

## PREPARATION OF WATER FILTER WITH BANANA PEEL, GRAVEL, GAUZES AND COTTON

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**Abstract:** Water pollution is a very common issue in these times. Nowadays, the occurrence and prevalence of diseases closely related to contaminated water are increasingly frequent. Currently, the problem of non-potable water has become widespread. This is because many people don't know what to do with it and simply discard it without knowing how to handle it. However, with a filter, this can be addressed.

The purpose of this project is to reduce water waste and clean dirty water that is considered unusable by the population. This will be achieved through the design of a water filter using banana peels, rocks, gravel, sand, cotton, grease, and a sponge.

The ultimate goal is to decrease the level of contaminants and improve the quality of water for consumption in rural areas.

**Keywords:** Filter, Water, Banana, Peel, Gravel, Cotton.

## INTRODUCTION

Water pollution is one of the problems, which is why it is now perceived as a finite resource with an unbalanced distribution. The importance that water quality has gained has made it possible to show that among the factors or agents that cause its contamination are: pathogens, waste that requires oxygen, organic and inorganic chemical substances, plant nutrients that cause excessive growth of aquatic plants, sediment or suspended material, radioactive substances and heat. Water contamination is the degree of impurity, which can cause adverse health effects in a representative number of people during foreseeable periods of time. In general terms, water is contaminated when it loses its potability for daily consumption or for use in domestic, industrial or agricultural activities.

Water contamination is a very common problem in these times, currently the appearance or suffering of diseases that are

closely related to contaminated water is more frequent, the most characteristic diseases that are related to this aspect are gastrointestinal diseases, These are produced by ingestion or contact with water that is not in optimal conditions, generating an alteration in the health of a normal person, which can range from a mild transitory state to a serious degree that requires much more consideration.

Today the problem of non-potable water has been presented a lot. This is because many people, because they do not know what to do with it, simply throw it away without knowing what to do with it and that with a filter it can be reused. Our purpose is that with this project we reduce the waste of water and clean the dirty water that It is useless for the population.

Design a water filter with banana peel, rocks, gravel, sand, cotton, gauze and sponge in order to purify and reduce the rate of pollutants to improve water consumption in human life.

There are several ways for the water to return to normal and to be usable without any problem, but with the pollution that exists now it is very difficult for it to be recycled and regenerated since we throw garbage into the sea and that makes us think that if This is how the problem is in these times as it will be in the future.

There are industries that throw their waste into the water as toxic materials such as oil or coal that are a danger to marine animals and also to us.

Water is given many types of chemical-based uses such as in agriculture to irrigate crops, creating human health problems due to the application of fertilizers, pesticides, herbicides and residues that contain nitrogen, phosphorus, among other toxic elements that They can cause side effects on our health and that of the animals, also being one of the major consumers of water since there is not a very efficient irrigation system.

In the domestic sphere, which is where we use water the most to do household chores such as washing our clothes or washing the dishes, people throw detergents, pesticides, food scraps or oils down the drain, which worsens groundwater contamination. There are also urban landfills that are normally made up of paper, glass, plastic or metal waste from the household.

This project is innovated to better purify the dirty water that today is presented to us through a filter that is more efficient, easy, practical and economical for the population.

This to improve the quality of water, thus having a homemade alternative for the use of rainwater, rivers, etc. besides; teach a simple way to make a filter or water purifier seeking that it can also be used as drinking water for human domestic use, this construction of homemade filters will be made with minerals and elements that are easy to obtain. So that in a certain situation it is possible to supply an unexpected water shortage or as an additional alternative to save water inside a home.

## PROJECT DESIGN

For the development of this project we have used the following materials:

- Sand
- Gravel
- Rock
- 2kg of banana peel
- Cotton and gauzes
- Sponge
- Plastic mesh
- Pvc tube
- 1grifo
- Wood
- Silicone glue
- 4 glass plates:

For the realization of this project the first thing that was taken into account is the

problem of rural communities about the lack of drinking water for consumption.

The search for materials that help to purify water and that are within everyone's reach continued. Then we proceeded to the design and construction of our project: measures: 36x10cm.

## TO OBTAIN POWDER FROM THE BANANA PEEL

First, the banana peel must be left in the sun for a week.

The dry shells are crushed and sifted through fine sieves, leaving a very fine powder that is easier to use.

For the preparation of the homemade water filter, the following steps will be taken into account:

Assemble the structure of the filter, for this it is necessary to join the 4 side plates and make a circular hole to later glue all the pieces with the silicone.

Cut the pvc tube with measurements of 5cm, 10cm, to stick it on the glass plate where the circular hole was made and thus be able to place the faucet to give way to the water outlet.

Place a layer of cotton and gauze of 2cm.

Introduce a sponge in the lower part of the structure about 2cm.

Place a 10cm x 10cm plastic mesh, then introduce 2cm of banana peel powder.

Replace the plastic mesh and introduce a 5 cm layer of coarse sand.

Introduce a 6 cm thick layer of fine gravel, this after having introduced the layer of sand.

Replace the plastic mesh followed by a 6 cm thick layer of gravel.

Finally, a 6 cm thick layer of stones or rocks is introduced.

## PROCEDURE TO FILTER THE WATER

Place a deep plastic or glass container on a flat surface.

Place the homemade filter on a flat surface and the deep container under the tap.

In the upper part of the filter, place the strainer and begin to spill the water to be filtered through the strainer, allowing it to begin to pass through the different layers of the filter.

Close the faucet and let the water stand for at least 15 minutes.

At the end of the required time, open the tap located at the bottom and let the already filtered water deposit itself in the deep plastic or glass container.

After following the steps, the water is ready to use.

## FUNCTION OF THE ELEMENTS USED IN THE FILTER

**Sponge:** made with a combination of silicone and coffee grounds that acts as a filter to purify the water, absorbing metals.

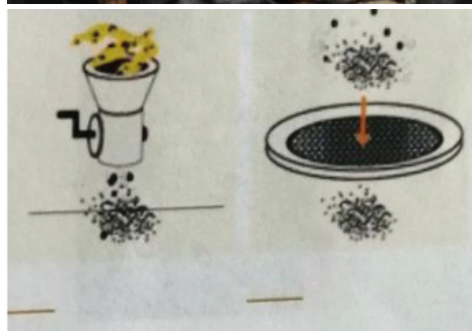
**Banana peel:** can clean water contaminated with heavy metals up to 65%.

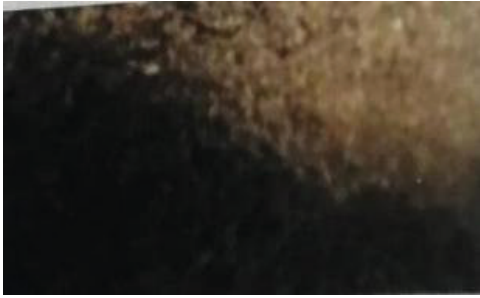
The function of the cotton will be mainly to support the stones and prevent their contents in the container from falling through the neck.

**Plastic mesh:** Improves each filtering stage by preventing the passage of solid waste.

**Gravel and sand:** they are mechanical filters, that is, they leave openings that do not allow larger particles to pass than the spaces left between the component particles. This is determined by the particle size of the gravel and sand.

These filters retain all types of particles, regardless of their nature.

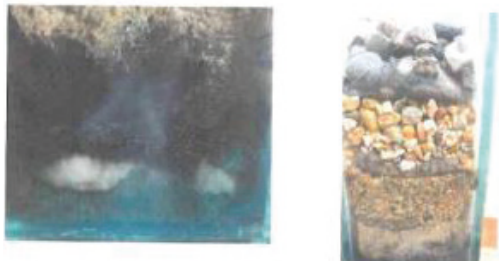




ANNEX 01: Obtaining powder from the banana peel



ANNEX 03: Results



ANNEX 02: Filter Construction

## CONCLUSIONS

After carrying out the water filtration, the pH levels in the water filtered by the control and experimental filters were compared with the function of knowing if the water is suitable for human domestic use.

Due to the above, it was determined that the water sample before filtering (M1) is not suitable for human domestic use, since it was not filtered water, which has a pH of 8.6 and the samples of filtered water in the filter (M2 and M3) were suitable for human domestic use and within what is established by the Sanitary Standards for the quality of drinking water, which is from 6.5 to 9.

It has been determined that purifying water will help improve the quality of life in humans because when water is purified, polluting and health-hazardous residues such as rust from iron pipes, foreign agents such as bacteria, etc., are eliminated. among others.

Regarding the methodology used, it was observed that with less materials and less expenses for the pocket of the population, it



was essential according to the resources that were at home. Due to this, a great effort was made to investigate different models found in the market and the combination of each of them.

## RECOMMENDATIONS

Do not filter water that contains organic and chemical residues, so it is preferable to strain the water before filtering it.

It is advisable to filter rainwater, rivers or streams.

Change the gauze or cloth when it is very dirty, because it can become a habitat for microbes.

It is recommended to boil the water after being filtered.

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