

# The Water Quality Enhancing Methods

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**Running Title:** The water quality enhancing methods

**Abstract:** Research is all about enhancing quality of drinking water and farming to gain maximum energy of water. Quality enhancing means: Making water in shorter cluster. Increasing and maintain pH level to make water alkaline. Using Magnetic and Electrolysis process to enhance water quality. During this research various methods of enhancing quality of water have been touched some extent but focused methods have been only magnetic and electrolysis under which devices also have been developed in reasonable costs. Water is the most important part of our body and has made me to think about consumption of normal water by human being as a normal routine but it is not good enough to hydrate our body efficiently to be absorbed maximum power of water by our body. For this we need to drink alkaline water as per our body pH level and certain quantity every day. I have explored various methods for enhancing quality of water as stated below but have worked on Magnetic and Electrolysis methods only: Electrolysis Process, Magnetizing Process, Vortex Process, Ozonization Process, Copper treatment process, Sound and Music Treatment Process, Gemstone water treatment process, Metal boiling water process, Distillation water Process, Reverse Osmosis Process etc. Each of the above treatment for enhancing quality of water has its own significance and studying all above techniques as conclusion I found that each technique is transmitting some kind of energy in to water which enhance the quality of water. As conclusion I reached is that we should not drink still water, we should shake water well before to drink to make water energize. As shacked water is now more liquids and with smaller cluster and more energy, if we do not have water treated by any one of the above technique

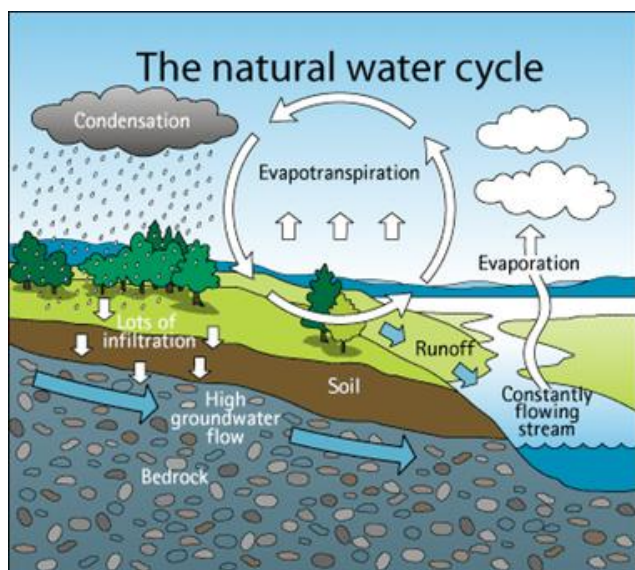
**Keywords:** Human, Drinking Water quality, human health, fruits and vegetables, Acids and Alkaline, Electrolysis, devices

## 1. What is Water?

Water is a combination of pure Oxygen and Hydrogen molecule as  $H_2O$ . Other than this it is crystal clear colorless and completely tests less liquid.

But because of its availability in different resources and conditions water contains various favorable and unfavorable minerals and gases in it in the context of human and nature health. [1]

Reference: <http://www.thefreedictionary.com/water>



Picture Source Reference:

<http://www.penderconservancy.org/presentations/pender-islands-groundwater/>

## 1.1 Natural Water Cycle

There is constant water in nature it just keep rotating in set sources automatically like water from surface goes in to earth human being take it out for domestic, industrial and harvesting purposes and then goes to drain and rivers etc. and then it get evaporated and goes to clouds by condensing than come again on earth in the form of rain so this process keeps going on

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Presented October 10, 2015

Pender Island Community Hall

Reference:

<http://www.penderconservancy.org/presentations/pender-islands-groundwater/>

**These contents in water are called impurities which are divided in three categories like:-**

- 1) Physical impurity:-Ground particles, Dirt or suspended Solids in Water
- 2) Chemical impurity:- Vegetative Matters, Dissolve Gases and Organic Acids
- 3) Biological impurity: -Biological contaminates may be bacteria or viruses.

## 2. Sources of water

There are various sources of water where we can get water for various purposes in day to day life [2].

- 1) **Ground water:** - The water which is found underneath the ground pockets coming via rocks, sand and soil ways it may come from rain or flood sources. Generally this water is used for drinking via boring hand pumps and well etc.



Source: <http://www.123rf.com/stock-photo/groundwater.html>

- 2) **Rain Water:-** Rain water directly come from rain which is indirectly comes from sea, ponds and other open sources like Trees and plants in the form of evaporation via sun light and heat process.



Source:

<https://www.hyderabadwater.gov.in/en/index.php/rain-water-harvesting/rain-water-collection/>

- 3) **River water:** River water is a natural source of water which comes from rain, flood and ice melting areas this water source is natural and good for drinking after purification and harvesting in natural form.



Source:

<http://www.globalwaterforum.org/2012/02/28/market-power-in-water-markets/>

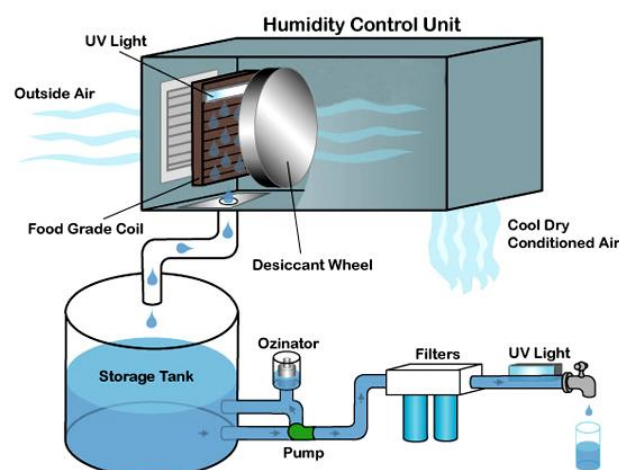
- 4) **Sea water:** Sea water is natural water from ocean. Ocean water is not used for drinking directly or harvesting because of higher content of salt.



Source: <http://7-themes.com/6902855-sea-water-hd.html>

- 5) **Air water:** Air water is almost pure water; it is extracted from moist air by machine and used for drinking purpose as it takes it is extracted in a low quantity only.

### Water Generating System



Source: <http://www.airowater.com/technology>

- 6) **Snow fall water:** snow fall water is extracted from snow or natural ice sources and it is ready to use for drink after a few normal filtration process if needed



Source: <http://www.khagta.com/2013/05/pictures-snowfall-in-the-himalayan-town-of-shimla-part-ii/>

- 7) **Dew water:** Dew water is also fresh drinkable water after a simple filtering process if required It is easy to

collect and clean it for ready to use. It mostly done in winter seasons when snow falling situation is not there and just dew temperature is there.



**Source:**

[http://www.wallpaperup.com/77978/droplets\\_drops\\_spider\\_web\\_webs\\_water\\_dew.html](http://www.wallpaperup.com/77978/droplets_drops_spider_web_webs_water_dew.html)

8) **Plant Water:** Plant water is extracted from the plant's leaves and branches by natural evaporation techniques under the sunlight, this water quantity is really less and takes long time to get a very less quantity for drinking



**Picture-1**



**Picture-2**



**Picture-3**



**Picture-4**

**Water from plant extraction process steps:-**

**In picture 1-** A branch of plant/tree with healthy leaves are packed in plastic bag.

**In picture 2-** Plastic bag is getting moist (condensed water) from leaves.

**In picture 3-** Plastic bag is full of moist water (condensed water).

**In picture 4-** Plastic bag has little pure water converted from (condensed water) of Leaves.

**Picture source Reference:**

<http://www.instructables.com/id/Extract-Clean-Drinkable-Water-From-Plants/>

### 3. There are four terms used for water [3]

- 1) **Potable water:-** The water which is used for Drinking and food preparation at home and food industry
- 2) **Palatable water:-** The water which is free from any offensive order, color, tastes and turbidity at desirable temperature.
- 3) **Contaminated water:-** The water which is having harmful bacteria and mineral content comes under contaminated water.
- 4) **Polluted Water:-** Anything which is polluted is mixed with any water body without proper treatment comes under polluted water.

#### Need of water for human:-

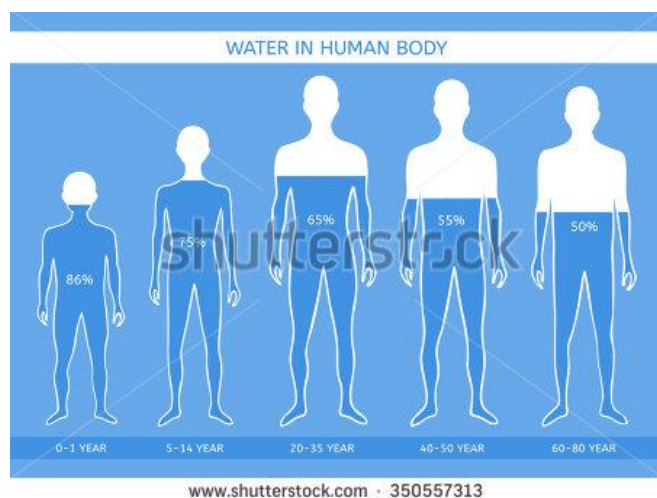
- 1) Domestic
- 2) Harvesting
- 3) Industry
- 4) Public
- 5) Non pet Birds and animals in human society & Forests
- 6) Loss of water in domestic, Industry & Public sector

#### The average water content of human being:-

**Table 3**

Srl.no.	Body	Water Content
01	Adult Human Body	Average 50 to 65 %
02	Infant Body	Average 75 to 86%

It means it is a serious matter to take care of both drinking water quality and quantity.



**Picture: 3a**

**Reference:** <http://www.shutterstock.com/pic-350557313/stock-vector-water-in-human-body-the-man-at-different-ages.html>

### 4. Requirement of Drinking Water Quality and its Contents

The standard quality of drinking water is actually the parameters or the limited content of the harmful constituents. Though there are not any recognized and conventional standard for drinking water at Global level. There are some part of the world where quality parameters dose matters but each of these countries have their own parametric values those areas of the world are Europe, USA and the WHO [4].

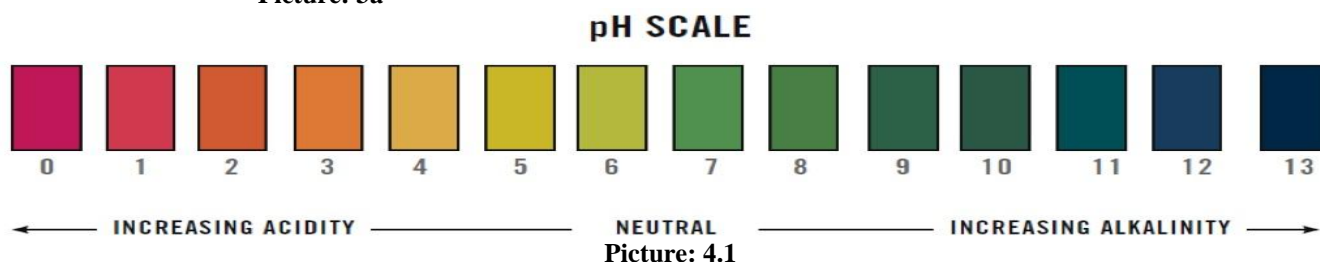
#### Quality water is required for various reasons as mentioned below:

- 1) For Healthy body
- 2) Avoiding water generated Diseases

#### Understanding TDS counts and pH Levels:-

**TDS** is Total Dissolvable Solids in water it can be 300 as excellent to 1200 as poor. As per the United States Environmental Protection Agency Total Dissolved Solids (TDS) as a secondary contaminant and is measured in milligrams per unit volume of water and also referred to as parts per million (ppm). For drinking water, the maximum concentration level set by GOVT. authority is **500 mg/L**.

**pH Level** is the scale of water to determine its intensity of Acidity, Neutrality and Alkalinity. On this scale 0 is complete Acidic, 7 are Neutral and 13 is complete Alkaline. Drinking water pH scale is between 7.0 to 9.5 pH Neutral to Excellent Grade.



Reference for pH Scale:-<https://nerdnod.com/reviews/best-alkaline-water-ionizer-reviews-buyers-guide>

## 5. World Health Organization Guidelines for Drinking Water [5].

**Table 5**

Srl.no	Content	Srl.no.	Content	Srl.no.	Content
	Inorganic Chemicals		Organic species:		Organic species:
01	Arsenic 10µg/l	01	Benzene 10µg/l	19	Trichloroethene 20µg/l
02	Barium 10µg/l	02	Carbon tetrachloride 4µg/l	20	Xylenes 500µg/l
03	Boron 2400µg/l	03	1,2-Dichlorobenzene 1000µg/l	21	Vinyl chloride 55(mg/l)
04	Chromium 50µg/l	04	1,4-Dichlorobenzene 300µg/l	22	Aldrin 0.03(mg/l)
05	Fluoride 1500µg/l	05	1,2-Dichloroethane 30µg/l	23	Chlordane 0.0(mg/l)
06	Selenium 40µg/l	06	1,2-Dichloroethene 50µg/l	24	DDT 2(mg/l)
07	Uranium 30µg/l	07	Xylenes 500(mg/l)	25	Heptachlor 0.03(mg/l)
08	Antimony 0.005(mg/l)	08	Dichloromethane 20µg/l	26	Lindane 2(mg/l)
09	Copper 2(mg/l)	09	Di(2-ethylhexyl)phthalate 8 µg/l	27	Methoxychlor 20(mg/l)
10	Manganese 0.5(mg/l)	10	1,4-Dioxane 50µg/l		
11	Mercury 0.001(mg/l)	11	Edetic acid 600µg/l		
12	Molybdenum 0.07(mg/l)	12	Ethylbenzene 300 µg/l		
13	Nickel 0.02(mg/l)	13	Hexachlorobutadiene 0.6 µg/l		
14	Nitrite 3(mg/l)	14	Nitrilotriacetic acid 200µg/l		
15	Nitrate 50(mg/l)	15	Pentachlorophenol 9µg/l		
16	Cadmium (Batteries, Fertilizers) 0.003(mg/l)	16	Styrene 20µg/l		
17	Cyanide (Industrial contamination)0.07(mg/l)	17	Tetrachloroethene 40µg/l		
18	Lead (House hold plumbing system)0.01(mg/l)	18	Toluene 700µg/l		

Guideline for drinking water quality from WHO suggested limit and parameters on naturally arising elements that may have direct opposing on human health influence.

Reference:-Guidelines for drinking water quality WHO Geneva 2010; 4th ed.

(PPT Slideshare.com- by Ravi Rohilla community Medicine PGIMS Rohtak)

[https://en.wikipedia.org/wiki/Drinking\\_water\\_quality\\_standards](https://en.wikipedia.org/wiki/Drinking_water_quality_standards)

## 6. What is the Drinking water normal allowed pH level and TDS counts?

There are ranges of TDS and pH levels which are acceptable for human being:-

Level of TDS (milligrams per liter) Rating [6].

**Table 6**

TDS Standards	TDS Ranges	pH levels	pH Ranges
Excellent	300 - 600	Excellent(Alkaline)	8.5- 9.5
Good	600 - 900	Good(Neutral)	7.5 – 8.4
Fair	900 - 1,200	Fair	7.0 – 7.4
Poor	Above 1,200	Poor	6.0 –6.9
Unacceptable	Beyond 1,500	Unacceptable	Below 6.0 and above 9.5

**To be precise water drinking requirement completely depends upon the individuals and environment situations mentioned below:**

- 1) Weather( Winter/Summer/high or low temp./dry/moist)
- 2) Body weight
- 3) Age(Infant/ Young/Old)
- 4) Gender (Male/Female)
- 5) Working hours(Standard/Long)
- 6) Geographical condition
- 7) Working nature(Physical/Mental)

- 8) Special situation(Fever/Outstation)
- 9) Working environment(Happy/Stressed)
- 10) Living style(Modern/conservative)

As we know that our body has approx.60% water and we constantly misplacing water in various form our body in the form of urine, sweat, and tears. And we need to maintain this level by drinking quality alkaline water frequently. Different sources declare about different quantity of water to drink every day. The health authorities universally advised about two liters water per day. On an average a person should drink at least 2 to 2.5 liters of Alkaline Water per day in winter and 2.5 to 3 liters in summer season.

As per the medical authorities a higher quantity of alkaline ionized water should be drunk: 3.7 Liters by male and 2.7 Liters by female.

As a general rule whenever person feels thirsty water should be drunk immediately without fail, whatever the quantity may satisfy the thirst.

**Reference:** <http://fitomorph.com/news/5-facts-you-should-know-about-muscles/>

<http://humannhealth.com/water-chart-exactly-how-much-water-you-need-to-drink-to-lose-water-weight-according-to-your-body/2573/>

<https://www.quora.com/What-is-the-acceptable-TDS-level-of-drinking-water>

## 7. What is the required pH level of a normal human body [7]?

7.1 We need to understand the human Digestive Zone pH Range first which is mentioned below:

**Table 7.1**

S.no.	Human digestive Zone	pH value	Time span	Note:- These all the tests are of a normal human being
01	Saliva	6.5- 7.5 pH	Up to 1 Minute	
02	Upper stomach (Fundie)	4.0- 6.5 pH	30 – 60 Minutes	
03	Lower stomach	1.5- 4.0 pH	1- 3 Hours	
04	Duodenum	7.0- 8.5 pH	30 – 60 Minutes	
05	Small Intestine	4.0- 7.0 pH	1- 5 Hours	
06	Large Intestine	4.0- 7.0 pH	10Hours to several days	
07	Tears(Average pH=7.0)	5.2- 8.6 pH	30 – 60 Minutes	

The information given above in table explains the average time food spends in each part of the digestive system with average pH level.

Reference:-<http://altered-states.net/barry/update178/>  
<https://prezi.com/qey-y0glo-v1/ph-of-tears/>

### 7.2 A healthy person's average pH level readings:-

**Table 7.2**

S. no.	Liquids	Acidosis	Neutral	Alkalosis
01	Blood	Acidosis – pH = 1 to 7.40	Neutral - pH = 7.41	Alkalosis- pH = 7.42 to 14.0
02	Urine	Unhealthy- pH < 6.0	Neutral - pH = 6.5 TO 8.0	Unhealthy - pH > 8.5
03	Tears(Average pH=7.0)	5.2- 8.6 pH		
04	Sweat	4.0- 5.5 pH		
05	Vaginal Secretion	4.0 pH		
06	Semen	4.0 pH		
07	Digestive juice	3.0- 4.0 pH		

Reference:-<http://www.chemcraft.net/acidph1.html>  
[https://www.google.co.in/?gfe\\_rd=cr&ei=sRdhV7zgKsWvmQXo-Z3QBQ&gws\\_rd=ssl#q=normal+ph+level+of+sweat](https://www.google.co.in/?gfe_rd=cr&ei=sRdhV7zgKsWvmQXo-Z3QBQ&gws_rd=ssl#q=normal+ph+level+of+sweat)

### 7.3 How do I get to know that how much quantity and what pH level water need to drink?

As a general rule whenever person feels thirsty water should be drunk immediately without fail, whatever the quantity may satisfy the thirst. Check Urine color if it is yellow and towards, Feeling tired, Feeling headache etc. are the symptoms which proves the requirement to drinking water. Once you find that your sweat and urine pH level is below the average than you need to drink alkaline ionized water normally 8.5 to 9.5 pH levels otherwise drink 7.0 or 7.5 pH level if the sweat and urine are on standard pH level as per standard readings mentioned in the table below.

**Table 7.3**

Srl.no.	Liquids	pH Level
01	Blood	Neutral - pH = 7.41
02	Urine	Neutral - pH = 6.5 TO 8.0
03	Tears(Average pH=7.0)	5.2- 8.6 pH
04	Sweat	4.0- 5.5 pH
05	Vaginal Secretion	4.0 pH
06	Semen	4.0 pH
07	Digestive juice	3.0- 4.0 pH

Normally Human Sweat and Urine pH level can be taken as sample and the average of both samples can be considered as final pH level of the body.

## 8. What is alkaline and acidic water [8]?

Simply water having pH level less than 7.0 is called Acidic and water that has pH level above 7.0 is called Alkaline.

Reference:-<http://www.med-health.net/Alkaline-Water-Benefits.html>

### 8.1 Why do we need to drink Alkaline Water?

As we know that water is the soul of life which measures 60 to 70 percent of human body and must be maintained effectively In order to stay healthy and hydrated all the way. Drinking quality water (**Alkaline Ionized Water**) in enough quantity keeps good health and hydrated because it helps flushing toxins and other waste from our body. We need to take care that drinking water must be fresh alkaline ionized water only because all the water is not as good as fresh alkaline ionized water. As we live specially in India where our drinking water come from various types of sources and contaminated with different chemicals and bacteria etc. The water we drink at home and offices pass through various pipes, filtration devices and chemical treatment hence the water electrical properties get manipulated and water becomes dead in nature. The Natural water has pH level 7.0 but concern agencies and water cleaning sources make it contaminated via reverse osmosis and such other mechanism to make it drinkable.

The natural water tests little odd but it is good for health because it has neutral pH level and enough minerals in it to keep our body healthy.

As soon as water turns to acidic because of cleaning treatment, it starts creating problems in to our body in term of various types of deceases. The water we drink from Reverse osmosis technology is called dead water because in this process mineral present in water get depleted which becomes very acidic and loses their potential to reduce oxidation in the body and this boosts the growth of free radicals which harms body cell organs. Acidic water has more protons and electrons insuring positive change on the other hand alkaline water has negative charge which helps fighting against free radicals at the cellular level of the body. The free radicals are the basic reason for many health issues along with aging process itself. It is to be believed that more than eighty percent of the whole illness may lead in an acidic Situation so it is better to maintain our body in alkaline state by drinking restructured alkaline ionized water. So it is better to drink restructured Ionized Alkaline water as per individual's requirement to stay hydrated and healthy all the way.

**Reference source:-**Alkaline water vs. Acidic water video clip

<https://www.youtube.com/watch?v=0EHizKfqfVE>

## 8.2 Composition of water in human body in different parts

We need to know the water composition in different parts of our body and its functions to regulate our body so that only we can understand the importance of quality drinking water. Some of the experts have given their statement in regard of water and its composition and functional values for human body below:-

### 8.2 (a) According to H.H. Mitchell, Journal of Biological Chemistry 158,

- 1) Our brain and heart are contains of 73% water
- 2) Our lungs contain about 83% water.
- 3) Our skin contains 64% water
- 4) Our Muscles and kidneys contains 79%,
- 5) Our Bone contains: 31%.

### 8.2 (b) As per other expert's opinions:-

- 1) Brain has water 80-85%
- 2) Lungs have 75-80%
- 3) Liver has 70-75%
- 4) Skin has 70-75%
- 5) Blood has 80% teeth have 8-10%
- 6) Heart has 75-80%
- 7) Bones have 20-25%
- 8) Kidneys have 80-85%
- 9) Muscles have 70-75%
- 10) Eyes have 95%

### 8.2 (c) According to Dr. Jeffrey Utz, Neuroscience, pediatrics, Allegheny University,

Different people have different percentages of their bodies made up of water.

- 1) Babies and kids have more water (as a percentage 78 %) than Adults.
- 2) An Adult men has about 60%
- 3) Women have less water than men (as a percentage 55%).
- 4) People with fatty tissue have less water.
- 5) People with less fatty tissue have more water.

### 8.2(d) Water plays a number of essential roles to keep us all going:

- 1) Water gives a vital nutrient to the life of every cell, acts first as a building material.
- 2) Water controls our inner body temperature via sweating and respiration.

- 3) Water assists in flushing waste and toxins mainly through urination
- 4) Water acts as a shock absorber for brain, spinal cord, and fetus
- 5) Water helps to form saliva
- 6) Water lubricates our joints
- 7) Water transport carbohydrates and proteins that our bodies use as food into bloodstream.

## References

<http://water.usgs.gov/edu/propertyyou.html>  
<http://lancasterpump.com/25-ways-water-impacts-your-health/>  
<http://drinkingwater.expert/drinking-water-benefits-and-guidelines/>

## 8.2 (e) Effective water drinking time and quantity per day

Water must be drink on particular time and quantity to get its maximum benefits as per given instruction below:-

- 1) Two glasses immediately after waking up from the sleep, it will help to activate internal organs genuinely.
- 2) One glass thirty minutes before meals, it will help digesting food effectively.
- 3) One glass just before having bath, it will help for lower blood pressure.
- 4) One glass just before going to bed, it will help to avoid stroke and attack.

**Reference:-** <http://theberry.com/2014/12/19/daily-motivation-25-photos-697/>

## 9. Claimed Health benefits of drinking Restructured Alkaline ionized Water

It is mandatory to keep our body hydrated and in Alkaline state by drinking quality water in required quantity otherwise our body goes into Acidic state and we start facing various types of physical problems like tiredness, headache, acidity and so many other problems which listed in the table at next page. Hence we need to drink Restructured alkaline Ionized water as per the individual requirements. There are number of health benefits of drinking Restructured Alkaline Ionized water listed in table below [9].

### 9.1 Health benefits of Consuming alkaline water

**Table: 9.1**

S. No.	Problems	Explanation
01	<b>Detoxify</b>	The kidneys are responsible for processing fluids in the urinary tract. By Drinking Restructured Alkaline Ionized water daily neutralize the acidity and wash acid waste products from cells and tissues. Restructured Alkaline Ionized water is the best for raising Urine pH level quickly that empowers The kidney for filtering out all the toxic metals and acid wastes collected in the body more efficiently.
02	<b>Hydrate</b> ✓ Tiredness ✓ High Blood Pressure ✓ High Cholesterol ✓ Skin Disorder ✓ Digestive Disorder ✓ Asthma & allergies ✓ Premature Aging ✓ Bladder or Kidney	Plain water has big clusters which is less absorbed by our body cell and the Alkaline Ionized Water has micro clusters that is more easily absorbed at the cellular levels hence it super hydrates our body. Drinking Alkaline Ionized water in fact change our thirst desire on, which would help us restore proper hydration. Alkaline Ionized water helps us to drink more water. It tastes better than plain water, It's sweeter, and feels more refreshing.  Alkaline Ionized water is the most dynamic sources of energy in our body. Because of Dehydration all the enzymatic activity in our body starts running slow, and hence we start feeling tiredness and fatigue.- <i>Tiredness</i>

	<b>Problems</b> ✓ Constipation ✓ Joint Pain or Stiffness ✓ Weight Gain	<p>Our blood has normally approx. 92% water when the body is fully hydrated. When our body gets dehydrated, the blood becomes thicker and it resistance to flow, which results in high blood pressure.- <i>High Blood Pressure</i></p> <p>In the situation of dehydrated body, it produces more cholesterol to prevent water loss from the cells. - <i>High Calastrol</i></p> <p>Dehydration damages the cells and hence removal of toxins and other wastes from the body via skin makes more exposed to all types of skin problems, including dermatitis as well as premature wrinkling and discoloration. - <i>Skin Disorder</i></p> <p>Digestive disorders, including ulcers, gastritis kind of problems can be because of shortage of water and alkaline minerals like calcium and magnesium. - <i>Digestive</i></p> <p>Dehydrated body restricts airways to safeguard water. In fact, the rate of histamine produced by the body increases exponentially as the body loses more water.- <i>Asthma &amp; allergies</i></p> <p>Chronically dehydrated the body's organs and skin, begins to wrinkle and wither prematurely.- <i>Premature Aging</i></p> <p>Dehydrated body accumulates the toxins and acid waste which creates an environment where bacteria increase and because of this the bladder and kidney to be more prone to infection, inflammation and pain.- <i>Bladder or Kidney Problems</i></p> <p>In the dehydration situation body starts drawing water from the colon which is the primary regions in order to supply fluids for critical body functions. Dehydrated body moves the wastes through the large intestine much more slowly which results in to constipation.- <i>Constipation</i></p> <p>Dehydrated body is always unable to repair joints or slow down the repairing process which results in to pain and discomfort because all joint have cartilage padding which is composed specially of water.- <i>Joint Pain or Stiffness</i></p> <p>Dehydrated body cells are depleted of energy and as a result people tend to eat more whilst in reality, the body is thirsty.-- <i>Weight Gain</i></p>
03	<b>Oxygenate/Antioxidants</b> ✓ Cancer ✓ Free Radicals ✓ Aging	<p>The Alkaline Ionized Water has the ability to give up electrons; it can successfully neutralize and block harmful free-radical damage to the body. Alkaline Ionized Water pursues out free radicals and transforms them into oxygen which our body can use for energy construction and tissue oxygenation. Alkaline Ionized Water performs as an antioxidant and neutralizes harmful free radicals of our body. Alkaline Ionized Water creates oxygenated and alkaline environment in the body where cancer and other illness cannot survive freely.</p>
04	<b>Alkalize your body's pH</b> ✓ Heart Trouble ✓ Obesity ✓ Bone Loss ✓ Diabetes	<p>Alkaline Ionized Water helps to maintain our body's balanced pH level at alkaline state which tends to be acidic because of acidic fast food diet and other liquids consumptions. The pH balance of our body has a significant effect on our health.</p> <p>Low pH level can lead to a condition called Metabolic Syndrome which is a group of health problems that include:-Heart Trouble, Obesity, Bone Loss and diabetes.</p>
05	<b>Improves Cardiovascular Circulation</b>	<p>As we know that Acidity is the principal cause of heart disease as it destroys the good fats that help heal inflammation of the arteries. There is widespread misunderstanding which concludes that fats are the only cause of arterial blockage, but in most cases severe inflammation residences stress on the walls of major blood vessels, causing life threatening leakages. It can be controlled by maintaining our body's pH level at alkaline state by using Alkaline Ionized Water.</p>
06	<b>Heart Health</b>	<p>Magnesium in alkaline ionized water is the key factor to impact on heart health.</p> <p>Alkaline Ionized water is the finest source of magnesium where our body absorbs magnesium 30% faster and easier from water than it does from food or supplements. The World Health Organization recommends that we get up to 20% of your daily needs for calcium and magnesium from the water we drink. Alkaline water is the best choice for mineral rich water because it's easiest to absorb the minerals in it and hence we can reduce the chance heart stroke.</p>
07	<b>Helps Regulate Digestion</b>	<p>Alkaline Ionized Water boosts the pancreas to develop alkaline minerals in the body. Pancreas is a glandular organ in the digestive system in human, it is located in the abdominal cavity behind stomach glandular is responsible for producing powerful gastric enzymes, and without enough alkalinized bicarbonate ions, it cannot battle with acidic temper which is mixed in the stomach. This temper can lead to a painful inflammation and serious deterioration of protective barriers surrounding vital organs, common triggers of more serious diseases.</p>
08	<b>Strengthens Immune System</b>	<p>Well hydrated body fluids helps to purify body of toxins and bacteria and hence immune system work as shield of armor on the other hand highly acidic level body will tarnish and wear away that protection. As per the modern medical practice illness is treated with insensitive medication, on the other hand scientific information dictates immunity to illness can only succeed with a purified and healthy shield and not with weakened by toxins.</p>
09	<b>Weight Loss</b>	<p>Using Alkaline ionized water daily 2 liters can help to reduce our body weight approximately 12 pounds in just two months without any exercise and diet follow up. Researchers have tried to find out the reason and explanation but they could not find any answer for it.</p>
10	<b>Healthy Brain</b>	<p>Hydrating with Alkaline Ionized Water help to keep our brain healthy as water makes up 75% of our brain.</p>

### These benefits of alkaline water have been supported by research:

There are so many evidences more than forty studies since the first study about alkaline water was done in Russia in 1950's. and after that till today there are so many companies who those are making alkaline water making machines with different capacities and configurations. But all those machines are quite expensive so still drinking alkaline water is not in common man's approach. That is why I am trying to provide less expensive machine for making alkaline water at home .

#### References:

Is Alkaline Water Extra Healthy or a Hoax?

By JESS BARRON Last Updated: Sep 27, 2016

<http://www.livestrong.com/article/498701-what-are-the-benefits-of-drinking-alkaline-water/>

The Major Health Benefits Of Drinking Alkaline Water  
Written by admin:

<https://www.undergroundhealth.com/the-5-major-benefits-of-drinking-alkaline-water/>

6 Health Benefits of Drinking Alkaline Water

By Dr. Victor Marchione, MD, **Category** : General Health • August 10, 2015

<http://www.doctorshealthpress.com/general-health-articles/health-benefits-alkaline-water>

Top ten alkaline water drinking benefits by Zen Water

<http://alkalinewatermachinereviews.com/alkaline-water-benefits/>

## 10. These are some processes I try to explore [10]

### 10.1 Ozonation Process

Ozonization process of cleaning water means to pass the ozone gas in to water to remove iron, bacteria/ virus, hydrogen sulfide and manganese. In a simple manner Ozone gas is made by passing dry and clean air via high voltage electric discharge by which ozone is created approximately 1% or 10000 mg/L.

#### Benefits of Ozonizing Water:-

- 1) It increases the pH level of water.
- 2) It removes bacteria and viruses
- 3) It does not include any type of chemicals.

#### Disadvantages of Ozonizing Water:-

- 1) As it is generated via electrical discharge, fire hazardous and toxicity matters are big concerns for ozone generation.
- 2) It would require pre treatment to avoid formation of carbonate scale.

**Reference:-**<http://www.water-research.net/index.php/ozonation>

### 10.2 Sedimentation and Filtration

In sedimentation process collected water is sent to tank where water is kept for certain time of period so all the particles, clay, and slit based turbidity, natural organic materials and other concern impurities can settled down in the bottom of tank once the sedimentation process is

complete than clean water of the tank is sent to another tank for further filtration process to make it more clear and drinkable.

Filtration process happens through sand and gravels bed where water becomes clearer and then further it is sent to other cleaning process like carbon filtration and reverse osmosis etc. to make quality water for drinking purpose.

#### Reference:-

<http://cityservices.baltimorecity.gov/dpw/waterwastewater02/waterquality6.html>

### 10.3 Reverse Osmosis

Reverse Osmosis is water cleaning technology where water is pushed by pressure through a semi-permeable membrane to remove a high quantity of contaminants from the water. In this process water is de-mineralized or de-ionized with high pressure.

#### Benefits of Reverse Osmosis:-

- 1) Cleanest water we get to drink.
- 2) Bacteria free and controlled TDS water to drink.

#### Disadvantages of Reverse Osmosis:-

Because of RO Process water pH level get reduced and turns to acidic level from neutral Ph level.

**Reference:-**<http://puretecwater.com/what-is-reverse-osmosis.html>

## 11. Electrolyzing Process/ Electrolytic Processes

In water electrolytic process ionic substances are decomposed in to a simpler smallest substance because of electric current pass through them subsequently dissolved ionic substance are free to move in water or in molten state of metals etc. In this process two titanium Platinized anodes are kept in two different water container attached with negative and positive DC current separately. Both the water containers are connected from the center level of the water via pipe so the ions can be exchanged or travelled from one to another water container as per the *shown in the photo*. As the current pass in to water it start reacting with minerals dissolved in water and decompose them in to a simpler and smallest substance and hence ionic substances starts moving free in water [11].

Negative side container water get negative charge which is used for drinking purpose because this water becomes more alkaline with high pH value right from 7.0 to 13 pH and according to requirement this water can be consumed in specific quantity.

Positive side container water get positive charge which is not used for drinking purpose because this water becomes more acidic with lower pH level below than 7.0 pH. This water can be used other than drinking purpose.

Making alkaline water with high pH value takes minimum eight hours to 24 hours right from 7.0 to 13 pH values. This water tastes better than normal water and good for health. This process is little slow but results are good. There is just

titanium Platonized anode and DC current 12Volt is used to achieve the results.

If we want to make alkaline water in shorter time, for this 10 grams of normal salt per one liter water in container can be added but in this addition water tests little salty.

Parallel during electrolyzing this water can be magnetized by placing negative side water container on North Pole surface of magnet and second positive side water container can be placed on South Pole surface of magnet.

Magnets helps water to make alkaline and ions charged better in shorter time.

**Material required for making alkaline water:-**

- 1) Two good quality food grade plastic water container
- 2) Two titanium Platonized Anodes size of 4"X2".
- 3) A 12 volt DC power laptop charger/adopter
- 4) Pipe fitting for dispensing water and making inter connection for water ions exchange.
- 5) Two piece of flat rectangular Magnets in the size of the base of water container.
- 6) Single wooden base for placing both water container
- 7) Two transparent colorless glass of plastic or glass
- 8) pH paper (Litmus) booklet with color and pH readings for checking pH value of water.



**Picture 11a**

Picture taken in our lab is original

**Reference:**

<https://www.youtube.com/watch?v=WCRs8hpD8R4>

**Picture 11a description:-**In order from bottom to top:-

- 1) Wooden base
- 2) Under LHS container rectangular flat magnet facing North Pole upside.
- 3) Under RHS container rectangular flat magnet facing South Pole upside.
- 4) LHS food grade plastic water container for negative charge for alkaline water.
- 5) RHS food grade plastic water container for positive charge for non alkaline water.
- 6) Submerged titanium Platonized net type anodes in both containers.
- 7) Power supply by 19V-3.16A laptop charger/adopter shown backside of the LHS container
- 8) LHS food grade plastic water container has blue color on off Valve.
- 9) RHS food grade plastic water container has red color on off Valve.



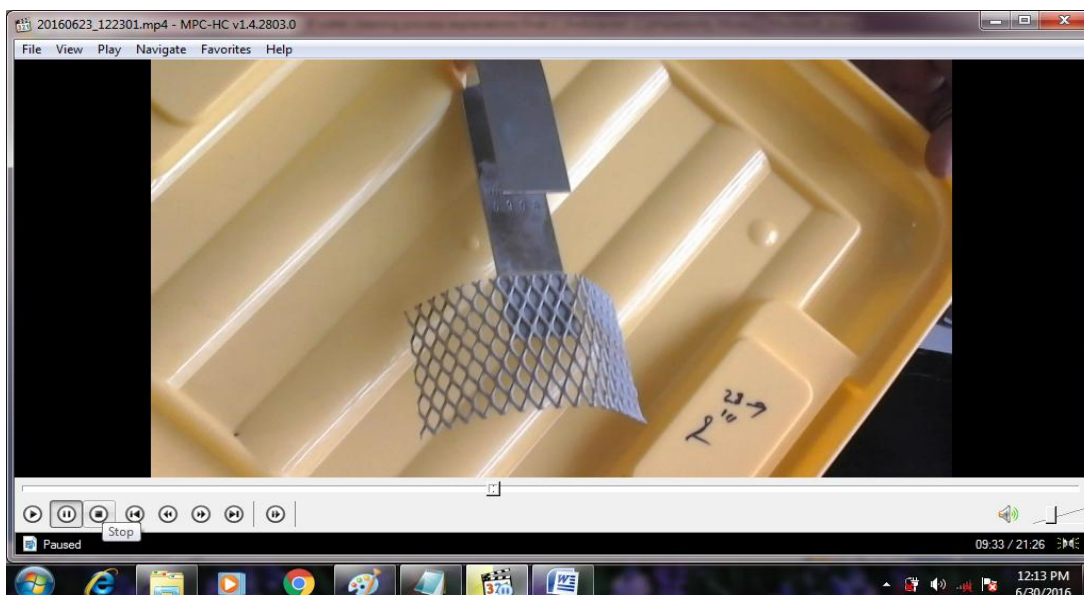
**Picture 11b**

**Picture 11b description:-**This is the back side of device where both containers have been interconnected together

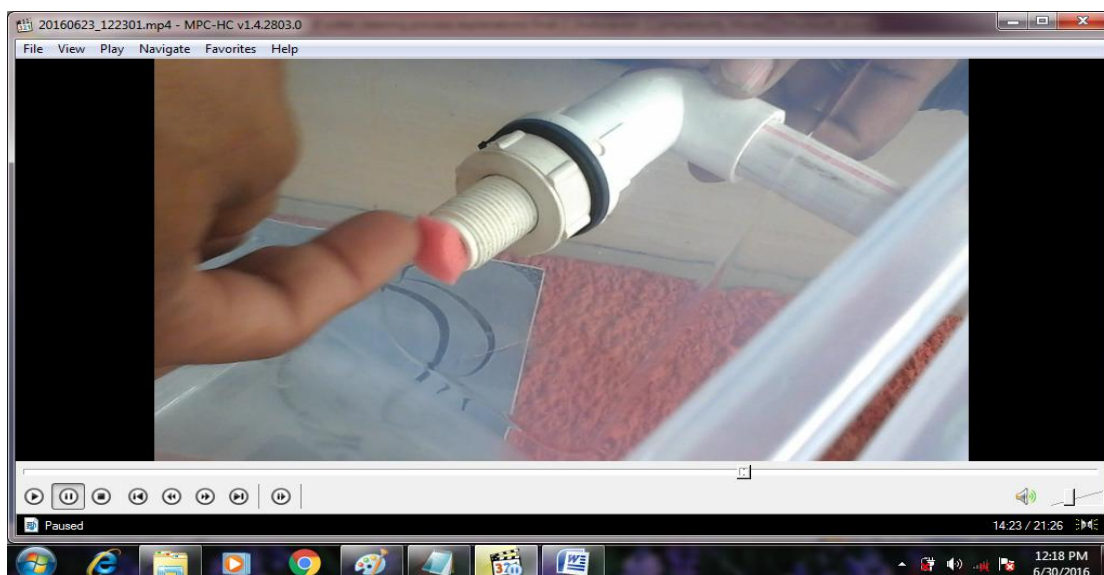
with single on off Valve. This connection will help to pass current form one to another container



**Picture 11c-**This is the 19V.3.16A laptop charger/adopter for power supply to device.



**Picture 11d-**This is the Titanium Platinized anode for making alkaline water.



**Picture 11e-**Foam to be fixed in back side connection for filtering and controlling ions travelling



**Picture 11f**-This is the wooden stand with rectangular flat magnet base to magnetize water during alkalizing process

#### Process:-

- 1) Place the alkaline water making device on the wooden and magnet base on north and South Pole accordingly.
- 2) Place negative charge water container on North Pole surface of magnet.
- 3) Place positive charge water container on South Pole surface of magnet.
- 4) Fill the normal water in both the containers.
- 5) Lock the water dispensing valve of both the containers.
- 6) Open central water connecting valve of containers to exchange current and ions.
- 7) Submerge titanium Platinized anodes in both containers water in middle level of water at near the central water connecting valve aside.
- 8) Connect with negative DC current on anode on blue color container for drinking water.
- 9) Connect with positive DC current on anode on red color container for non drinking water.
- 10) Start current supply from 19V-3.16A laptop charger. And leave it for minimum eight hours.
- 11) Check water pH level with litmus paper after 8 hours, it will reach up to 8.5 to 9pH right from 7pH.
- 12) Check water pH level with litmus paper after 12 hours, it will reach up to 9.5 to 10pH right from 7pH.
- 13) Check water pH level with litmus paper after 24 hours, it will reach up to 10 to 13pH right from 7pH.
- 14) Stop current supply and lock central water connecting valve and remove water from blue color container which is charged with negative current supply in to another container and it is ready for drinking.
- 15) The positive charged container water will become acidic and is not for drinking, it can be used for cleaning dishes and floor etc.

#### 12. Results

Produces magnetized alkaline water from 7pH to 14 pH within 8 to 24 hours.

#### Precautions:-

- 1) Check pH level of the water which is going to be treated, prior to fill in containers.
- 2) The water to be treated must be filtered and cleaned by any device so after making it alkaline via our device can be drink without any doubt because our device makes water alkaline only.
- 3) Lock the central water connecting valve before to take water samples at every go and while collecting full water in to another container for storing ready to use.
- 4) Put pillow foam in to the central water connecting pipe on both sides before loading water in to both containers.
- 5) Clean containers properly before to load or re-load water in to it to avoid any contamination.

#### Note:

- 1) In this device use only filtered water by RO or other filtering device to make magnetized alkaline water.
- 2) This device does not clean or filter the water.
- 3) The above results have been achieved on one liter of water quantity only, if want to make more quantity of magnetized alkaline water then will require bigger size anodes and higher power current supplying charger/adaptor to achieve same results in given time.
- 4) This Higher pH water can be mixed with normal water and can be used as per individual requirement.

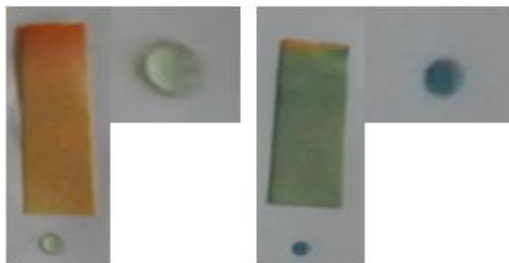
#### Proofs:-

Results are proven by pH strip. And In the shown picture A-at LHS water pH level has been indicated 6pH before process.

In the shown picture B –at RHS water pH level has been indicated 13pH after process.

In the picture A given below orange or yellowish color shows acidic level of water which is RO water before process in to alkalinity and.

In the picture B given below bluish color shows alkaline level of water which after process via device we made.

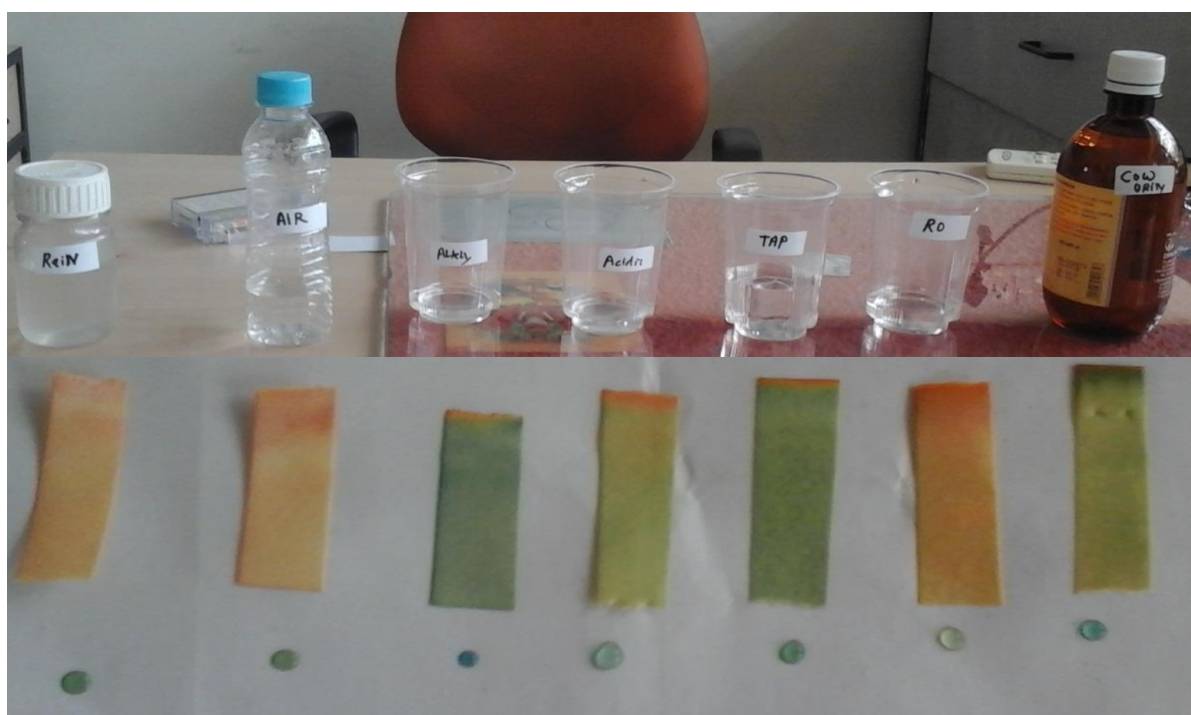


Picture11g taken in our lab is original

There are some water samples in order which are tested for their pH levels:-

**Table 11**

S. No	Water Source	pH Value	Srl. No.	Water Source	pH Value
01	Rain water	6.5	05	RO water	6
02	Air water	6	06	Acidic treated water-	6.5-7
03	Alkaline Treated water	12.5-13	07	Cow urine-	12
04	Tap water	7			



Picture 11h taken in our lab is original

**Note:** - Sample results shown in picture need to see color of drops as the picture has been clicked after checking all the samples till that time strips were dried and the drops color also had been little color faded. Hence information written in is on actual results we found.

### 13. Dissolving tea in magnetized alkaline water [12].

#### For demo process:

Fill transparent colorless glass with plain/RO water and dip tea bag in it.

Fill transparent colorless glass with magnetized alkaline water and dip tea bag in it.  
 Leave both glasses for one to two minutes.

#### Results of demo:

The tea will dissolve in magnetized alkaline water faster than plain/RO water. As shown in picture.

LHS alkaline water

RHS plain/RO water

#### For demo Reference:

<https://www.youtube.com/watch?v=M0paOwEfibY>



Picture 12 taken in our lab is original

**For demo Reference:**

<https://www.youtube.com/watch?v=M0paOwEfibY>

## 14. Magnetized water

Magnetizing is also one of the water qualities enhancing technique. In this technique water is filled in glass or a plastic container and this container is kept on magnets North Pole or the South Pole according to requirement in this process water get magnetized with negative charge via North Pole and positive charge via South Pole. This water is used for many diseases to be cured; in magnetized water one fact has been observed that pH level of water get increased apparently. This water is also kept on magnet for minimum 45 minutes to get it charged with magnetic power. Magnetized Water is used for harvesting also and results have been noticed positively 10 to 30% higher in healthy growth of corpus and plants in shorter time compare to normal water usages [13].

We have made a device for magnetizing water; this device can be use for both harvesting and human Drinking as well.

**Material required for making device:-**

- 1) Copper pipe
- 2) Round hollow speaker magnets
- 3) Plastic pipes fittings etc.
- 4) Adhesives glue for fixing fittings
- 5) Any plastic electric tapes to cover outer body of device.

**Process of making:-**

- 1) Keep the copper pipe, plastic pipe fittings and magnets ready. As shown in picture below.

**Step-1**



- 2) Fit the plastic pipe fitting at one end of the copper pipe with adhesive glue. As shown in picture below

**Step-2**



- 3) Start putting magnets on to copper pipe having same face of magnets to each other.

**Step-3**



- 4) Complete the full copper pipe by fixing all the magnets till the second end of pipe.

**Step-4**



- 5) Now rap the electric tape on the whole device to protect from water and other materials. As shown in picture.

**Step-5**



**Note:** - This Device can be used for drinking water as it has a copper pipe as copper is a bacteria killer metal and is good for human health. Secondly it can be used for watering plants.

**For device making reference:**

<https://www.youtube.com/watch?v=HK-ksPsz88M>

**Now the device is ready for use:**

If we want to use for drinking purpose then we need to close one side with led/cap, and then fill water in the device and leave it minimum 45 minutes to make it drinkable for better health. If we want to use it for harvesting purpose then we need to add this device in the starting or the end point of water supply pipe to water the plant and corpus.

Simply water can be magnetized just putting a glass of water on magnet for 45 minutes minimum and the health benefits can be taken out of it.

Magnetized water may or may not have bubbles in it like shown in the picture below.



**Picture – showing magnetic effect as bubbles in water**

As per my research done on this technique for the full 30 days of June 2016 I found that water of different places or sources and day and time of extraction of water affects the magnetizing process and results may vary on different situations.

**For magnetizing water reference:**

<https://www.youtube.com/watch?v=WAIL7vXkQBU>

## 15. Acknowledgement

Author would like to thank all those knowledge sources which those are listed in above list of reference like books authors and websites including papers which those are referred to compile this paper, and also want to mention that author may forgot to include many sources to write in this thanks list without those also was difficult to complete this paper and hence want to thank them also.

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#### Author Profile



**Mr. Sanjeev Kumar** is a B.Com Graduate from Delhi University in 1997 and 2 Years diploma holder in Jewellery design and manufacturing technology form Noida in 2001. Since 2002 have been busy in education and production industry of jewellery and played various important roles like production executive, production manager, research and development manager, technical education director and currently engaged with Pearl academy of fashion as an Asst. Professor in Jewellery design department for jewellery graduate course. Previously have been to South America and Africa for setting up various jewellery production units and institutes. Being a creative person keeps doing experiments with various metals and materials which is my passion.