

Study of Ground Water Contamination in the Municipality Area of Narnaund (Hisar)

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Abstract : *This paper will discuss the quality of ground water. The physical and chemical parameters of the ground water predominantly contains Taste, turbidity, colour, odour, pH value, total dissolved solids (TDS), hardness, salinity etc. During the operation of scientific research work we noticed a problem: "what is the effect of imbalanced ground water contaminants on human health and environment?" Today every living being is suffering with the environmental pollution but the much more effect on human being is seen. Waterborne diseases are caused by drinking contaminated or dirty water. Contaminated water can cause many types of diarrheal diseases, including Cholera, and other serious illnesses such as Guinea worm disease, Typhoid, and Dysentery. That's because the Reverse Osmosis (R.O) System are Installed by peoples at their residents, office, other public and private Places. Based on the research problem we can hypothesize: Yes, Groundwater Contamination (pollution) has a great impact on the environment and living beings.*

Keywords: Environment, Ground water Contamination, TDS

Introduction

Groundwater pollution (also called groundwater contamination) occurs when pollutants are released to the ground and make their way down into groundwater. It can also occur naturally due to the presence of a minor and unwanted constituent, contaminant or impurity in the groundwater, in which case it is more likely referred to as contamination rather than pollution. Pollution can occur from on-site sanitation systems, landfills, effluent from wastewater treatment plants, leaking sewers, petrol filling stations or from over application of fertilizers in agriculture. Pollution (or contamination) can also occur from naturally occurring contaminants, such as arsenic or fluoride. Using polluted groundwater causes hazards to public health through poisoning or the spread of disease.

Narnaund is located at 29° 13' 14N latitude 76° 8' 34E longitude. It has an average elevation of 208 meters. There is 13 wards in Narnaund municipal committee. The population of Narnaund city according to 2011 census was 17242. Based on the yield potential characteristics of aquifers the tube wells can yield 150m³/hr. It is surrounded by Bhaini Amirpur and Sulchani Village in east, Petwar village in south, Majra Piyau in West and by Budana Village in North.

We collect the sample from all the 13 wards of Narnaund Urban and Rural Areas. The physical and chemical concentration examined by various electronic, digital and chemical uses. The value obtained is entitled in this paper. All over it has been seen that the permissible limit of contaminant in drinking water, irrigating water was not upto desired as by BIS and CGWB given for potable water.

Environment And Ground Water Pollution:

The word "environment" may mean different things to different people. Scientifically, the Physical, environment is different from social or economic. Environment means "that which surround or that which envelop the earth and it consist of the entire ecosystem. Scientifically, the four spheres or division of the earth VIZ:- Lithosphere, Hydrosphere Biosphere, and Atmosphere. This could be broken to include the water body and life therein, landmass, forests, grassland, deserts, animals, man himself and all the interactions taken place among those groups. Environment is also defined as the circumstances surrounding or regions in which everything exist. Everything external to the organism is included in it. It also includes open field, mountains, forest, Deserts, snow, Seas, River, Lakes, Wells, Springs, Atmosphere Etc

Water Pollution: water become contaminated from disease bearing human wastes and also become polluted through industrial influent. The classification can also be in the order:-

(a) **Water communicable disease:** infection related to water supply and sanitation are many and their relationship is complex. However, in many Africa countries, a conception system for understanding disease related to water and sanitation has been developed.

(b) **Water related infections:-** water related disease is one which is in same gross way related to water in the environment (Bodies of water) and the impurities within water. Transmission Route Of Water Related Infections (water borne route) Water borne transmission occurs when the pathogen is in the water, which is infected by a person or animal which may then become infected.

(c) **Water-wash route:-** Water wash disease is the one whose transmission will reduce by an increase in the volume of water used for hygienic purpose irrespective of the quality of that water. Diseases Cause By Water- Washed route are numerous. An example of such are: Typhoid, Eholeva, Darrheas, Ascarrasis, cholera, Dysentries, polio, infection Hepatitis, bacillary, eye infection, craw-craw, house bone, fewer, etc.

(d) **Water based route:-** A water based disease is one in which the pathogen spend a part of its life cycle in a water snail or other aquatic animal. The diseases are due to infection by parasite worm which depends on aquatic intermediate hosts to complete their cycles. Diseases cause by water based Route: Diseases cause by water based is as followed: Guinea worm, Schishomiasis, paragommense, clonorchvasis, etc.

(e) **Insect vector route:-** This is spread by insect which lives either in water or lives near water. Diseases cause by insect vector Route:- sleeping sickness, malaria, River blindness, filaviasis, mosquito bone, viruses-yellow fever etc.

(f) **Excreta –Related infection:** An excreta –related infection is one which is related to human –excreta (i.e. urine and feaces).The two transmission mechanisms for this are: i Transmission via infected excreta: in this case pathogen is release into the environment through feaces or urine of infection individuals. ii Transmission by an excreta – related insect vector: an insect which visit excreta to breed or to feed may mechanically carries excreta pathogen to food or an insect vector of a non-excreted pathogen and may preferably breed in feacally polluted sites.

EXAMINATION OF WATER : The Process of finding out the quality of water is called as water analysis or examination. It consist of the followings:

(i) **Sampling of water :** The water samples collected for analysis was collect in may-june 2017 and january-february 2018 ,in a sterilised bottles having stoppers.the date ,time,place,sample no. was write on each bottle for better analysis.the nature of supply also mentioned on bottle i.e is well, stream ,lake, filter,sediment tank,public health supply etc.

(ii) **Physical Analysis :**

The Properties of water which are discussed under physical examination are taste,colour,odour,temprature,turbidity.

(a) **Temprature:-** The most desirable range of temprature for drinking water should be in between 40⁰-50⁰ F. The Thermometer used for determining the temprature.

(b) **Colour :-** The colour imparted to water is due to decaying of vegetables and other substances dissolved in it. The water have naturally yellowish or brownish in apperance. The colour of water can be determined by comparing it with the standard unit consisting of 1mg of platinum per ltr of water on cobalt scale.

(c) **Turbidity:-** The muddiness of water is caused by the suspended and colloidal impurities in water.It can found simply by Jackson Turbidity Meter.

(d) **Odour:-** The odour in water is due to the micro organism ,vegetables,organic substances gases which are still undergoing decomposition. The water odour should not be more then 1:4 with fresh water.

(e) **Taste:-** The taste in water may be because of micro organism dead or alive,any gases,minerals combined with it.wate rin taste should be normal sweet.

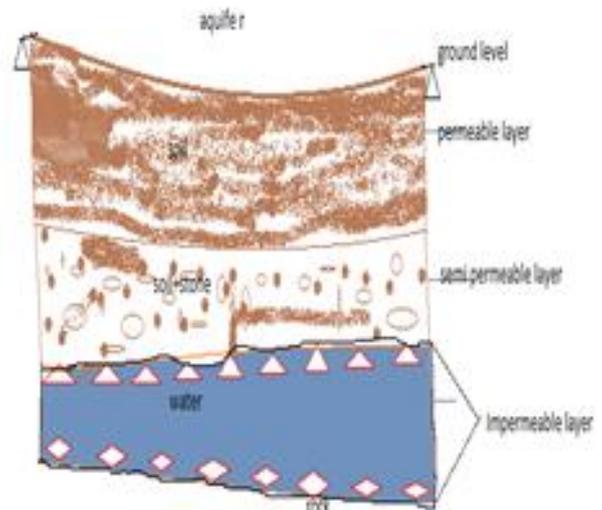
(iii) **Chemical Analysis :**

(a) **Total Solids:-** suspended solids can be found by heating the water and weighing the dry residue left after evaporation of water. The suspended solids can found filtering the water sample by WattsMan filter paper and weighing the residue left. The difference intotal solids and suspended solids give the dissolved solid. The dissolved solids can also found by digital TDS Meter.

(b) **Hardness:-** the hardness is the property of water by which it prevents the lathering of soap.it is due to the presence of carbonates ,bicarbonates,sulphates,chlorides,niterates of calcium,and magnesium.its expressed in gms/ltr or p.p.m of calcium carbonate in water.

(c) **pH Value:-** It is the logarithm to the base 10 of reciprocal of hydrogen ion concentration expressed in gms./ltr. Drinking water is desirable with neutral pH value,or near about.

Ground Water Geographical view



Result and Conclusions : It has been that the ground water quality of municipal committee Narnaund region is not so much reliable as per indian standards for drinking or potable water. The Permissible limit of Dissolved solid are exceed much more then permissible limit. The percentage of chlorides , salinity, calcium etc are also more then balance. Hence, govt. should need to take steps toward the water resources, supply system and its conservation.The higher percentage of contaminant in drinking or ground water is directly influenced by the exess Irrigation,Paddy Farming in area at higher rate,use of pesticides,fertilizers.The Sewerage waste and Acid rains are also responsible for the same. Strict Steps need to take for betterment of future Generations health.

Educating and Creating Public Environmental Awareness Environmental Engineers and other related Engineering professional bodies have a vital role to pay in mobilizing the

public for action aimed at improving the quality of man's physical environment. This can be achieved by organizing relevant programmers, seminars, workshops, public debates, etc. on environmental issues. The role of the medial profession cannot be over emphasized here. There is the need for a better understanding of issues of the environment by media Practitioners, news editors, features editors, news producers etc. in print and electronic media.

Ground water Analysis (Table) for Narnaund municipal Committee (Hisar)

Name of Supply	Property/Substance (Physical/Chemical)	Observed Value		Standards limit (Max.)	
		May/June	Dec/Jan	Acceptable	Allowable
Well	Colour	3	2	5	50(pcu)
Well	Taste	Normal	Normal	Unobjection	Unobjection
Well	Odour	None	None	-----	-----
Well	Temperature	55° F	30° F	10-15° C	10-20° C
Well	Turbidity	1 p.p.m	1 p.p.m	5 Unit	20 Unit
Well	Hardness	110 p.p.m	140 p.p.m	150-200 ppm	200 ppm
PHE D	Dissolved Solids(TDS)	210 p.p.m	225 p.p.m	500 ppm	1500 ppm
Well	Dissolved Solids(TDS)	1409 p.p.m	1501 p.p.m	500 ppm	1500 ppm
Well	pH Value	8.7	8.6	7.0-8.5	6.5-9.5
Well	Calcium	65 gms/ltr	76 gms/ltr	75 g/l	200 g/l
Well	Alkalinity (carbonate)	118 ppm	117 ppm	120 ppm	200 ppm
Well	Chlorides	180 ppm	185 ppm	200 ppm	600ppm
Well	Pathogenic Bacteria	0.0001	Nil	Nil	Nil

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