

The Federal Trade Commission (FTC) Proposed Rule: 19 CFR Part 159 for Automotive Fuel Ratings, Certification and Posting generates a rating, certifying, and labeling system in order to assist purchasers in identifying the best fuel for his or her car at the gas pump. I support the proposed rule for the gain in consumer awareness about fuel and the principal components of the rating certifying, and labeling system. However, while the mission of the FTC does not focus on environmental or public health, the proposed rule could consequently affect the environment and the health of the U.S. and global population. As the FTC's mission is to protect American consumers, I feel that the responsible thing to do is to raise the FTC's awareness about the environmental and health implications regarding ethanol usage for fuel. The purpose of this comment is two-fold: 1) to provide you with a better understanding of the potential impacts to public health (at both the local, regional, and global levels) from the production of ethanol; and, 2) to provide you with examples of how to leverage the proposed labeling system to communicate a public health message to American consumers of ethanol.

#### PUBLIC HEALTH AND ENVIRONMENTAL IMPLICATION

U.S. sales of ethanol fuel are expected to continue to increase—more ethanol will be produced and used. I support a more thorough review and examination of the potential ramifications of this increased production and use, specifically, the potential for adverse impacts to human health and the environment at the local, regional, and global levels. Fuel blending and ethanol production has rapidly increased about six-fold from 2000-2008 (Naidenko 2009). While the proposed bill does not specify where the ethanol will be derived from, about 95 percent of current U.S. ethanol production for fuel comes from the processing of corn and 18 percent of total U.S. corn production per year is directed to the production of ethanol (US Energy Information Administration, 2009 & Pimentel et al. 2007). Corn crops are growing in demand: 1) existing cropland may be redirected to ethanol production and away from animal feed and derivative products and 2) more demand means more impacts to the environment from this intensive crop. Increased supply and demand equates to increased prices, e.g. the price of food is estimated to increase over the next few years (Huber et al. 2009). The large amount of cropland, water, and energy needed to produce ethanol for automobiles takes away from using corn as food not just in the U.S., but elsewhere in this global supply chain of corn and derivative products. This has created an ethical and political dilemma where the world's two billion poorest people earning less than \$3,000 per year and suffering from hunger, malnutrition, and mortality are at a silent war against the 910 million automobile owners earning about \$30,000 per year (Brown, 2009). I encourage you consider global impacts when implementing the proposed rule.

When examining ethanol production, I suggest that you analyze the effects ethanol production has on cancer and ozone-related diseases in humans due to the introduction of chemicals in the ambient air. When comparing the burning of fuel usage of E10 (a mixture of gasoline with 10 percent ethanol) to E0 (the baseline of no ethanol), carbon monoxide emissions decrease by 15 percent; however, cars operating on E20 (a mixture of gasoline with 20 percent ethanol) had higher carbon monoxide emissions compared to E10 (Huber et al. 2009). The proposed rule does imply that several organizations are promoting the sales of blends such as E20 and higher. In addition, fuel ethanol can only be transported by rail or truck and the average delivered cost (Naidenko 2009). This has the potential to increase carbon dioxide emissions and negate the desired environmental benefits from using ethanol fuel.

Although ethanol fuel emissions may decrease certain air toxics compared to conventional gasoline, it is linked to the increase of hazardous air pollutants such as acetaldehyde and formaldehyde, probable human carcinogens (see Appendix A for a summary of air pollutant and health/environmental health consequences associated with the exposure to the air pollutant) (Huber et al. 2009 & Winebrake 2001). In a study examining the major human carcinogens emitted during gasoline and E85 (a mixture of gasoline with 85 percent ethanol) combustion, it was concluded that E85 emits 73.1 percent of unburned ethanol and 3.7 percent from evaporation which may enhance global acetaldehyde and ozone levels (Jacobson 2006). In addition, due to E85 emissions, ozone health effects are significant with an estimated four percent of deaths, about 990 more hospitalization, and 1,200 asthma-related emergency room visits per year in the United States (Jacobson 2006). Tropospheric ozone formation occurs when the ambient air emissions of volatile organic compounds (VOCs) interact with nitrogen oxides (NOx) from motor

vehicle emissions. The rise in ozone levels will adversely affect the environment and the sales of higher ethanol fuel blends will burden the health of those within the United States.

RECOMMENDATIONS: PUBLIC HEALTH MESSAGE IN LABEL

The FTC values protecting the American consumer. I am hopeful that you will appreciate my suggestion to leverage the labeling of the fuel to communicate public health messages about ethanol production and use to consumers. There has been success in conveying public health messages through labels in the past. For example, California's Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986 protects California citizens by informing them of chemicals known to cause cancer, birth defects, and/or other reproductive harm that are used in various products (California State Office of Environmental Health Hazard Assessment 2010). By implementing a message about how ethanol production and use impacts the public health would be a progressive and crucial step towards protecting the American consumer. There are several U.S. public health agencies which can be helpful to the design and implementation of a public health message including, but not limited to Environmental Protection Agency (EPA), National Institute of Environmental Health Sciences (NIEHS), National Institutes of Health (NIH), and the Centers for Disease Control and Prevention (CDC).

Regardless of the agencies that assist with the design and implementation of the public health message, the overall gist of the message should be aimed at how air pollution from the production and use of ethanol contains cancer-causing substances. Therefore, the warning label could state, "Warning: Inhalation of vapors may be harmful to human health.. By using the words warning and/or harmful, it indicates that the product is toxic and may cause long-term illness (Arizona City of Tempe 2010). Although this is a broad comment, it falls in line with the current layout of the label. The public health warning should be positioned at the bottom of the label. In addition, it would be crucial for the FTC to have information on the FTC website regarding the public health and environmental implications of fuel emissions as a way for the public to research more information. On the website, there should be information pertaining to the gasoline breakdown, likelihood of water and air contamination, general risk assessment, life cycle assessment, the implications on various social groups, and information about environmental implications. If a public health warning is not implemented, the FTC will not be preserving its mission of protecting the American consumer and will miss a key opportunity to increase public awareness about the impact fuel emissions have on the environment and human health.

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APPENDIX A: AIR POLLUTANT AND HUMAN/ENVIRONMENTAL HEALTH CONSEQUENCE

Source: Naidenko 2009

Air pollutant	Findings	Human and environmental health consequences
<b>Carbon monoxide (CO)</b>	Decreases for E10, no further improvement for E15 and E20	Reduces the ability of blood to carry oxygen to body tissues and vital organs; aggravation of heart disease
<b>Benzene and 1,3-butadiene</b>	Expected to decrease due to dilution of gasoline with ethanol (E10); no E15 data available so far	Inhalation carcinogens
<b>Acetaldehyde</b>	Increases by two- to three-fold, especially when the vehicles are started at cold temperature	Respiratory toxicant; irritant; inhalation carcinogen; strongly contributes to ground-level ozone formation
<b>Formaldehyde</b>	Increases for all ethanol blends	Respiratory toxicant; inhalation carcinogen; contributes to ground-level ozone formation
<b>Oxides of Nitrogen (NOx)</b>	Some increase for E15 and notable increase for E20, especially for older, high-mileage vehicles; increases for non-road engines at E10, E15, and E20	Aggravates respiratory disease; contributes to ground-level ozone formation; increases acidification and eutrofication of soil and surface water
<b>Ethanol</b>	Released during both ethanol production and ethanol fuel combustion	Health effects due to acetaldehyde formation in the air
<b>Volatile organic chemicals (VOCs)</b>	Increased at ethanol production facilities	Respiratory toxicants; contribute to ground level ozone formation
<b>Ozone</b>	May increase with increased ethanol use due to the projected increases in VOCs and NOx emissions	Aggravates respiratory and cardiovascular disease; higher rates of asthma; respiratory infection; increases premature death; causes damage to vegetation such as trees and crops
<b>Particulate matter (PM<sub>2.5</sub>)</b>	Significant increases due to corn ethanol production compared to conventional gasoline	Aggravation of respiratory and cardiovascular disease; decreased lung function; increased asthma; premature death; environmental influence: impairment of visibility, effects on climate