

CHAKACHAK BIOENZYME:

A program to promote use of natural cleaner through educational institutes.

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Indoor air pollution is an environmental hazard faced by schools. Poor ventilation, coupled with use of strong cleaning agents, causes an increase in levels of air pollutants like VOCs (Volatile Organic Compounds) in the indoor air leading to increased episodes of asthma and allergy .

Ways to improve indoor air quality in schools?



Bio Enzyme

Also known as Garbage Enzyme or Fruit Enzyme. A multi-purpose, natural cleaner produced from fruit/ vegetable peels, developed by Dr Rosukun Poompanvong from Thailand.

Production

By fermenting a mixture in the ratio of 1:3:10, for 3 months.



* Yeast can be added to accelerate the process.

Cleansing properties

Dissolves the oil, removes stains and odour.

Antimicrobial properties

Effective against pseudomonas and hence can be used as floor cleaner.

Benefits

Effective alternative to harsh chemicals such as bleach, phenyl, and other chemical solutions used to wipe floors, tiles and other surfaces.

The school won gold prize at National level science congress



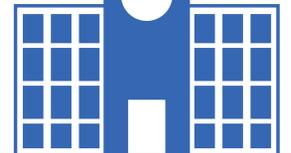
for its project **Bioenzyme.**



Triggered to implement the project at school premises.

PROGRAMM DESIGN

Smt. Sulochanadevi Singhania School is located in Thane city, with strength of 6000+ students from junior KG to XIIth standard. The school complex functions across 3 buildings with 156 classrooms.



Smt. Sulochanadevi Singhania School

PHASE WISE PROGRAM IMPLEMENTATION

Preparatory

- Training of Housekeeping staff for bioenzyme production.
- Material procurement, identification of site for bioenzyme preparation.
- Creating Mopping Schedule & Protocol.

Implementation

- Pilot implementation for 15 days at selected areas.
- Make assessment reviews for scale-up.

Scale-up

- Based on assessment reviews, replication of the program in the entire school.
- Parallel awareness sessions for staff and students

MOPPING PROTOCOL



Gradual switch to 100% bio-cleaner

Substitute with the 1st and 2nd mopping



Minimise phenyl usage

3rd mopping will be done using phenyl.

Existing Practice:
3 times wet mopping with phenyl.
Based on the preference of the cleaning staff and the management.

Bioenzyme will be restricted to use as floor cleaner only. For Toilets a proven disinfectant and de-odourizer is recommended.

ENVIRONMENTAL SAVINGS

18kg of citrus peels will be saved from going into landfill. Once prepared, these soft peels will be composted in the school's composting unit.

RESULT & INFERENCE

FINANCIAL SAVINGS

SCHOOL SPENDING ON FLOOR CLEANER (APPROX)

Old mopping protocol		New mopping protocol	
Cost of procuring monthly 1000 litres of any chemical based Phenyl	Rs 12000	Cost of preparation monthly 60 litre of Bioenzyme	Rs 500
		Cost of procuring monthly 401 of phenyl	Rs 4720
Total	Rs 12000	Total	Rs 5500

Monthly saving Rs 6500 i.e 54%

Assessment Reviews (Based on Housekeeping staff's feedback)

PARAMETER	USER EXPERIENCE	INFERENCE
Chemical Exposure	No fumes released	Safe for Human contact
Cleansing Action	Perceived as ineffective cleaning agent when compared with phenyl.	Important to educate staff that naturally made organic compounds are effective against microbes, while being safe for them and their environment
Smell	Lack of fragrance. Most staff disliked the smell of the prepared bioenzyme and showed lack of enthusiasm to use the product	Bioenzyme has no artificially added compound for fragrance. Perception of fragrance as pointer for cleanliness has to change. But for wider and commercial viability addition for external fragrant oil as an option should be explored.

Currently, with ease of availability and cheaper chemical cleaners being available in the market, all surfaces are cleaned with strong and harsh chemicals, unnecessarily. Traditional methods for disinfection using naturally available cleaners needs to be revived for safe human and environmental health.