

IV RECYCLING TECHNOLOGY

Project Title: METHANE GAS

Name and Address of Principal Investigator: Mr. Vicente E. Venida
Building Construction Assistant
Instructor-University of Southeastern Philippines-College of Engineering

Description of the Project: This methane gas generator is an excavated pit, square in section and the walls are made of concrete hollow blocks. All inner walls are plastered on both sides and bottom floor with water-proof cement to prevent seepage. The dimensions are, width 2.30 m., 2.30 m. length and 1.50 m. in deep. The cover is made of plain G.I. sheets, gauge 18, welded and coated with lead oxide and painted with antirust for durability. This generator is connected to the piggery pen by means of a soil pipe 4" in diameter. A ½" G.I. pipe is attached to a gate valve installed on top of the cover or gas holder where a flexible hose is attached leading to the kitchen stove. The stirrer is also welded to the gas holder.

Project Cost and Source of Funding: ₱ 5,468.00

Cooperating Agencies: None

Date Started: July 10, 1980

Duration or Expected Date of Completion: Oct. 4, 1980

Date of Completion (for completed projects): Dec. 4, 1980

Present Status of Project: 3/4 finish

Other Relevant Information: Gas Utilization and Rate Consumption:

1. For Gas stove — 15 cu. ft./ hour / burner
2. For Gas Engine (Converted Jeep Engine) — 15.20 cu. ft./hr.
3. For Gas refrigerator — 7 cu. ft. (converted) 2.5 — 3 cu. ft./hr.
4. For gas boiler (10 H.P.) — 250-300 cu. ft./ hr.

Project Title: INTEGRATED COMMUNITY BIOGAS AND VERMICULTURE PLANT FOR WASTE RECYCLING

Principal Investigator: Blas R. Tabaranza, Jr.
MSU-IIT, Iligan City

Project Description: The project will recycle all community wastes (domestic, farm and animal wastes) to produce (a) cheap methane gas for community use as fuel and (b) vermiculture products to boost the economy of the community i.e., (b.1.) live earthworms to be sold at the current price of ₱ 30.00/kilo (b.2.) livestock feeds (earthworms as protein ingredient (b.3) organic fertilizer (b.4.) protein for human consumption (optional).

The project consists of several studies, to wit:

- a) Survey on the Municipal Solid Waste Disposal System and Problems of Iligan City. (Completed)
- b) Study on the Status of Vermiculture Industry in the Philippines. (on-going)

- c) Verification Study on the Breeding of Lumbricus rubellus. (on-going; from Nov. 1979 until Dec. 1980)
- d) Laboratory studies on the breeding and feeding habits of classified local species. (on-going until June 1981)
- e) Study on and collection of local species of earthworm. (on-going from Jan. 1980)
- f) Technical and Economic Feasibility Study of Producing Biogas from Municipal Organic Wastes. (Jan. 1981-Dec. 1983)
- g) Study on the Utilization of Sludge from Biogas Tanks as Substrates for Earthworms. (June 1981-Dec. 1982)
- h) Study on the Rate of Conversion of Municipal Organic Wastes into Fertilizer by Lumbricus rubellus and viable local species. (Jan. 1982-Dec. 1983)
- i) Technical and Economic Feasibility Study on Processing Animal Feeds using Earthworms as Protein Ingredient. (Jan. 1984-Dec. 1984)

Project Cost: P799,534.00.-

Source of Funding: MSU-IIT, Research Funds

Cooperating Agencies: The proponent hopes to tap the cooperation of the following agencies for funding and other assistance:

- a) Department of Energy
Bureau of Energy Development
- b) Ministry of Human Settlements
- c) National Science Development Board
- d) City Government of Iligan

Date Started: August 1979

Duration: 5 years and 5 months

Expected date of completion: Dec. 1984

Present Status of the Project:

- a) Completed a Biogas and Vermiculture Bibliography consisting of 34 Book Titles, 77 Pamphlets and Periodicals
- b) From one box with only .1 kilo of Lumbricus rubellus earthworm in Nov. 1979, the project has produced 10 boxes as of July 31, 1980 with no less than 10 kilos of earthworms.
- c) As of July 1980, the proponent has collected two local species of earthworm, one of which has striking similarity with the L. rubellus and observed to be quite prolific, too.
- d) A paper entitled "Vermiculture Industry: Its Economic Perspectives" was delivered by the proponent during the 7th Annual BioWeek (Feb. 11-15, 1980) in MSU, Marawi City. This paper is being prepared for publication.

Project Title: SUBSTITUTION OF RESIDENTIAL SEPTIC TANKS BY BIOGAS DIGESTERS

Name and Address of Principal Investigator: Rachel Polistico

Xavier University, Cagayan de Oro
City

Description of the Project: Installation of biogas digesters as dormitory and school septic tanks to provide biogas for lighting and cooking needs.

Project Cost and Source of Funding: ₱15,000 — COCOFED; NDMC

Date Started: March 15, 1980

Duration or Expected Date of Completion: June 1, 1984

Present Status of Project: 25% complete

Other Relevant Information: This research is part of the effort of the NDMC College of Engineering to develop non-conventional sources of energy for use on campus.

Project Title: RECYCLING TECHNOLOGY: UTILIZATION OF WASTE MATERIAL FOR DRYING FRUITS, VEGETABLES, CEREALS AND MARINE PRODUCTS

Name and Address of Principal Investigator: Dr. Ignacio S. Pablo
Philippine Institute of Nutrition,
Food Science and Technology
Batek Center
Philippine Womens University
Taft Avenue, Manila

Description of the Project: Preliminary Study

The first phase of the project which was funded by the Makati Rotary Club Foundation dealt with the standardization of procedures for osmotic drying of 12 fruits, vegetable and marine products. Simultaneously, modification and standardization of the fuel and the design of the biomass dryer fabricated by Project Sta. Barbara, Phil, Navy were done.

Project Cost: ₱25,000.00

Makati Rotary Club Foundation, Inc.

Cooperating Agencies: PINFST Batek Center — PWU
Makati Rotary Club Foundation, Inc.

Date Started: January 1, 1979

Duration: 18 months

Date of Completion: June 30, 1980

Present Status of Project: Further modification on the biomass dryers is necessary for improving efficiency.