Eco-Friendly Sanitary Napkin From Corn Starch And Natural Fibres

Eco-Friendly Sanitary Napkin From Corn Starch And Natural Fibres

SCIENCE FAIR PROJECT REPORT

LEVEL	JUNIOR
CATEGORY	Environmental science

SUBMITTED BY : **AFIYA A**

GRADE : **IX**

SCHOOL : **IMAM SHAFI (RAH) MAT.HR.SEC SCHOOL ADIRAMPATTINAM.**

PROJECT ID : **NSF-SCH -2025 – 298**

PROJECT TITLE : **Eco-Friendly Sanitary Napkin From Corn Starch And Natural Fibres**

CITY AND STATE : **Adirampattinam, Tamilnadu**

ACKNOWLEDGEMENT

I wish to experts my deep gratitude and sincere thanks to our Directors , Principal Madam, Vice Principal, Teachers and parents for their encouragement and for all the facilities that they provided for this project work.

I take this opportunity to express my deep sense of gratitude for that invaluable guidance constant encouragement , and constructive comments.

ABSTRACT

This project created a biodegradable sanitary napkin using cornstarch bioplastic and natural fibers, offering a gentle, absorbent, and eco-friendly alternative to plastic-based pads. The results show that simple, sustainable materials can produce an effective product that protects both women's health and the environment.

Introduction

Most sanitary napkins are made of plastic and chemicals that take many years to decompose and harm the environment. To reduce this pollution, I created an eco-friendly sanitary napkin using corn starch and natural fibres. These materials are safe, biodegradable, and comfortable. This project aims to make a sanitary napkin that is good for both women's health and the environment.

STATEMENT OF THE PROBLEM:

Most commercial disposable napkins are made with plastics and synthetic fibres. They are non-biodegradable, pollute soil and water, harm the environment, affect women and reproductive systems, can cause pelvic inflammatory disease , and exposure to chemicals. A sustainable alternative is needed.

HYPOTHESIS:

If corn-starch based on bioplastic sheets are combined with natural fibres (banana fibres or cotton), then the resulting Napkin will be absorbent, flexible, and biodegradable, making it Eco-friendly compared to commercial napkins.

DESIGN OF STUDY:

DEPENDENT VARIABLE:

The performance or quality of the napkin.

(Absorbency level , Drying time, Flexibility of bioplastic sheet, Comfort or softness, biodegradability rate.)

INDEPENDENT VARIABLE:

The materials used to make the sanitary napkin.

Type of fiber (cotton, banana fiber, bamboo fiber, Amount of cornstarch, glycerin, or vinegar, Thickness of bioplastic layer)

CONTROLLED VARIABLE:

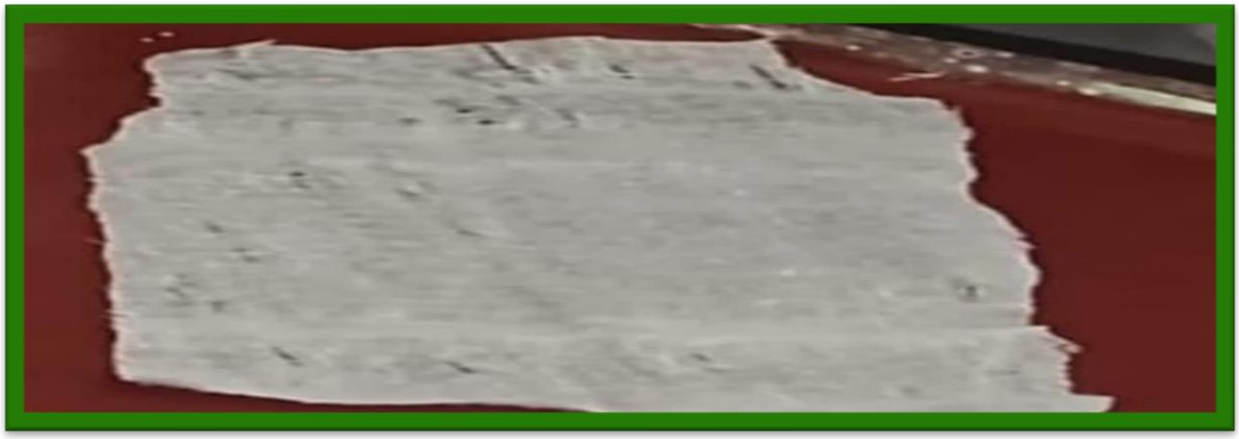
Drying time in sunlight, Quality of ingredients, Size and shape of the napkin, Pressing time.

MATERIALS:

- Corn-starch
- Water
- Glycerin (for Flexibility)
- vinegar (as binder)
- Cotton (or banana fibre) - absorbent core
- Muslin cloth - outer cover
- Tray / mould
- Heat source (stove / hot plate)
- spatula / spoon

PROCEDURE:

1. Mix cornstarch, water, glycerine and vinegar.
2. Heat until it thickens.
3. Spread as a thin layer in a tray and dry in sunlight for 1-2 days.
4. Peel off to get a bioplastic sheet
5. Place a bioplastic sheet at the bottom.
6. Add 2 layers of cotton and 2 layers of muslin cloth.
7. Press all layers together – Napkins ready




CORN
FLOUR
GLYCERIN

RESULT:

- After completing the preparation process, the eco-friendly sanitary napkin made from cornstarch-based bioplastic, cotton, and muslin cloth showed good absorbency, flexibility, and comfort.
- The bioplastic sheet formed a smooth, waterproof, and biodegradable base.
- The cotton layers effectively absorbed liquid.
- The muslin cloth provided a soft, skin-friendly surface.
- The napkin was lightweight, comfortable to use, and completely free from plastic.
- When buried in soil, the napkin started decomposing within a few weeks, proving its biodegradability.

CONCLUSION:

This project successfully demonstrates that eco-friendly sanitary napkins can be made using cornstarch and natural fibers as safe and sustainable alternatives to plastic-based pads. The bioplastic sheet made from cornstarch acted as a biodegradable waterproof layer, while cotton and muslin cloth provided absorbency and comfort.

The final product was soft, flexible, and completely decomposable, proving that biodegradable materials can replace harmful synthetic ones used in commercial sanitary products.

By adopting such innovative methods, we can reduce plastic waste, protect women's health, and promote environmental sustainability
A small change in our choices can make a big difference to our planet.

REAL LIFE APPLICATION:

1. **Environmental Protection:**

These eco-friendly sanitary napkins can replace plastic-based pads, reducing non-biodegradable waste and preventing soil and water pollution.

2. **Women's Health and Hygiene:**

Since the napkin is chemical-free and skin-friendly, it helps prevent rashes, allergies, and infections caused by synthetic materials.

3. **Rural and Low-Income Areas:**

The napkins can be easily made at home or by women self-help groups, creating employment opportunities and promoting affordable menstrual hygiene.

4. **Educational Awareness Programs**:

Schools and NGOs can use this model to educate students about menstrual hygiene and eco-friendly practices.

5. **Industrial Production:**

This idea can be expanded to large-scale production of biodegradable sanitary pads using natural fibers and cornstarch bioplastic, reducing the carbon footprint of hygiene industries.

6. **Agricultural Use After Disposal:**

Since the pad is biodegradable, it can be composted and turned into natural fertilizer, enriching the soil instead of harming it.