TITLE 4. DEPARTMENT OF FOOD AND AGRICULTURE

NOTICE IS HEREBY GIVEN that the Department of Food and Agriculture (Department) proposes to promulgate regulations contained in California Code of Regulations, Title 4, Division 9, Chapter 6, Automotive Products Specifications. The Department proposes to add "Article 9. Specifications for Dimethyl Ether Used in Compression-ignition Engines," to provide clarity and uniformity in the implementation and enforcement of California Business and Professions Code (BPC) Section 13450.

PUBLIC HEARING

A public hearing regarding this proposal is not currently scheduled. However, any interested person, or duly authorized representative, may request, no later than 15 days prior to the close of the written comment period that a public hearing be scheduled. Following the public hearing, if one is requested, or following the written comment period, if no public hearing is requested, the Department, upon its own motion or at the instance of any interested person, may thereafter adopt the proposal substantially as set forth without further notice.

WRITTEN COMMENT PERIOD

Notice is also given that any interested person, or his or her authorized representative, may submit written comments relevant to the proposed regulatory action to the Department of Food and Agriculture, Division of Measurement Standards (Division), 6790 Florin Perkins Road, Suite 100, Sacramento, California 95828. Comments may also be submitted to Steven Cook, Chief, Enforcement Branch, by facsimile (FAX) at (916) 229-3026 or by e-mail at DMS@cdfa.ca.gov. Comments must be submitted prior to 5:00 p.m., September 8, 2014.

AUTHORITY and REFERENCE

The Department is authorized by BPC Section 12027 to make regulations necessary to carry out the provisions of Division 5. In addition, under BPC Section 13450, the Department is required to take regulatory action to adopt, by reference, the latest standards for a compression-ignition engine fuel established by a recognized consensus organization such as ASTM International or SAE International. Since ASTM has published D7901-14 "Standard Specification for Dimethyl Ether for Fuel Purposes", the Department is obliged to adopt this new standard. Furthermore, BPC Section 13451 declares that it is unlawful to sell any product as "compression-ignition

engine fuel" unless it conforms to the specifications of Article 6, found in Division 5, Chapter 14 of the BPC.

INFORMATIVE DIGEST/POLICY STATEMENT OVERVIEW

The broad objective of the proposed regulation is to ensure that motor vehicle fuels offered for sale in the state meet minimum quality standards. BPC Division 5, Chapter 6, Section 13450 requires the adoption of standards of fuel quality for materials used in compression-ignition engines in motor vehicles. BPC Section 13451 declares that it is unlawful to sell any product as "compression-ignition engine fuel" unless it conforms to the specifications of Article 6, found in Division 5, Chapter 14. BPC Division 5, Section 12027 states that the Secretary of the Department of Food and Agriculture (Secretary) "may make such rules and regulations as are reasonably necessary for the purpose of carrying out the provisions of this division." The Department has the authority and responsibility to ensure that dimethyl ether (DME) used in compression-ignition engines is of sufficient quality to prevent damage to the vehicle or harm to the public.

Adoption of this standard is compatible with and furthers the goals of AB 32 (Nuñez) Global Warming Solutions Act of 2006. This act added Division 25.5 (commencing with Section 38500) to the Health and Safety Code, relating to air pollution. Use of fuels like DME will reduce greenhouse gas (GHG) emissions and improve air quality.

The Department has determined that this proposed regulation is consistent and compatible with existing regulations for fuel quality. ASTM Standard D7901-14, "Dimethyl Ether for use as an Engine Fuel," is the latest standard available, and meets the statutory requirements for adoption. After conducting a review for any regulations that would relate to or affect this area, the Board has concluded that these are the only regulations that concern the retail sale of DME in California.

Since 2005, an average of nearly 2.8 billion gallons of diesel fuel has been sold each year in California. In addition to petroleum hydrocarbons, diesel fuel contains a variety of additives, many of them toxic. The combustion of diesel fuel throughout the state is a major source of adverse human health effects, GHG emissions, toxic air pollutants, and environmental contaminants.

The California Office of Environmental Health Hazard Assessment (OEHHA) reviewed the health impacts of petroleum diesel exhaust. Both acute and chronic exposure to diesel emissions of particulates and nitrogen oxides (NOx) are found to have serious adverse effects on human health. An OEHHA fact sheet states "long-

term exposure to diesel exhaust particles poses the highest cancer risk of any toxic air contaminant evaluated by OEHHA" and that both diesel particulates and NOx emissions can cause respiratory illness and aggravate asthma. The California Air Resources Board (CARB) has identified diesel exhaust as a major source of fine particulate matter (PM2.5) in California.

Agency Authority:

There is no existing, comparable federal regulation, or statute regulating DME as a motor fuel. The Department is the only agency that can implement regulations pertaining to fuel quality.

Anticipated Benefits of the Proposed Regulation:

DME can replace petroleum diesel in modified compression-ignition vehicles if it meets established fuel quality specifications. As noted above, ASTM has published a quality specification for DME as a compression-ignition fuel, D7901-14. BPC Section 13450 requires the Department to adopt this standard.

When new fuel quality specifications are published and adopted into Title 4, Division 9 of the California Code of Regulations (CCR), the Department is able to continue its marketplace oversight. This ensures that engine fuels will not damage motor vehicles, resulting in costly repairs to consumers. Therefore, Californians who may purchase vehicles using DME will be beneficiaries of the proposed regulation Positive experiences with new fuels will result in increased purchases of alternative fuel vehicles and greater acceptance of alternative fuels in general. This will have a positive impact on the health and welfare of California residents, as well as the environment.

It is the policy of the State to reduce GHG emissions. One measure of GHG emissions from transportation fuels is the carbon intensity, expressed in CO_2 equivalent. Diesel fuel contributes 37 million metric tons of CO_2 equivalent (CO_2e) to California's GHG emissions each year. Under the Low Carbon Fuel Standard (LCFS), the average carbon intensity of the fuel supply must be reduced by 10 percent by 2020. DME is a low carbon fuel that meets the requirements of the LCFS. While CARB has not yet certified a carbon intensity for DME, it has greatly reduced GHG emissions compared to diesel fuel. DME can make a significant contribution towards California's LCFS and AB 32 goals.

In a 2003 joint report *Reducing California's Petroleum Dependence*, the California Energy Commission (CEC) and the CARB set goals for the reduction of petroleum fuel use to 15 percent below 2003 levels by 2020 and increased use of alternative fuels to 26 percent of all fuel consumed by 2022. The replacement of petroleum diesel with DME provides California with a reliable and stable transportation fuel whose cost is not linked to crude oil prices and availability. The use of DME will reduce the state's dependence on petroleum, helping to meet the goal of the CEC and CARB of a 15 percent reduction below 2003 levels by 2020.

DME can be manufactured from a wide range of feedstock, including natural gas, dairy digester biogas, and other biomass sources. The production of DME is scalable and small production units can be located near dairies or other feedstock sources. The use of agricultural waste for DME production could also reduce agriculture's 6 percent contribution to the state's GHG emissions. In addition, biomass-based DME may even have *net* negative carbon content and so will have the benefit of reductions in net carbon in transportation fuels and reduced GHG emissions.

According to a 2010 University of Minnesota study, DME has the highest well-to-wheel energy efficiency, 25 percent better than synthetic diesel fuel, and the lowest GHG emissions of any biomass-based fuel. Production of DME in California would contribute to the goal of Executive Order S-06-06 to shift to state resources to produce biofuels.

According to an October 2000 report prepared by Dupont for the U.S. EPA, DME has no known carcinogenic, mutagenic, or reproductive toxicity effects. It's very low toxicity combined with its non-ozone depleting properties has supported wide use of DME as a propellant in cosmetic and pharmaceutical products. DME, a gas under ambient conditions, also poses no known threat of polluting soil or water. DME degrades rapidly in the atmosphere through photochemical reactions. If DME is released into surface waters, it will volatilize rapidly out of the water, and then break down in the air. Unlike petroleum diesel fuel, DME has very low toxicity to aquatic invertebrates, fish, and wildlife.

DME's physical and combustion properties are very similar to those of propane. Therefore, DME may be handled using the same equipment, distribution, infrastructure, and dispensers used for liquefied propane gas (LPG). The safety procedures used with LPG can be used for handling DME.

Consistency with Other State Regulations:

The Department has conducted a search of any similar regulations on this topic and has concluded that this proposed regulation is not inconsistent or incompatible with other state regulations. According to BPC Sections 12027 and 13450, the Department has the authority and responsibility to adopt by reference motor vehicle fuel quality specifications published by a recognized consensus organization such as ASTM International.

FISCAL IMPACT/COST TO LOCAL AGENCIES AND SCHOOL DISTRICTS

The Department has initially determined that this proposal does not impose a mandate on local agencies or school districts.

The Department also has determined that this action will involve no costs or savings to any other state agency, no nondiscretionary costs or savings to local agencies or school districts, no reimbursable costs or savings to local agencies or school districts under Part 7 (commencing with Section 17500) of Division 4 of the Government Code, and no costs or savings in federal funding to the state.

EFFECT ON HOUSING COSTS

The Department has made an initial determination that the proposed action will not affect housing costs.

SIGNIFICANT STATEWIDE ADVERSE ECONOMIC IMPACT DIRECTLY AFFECTING BUSINESS, INCLUDING ABILITY TO COMPETE

The Department has made an initial determination that adoption of the proposed regulations will not have a significant statewide adverse economic impact on businesses that manufacture DME and must adhere to the proposed fuel quality specifications. This finding is based on input from Oberon Fuels, a California manufacturer of DME. Oberon has stated that the proposed regulation will have a positive impact on its business.

STATEMENT OF THE RESULTS OF THE ECONOMIC IMPACT ASSESSMENT

Currently, DME is not sold at retail as a motor vehicle fuel in California. It has limited use in vehicles as a demonstration fuel by Oberon Fuels, a California producer of DME. Since DME production is so low at this time, it does not compete with

conventional fuels. DME is not expected to have any negative impact on the businesses that currently sell petroleum diesel. If demand and production increase, existing fuel retailers will have the opportunity to expand into this market. Therefore, the Department has made an initial determination that the proposed regulations will not have a negative statewide impact on existing businesses.

The Department has made an initial determination that the adoption of the proposed regulations will not have a significant statewide adverse economic impact on businesses that produce DME and must adhere to the fuel quality specifications. Oberon Fuels, a current producer of this fuel in California and a driver for the adoption of the ASTM specifications, has requested that the Department move forward with the adoption of the proposed regulations, even though widespread production and use of DME does not currently exist.

The extent of market acceptance and adoption of DME cannot be predicted at this time, but expanded DME utilization will provide opportunities for other business types. Fuel distributors can use existing LPG technology and infrastructure for the distribution of DME. There could be job creation or expansion in California for the approximately 200 registered service agencies (RSAs) that install, repair, and maintain commercial fuel dispensers. Most of these are small businesses, averaging fewer than ten employees. Therefore, the Department has determined that this regulation could have a positive effect on existing small businesses by expanding the variety of commercial devices available for service.

Diesel mechanics would be needed to perform the vehicle conversions to accept DME fuel, and provide maintenance on heavy-duty trucks. Businesses wishing to purchase and use DME fuel in their vehicles will have certain upfront expenses, but these will likely be offset by the benefits associated with the fuel. According to Oberon Fuels, the price of DME is expected to be competitive with that of diesel. DME will meet or exceed CARB’s latest emissions standards. A DME-modified vehicle is expected to have reduced maintenance costs because of the simpler fuel and emissions control.

To reduce particulate and NOx pollution from diesel engines, in 2008, CARB adopted truck and bus regulations that require upgrades to most diesel engines. By 2023, most diesel vehicles must have engines from model year 2010 or later. These requirements will be phased in starting in 2015 for the oldest engines (pre-1994). Fleet owners that add alternative fuel trucks will have flexibility in meeting the requirements. Availability of DME as a motor vehicle fuel would offer a new and cost-effective method of addressing the CARB mandate. Oberon Fuels states that by 2015 California’s fleet operators will be

able to purchase heavy-duty trucks with compression-ignition engines specially designed to run on DME instead of diesel.

Type evaluation is the examination of weighing or measuring devices for the legal purpose of certifying that its design and performance complies with all applicable weights and measures requirements such as accuracy and reliability. Retail sale of DME as a motor vehicle fuel would require type evaluation of the dispenser(s) by the Department (BPC Section 12500.5). Once a commercial device type has been successfully evaluated by the Department, that make and model may be mass-produced for commercial purposes. Manufacturers choosing to sell DME dispensers would incur one-time costs of up to $20,000 for type evaluation.

RSAs that install, repair, and provide maintenance service for conventional fuel dispensers could choose to expand their operations to include DME dispensers. Established RSAs would not incur additional fees or expenses unless they needed to buy new test equipment. RSAs currently servicing LPG dispensers can likely use existing equipment. The Department estimates that new equipment may cost up to $25,000 should a business decide to expand into this arena.

There are no immediate costs or savings to the Department resulting from the adoption of these fuel specifications for DME since there are no commercial stations selling DME at this time. Adoption of these specifications is precedent to fuel quality enforcement which will only occur with commercialization of DME. All fuels sold at retail in California must meet ASTM or SAE International specifications. In order for the Department to verify compliance, fuel quality analysis will become necessary. The Department does not currently have the instrumentation required. Therefore, initial testing of up to five samples a year would likely be performed by a private laboratory at an estimated cost of $1,000 per sample. A funding source for DME quality sampling and testing would need to be established.

If the fuel becomes popular and its use becomes widespread, the Department will also be responsible for type evaluation of DME dispensers; training and oversight of county weights and measures officials who perform fuel dispenser testing for accuracy; and development of field fuel sampling protocols. Because the Department cannot predict the extent and rate of market adoption of DME fuel, the long-term fiscal impact to the Department is unknown.

The Department concludes that the proposed regulations: (1) may create new jobs within California; (2) may create new businesses within California; (3) may affect the expansion of businesses currently doing business within California. The Department

estimates that between 1 and 10 new businesses in the RSA and diesel mechanics sectors could be created as a result of DME commercialization. These new businesses could add between 10 and 100 new jobs; and (4) are unlikely to eliminate any jobs or existing businesses.

EFFECT ON SMALL BUSINESS

The Department has determined that this regulation will likely have a positive effect on existing small business by creating new business opportunities. Existing fuel producers, distributors, and retailers in California could expand their operations to include DME. This in turn could lead to job creation or expansion in California for service agents that maintain the devices used for dispensing the fuel and vehicle mechanics that would perform the engine conversions to burn DME fuel.

COST IMPACTS ON REPRESENTATIVE PRIVATE PERSON OR BUSINESS

The Department is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

CONSIDERATION OF ALTERNATIVES

The Department has determined that no reasonable alternative it considered or that has otherwise been identified would be more effective in carrying out the purpose for which the action is proposed. In addition, the Department has determined that no reasonable alternative would be as effective as or less burdensome to affected private persons than the proposed action, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

If the Department chooses to do nothing, it would be in violation of BPC Section 13450, which requires the adoption of a standard promulgated by a consensus organization establishing fuel quality specifications for compression-ignition fuel for use in internal combustion engines.

Through promulgation of regulations, the Department can adopt, by reference, the latest specification published by ASTM International. Doing so allows the Department to stay abreast of best practices and standards for the industry. The Department believes that this is the best and only solution.

The Department invites interested persons to present statements or arguments with respect to alternatives to the proposed regulations at the scheduled hearing or during the written comment period.

CONTACT PERSONS

Inquiries about the notice may be directed to:

Steven Cook Chief, Enforcement Branch
California Department of Food and Agriculture
Division of Measurement Standards:
6790 Florin-Perkins Road, Suite 100
Sacramento, CA 95828-1812
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AVAILABILITY OF STATEMENT OF REASONS AND TEXT OF PROPOSED REGULATIONS

The Department has prepared an initial statement of reasons for the proposed action, has available all the information upon which its proposal is based, and has available the express terms of the proposed action. A copy of the statement of reasons, and the proposed regulations in strikeout and underline form may be obtained upon request. The rulemaking file and all information on which the proposal is based are located at the Division of Measurement Standards, 6790 Florin-Perkins Road, Suite 100, Sacramento, California 95828, and may be obtained upon request. Additionally, documents relating to this rulemaking file are available on the Department's web site located at http://cdfa.ca.gov/dms/regulations.html.

Following the written comment period, the Department will adopt the proposal substantially as set forth above without further notice. If the regulations adopted by the Department differ from, but are sufficiently related to, the action proposed will be available to the public for at least 15 days prior to the date of adoption. Any

interested person may obtain a copy of said regulations prior to the date of adoption by contacting Mr. Cook or Ms. de Contreras at the above address. Please direct requests for copies of the proposed text (the “express terms”) of the regulations, the initial statement of reasons, the modified text of the regulations, if any, or other information upon which the rulemaking is based to Ms. de Contreras at the above address.

AVAILABILITY OF THE FINAL STATEMENT OF REASONS

Upon its completion, copies of the Final Statement of Reasons may be obtained by contacting Mr. Cook or Ms. de Contreras at (916) 229-3000.

AVAILABILITY OF DOCUMENTS ON THE INTERNET

Copies of the Notice of Proposed Action, the Initial Statement of Reasons, and the text of the regulations can be accessed through our website at http://cdfa.ca.gov/dms/regulations.html .