

## Application of NSF-2024

- Name of student: R.M.Vidyuth
- Class in which studying: IX
- Title of the project: Solar water purifier
- Category level of project: senior secondary level.
- WhatsApp number of student:9677232395
- Name of the guide teacher: Ramya
- E-mail of teacher:
- E-mail of student: [sindhujam83@gmail.com](mailto:sindhujam83@gmail.com)

- Contents

- Aim of the project:

### Aim of Solar Water Purifier

“To demonstrate how solar energy can be used to purify dirty or salty water through the processes of evaporation and condensation, and to show a low-cost, eco-friendly method of obtaining clean drinking water.”

- Materials required for the project:

### Materials Required for Solar Water Purifier

1. Large bowl or pan – to hold dirty/salty water
2. Small cup or glass – to collect purified water

3. Cling wrap / transparent plastic sheet – to cover the bowl
4. Rubber band / tape – to seal the edges of the bowl
5. Small stone/weight – to create a slope in the cling wrap
6. Dirty or salty water sample – for demonstration
7. Sunlight / lamp (strong light source) – for heating and evaporation

- Procedure:

#### Procedure

1. Take a large bowl or pan and fill it halfway with dirty or salty water.
2. Place a small cup or glass in the center of the bowl.

Make sure the cup does not float. (You can add a small weight inside if needed.)

3. Cover the bowl tightly with cling wrap (plastic sheet).

Seal the edges using tape or a rubber band to prevent vapor from escaping.

4. Place a small stone/weight on the cling wrap directly above the cup.

This creates a sloped surface so that condensed water droplets fall into the cup.

5. Keep the setup in direct sunlight for several hours.

The sun's heat warms the dirty water.

6. Observe the process:

Water evaporates → vapor rises → condensation forms on cling wrap → droplets fall into the cup.

7. After a few hours, check the cup.

You will find clean distilled water inside.

- Introduction:

Here's a simple, science-fair-ready Introduction of Solar Water Purifier you can use:

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#### Introduction of Solar Water Purifier

A solar water purifier is a simple device that uses the heat energy of the sun to clean dirty or salty water. It works on the principle of the natural water cycle – where water from rivers, lakes, and seas gets heated by the sun, evaporates, forms clouds, and later condenses as rain.

Useful – can provide safe drinking water in rural areas, deserts, or during emergencies like floods and natural disasters.

- Abstract

#### Abstract of Solar Water Purifier

Water is essential for life, yet millions of people worldwide face shortages of clean drinking water. Conventional purification methods are often expensive or require electricity. A solar water purifier provides a simple, low-cost, and eco-friendly solution by using the renewable energy of the sun.

This project demonstrates how dirty or salty water can be purified through the natural processes of evaporation and condensation. A bowl containing impure water is placed under sunlight and covered with a transparent plastic sheet. As the sun heats the water, it evaporates, leaving behind impurities. The vapor condenses on the plastic sheet and drips into a container placed at the center, collecting as clean distilled water.

The experiment proves that solar energy can effectively purify water without the need for electricity or chemicals. This method can be particularly useful in rural areas, disaster relief situations, and regions with limited access to safe drinking water.

- Statement of the problem

Access to clean and safe drinking water is one of the major challenges faced by many communities around the world. In rural areas, disaster-affected regions, and places with poor infrastructure, people often depend on contaminated or salty water sources. Conventional purification methods are costly, require electricity, or use harmful chemicals, making them unsuitable for such situations.

The problem, therefore, is:

“How can we purify dirty or salty water in a simple, eco-friendly, and low-cost way using readily available resources?”

This project addresses the problem by developing a Solar Water Purifier that uses renewable solar energy to purify water through natural processes of evaporation and condensation, making it safe for consumption.

- Conclusion

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Here's a neat and simple Conclusion for Solar Water Purifier that you can directly use in your science fair project:

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 Conclusion

The Solar Water Purifier successfully demonstrated that solar energy can be used to purify dirty or salty water through the natural processes of evaporation and condensation. The experiment showed that after exposure to sunlight, clean distilled water was collected in the container, leaving behind impurities and salts in the main bowl

