

**U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON ENERGY & ENVIRONMENT**

HEARING CHARTER

Hitting the Ethanol Blend Wall: Examining the Science on E15

**Thursday, July 7, 2011
2:00 p.m. to 4:00 p.m.
2318 Rayburn House Office Building**

PURPOSE

On Thursday, July 7, 2011, the Energy & Environment Subcommittee of the Committee on Science, Space, and Technology will hold a hearing entitled “Hitting the Ethanol Blend Wall: Examining the Science on E15.” The purpose of the hearing is to examine the scientific and technical issues related to EPA’s recent waiver decisions permitting mid-level ethanol blends of up to 15 percent ethanol (“E15”) in gasoline and receive feedback on draft legislative language.

WITNESSES

- **Ms. Margo Oge**, Director, Office of Transportation and Air Quality, U.S. Environmental Protection Agency (EPA)
- **Mr. Bob Greco**, Group Director, Downstream and Industry Operations, American Petroleum Institute
- **Ms. Heather White**, Chief of Staff and General Counsel, Environmental Working Group
- **Mr. Jeff Wasil**, Emissions Certification Engineer, Evinrude Outboard Motors
- **Mr. Mike Brown**, President, National Chicken Council
- **Mr. W. Steven Burke**, President and CEO, Biofuels Center of North Carolina
- **Dr. Ron Sahu**, Technical Consultant, Outdoor Power Equipment Institute

BACKGROUND

Section 211(f) of the Clean Air Act requires that the Administrator of the EPA may not grant a waiver for any fuel or fuel additive that is “not substantially similar” to the existing certification fuel(i.e. regular unleaded gasoline without ethanol added), however, the Administrator may waive the prohibition in 211(f)(1) if the Administrator determines the fuel or fuel additive will “not cause or contribute to a failure of any emission control device or system (over the useful life

of the motor vehicle, motor vehicle engine, nonroad engine or nonroad vehicle in which such device or system is used.” In other words, under Section 211(f)(4), as added by Energy Independence and Security Act of 2007 (EISA), the Administrator may grant a waiver for a prohibited fuel or fuel additive if the applicant is able to demonstrate the new fuel or fuel additive will not cause or contribute to engines, vehicles, or equipment failing to meet their emissions standards over their useful life. Further, 211(f)(4) requires the Administrator to take final action on an application within 270 days of receipt. In 1978, EPA authorized the use of 10 percent ethanol blended gasoline (E10) and, in response to the Renewable Fuels Standard (RFS II) included in EISA which mandated the use of 15 billion gallons of renewable fuel in 2012 and 36 billion gallons by 2022, ethanol producers have called for the Agency to allow an increased proportion of ethanol in gasoline. In particular, a petition¹ filed by Growth Energy and 54 ethanol manufacturers in March 2009 requested that EPA grant Clean Air Act waivers for the use of E15.

In October 2010 and January 2011, EPA partially approved these waivers.² The October decision authorized E15 use in model year 2007 and newer light-duty motor vehicles (cars, light-duty trucks and medium-duty passenger vehicles), while the January partial waiver extended E15 use to model year 2001-2006 light-duty motor vehicles. EPA is expected to complete final registration of E15 blends in the near future, triggering the delivery and sale of the new gasoline formulation as early as late 2011. Vehicles older than model year 2001—which represent approximately 32 percent of the motor vehicle fleet³—as well as other gasoline-powered products such as outdoor equipment and recreation vehicles remain unapproved for E15 use.

Implications and Technical Issues

This set of EPA decisions has resulted in two overarching technical and practical concerns: (1) the potential for E15 to damage vehicle engines of all model years, as well as off-road engines; and (2) the potential of a newly bifurcated fueling system to result in widespread misfueling of engines (i.e. owners of model year 2000-and-older cars as well as nonroad vehicles and equipment filling their tanks with unapproved E15 gasoline blends).

More specifically, a number of significant technical concerns including emissions, reliability, infrastructure, and liability have been raised about the E15 waiver by a diverse coalition of stakeholders from throughout the automotive and gasoline supply chains, as well as nonroad engine makers, agricultural groups, environmental organizations, and states and localities. Their concerns emphasize the following issues:

- Potential impacts for both light-duty motor vehicle engines as well as non-covered engines including engine failure, corrosion, materials incompatibility, catalyst

¹ Notice of Receipt of a Clean Air Act Waiver Application To Increase the Allowable Ethanol Content of Gasoline to 15 Percent; Request for Comment, April 21, 2009, <http://www.epa.gov/fedrgstr/EPA-AIR/2009/April/Day-21/a9115.htm>.

² Additional waiver information available at: <http://www.epa.gov/otaq/regs/fuels/additive/e15/>.

³ According to EPA, 2007 and later model year passenger vehicles represent “nearly 30 percent of the motor vehicle fleet” and vehicles in model years 2001 to 2006 “cover roughly 38 percent.” Assistant Administrator Gina McCarthy, Letter to Congressman Joe Barton, September 17, 2010.

degradation, water-in-fuel and phase separation, higher exhaust temperatures, increased pollution emissions, and reduced useful life of a vehicle or product.

- The need for substantially more testing on the use of E15.
- Risk of misfueling with E15 in non-approved engines due to incomplete or inadequate labeling requirements consistent with relevant technical standards.
 - Non-approved engines include not only those in light duty vehicles from model years 2001 and older, they also include the 13 million recreational boats, 200 million outdoor power equipment products, 8 million recreation vehicles and motorcycles, and a variety of other gasoline-powered legacy products currently in use.
- Data from DOE tests was released after the end of the public comment period, and multiple requests for deadline and comment period extension were denied by EPA. The Agency also referred to unreleased “engineering analysis” in determining that no emission control systems would fail in the waived segment of vehicles.⁴
- Responses to letters from Vice Chairman Jim Sensenbrenner indicate that major automakers in this country will not back warranty coverage for vehicles fueled with E15. Many owners’ manuals also make this fact clear.⁵

EPA Waiver Criteria and Decision Process

According to a Congressional Research Service summary of the EPA requirements for a Section 211(f) waiver request (and in turn, the criteria for EPA’s decision)⁶, a submission must:

- include both evaporative and exhaust emissions;
- be comprehensive, assessing the emissions effects both short-term and over the full useful life of the vehicle;
- include tests on a variety of vehicles (e.g., new and used, car, truck, and motorcycle), and the selection of vehicles should reflect their frequency on the road;
- assess the durability of vehicles and vehicle parts using the fuel, including assessments of the compatibility of the new fuel (or blend level) with engine materials, and the effects on operability and performance; and
- [b]ecause gasoline is also used in other engines (e.g., lawnmowers, snowmobiles, boats, etc.), the long-term effects on emissions and engine durability for these engines must also be studied, according to EPA.

Despite a variety of other technical information test data, as well significant gaps in understanding related to mid-level ethanol blends, EPA’s rationale for these partial waiver decisions relied almost exclusively on a single set of Department of Energy (DOE) tests

⁴ Assistant Administrator Gina McCarthy, Letter to General Wesley Clark and Jeff Broin of Growth Energy, November 30, 2009.

⁵ “Sensenbrenner Hears from Automakers: E15 Bad for Engines, American Consumers,” July 5, 2011, [http://sensenbrenner.house.gov/News/DocumentSingle.aspx?DocumentID=249952>%3B.](http://sensenbrenner.house.gov/News/DocumentSingle.aspx?DocumentID=249952>%3B;); Sheila Karpf, “You Could Be On Your Own If Ethanol Messes up Your Engine,” May 9, 2011, [http://www.ewg.org/agmag/2011/05/you-could-be-on-your-own-if-ethanol-messes-up-your-engine/.](http://www.ewg.org/agmag/2011/05/you-could-be-on-your-own-if-ethanol-messes-up-your-engine/)

⁶ Brent Yacobucci, “Intermediate-Level Blends of Ethanol in Gasoline, and the Ethanol “Blend Wall,” R40445, July 1, 2011, 8.

conducted in 2009 and 2010 (referred to in both waiver decisions as the “DOE Catalyst Study”⁷). These tests looked at catalyst durability results for 27 high sales volume models (8 models representing 2001 to 2006, and 19 models representing 2007 and newer). Despite criticism of this program as non-representative,⁸ there was little opportunity for public discussion and comment as the results of the raw test data were posted to the docket just days prior to the partial waiver decisions. Furthermore, the EPA’s decision to justify its ruling overwhelmingly on the DOE Catalyst Study represents a significant narrowing of its originally stated plans. Specifically, a June 2008 presentation of “EPA Staff Recommendations” for testing associated with potential waivers called for pursuing a comprehensive understanding of engine impact issues for vehicles and equipment of all ages.⁹

Additionally, the EPA waiver decisions did not take into account numerous ongoing test programs (nearly all of which have involved DOE and EPA as partners and participants) for a full range of technical and engineering questions related to mid-level ethanol blends such as E15. For example, the Coordinating Research Council (CRC),¹⁰ in cooperation with government entities like EPA and DOE, has developed a comprehensive testing program on the effects of mid-level ethanol blends. The testing timeline offered below¹¹ shows that significantly more technical data would have been available to EPA decision makers in the near-future:

⁷ These tests have not been compiled into a report and, according to the Department of Energy, there are no plans to interpret these results accordingly. Data from these tests were added into the waiver docket, including multiple submissions (including a Technical Summary of the test results) on October 12, 2010, the day prior to the EPA Administrator’s first waiver decision. These results were posted more than a year after the end of the public comment period on July 20, 2009.

⁸ Major criticisms of the test program includes: the tests do not fully consider evaporative emissions, materials compatibility, and drivability/operability concerns; the results indicate emissions failure for some vehicles; the program did not include a model year 2001 vehicle; and that catalyst durability is not the only vehicle durability effect that should be examined. Sheila Karpf, “When it Comes to E15, Never Mind the Data,” May 5, 2011, <http://www.ewg.org/agmag/2011/05/when-it-comes-to-e15-never-mind-the-data/>; Coleman Jones, General Motors, and Jeff Jetter, Honda, “CRC Research Program on Intermediate Ethanol Blends,” Presentation to Society of Automotive Engineers, January 27, 2011, <http://www.sae.org/events/gim/presentations/2011/JonesJetter.pdf>.

⁹ Karl Simon, EPA, OTAQ, “Mid Level Ethanol Blend Experimental Framework—EPA Staff Recommendations,” Presentation to the American Petroleum Institute Technology Committee Meeting, Chicago, June 4, 2008.

¹⁰ The CRC describes itself as “a non-profit organization that directs, through committee action, engineering and environmental studies on the interaction between automotive/other mobility equipment and petroleum products.” The organization “is not involved in any way in regulation, which remains a governmental responsibility; nor is CRC involved in the development of hardware or petroleum products, which remains the responsibility of private industry. The formal objective of CRC is to encourage and promote the arts and sciences by directing scientific cooperative research to develop the best possible combinations of fuels, lubricants, and the equipment in which they are used, and to afford a means of cooperation with the Government on matters of national or international interest within this field.” <http://www.crao.com/about/index.html>

¹¹ Jones and Jetter.

CRC Mid-Level Ethanol Blend Projects																									
Project	Project #	Partners	Year 2009			Year 2010			Year 2011																
			J	F	M	M	J	J	A	S	O		N	D	J	F	M	M	J	J	A	S	O	N	D
*LDV Fuel Permeation Follow-up	E-65-3		~																						
**Hot Driveability	CM-138-06		~																						
# Lit. Review of Fuel Effects on Emissions	E-84		~																						
## CS&W E85/E15/E20 Driveability	CM-138-08	NREL, RFA	~																						
CO vs. RVP	E-74b	EPA	~	~	~																				
Advanced Combustion Systems	AVFL-13b		~	~	~	~	~																		
Enhanced Evaporative Emissions	E-77-2	EPA	~	~	~	~	~																		
E20 Emissions Durability Screening Test	E-87-1	DOE/ORNL	~	~	~	~	~																		
E15/E20 in OBD-II Systems	E-90-2a/2b	DOE/NREL	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	2Q
E20 Fuel System Durability	AVFL-15/15a	DOE/NREL	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	2Q
Enhanced Evap Emissions follow-on	E-77-2c	DOE/NREL	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	
EPAct Light-Duty Vehicle Fuel Effects	E-89	EPA, DOE	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	
E20 Emissions Durability Testing: Exhaust	E-87-2	DOE/ORNL	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	
E20 Emissions Durability Testing: Evaporative	E-91																								2Q
Intermediate Ethanol Blend Air Quality Impa	A-73																								3Q
E15/E20 Engine Durability	CM-136-09-1b																								
High Temp/Altitude Driveability-E15/E20	CM-138-09-1	NREL																							
Hot Fuel Handling & Cold Start Driveability	CM-138-09-2	ASTM																							4Q
E15/E20 Cold Ambient Emissions	E-92																								NS
* Completed 5/06 **Completed 1/07																									Completed
#Completed 6/08 ##Completed 10/08																									Ongoing
																									Developing

Misfueling

On June 23, 2011, EPA issued a final regulation to “help reduce the potential for vehicles, engines, and equipment not covered by the partial waiver decisions to be misfueled with E15.” The regulation mandated a new label to be placed on service station fuel pumps around the country when stations choose to sell E15. The labeling decision attracted criticism due to the enormous risk of widespread engine damage and potential environmental consequences associated with misfueling. Specifically, EPA’s label requirement ignored alternative technological options and failed to incorporate dominant safety labeling techniques such as the color, signal word, and image recommendations of the American National Standards Institute’s Z535 standard. The final EPA label is below:



Legislative Language calling for National Academy of Sciences Review

Appendix A contains a preliminary discussion draft requiring the Administrator of the EPA to enter into an arrangement with the National Academy of Sciences to conduct an evaluation and assessment of the full suite of technical data, gaps in understanding, and research and development needs related to the deployment and use of mid-level ethanol blends. Witnesses have been asked to comment on this language.

Appendix A Discussion Draft

Section 1. Definitions- In this section:

- (1) ADMINISTRATOR- The term `Administrator' means the Administrator of the Environmental Protection Agency.
- (2) MID-LEVEL ETHANOL BLEND- The term `mid-level ethanol blend' means an ethanol-gasoline blend containing greater than 10 percent ethanol by volume that is intended to be used in any conventional gasoline-powered motor vehicle or nonroad vehicle or engine.

Section 2. Evaluation

- (1) IN GENERAL –Not later than 45 days of enactment of this Act, the Administrator, acting through the Assistant Administrator of the Office of Research and Development at the Environmental Protection Agency, shall enter into an arrangement with the National Academy of Sciences to provide a comprehensive assessment of the scientific and technical research on the implications of the use of mid-level ethanol blends, including an evaluation of the research comparing ethanol-gasoline blends containing 15 percent ethanol with ethanol-gasoline blends containing 10 percent ethanol.
- (2) CONTENTS – The assessment performed under subsection (1) shall—
 - (A) Evaluate the short-term and long-term environmental, safety, durability, and performance effects of the introduction of mid-level ethanol blends on onroad, nonroad and marine engines, onroad and nonroad vehicles, and related equipment. Such evaluation shall include a review of all available scientific information, gaps in understanding, and research needs related to—
 - (1) Tailpipe emissions;
 - (2) Evaporative emissions;
 - (3) Engine and fuel system durability;
 - (4) On-board diagnostics;
 - (5) Emissions inventory and other modeling effects;
 - (6) Materials compatibility;
 - (7) Operability and drivability;
 - (8) Fuel efficiency; and
 - (9) Adequate pump labeling consistent with applicable technical standards and recommendations of the National Institute of Standards and Technology, the American National Standards Institute, and the International Organization for Standardization.
- (3) REPORT – Not later than 1 year after the enactment of this Act, the National Academy of Sciences shall submit to the Committee on Science, Space, and Technology a report on the results of the evaluation.

Section 3. Authorization of Appropriations.

In order to carry out this Act, the Administrator shall utilize funds made available under P.L. 96-569.