LIVERMORE, Calif., June 24 CA-Simmons-Sandia-Lab
LIVERMORE, Calif., June 24/PRNewswire/ -- Citing a severe lack of hard empirical data, an assembly of scientists and researchers across the nation urged California to adopt a Low Carbon Fuel Standard based on commonly understood direct impacts on carbon dioxide emissions and further study highly controversial and speculative "indirect land use changes" before incorporating any of these indirect impacts in that standard.

In a letter sent to the Chair of the of the Air Resources Board, the scientists and researchers state: "Given that our only options for sustainably powering transportation with a significant reduction in transportation related greenhouse gas emissions are biofuels, batteries, and hydrogen, a presumptive policy implementation based on the current understanding of indirect impacts will have a significant chance to hurt real progress on reducing carbon emissions and decreasing our reliance on fossil fuels.

"We propose that a sound policy approach would be to base the initial LCFS on existing data sets that possess scientific consensus. These include the direct impacts of renewable biofuels production. The scientific and economic communities can then take advantage of the necessary time over the next five years to fully understand, gather, and validate the indirect impacts of biofuels production with empirical evidence that will enable the implementation of a sound policy that can address any indirect impacts." The scientists and researchers, signing on their own and not on behalf of their institutions, include scientists from Universities and National Laboratories across the nation. The full text of the letter appears below.

Mary D. Nichols, Chairman
California Air Resources Board
1001 "I" Street
P.O. Box 2815
Sacramento, CA 95812

June 24, 2008

Dear Chairwoman Nichols,

We are writing regarding the California Air Resources Board's (ARB) ongoing development of the Low Carbon Fuel Standard (LCFS). As you are well aware, the Governor issued Executive Order S-1-07 on January 18, 2007, which calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020.

As researchers and scientists in the field of biomass to biofuel conversion, we are convinced that there simply is not enough hard empirical data to base any sound policy regulation in regards to the indirect impacts of renewable biofuels production. The field is relatively new, especially when compared to the vast knowledgebase present in fossil fuel production, and the limited analyses are driven by assumptions that sometimes lack robust empirical validation.

As an example of the confusion that this lack of reliable data produces, there has been significant attention to a recent article by Searchinger and coworkers in Science Express

("Use of U.S. Croplands for Biofuels Increases Greenhouse Gases through Emissions from Land Use Change," February 7, 2008). This article attempted to address the issues of fuel ethanol's effects on greenhouse gas (GHG) emissions by including GHG emissions from potential land use changes arising from ethanol production. It has prompted a large response from the scientific community, pointing out apparent errors and/or gaps in the analysis presented. For example, Searchinger et al. estimated that U.S. corn ethanol production (between 15 billion and 30 billion gallons) would result in a requirement for an additional 10.8 million hectares of crop land worldwide; 2.8 million hectares in Brazil, 2.3 million hectares in China and India, and 2.2 million hectares in the United States, with the remaining hectares in other countries. Searchinger et al. maintain that the United States has already experienced a 62% reduction in corn exports. In reality, U.S. corn exports have remained relatively constant at around 2-billion-bushels-per-year since 1980. In 2007, when U.S. corn ethanol production increased dramatically to approximately 6 billion gallons, corn exports increased to 2.45 billion bushels -- a 14% increase from the 2006 level (excerpt taken from Wang's response to Searchinger, 2008). Searchinger also ignored the fact that the protein in corn still goes on for use as cattle feed as it cannot be converted to ethanol, with the result that there is no reduction in protein available for feeding animals, the major (about 60%) market for corn.

The traditional tools used by researchers, including Searchinger et al., to determine the direct and indirect impacts of renewable biofuel production are life cycle analysis (LCA) coupled with land-use change (LUC) projections. The results produced by the majority of the LCA models are highly sensitive to LUC assumptions, as well as baseline projections and test cases that have very limited scope. These sensitivities highlight how common LCA models can be applied to the same problem but produce significantly different, and often contradictory, results. There remain great uncertainties and challenges in combining LUC and LCA models that make their use highly problematic, particularly if the outputs of these models are used as a basis for policy decisions, or for comparing indirect impacts between fuel types. Some of the problems include the lack of large-scale, reliable data sets from field and process trials of growing, harvesting, and converting dedicated energy crops into biofuels. These data are needed as "training sets" for the LCA models. Moreover, without validation of the results produced by the LCA models, they should not be considered as based in fact, but rather based on statistical correlations. Thus it is extremely difficult to make a comparison of the direct and indirect impacts between fossil fuels and renewable biofuels.

Significant research is still required to develop reliable data training sets and validated LCA tools that can accurately guide policies such as the LCFS. Renewable biofuels remain a relatively new field of study with significant gaps in our current understanding that will only be filled with research over an extended period of time. Given that our only options for sustainably powering transportation with a significant reduction in transportation related greenhouse gas emissions are biofuels, batteries, and hydrogen, a presumptive policy implementation based on the current understanding of indirect impacts will have a significant chance to hurt real progress on reducing carbon emissions and decreasing our reliance on fossil fuels. We propose that a sound policy approach would be to base the initial LCFS on existing data sets that possess scientific consensus. These include the direct impacts of renewable biofuels production. The scientific and economic communities can then take advantage of the necessary time over the next five years to fully understand, gather, and validate the indirect impacts of biofuels production with empirical evidence that will enable the implementation of a sound policy that can address any indirect impacts.

It is clear that building a LCFS is a significant undertaking. Many states and countries will look to this regulation as a template for reducing the impact of transportation fuels in other parts of this country and overseas. It is therefore critical that we keep the underlying need for innovation in mind, and base the LCFS upon data obtained from robust and mature tools and empirical validation.

We are writing this letter as researchers in the field of biomass to biofuel conversion, but do not represent the official views of the Department of Energy, the United States Department of Agriculture, or the National Laboratories.
Thank you in advance for your consideration of this important issue.

Sincerely,

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