- which natural waters are the main pathways. The elucidation of the chemical which they appear is determination of levels of heavy metals in these waters, as problems are caused well as the forms in a prime target in today. A vast combination of the two majority of groundwater quality by contamination, to detect & hard to resolve over-exploitation, or Most groundwater quality problems consuming & not always effective are difficult. The solutions are usually many parts of our country very expensive, time.

A two alarming picture is beginning to is intrinsically difficult emerge in. Groundwater quality is slowly but problem may well be concealed surely declining everywhere. Groundwater time consuming & pollution to detect, since below the surface & monitoring contamination is not detected is costly, somewhat hit-or-miss by nature. Many which time the pollution times the until obnoxious substances

actually all activities carried appear in water used, by has often dispersed over a large groundwater, whether area. Essentially out on land have the potential to Large scale, concentrated sources contaminate the associated with urban, industrial landfills & subsurface injection or agricultural activities. Of obvious source of groundwater pollution such as industrial discharges, of chemicals & hazardous wastes, are an pollution.

DRINKING WATER CONTAMINATION

The availability of water per cap it's would come grossly low in the developing countries. If we ignore the water availability of advanced countries with this cap it's, the contaminated water for drinking purpose is a common phenomenon for metropolitan cities. Main reason of water pollution is the wake of unmanaged industrialization, use of the inorganic fertilizers, wide use of pesticides, industrial and domestic pollution. The unhygienic practices, social and religious customs and rituals, all contribute to the contamination. If there are living agents of the carriers of communicable disease the situation gets greatly accentuated.

Sources of surface water pollution based on their origin:-

Point Sources	From pipe or ditch, sewage treatment plant, a city storm drain etc.
Non point sources	From Leaching out of nitrogen compounds from fertilized agriculture land, Urban runoff etc.

The present day contamination of drinking water is chemical and metallic ingredients of industrial effluents, inorganic Fertilizers which percolate through the soil to reach the water table. Several salts of Organic origin reducing gases resulting from the degradation of organic matter etc. also pollute our drinking water resources. In addition to this the bacterial flora is also polluting our drinking water resources.

CONSEQUENCES OF WATER POLLUTION

Water pollution has wider ecological impact than just being unsuitable for consumption or posing health hazards. Mostly the water discharge from resources is used for consumption like household use and 'water-carriage' of wastes and sanitary discards in domestic and municipal jurisdiction. Similarly, most of the water use in industrial plants is for 'water-canon' of wastes, for removal of byproducts and impurities and as coolan. Thus, water is the major conduit in direct transmission of toxic agents, persistent hazardous organic chemicals and infectious agents and vectors for several diseases, such as cholera, gastrointestinal disease, malaria, schistosomiasis, tyhoid fever, filiariasis, and encephalitis.

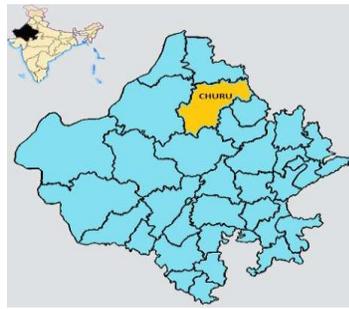
Increase in human urbanization, settlements, and population explosion pose a greater demand for water for, washing and bathing, domestic use, flush-toilets, swimming pools, lawns and gardening recreational activities, automobile and other vehicular users, agricultural, construction, sanitation and healthcare centers, and industrial operations. But, available water is limited. So, the advers effects of water pollution on ecological systems at local, regional, continental and global levels would become more and more serious.

The present short research project was therefore under taken to have a general idea about the safely of the drinking water made available to the public of Hanumangarh through the different sources: viz. tubewells bore open wells, fresh water ponds, and bawries.

District "Hanumangarh" surrounded by given districts–

Hanumangarh, Bikaner, Nagaur, Sikar, Jhunjhunu and Bhiwani(Haryana).

There is a popular sanctuary in "Hanumangarh"–



CLIMATE OF HANUMANGARH DISTRICT

Climate of district categorized as semi-arid region of Thar Desert climate ranges arid in south and extremely arid in west and is characterized by large extremes of temperature (Recorded maximum and minimum temp. of Rajasthan in 2006) erratic rainfall and high evaporation.

RAINFALL

The average annual rainfall of district is 25mm varying from 300mm in east to 180mm in west. The bulk of rainfall occur from June to September, maximum occurring in the month of August. The usual onset of active monsoon is in the month of July. The rainfall variability in the district from year to year is high and standard deviation from normal annual exceeds 100mm practically at all stations with coefficient of variability ranging from 50-60% for different recording stations.

Rainfall data from 1901-1980 has shown that percentage probability of drought years in the district works out as 10% (once in 8 years), and total of flood year is 12% (once in 7 years). Deficit rainfall year (receiving 80% normal annuals) account for 2 rainfall years in every 5 years period, Weekly rainfall distribution during the rainy season in the district is not sufficient for adequate crop growth.

TEMPERATURE

Winter temperature in the district is very low (-4° to 10° C) and there is a probability of frost occurrence once in three or two years. Winter season in the district occurred about the 90-120 days long period. In this period some hailstorms are occurred. Wind speeds during winter season are low with an average of 4 to 6 km/h, main direction being from north east. High temperatures in the district start from April onwards, and May-June are the hottest months of year. During the period, dry hot winds and dust storms occur frequently. From April to June, temperatures exceed 40° C in the most of the year and in some years temperature above 45° C to 50° C have been recorded. The wind regime during the hot months is from the direction of west and south west and wind speeds increase from average of 6.5 Km/h in March to 13.5 Km/h in June.

With the onset of monsoon in late June or early July, the dry temperatures fall to 37° C in July to 35° C in August and September. The diurnal variation in the temperature during the season is about 10° C. The wind direction during monsoon is mainly South-Western with mean speeds decreasing from 12-8 Km/h in July to 9.4 Km/h in September with 24 to 28% as coefficient of variability. The probabilities of rainfall occurrence, number of rainy days and other climatic data show that the district "Hanumangarh" is largely suited for grass production and thick grain & bean production. It is seen that whereas the mean duration of crop growing season works out to 8.3 weeks with a deviation of 5.5 weeks, the pasture growing season is larger of duration of 5.3 to 7.3 weeks.

CONCLUSION

Water is most abundant and is an essential part of our life supporting systems. Water is a chemical compound consisting of one volume of oxygen and two volumes of hydrogen. In the form of water

vapour it is very pure, but when it comes to the earth surface in the form of rain, it arrests with atmospheric and surface impurities. It is a very good solvent; therefore, it is polluted easily and is never found absolutely in its pure state. But today most of the countries are facing drinking water problems. In India, drinking water is contaminated at many places by various pollutants such as fluorides, nitrates, iron etc. These contamination are responsible for the water pollution and the other sources of water pollution is wide use of the inorganic fertilizer, industrial and domestic pollution, the unhygienic practices, social and religious customs and rituals, all contribute to the contamination.

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