LEARNING GUIDE

Programs Environmental Technology
Biodiesel Processing

Module RENEWABLE ENERGY

Learning Unit How to Make Biodiesel

Introduction

Making biodiesel fuel using used vegetable oil is done by following a step by step process. Each step must be completed properly. This learning guide will teach you each of the steps necessary for the production of biodiesel fuel. This learning unit will also review the science and math necessary to producing biodiesel.

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Biodiesel Processing

Performance Objective: The student will complete each step in the process used for manufacturing biodiesel

Given: An instruction sheet, conversion book, instructor oversight, tools and materials

The Student Will: Process a batch of biodiesel

How well: You must successfully pass a knowledge test and performance test.

Name: _____

Date: _____

Grade: _____

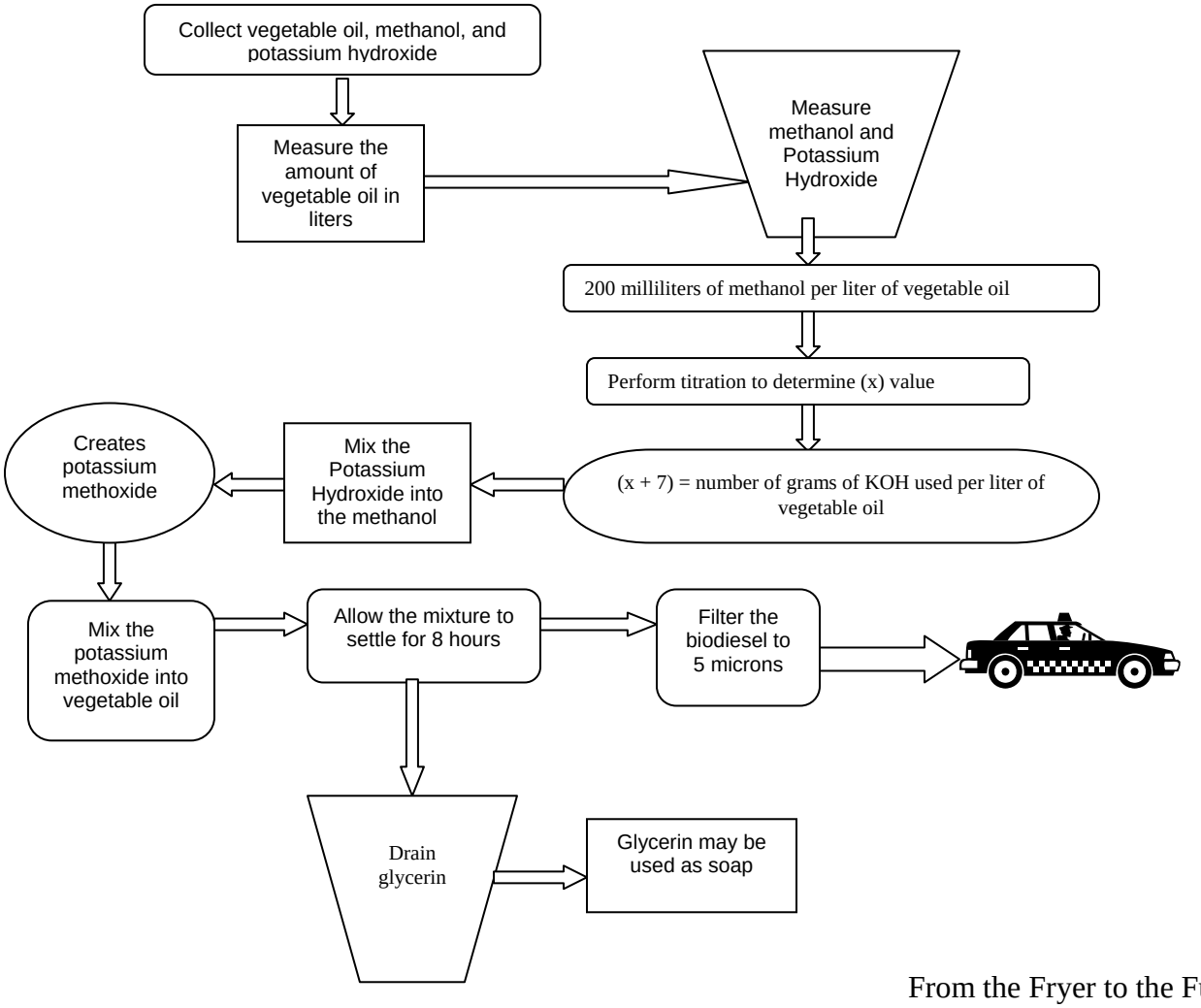
INSTRUCTION SHEET

Processing biodiesel from used vegetable oil is done through a process known as transesterification. Approximately 20% of the vegetable oil molecule is made up of glycerin. Glycerin is what makes vegetable oil viscous and sticky. The transesterification process separates the glycerin from the vegetable oil molecules making it thinner and less viscous and easier to use as a fuel source. For our classroom process, we will using potassium hydroxide (KOH) as a reactant instead of sodium hydroxide (NAOH) because it is safer to work with.

Reading Assignment: Read *From the Fryer to the Fuel Tank* pages 59-73 to understand the steps and procedures of processing biodiesel fuel. (*From the Fryer to the Fuel Tank,* by Joshua Tickell, Joshua Tickell Media Productions, Third Edition New Orleans, LA 2003)

Follow All Safety Procedures

Biodiesel Processing Flow Chart



From the Fryer to the Fuel Tank, pg 65.

KNOWLEDGE TEST

1. What is the process of removing glycerin from the vegetable oil molecule called?

2. What are the hazardous properties of potassium hydroxide?

3. What are the hazardous properties of methanol?

4. What can glycerin be used for after it is removed from the vegetable oil?

5. What are three benefits of producing biodiesel from used vegetable oil?

Essay Question:

Write a three-paragraph (minimum) essay stating why we should use biodiesel, and how it’s processed.