

The Effects of Transportation Biofuels Usage on Wisconsin Air Quality

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I was asked to appear before the Committee today to discuss the impacts of transportation biofuels usage on air quality in Wisconsin. Before addressing that specific issue, it is important to give you an overall perspective on air quality trends in Wisconsin.

Wisconsin Air Quality Trends

As you may be aware, there are 3 pollutants in particular that are of import to Wisconsin, both in terms of their impact to public health and the business community: ozone, fine particulates (PM 2.5), and hazardous air pollutants (HAPs). Fortunately, air quality in Wisconsin is steadily improving and is forecast to continue improving due to implementation of stationary and mobile sources emission control programs. Some of the programs that reduce emissions are listed in the following table:

Significant Emission Control Programs

Stationary	Mobile
Reasonably Available Control Technology for NOx	Federal Motor Vehicle Emission Control Program
Reasonably Available Control Technology for VOC	Low Sulfur Gasoline
Best Available Retrofit Technology	Ultra Low Sulfur Diesel
Clean Air Interstate Rule*	Off-Road Engine Standards
Consent Decrees with Electric Power Producers	Reformulated Gasoline
	Motor Vehicle Inspection/Maintenance

** Although the CAIR was recently vacated in federal court, EPA was directed by the court to develop a replacement rule. We expect the replacement rule to be at least as stringent as the original CAIR.*

Modeling results using 2005-2007 base year data and factoring in the emission reductions gained by the above “one-the-books” and “on-the-way” control programs listed above indicate continually improving ozone and PM 2.5 air quality into the future. However, despite this progress there is still projected to be ambient air quality problems in the eastern portion of the state in the next 10 years. To address that problem, the Department recently promulgated a Mercury Multi-pollutant rule. ***That rule, currently under review in the Legislature, is projected to bring the state into attainment for both ozone and fine particulates within the federally required timeframes for attainment.***

1. Ozone - The old ozone standard of 85 ppb is a past due requirement. In 2008, air quality in Wisconsin had improved to the point where every monitor in Wisconsin met the old 8-hour 85 ppb standard. In addition, the LADCO modeling depicted below for 2009 shows no monitors to be above the old standard. ***The Department is in the process of preparing an attainment demonstration SIP for the old ozone standard and will submit it to EPA as soon as practicable.***

The new ozone standard of 75 ppb must be attained by 2016. Modeling depicted below for 2018 (the most relevant modeling timeframe) shows one monitor to be above the new standard and two monitors to be at the standard. This could result in several counties not attaining the standard within the federal timeframe. ***However, the mercury multi-pollutant rule, if enacted, will enable the state to meet federal ozone attainment deadline of 2016.***

Ozone Modeling Results for Wisconsin (Concentrations in ppb) - Standard = 75 ppb

Monitoring Site	Base-Year 2005-2007 Design Value	Modeled 2009 Design Value	Modeled 2012 Design Value	Modeled 2018 Design Value
Chiwaukee	85	82	81	76
Racine	81	78	76	71
Bayside	83	80	78	73
Harrington Beach	83	80	78	73
Sheboygan	89	84	82	75
Manitowoc	86	81	79	73
Kewaunee	83	78	76	70
Newport Beach	90	84	82	75

2. PM 2.5 - Recently, the federal government promulgated a PM 2.5 standard of 35 ppb. The standard must be attained by 2014. Modeling depicted below for 2012 (the most relevant modeling timeframe) shows one monitor to be above the new standard, and three monitors to be slightly below the standard. This could result in several counties not attaining the standard within the federal timeframe. ***However, the mercury multi-pollutant rule, if enacted, will enable the state to meet federal PM 2.5 attainment deadline of 2014.***

PM2.5 Modeling Results for Wisconsin – (Concentrations in ug/m³) Standard = 35 ug/m³

Monitoring Site	Base-Year 2005-2007 Design Value	Modeled 2009 Design Value	Modeled 2012 Design Value	Modeled 2018 Design Value
Green Bay	37	35	34	32
Madison	36	32	31	29
MKE – Health	39	35	34	33

MKE – SER HQ	37	34	34	33
MKE – Virginia St	40	36	36	36
Waukesha	36	31	31	29

3. Hazardous Air Pollutants - When compared on a BTU basis, use of biofuels results in significant reductions in hazardous air contaminants compared to conventional fuels. Generally, the larger the percentage of biofuel used, the greater the decrease in hazardous air contaminants.

- Use of alcohol based biofuels such as E-10 and E-85 will reduce emissions of benzene, acrolein, 1-3 butadiene and formaldehyde. It should be noted that E-85 has superior hazardous air pollutant reduction benefits than E-10.
- Biodiesel will significantly reduce the carcinogenic contaminants in diesel exhaust, such as diesel particles and polycyclic aromatic hydrocarbons.
- VOCs are reduced with ethanol fuel blends of 20% and greater.

It is the Department’s position that increased use of biofuels in the state will result in reduced cancer risks to the state’s population from inhalation of hazardous air pollutants.

Transportation Biofuels and Air Quality

It is difficult to estimate with precision the impact of increase biofuels use on Wisconsin’s air quality without knowing the amount and mix of biofuels use. Generally speaking, E-10 creates a disbenefit for NOx, a positive benefit for CO2, and as stated above, a reduction in hazardous air pollutants. E-85 on the other hand, is NOx neutral, and has even more benefit for CO2 and hazardous air pollutants.

The amount of increased NOx emissions from biofuels, as stated above, will depend on the percentage of biofuel use in the state. Assuming 20% use of biofuels, with a mix of E-10, B-20, and E-85, would result in @ 2,800 tons/year of increased NOX emissions. The result of just the CAIR, NOX RACT, and mercury multi-pollutant rules, would be a reduction of 25,000 tons/yr of NOx emissions.

Conclusion: While some biofuels, such as E-10, will result in excess NOx emissions, these emission increases are insignificant compared to the decreases in emissions that will result from power plant control programs in Wisconsin such as the Clean Air Interstate Rule, Reasonably Available Control Technology for NOx and the proposed Mercury Multi-Pollutant rule.

I hope this brief presentation at the end of a long day meets the needs of the Committee. This concludes my remarks, but I would be happy to try and answer any questions you may have.