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# State Water Resources Control Board

## Division of Water Quality

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Arnold Schwarzenegger  
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To: Local UST Regulatory Agencies and Interested Parties

### CLARIFICATION OF REGULATIONS APPLYING TO BIODIESEL-E STORED IN UNDERGROUND STORAGE TANK (UST) SYSTEMS

There are several chemically different versions of “biodiesel” all of which are produced from the same feedstock: animal fats, raw vegetable oils, and recycled cooking greases. The most common and widely distributed version is a fuel composed of mono-alkyl esters of long chain fatty acids produced through a transesterification process, which we refer to as Biodiesel-E to indicate it is an “ester” version. A second version reportedly under development is an alkane fuel produced via the Fisher-Tropsch process and depolymerization, which we refer to as Biodiesel-A. This letter addresses only Biodiesel-E described below as “biodiesel”, as Biodiesel-A is not yet available.

Biodiesel can be used, either as a pure fuel or blended with conventional petroleum-based diesel fuel, to power diesel engines. The use of biodiesel is expected to increase in the coming years as a result of the Energy Independence and Security Act signed into law in December 2007, which mandates an increase of renewable fuels from 6 billion gallons in 2007 to 36 billion gallons by 2022. In anticipation of this increased use, the State Water Resources Control Board (State Water Board) is issuing this letter to clarify how existing state laws and regulations apply to underground storage tank (UST) systems storing biodiesel and biodiesel blends. This letter supersedes any previous correspondence regarding biodiesel.

#### **1. Are UST systems storing biodiesel or biodiesel blends subject to regulation?**

Yes. Even biodiesel that has been manufactured in strict accordance with ASTM D6751-07a (March 2007) standards for biodiesel usually meets the definition of “hazardous substance” provided in the California Health and Safety Code, Chapter 6.7, section 25281(h), because the most recent ASTM biodiesel specifications<sup>1</sup> allow 0.2 %v/v methanol, which is a hazardous substance. Biodiesel manufactured out of specification has an even higher probability of containing hazardous substances, and to date most biodiesel has been manufactured out of specification<sup>2</sup>.

<sup>1</sup> ASTM D6751-07a (March 2007)

<sup>2</sup> In 2007 the U.S Department of Energy, National Renewable Energy Laboratory published the results of tests conducted on B100 samples obtained from biodiesel manufacturers around the U.S. and found that approximately 60% DID NOT meet the ASTM D6751-07(a) standard for biodiesel including out of specification peroxide levels.

Additionally, biodiesel manufacturers recommend the addition of antioxidants to stabilize the fuel, most of which are hazardous substances. Manufacturers also add, or recommend adding, other regulated hazardous substances such as biocides and fungicides to reduce microbial activity. Without the addition of these hazardous substances, biodiesel may oxidize and form peroxides which are also on the OSHA Special Health Hazard Substance List because peroxides can be highly explosive and mutagenic. Biodiesel may also contain toxic remnants of the manufacturing process, such as methanol or sodium hydroxide, and other contaminants such as peroxides. Finally, even “100%” biodiesel may contain small amounts of petroleum diesel. This occurs when petroleum diesel is intentionally added to obtain a desired physical property (lubricity, viscosity, etc.), or when biodiesel is inadvertently contaminated as it moves through a distribution network (bulk tank, piping, delivery truck, etc.) that is shared with petroleum diesel.

The presence of any quantity of any hazardous substance within the biodiesel is sufficient to designate the entire contents of the UST system a “hazardous substance” as defined in the Health and Safety Code. Therefore, local regulatory agencies are advised to assume that even “100%” biodiesel is a hazardous substance unless the particular batch of biodiesel being stored has been analyzed and determined to contain no antioxidants that contain regulated substances, nor any biocides, fungicides, petroleum diesel, methanol, peroxides, or other hazardous substances. Local regulatory agencies and UST owners/operators should be aware that each delivery of biodiesel will be different, depending on variables such as the supplier, biodiesel feedstock, and quality controls employed during the manufacturing (transesterification) process.

**2. Would UST systems storing “100%” biodiesel be exempt from regulation because the small amount of hazardous substance found in the stored product could be considered a “*de minimis*” concentration?**

No. California’s UST laws and regulations do not provide a *de minimis* exemption, meaning any concentration of hazardous substance stored in an UST is subject to regulation. Federal UST regulations<sup>3</sup> do provide an exclusion for UST systems storing a *de minimis* concentration of regulated substance. However, even examples given in the preamble to this federal regulation include substances with exceedingly small concentrations, such as chlorine in drinking water and swimming pools (generally a few parts per million) (53 Fed Reg. 37108 – 37109 (1988)). Based on the examples noted in the preamble we believe that it would be inappropriate to apply a *de minimis* exemption to biodiesel, even under federal regulations.

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<sup>3</sup> 40 CFR, §280.10(b)(5)

**3. Is switching from petroleum diesel to a biodiesel blend considered a change of stored substance?**

Yes. When any percentage of biodiesel is added to an UST system that has been permitted to store petroleum diesel fuel, it is considered a change of stored substance. California Code of Regulations, Title 23, section 2711 requires the UST owner or operator to inform the local regulatory agency of the hazardous substances that are stored, or are proposed to be stored, in the UST system. Section 2711 also requires the owner or operator to notify the local agency of any changes to that information within thirty days unless required to obtain approval before making the change. We strongly advise local regulatory agencies to require notification from the UST owner/operator PRIOR to any change of stored substance. This will allow the local agency to determine ahead of time whether or not the UST system is suitable for storing the new substance.

**4. Must an owner or operator of a UST demonstrate material compatibility prior to storing biodiesel or biodiesel blends?**

Yes. California Health and Safety Code, Chapter 6.7, requires primary containment to be compatible with the product stored<sup>4</sup>. This means that the primary containment must retain its chemical and physical properties upon contact with the stored substance for the life of the UST system under normal operating conditions. California Health and Safety Code, Chapter 6.7, also requires that secondary containment be designed to prevent structural weakening as a result of contact with the stored substance<sup>5</sup>. These requirements apply to any regulated UST system installed after 1984, including those storing biodiesel or biodiesel blends. The UST owner/operator is ultimately responsible for ensuring that their UST system is compatible with the stored product at all times.

If you have questions regarding this document, please contact Laura Fisher-Chaddock at (916) 341-5870 ([lchaddock@waterboards.ca.gov](mailto:lchaddock@waterboards.ca.gov)) or Robert Hodam at (916) 341-5871 ([rhodam@waterboards.ca.gov](mailto:rhodam@waterboards.ca.gov)).

Sincerely,

*Original signed by*

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<sup>4</sup> §25291(a)(1), §25290.1(c)(1), §25290.2(c)(2)

<sup>5</sup> §25291(a)(2), §25290.1(c)(2), §25290.2(c)(2)