

Republic of the Philippines
House of Representatives
Batasan Complex, Quezon City

Thirteenth Congress

1st Regular Session

HOUSE BILL NO. 4341



Introduced by **MONICO O. PUENTEVELLA**

EXPLANATORY NOTE

The urgent worldwide thrust to fast track the development of alternative and/or renewable fuels is prompted by three (3) serious global concerns:

First is the ***Dwindling World Crude Oil Reserve***. Petroleum analysts worldwide are in unison in projecting that the world crude oil supply will be halfway by the year 2010 and critical by the year 2040. China and India are overheating in industrialization while problems continue to beset the oil fields thereby causing serious imbalance in the supply and demand picture. As such, the spiralling cost of oil prices worldwide will continue to a point where countries specially third world like the Philippines may no longer be able to bear.

Second is the ***Environmental Degradation*** causing global warming and climate change. The unabated and continuous dumping of greenhouse gases (GHG) into the atmosphere has caused atmospheric temperature to sharply rise over the recent years. For the Philippine climate, this means the dry season becomes drier (causing El Nino), and the wet season becomes wetter (causing La Nina). At the forefront of greenhouse gas emission are CO₂ and NO_x which are products of fossil fuel combustion.

Third is ***Air Pollution and Risk to Public Health***. Emission from combustion of fossil fuel consist of an array of air pollutants which cause respiratory ailments and cancer. A recent study by the Boston Clean Air Task Force (published on Feb 2005) show that diesel soot causes cancer 8 times more than all air pollutants combined.

The Philippines is blessed with coconut trees because Coco Biodiesel has been proven to be an effective response to all three (3) concerns and a means for environmental well-being.

There are thousands of researches, studies, laboratory and field test, health test, comparative tests, and others conducted over the past 20 years in various universities and research institutes in Europe, U.S., Canada, Japan, Australia, South Korea, and others on Biodiesel. There are no serious negative findings except for apprehension in its solvency effect on rubber component of engines at high blends and slight increase in NO_x emission. However, test on neoprene and several types of rubber used in engines have been evaluated at 20% blend without negative findings. On NO_x emission, Coco biodiesel is the only biodiesel that reduces NO_x.

All researches and studies on Biodiesel have dramatic and very favorable findings when used as diesel fuel substitute or diesel quality enhancer. The U.S. congress has, in fact, already passed a

declaration that Biodiesel is the official alternative diesel fuel for the United States using Soybean. Such declaration resulted in very progressive demand growth for biodiesel which accelerated soybean production and inflow on new plant investments. More importantly, it is contributing to their reduction of imported fossil fuel. Such reduction will continue to improve as renewable fuels have just recently been given tax incentives by President Bush..

Although biodiesel can be used as 100% diesel fuel substitute without need for engine alteration, its higher cost does not make it feasible as a 100% alternative to fossil fuel as yet even in Europe and U.S. Being registered in the U.S. Environmental Protection Agency (EPA) as both fuel and fuel additive, biodiesel is typically used in developed countries at 5% to 10% blend to effectively address their strict emission standards. In many parts of Europe such as France, a 5% biodiesel blend (from Rapeseed oil) is mandated by government. The European Economic Council has also issued a circular to its member countries to develop their own biodiesel program such that a 10 % blend can be attained by 2010.

Biodiesel is fast catching up in Asia. Japan is finalizing its biodiesel standards and will soon mandate a 5% blend that translates to a requirement of 2 billion liters per year. Similar initiatives are already in place in other Asian countries. All these countries will undoubtedly rely on palm and coconut biodiesel.

The Philippine Coco Biodiesel

Coconut oil being abundant in the Philippines is logically the source oil for methyl ester. This is now referred to as Coconut Methyl Ester, the Philippine Biodiesel or Coco Biodiesel. Unlike other plant oil, coconut contains medium carbon chain which is 91% saturated. When esterified for use as biodiesel, these medium saturated carbon chain makes Coconut Methyl Ester unique, superb, and versatile over other biodiesels. It is one of only two plant oil in the world that has such uniqueness which makes it a premium biodiesel.

Features of coco biodiesel (not present in other biodiesels) are: High solvency and detergency; High cetane number; Wide distillation range; and Reduces NOx emission. Other features common in all biodiesel (including coconut) are : High lubricity and Oxygenated with 11% oxygen. Common in other biodiesels (except coconut) are : Mild solvency; Narrow distillation range; increases NOx emission.

Role of Coco Biodiesel in Mitigating Air Pollution

This measure calls for initial pre-blend of 1% Coco Methyl Ester in diesel fuel upon effectivity of the bill; 2% pre-blend after two (2) years; then 5% pre-blend after another 5 years to further reduce fuel import.

It has been proven in various research institutes such as the Japan Society for the Promotion of Science (JSPS) at Nihon University in Tokyo, Japan ; Daeduk Institute in So. Korea , and in many local field tests, that emission of diesel soot or Particulate Matter (PM) is reduced by as much as 60% and NOx by as much as 20% from as little as 1% blend of Coco Methyl Ester. Local opacity test on typical surplus diesel engines have even shown dramatic reduction of PM by more than 80%.

The action of coco biodiesel in engine and fuel even with just a 1% blend is two-fold:

1. It **restores engine efficiency**. Its high solvency and lubricity features provide this action. Heavy accumulation of carbon deposits in combustion chamber and clogs in fuel lines and injector nozzles are cleansed to restore the operating efficiency of the engine. It

is a non-invasive means of declogging fuel lines and injector fuel nozzles. The result is better combustion and less emission.

2. It *enhances the combustibility of fuel*. Its oxygen content and high cetane number provides combustion improvement and acceleration response. Result is cleaner combustion, less emission, and increase in fuel mileage economy.

The additional cost of Coco Biodiesel at 1% pre-blend is just a one-time input in the price build-up of diesel fuel. It is a front-end cost like a fertilizer to generate greater back-end harvest. The "back-end harvest" is in terms of increase in mileage efficiency which provides a net reduction in fuel consumption or cost savings. Such "harvest" also includes boost to social, environmental and economic well being of the country.

Ball park estimate of the net price effect per liter to motorists at dispensing pump:

	1% cost of Coco Biodiesel at pump	P 0. 55
less:	1% cost of Displaced Diesel at pump	0. 27
		P 0. 28
less:	Cost of displaced additive	0. 08 (estimate)
	Net addition at pump price	P 0. 20/liter

The "one-time" input of 0. 20 centavos in the price build-up of diesel fuel per liter is a small amount compared to the monthly round of fuel price increases by oil companies to cover their crude cost. This additional amount is in fact offset (break-even) by less than 1% increase in mileage. Since actual mileage test conducted in private and government vehicles registered mileage increase of 10% to as much as 25% from a 1% coco biodiesel blend (or average of 17%), fuel savings will undoubtedly be substantial. Even just a 10% increase in mileage efficiency is already equivalent to a fuel cost reduction of P 2.70 per liter or a net savings of P 2.50 centavos per liter for the motorists.

Pre-blending Coconut Methyl Ester in diesel fuel is a practical, doable, and inexpensive means of eliminating smoke and other harmful emissions for healthy air. It will enable motorists to easily comply with the emission standards under the Clean Air Act. It does not require any additional logistical facilities nor engine modification and it is already immediately available. The Worldwide Fuel Charter, an agreement signed by all car and engine manufacturers worldwide for a single diesel fuel specification, allows the blend of up to 5% vegetable-derived ester provided it complies with DIN 51606 (a German Standard for Diesel Fuel). Coco-Biodiesel surpasses the DIN 51606 standard. Thus, car warranties are not compromised by a 1% blend of Coco Biodiesel.

Coco Biodiesel can effectively address the worldwide "Quest for Clean Air and Fuel Economy" and it is a Philippine initiative.

In view of the foregoing, early passage of this bill is earnestly sought.


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HOUSE BILL NO. 4341

Introduced by **MONICO O. PUENTEVELLA**

AN ACT
REQUIRING THE PRE-BLEND OF LOCALLY-PRODUCED METHYL ESTER
INTO DIESEL FUEL TO PROMOTE CLEAN AIR AND BOOST RESOURCE
DEVELOPMENT FOR RENEWABLE FUELS TO REDUCE IMPORT DEPENDENCE,
OPEN A NEW EXPORT REVENUE, AND PROVIDE FUEL SECURITY FOR THE
COUNTRY IN TIMES OF GLOBAL FUEL SHORTAGE.

SECTION 1 *Title* – This Act shall be known as the **“BIODIESEL ACT of 2005”**

SECTION 2. *Declaration of Policy-* It is hereby declared the policy of the State to:

- 2a. Promote energy efficiency in the transport sector to reduce fuel consumption and subsequently reduce oil import.
- 2b. Protect human, animal and plant life from the harmful effects of pollution through a clean and safe environment while conforming with international treaties and agreements to which the Philippines is a signatory.
- 2c. Develop new renewable energy fuels for long term energy security of the country in the light of dwindling world crude oil reserve projected to be critical within the 1st half of this century.

SECTION 3 *Definition of Terms* – As used in this Act, the following terms shall be taken to mean as follows:

- a) **Methyl Ester** – shall refer to the fatty acid component of a plant oil that no longer contains glycerine and its acidity has been removed through reaction with methanol. The process is known as esterification. Upon recovery of methanol, the remaining fatty substance is known as Mono Alkyl Ester or Methyl Ester which has similar carbon-hydrogen structure as

fossil diesel fuel except that it contains an oxygen molecule at the end of the carbon chain.

- a) **Esterification** - shall refer to the separation of glycerine from fatty acid by reaction process with an alcohol. What remains after recovering the alcohol is simply a fatty substance (or ester) which has a carbon chain profile similar to fossil diesel plus an oxygen molecule at the end of the carbon chain.
- b) **Coconut Methyl Esters (CME)** – shall refer to Methyl Ester produced by esterifying coconut oil with methanol with the aid of a catalyst. If palm oil is used, it is known as Palm Methyl Ester.
- c) **Biodiesel** – shall refer to the international name of methyl ester used as diesel fuel or diesel enhancer at various blends from B1 to B100.
- d) **Coco-Biodiesel** – shall refer to biodiesel produced from coconut oil. It is Coconut Methyl Ester (CME) that fully complies with the Philippine National Standard (PNS) for biodiesel as substantiated by a Certificate of Fuel Additive Registration Number (CFAR No.) and also conforms to the PNS for diesel fuel.
- e) **Diesel Fuel** – shall refer to mineral (fossil) fuel for diesel engines representing the middle distillate component of crude oil produced through fractional distillation and conforms to a set of quality parameters established as Philippine National Standard (PNS) for diesel fuel.
- f) **Vegetable-Derived Ester (VDE)** – shall refer to any kind of ester (e.g. methyl ester; ethyl ester, TMP ester, polyglycol ester, etc.) derived from plant or vegetable oil.
- g) **Enhancer** – shall refer to an element blended with diesel fuel expressed in **percent** (%) of fuel quantity to enhance the fuel's performance quality such as solvency (or detergency), lubricity (or anti-wear), cetane booster, others. If expressed in ppm (parts per million), it is otherwise referred to as additive.
- h) **B100** – shall refer to 100% use of biodiesel in diesel fuel.
- i) **B20** – shall refer to 20% blend of biodiesel in diesel fuel
- j) **B5** - shall refer to 5% blend of biodiesel in diesel fuel
- k) **B1** - shall refer to 1% blend of biodiesel in diesel fuel.

SECTION 4. *Purpose and Coverage of this Act* – This Act requires the pre-blend of locally-sourced methyl ester into diesel fuel. Coconut Methyl Ester (CME) being the dominant plant oil in the Philippines is the preferred subject of this Act. However, this act also encourages the development of other plant based methyl ester to boost the agricultural sector where barren lands can be utilized for planting certain oil producing crops that can be esterified into biodiesel. It is the intention of this act to harness the superb and unique quality of Coco Methyl Ester as diesel enhancer to address air pollution; and in the process, also boost resource development, boost rural economy; reduce oil import; and accelerate the development of locally-sourced renewable fuel for energy security of the country.

This act shall require a ***minimum blend of 1%*** Coconut Methyl Ester (certified by the Dept. of Energy with a Certificate of Fuel Additive Registration Number or CFAR) in all locally refined and imported diesel fuel sold in the country upon effectivity of this bill. The blend shall increase to ***2% after 2 years***, and further increase to ***5% at the end of another 5 years*** to further reduce fuel import unless otherwise amended. All producers, refiners, importers, distributors and sellers of diesel fuel shall be covered by this Act.

SECTION 5. *Taxes on Coco Biodiesel*

5-a. Value Added Tax (VAT)

Coco biodiesel is entirely new, which is a high volume, high value, long term, and sustainable alternative secondary product of coconut for domestic and export market. Since the quantity used for the production of Coco Methyl Ester will displace part of the export volume of coconut oil which is totally exempt from all taxes, this act shall grant DOE-registered Coco-Methyl Ester a special VAT status of 1% for a period of 5 years to promote its use and accelerate development of the Biodiesel program. Being a new product about to create a new domestic and export market as well as new revenue money for the country, such special VAT status is revenue-neutral.

5-b. Specific Tax on Blended Product

Considering that diesel fuel already has a built-in specific tax and Coconut Methyl Ester (CME) will be a special VAT status (from 5-a), the blend of 1% CME with Diesel Fuel to produce a Coco Biodiesel blend shall be exempt from the ***additional*** specific tax being assessed on blended product. Such exemption is revenue-neutral (no loss to government).

5-c. Duties and Taxes on Plant Investments.

To encourage the inflow of investments for the establishments of biodiesel plants as well as expansion plants, duties and taxes on the importation of

manufacturing equipment and parts shall be exempt for a period of five (5) years.

SECTION 6. *Implementing Rules and Regulations (IRR)* - Within 3 months from the effectivity of this Act, the Department of Energy (DOE) shall promulgate the implementing rules and regulations (IRR) of this Act. This shall incorporate the quality parameters of the Philippine National Standard (PNS) for Coco Biodiesel. The IRR shall also include the procedure for monitoring compliance as well as guidelines on sanctions against those in violation of this Act. Likewise, the Dept. of Finance (DOF) shall issue guidelines on the VAT exemption of Coco Methyl Ester used as Coco Biodiesel and the exemption from additional specific tax on blended product. The Board of Investment (BOI) and the Dept. of Trade and Industry (DTI) shall establish appropriate guidelines for new investments in biodiesel plants.

Within another 3 months after issuance of the IRR, the Dept. of Energy shall thereafter mandate all petroleum companies, importers, traders and sellers to effect the 1% blend of Coconut Methyl Ester premixed in diesel fuel sold in the country.

SECTION 7. *Effectivity* – This Act shall take effect fifteen (15) days from the date of publication in the Official Gazette or in at least two (2) newspapers of general circulation whichever comes earlier.

Approved;