

INTEGRATED BIOREFINERY

CONVERTING OIL PALM WASTE INTO USEFUL CHEMICAL COMPOUND



(From left)

1) Oil Palm Waste.

2) Conversion process

3) Sample of end product: Baby Diapers

CHALLENGES

Current technologies make use of crude oil as raw material.

OUR SOLUTION

Convert oil palm waste to acrylic acid using combination of bioprocess (fermentation) and chemical (catalytic) process.

HOW IT WORKS

Biomass is converted to cellulose and hemicellulose by heat and acid treatment. Cellulose and hemicellulose is broken down into C5 and C6 sugars by enzymes. The sugars are then converted into lactic acid using bacteria isolated from fungi found in Singapore. Lactic acid is converted into acrylic acid via a catalyst developed by ICES.

BENEFITS

Avoid usage of crude oil as raw material.

APPLICATIONS

- Sustainable production of bulk chemicals.
- Acrylic acid used in emulsion paints, textiles, super absorbent polymers for diapers etc.

