



Executive Summary

The issue at hand is simple: There is a war going on over what you put in your vehicle's gas tank.

Many of us don't think much about what goes into our gasoline. Most of us just figure someone, somewhere, has decided that what we purchase at the pump isn't going to harm us. The problem is this: Gasoline is made up of 10 percent ethanol and 90 percent various petroleum products. There's no such thing as pure gasoline. A large portion of those petroleum products are classified as highly toxic carcinogens that can lead to real health issues and negative effects on the environment. Those carcinogens are called aromatics, and they include benzene, toluene and xylene (BTEX).¹

Though you may not know the technical terms for the chemicals in your gas tank or what comes out of your tailpipe, they are not healthy. In light of this, Congress added amendments to the Clean Air Act in 1990 in an effort to minimize a specific aromatic pollution called mobile source air toxics (MSATs). Congress directed the Environmental Protection Agency (EPA) to control these hazardous air pollutants to the greatest degree of emission reduction achievable.²

What does that mean? In the simplest terms, it means that the EPA was charged with getting rid of as much of the bad stuff in gasoline as possible. That's a very clear directive. In fact, there have been 14 separate major/regulatory events either created, extended, or that have otherwise supported the use of renewable fuels and addressed the dangers of our nation's dependence on oil.³ Every U.S. President since Jimmy Carter has supported these initiatives. They were all courageous bipartisan efforts to end the nation's addiction to crude oil and end a 100+ year gasoline mandate. Yet today, toxic aromatics still make up at least 25 percent of gasoline, sometimes as much as 40 percent.⁴ This is not necessary, considering there is a cleaner, readily available alternative in biofuels like ethanol. Biofuels are

¹ Scottish Environmental Protection Agency, Pollutant Release Inventory: Benzene, toluene, ethylbenzene, xylenes (BTEX)

<http://apps.sepa.org.uk/spria/pages/substanceinformation.aspx?pid=999>

² Environmental Protection Agency, Clean Air Act Overview - Emission Standards for New Motor Vehicles <https://www.gpo.gov/fdsys/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapII-partA-sec7521.htm>

³ Urban Air Initiative, Legislative & Regulatory Timeline Related to Ethanol, Gasoline, and Federal Agencies <https://fixourfuel.com/wp-content/uploads/2018/10/Legislative-Regulatory-Timeline-Related.pdf>

⁴ Environmental and Energy Study Institute, Fact Sheet, A Brief History of Octane in Gasoline: From Lead to Ethanol, March 2016 https://www.eesi.org/files/FactSheet_Octane_History_2016.pdf



Beyond a Reasonable DOUBT

homegrown products that support rural America and reduce the need for aromatics, which improves tailpipe emissions and the air we all breathe.

Ethanol as a clean fuel source is nothing new. When Henry Ford designed his Model T in 1925, he fashioned it to burn on any combination of gasoline and alcohol. The revolutionary design was supported by both the automotive industry and some of the greatest scientific minds of the time: Alexander Graham Bell, Thomas Edison, and Charles F. Kettering. All of them endorsed alcohol as a high-quality fuel and applauded the opportunity it presented for a new industrial market for farm products.⁵

As engine designs have evolved, the need for higher octane fuels has increased. Subsequently, other compounds have been added into the gasoline equation, especially after the use of lead for octane was phased out starting in 1974.⁶ Mercedes stated that, “octane is the single most important property of gasoline when determining engine design.”⁷ The search for the right compound, derived from petroleum, to boost gasoline octane ratings has been extremely difficult. Today, after a century of research, there are only two commercially viable octane-enhancing additives: toxic aromatics and biofuels.

And the problems don’t stop with just the aromatics in our gasoline. The crux of this issue is that the EPA is relying on science that routinely and knowingly discounts the value of biofuels. Extensive research has shown that regulations are being implemented based on vehicle testing that uses fake test fuels. But even if unbiased science was allowed to play out in these tests, the regulations that the EPA creates are prohibitive for development and production of any alternative to petroleum-based fuel products.

So how is it that the battle around clean fuel and a cleaner environment rages on? The answer is simple. The legislation that has been passed to protect Americans from harmful toxins in our gasoline isn’t being enforced by the government agencies created to keep us safe.

But there is something that can be done: Get the “power to govern” our nation’s best interest out of the hands of non-elected bureaucrats and back into the hands of Congress, into the hands of the people.

⁵ EnvironmentalHistory.org, Henry Ford, Charles Kettering and the Fuel of the Future

<http://www.environmentalhistory.org/billkovarik/about-bk/research/henry-ford-charles-kettering-and-the-fuel-of-the-future/>

⁶ Environmental and Energy Study Institute, Fact Sheet, A Brief History of Octane in Gasoline: From Lead to Ethanol, March 2016

https://www.eesi.org/files/FactSheet_Octane_History_2016.pdf

⁷ Comments of The Energy Future Coalition and Urban Air Initiative on the U.S. Environmental Protection Agency’s Proposed Rule: Control of Air Pollution from Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards, Docket ID No. EPA–HQ–OAR–2011–0135, 78

<https://fixourfuel.com/wp-content/uploads/2017/12/Tier-3-Comments-EFC-UAI-002.pdf>



Beyond a Reasonable DOUBT

The Problem:

Internationally, the World Health Organization (WHO) stated that air pollution has become a large worldwide environmental health risk, with mobile source pollution linked to approximately four million fatalities annually. Its report links air pollution to heart disease, stroke, lung disease, and multiple cancers. “These are among the top five causes of death today, and one-quarter to one-third of deaths from these diseases are due to air pollution,” WHO stated.⁸

The EPA acknowledges that as much as 50 percent of air pollution comes from the transportation sector and that, specifically within that subset, mobile source air toxics (MSATs) are considered to be the most dangerous to public health. MSATs are basically tailpipe emissions and are carriers of toxic carcinogens produced from the aromatic compounds in gasoline.⁹

The missing link in public knowledge, and largely missing in the public debate, is the reality that MSATs create ultrafine particulates. While EPA’s Office of Transportation and Air Quality (OTAQ) states that it has significantly reduced particulate emissions by controlling stationary sources like power plants, these are not the most dangerous sources.¹⁰ Ultrafine particulates are the smallest and most damaging to human health. They are also not regulated.

Even if EPA measurements are 100 percent accurate at predicting real-world emissions, gasoline represents 80 percent of the mobile source fuel. Every year, about 30 billion gallons of aromatic carcinogens are incompletely combusted and emitted into our air as highly toxic particulate airborne pollutants.¹¹ Many of these aromatics, like benzene, are known to be dangerous to public health.

In fact, the American Petroleum Institute (API) stated as early as 1948 that:

“It is generally considered that the only absolutely safe concentration for benzene is zero. There is no safe exposure level to benzene, even tiny amounts can cause harm.”¹²

The US Department of Health and Human Services (DHHS) classifies benzene as a human carcinogen:

⁸ World Health Organization, Media Centre, 7 million premature deaths annually linked to air pollution, March 25, 2014

<https://www.who.int/mediacentre/news/releases/2014/air-pollution/en/>

⁹ United States Environmental Protection Agency, How Mobile Source Pollution Affects Your Health, May 2018

<https://www.epa.gov/mobile-source-pollution/how-mobile-source-pollution-affects-your-health#air%20toxics>

¹⁰ The Environmental Protection Agency, Air Enforcement, Stationary Sources

<https://www.epa.gov/enforcement/air-enforcement#stationary>

¹¹ Environmental Protection Agency, Fuel Trends Report: Gasoline 2006-2016, Page 29

<https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P100T5J6.pdf>

¹² American Petroleum Institute, API Toxicological Review, Benzene, September 1948, Agency for Toxic Substances and Disease Registry, Department of Health and Human Services on file (EPAS Benzene Toxicological Review)

<https://www.documentcloud.org/documents/1373098-00010795.html>



Beyond a Reasonable DOUBT

“Longer-term exposure to excessive levels of benzene in the air causes leukemia, a potentially fatal cancer of the blood-forming organs.”¹³

According to the Centers for Disease Control and Prevention (CDC) Toxic Substances Portal:

“As benzene is ubiquitous in gasoline and hydrocarbon fuels are in use everywhere, human exposure to benzene is a global health problem.”¹⁴

When it comes to these toxics, the human lung is not capable of removing these microscopic particles from the air you breathe. As a result, they pass directly into the bloodstream. This is why they are not only associated with respiratory ailments, but also many kinds of cellular and neurological disruptive problems from cancers to autism and other mental issues, as documented in numerous peer-reviewed medical studies. In fact, these MSATs -the carcinogens emitted by gasoline exhaust -trigger what is called “Endocrine Disruptors” that are known to interfere with the normal function of hormones in our bodies even as they develop in the womb.¹⁵

According to EPA, in the United States alone, there are 45 million people living, working or attending school within 300 feet of a major road, airport, or railroad.¹⁶ Residents of urban areas, with buildings and other obstacles trapping these emissions, are disproportionately affected.

American consumers pay the ultimate price for EPA not making MSATs a priority. While there is disagreement about carbon dioxide and the impact that fossil fuels have on changing the climate, there is no public disagreement that air pollution is literally killing people.

Think about that the next time you see a pregnant woman standing by the side of a busy urban street breathing in a cloud of engine exhaust. She has just exposed her baby to more cancer-causing aromatics, like benzene, than a person living 200 years ago would have been exposed to in their entire lifetime.¹⁷ The worst part is the oil industry knows this, the government knows this, and the agencies empowered to protect her and her baby are not doing what the law requires.

¹³ Centers for Disease Control and Prevention, Facts about Benzene
<https://emergency.cdc.gov/agent/benzene/basics/facts.asp>

¹⁴ Centers for Disease Control and Prevention, Agency for Toxic Substances and Disease Registry (ATSDR), Division of Toxicology and Human Health Sciences, Toxic Substances Portal – Benzene
<https://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=40&tid=14>

¹⁵ US National Library of Medicine, National Institutes of Health, Journal of Clinical Research in Pediatric Endocrinology, Fetal and Neonatal Endocrine Disruptors, June 2012
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3386773/>

¹⁶ Environmental Protection Agency, Research on Near Roadway and Other Near Source Air Pollution
<https://www.epa.gov/air-research/research-near-roadway-and-other-near-source-air-pollution>

¹⁷ Environmental and Energy Study Institute, Re: Comments on the Proposed Updates to the Air Quality Standards for Ground-Level Ozone, ID No. EPA-HQ-OAR-2008-0699, March 17, 2015
http://www.eesi.org/files/EESI_Ozone_Regs_Comments_3.17.15.pdf



Beyond a Reasonable DOUBT

The good news is that reducing pollution saves lives.¹⁸ The bad news is that, in many respects, today's air pollution results in similar negative health effects to those that the nation experienced when lead was added to gasoline to increase octane.¹⁹ Solutions are available today: One gallon of ethanol can replace up to two gallons of aromatics, which means a reduction in MSATs and ultrafine particles that create dangerous pollution and negative health effects.

The Threat:

An unexpected consequence of removing lead from gasoline was a dramatic increase in toxic aromatics. For example, in 1971 leaded gasoline averaged a level of 22 percent aromatics. But by 1987, when lead was removed due to its toxic effects, an octane replacement was needed. Refiners turned to aromatics and the number increased to an average of 37 percent. That's a 68 percent increase of a toxic material.²⁰

Aromatics are created during the process of refining crude oil into gasoline. Aromatics happen to be the most expensive, carbon-intensive, toxic, and environmentally harmful component of gasoline. Still today, about 25 to 30 percent of the 140 billion gallons of gasoline sold in the U.S. are aromatics.²¹ That is more than 30 billion gallons of carcinogens dumped into gasoline...dumped into the air...dumped into the American bloodstream each year.²²

And, as we explained in the "The Problem" section, the 45 million people living, working or attending school in urban areas of the U.S. are disproportionately affected by these toxic emissions. The research related to the health dangers of air pollution and what it's costing society is staggering. For instance, a report by the Organization for Economic Cooperation and Development (OECD) targets air pollution as

¹⁸ Caiazzo, Fabio; Ashok, Akshay; Waitz, Ian A.; Yim, Steve H.L.; Barrett, Steven R.H., Atmospheric Environment, Air pollution and early deaths in the United States. Part I: Quantifying the impact of major sectors in 2005, Volume 79, November 2013, Pages 198-208

<http://www.coolgreenschools.com/wp-content/uploads/2015/07/US-air-pollution-paper.pdf>

¹⁹ Environmental and Energy Study Institute, Fact Sheet, A Brief History of Octane in Gasoline: From Lead to Ethanol, March 2016

https://www.eesi.org/files/FactSheet_Octane_History_2016.pdf

²⁰ Clean Fuels Development Coalition, Improving Air Quality through Transportation Fuels, 2015

<http://cleanfuelsdc.org/wp-content/uploads/2018/05/CFDC-Issue-Brief-0311.pdf>

²¹ Davis Burroughs, Morning Consult, Growing Chorus of Complaints on Chemicals in Gasoline, April 22, 2015

<https://morningconsult.com/2015/04/22/growing-chorus-of-complaints-on-chemicals-in-gasoline/>

²² Caiazzo, Fabio; Ashok, Akshay; Waitz, Ian A.; Yim, Steve H.L.; Barrett, Steven R.H., Atmospheric Environment, Air pollution and early deaths in the United States. Part I: Quantifying the impact of major sectors in 2005, Volume 79, November 2013, Pages 198-208

<http://www.coolgreenschools.com/wp-content/uploads/2015/07/US-air-pollution-paper.pdf>



Beyond a Reasonable DOUBT

the biggest environmental cause of premature death globally, overtaking poor sanitation and unclean drinking water. Road transport emissions are blamed for half of the premature deaths.²³

Closer to home, the Massachusetts Institute of Technology (MIT) placed premature deaths from air pollution in the U.S. at 200,000 per year. According to MIT, exhaust emissions from road transportation were the most problematic, causing approximately 53,000 premature deaths in 2005.²⁴

Seven of the “Top 10 Causes of Death” in the U.S. are associated with the research we discovered about the harmful health effects from air pollution, including benzene, and benzene emissions from burning aromatics and MSATs.²⁵

If the health statistics aren’t startling enough, consider the financial burden our society is facing due to toxic emissions from gasoline. The World Health Organization (WHO) estimates the annual economic cost of premature deaths from air pollution across designated countries at \$1.431 trillion (USD).²⁶

According to research in Lives per Gallon: The True Cost of our Addiction to Oil, the Institute for Transportation Studies at the University of California, Davis determined the minimum external cost of air pollution from motor vehicles in the U.S. at \$24.3 billion every year.²⁷

We as a country and a world can do better. There is already proof that reducing air pollution saves lives and dollars. When Congress asked for an evaluation of the benefits and costs of all federal regulations in 2007, it found the largest estimated benefit was from the reduction in air pollution from just one air pollutant: fine particulate matter. The benefits were estimated at between \$18.8 billion to \$167.4 billion per year, compared to a cost of \$7.3 billion per year.²⁸ That translates to a benefit-cost ratio of between 2.5 to 1 on the low end and possibly up to 20 to 1 on the high end. These are pretty astounding numbers for the benefits that were initiated by a 1993 Harvard study. That specific study ultimately led to a new

²³ Organization for Economic Cooperation and Development (OECD), The Cost of Air Pollution, Health Impacts of Road Transport, May 21, 2014

<http://www.oecd.org/env/the-cost-of-air-pollution-9789264210448-en.htm>

²⁴ Jennifer Chu, MIT News, Study: Air Pollution Causes 200,000 early deaths each year in US, August 29, 2013

<http://news.mit.edu/2013/study-air-pollution-causes-200000-early-deaths-each-year-in-the-us-0829>

²⁵ Centers for Disease Control and Prevention, National Center for Health Statistics, Number of deaths for leading causes of death

<https://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm>

²⁶ World Health Organization, Economic cost of the health impact of air pollution in Europe: Clean air, health and wealth, Page viii, 2015

http://www.euro.who.int/_data/assets/pdf_file/0004/276772/Economic-cost-health-impact-air-pollution-en.pdf

²⁷ Terry Tamminen, Lives per Gallon: The True Cost of Our Oil Addiction, page 68

<https://epdf.tips/lives-per-gallon-the-true-cost-of-our-oil-addiction.html>

²⁸ Harvard School of Public Health, Landmark air pollution study turns 20

<https://www.hsph.harvard.edu/news/features/six-cities-air-pollution-study-turns-20/>



Beyond a Reasonable DOUBT

agenda for air pollution research, new air quality standards, improved air quality, and evidence of the benefits of cleaner air.”²⁹

And this was still with at least 25 percent aromatics in our fuel and no regulations on the even more dangerous ultrafine particulates damaging our bodies with every breath we take. As you can see from the research we’ve outlined, mobile source air pollution hasn’t been a priority of the EPA, despite Congressional mandate.

What’s Been Done:

If anything is clear so far, it’s that gasoline is dangerous stuff. The aromatics added to gasoline at the refinery to boost octane are known to cause cancer. Yet they continue to be used even though Congress has directed the EPA to reduce aromatics to the greatest extent possible.

Knowing that government agencies are empowered to inform Congress, regulate producers and protect us, consider this:

- In 1970, the Environmental Protection Agency (EPA) was established to understand the science of environmental threats and to enforce compliance with laws designed to protect the public from toxins in the environment.
- The Office of Transportation and Air Quality (OTAQ), a division of the EPA, was specifically tasked with protecting the public from mobile air source toxics (MSATs) to the greatest extent possible.

If the mission of those offices wasn’t enough to protect the public, the Clean Air Act was passed in 1970 with amendments in 1977 and again in 1990.³⁰

Despite the clear and present danger of aromatics, legislation did not improve the situation very much. The toxic controls enacted by Congress weren’t prioritized by EPA/OTAQ officials. The result was the 1990 amendments to the Clean Air Act, commonly referred to as the “Clean Octane” Amendments. Toxic controls were established in the Clean Octane Amendment, and now, due to this effort, all gasoline is currently limited to 0.62 percent benzene by volume.³¹

The Clean Air Act Amendments have two goals. First, to provide energy security by reducing petroleum use and, second, to create markets for renewable fuels and domestic biofuels. The centerpiece of that

²⁹ Clean Fuels Development Coalition, Improving Air Quality through Transportation Fuels, 2015
<http://cleanfuelsdc.org/wp-content/uploads/2018/05/CFDC-Issue-Brief-0311.pdf>

³⁰ Urban Air Initiative, Legislative & Regulatory Timeline Related to Ethanol, Gasoline, and Federal Agencies
<https://fixourfuel.com/wp-content/uploads/2018/10/Legislative-Regulatory-Timeline-Related.pdf>

³¹ Environmental and Energy Study Institute, Fact Sheet, A Brief History of Octane in Gasoline: From Lead to Ethanol, March 2016
https://www.eesi.org/files/FactSheet_Octane_History_2016.pdf



Beyond a Reasonable DOUBT

legislation requires the petroleum industry to include a gradually increasing percentage of renewable fuels in their slate of products to boost octane and reduce toxic emissions.³²

U.S. ethanol producers and farmers responded by exceeding the Congressionally mandated targets within only two years. As oil prices climbed above \$100/barrel, and corn ethanol producers proved the commercial viability of their technologies, Congress increased the use targets for conventional biofuels, including corn starch-derived ethanol, up to 15 billion gallons per year. Congress then established even higher targets for ethanol derived from cellulosic biomass materials and advanced biofuels.³³

Fearing that the U.S. corn ethanol industry would expand exponentially, the oil industry aligned with the environmental community to pressure EPA/OTAQ to derail the corn ethanol industry. It appears contradictory, but many key environmental groups focused more on land use issues and misguided net energy reports than clean fuels and clean air. Consequently, they were persuaded to oppose biofuels as a clean renewable fuel and octane source³⁴ which resulted in the continued increase of toxic aromatics in the fuel supply.

Random fuel samples collected from the Kansas City area in 2016, and sent out for testing by Urban Air Initiative (UAI), revealed benzene volumes as high as 2.1 percent, and that figure does not include benzene emissions that are formed by other aromatics compounds as they exit the tailpipe. This is nearly twice the legal limit.³⁵

This goes to show that Congressional intent is still not being followed and the general public is being exposed to even higher levels of toxic aromatics than allowed by law. In our next section, we will explore the research that uncovers why protecting the public doesn't appear to be an EPA and OTAQ priority.

Why it's Not Working:

For more than 30 years, a handful of career government civil servants and contractors at EPA/OTAQ in Ann Arbor, Michigan, have shaped transportation fuels regulatory policy in the United States. Presidents — both Republican and Democrat — have come and gone, but these core career bureaucrats have remained and continue to direct transportation fuel regulatory policy.³⁶

³² Fuel-Testers: Ethanol Alcohol Fuel Test Kits, Ethanol Fuel History, Ethanol History Timeline

http://www.fuel-testers.com/ethanol_fuel_history.html

³³ Environmental Protection Agency, Renewable Fuel Standard Program, Overview for Renewal Fuel Standard

<https://www.epa.gov/renewable-fuel-standard-program/overview-renewable-fuel-standard>

³⁴ Renewable Fuels Association, Fueling a Nation, Feeding the World, 2014

<https://ethanolrfa.org/wp-content/uploads/2015/09/Fueling-a-Nation-Feeding-the-World-2014.pdf>

³⁵ Southwest Research Institute Report # ICM ODDB-19182. See line number 77 in red tab

³⁶ Boyden Gray & Associates, "fixourfuel.com," May 4, 2018

<https://fixourfuel.com/wp-content/uploads/2018/06/Memo-re-EPAAct-Emails-20180504c.pdf>



Beyond a Reasonable DOUBT

Besides the career bureaucrats, our research found that lobbyists are involved when there is turnover within the EPA/OTAQ. Laws made in the public's interest that create energy, environmental, economic, and public health policy are influenced by conflicting special interests.

According to www.OpenSecrets.org, a service of the Center for Responsive Politics, 73 percent of American Petroleum Institute (API) lobbyists had previously held government jobs in 2016-2017. But the door swings both ways. API lobbyists are also becoming bureaucrats in the "Alphabet Agencies," like the EPA and OTAQ. According to the *Washington Post*, it appears this trend has not only continued for at least ten years, it is far above the standard for any other industry lobbyist group. "Three of every four oil and gas lobbyists worked for the federal government, a proportion that far exceeds the usual Revolving Door standards on Capitol Hill."³⁷

It's not illegal to petition or lobby our government. However, there are rules to protect the integrity of our political system. Most important is the transparency of money spent on specific legislation, by specific industries, by specific people, and with specific stated interests. If lobbying our government was not such a problem, there would not be a need for such an oversight process or watchdog.

In 2017 alone, the oil industry had grown to 775 lobbyists, and 512 of them (65 percent) are on the www.OpenSecrets.org revolving door watch list. The EPA is on the oil industry's target list because the EPA experienced an upswing in lobbying activity after the passage of the Renewable Fuel Standard (RFS2) in 2007. On the other hand, there are fewer than 50 lobbyists representing the biofuels industry.³⁸

Flawed Fuel Testing:

It's not just who is working in the EPA/OTAQ offices that raised a red flag from our research. It's also the technical data that shows the nation has been exposed to decades of flawed test fuels and flawed driving tests, which in turn means flawed emissions results and mileage claims. EPA/OTAQ has the unique ability to determine the outcome of tests, experiments, and studies.

It is simple logic really. You don't use the producer of a toxic fuel to be your consultant and tell you how to produce test fuels. You also don't ask them which product they would like you to use, or how they would prefer the fuel be tested. This information came from EPA emails obtained by the Urban Air Initiative through a Freedom of Information Act (FOIA) request.³⁹

³⁷Dan Eggen and Kimberly Kindy, Three of every four oil and gas lobbyists worked for federal government, *Washington Post*, July 22, 2010

³⁸ [OpenSecrets.org](http://www.opensecrets.org), Oil & Gas, 2017

https://www.opensecrets.org/lobby/indusclient_lob.php?id=E01&year=2017

³⁹ Boyden Gray & Associates, "fixourfuel.com," May 4, 2018, page 2

<https://fixourfuel.com/wp-content/uploads/2018/06/Memo-re-EPAAct-Emails-20180504c.pdf>

Beyond a Reasonable DOUBT

For example, emails between the EPA and the oil industry show that EPA asked oil industry employees what test fuels they would “prefer to see tested” and then revised the test fuels in response to their input. The EPA also threw out three test fuels after preliminary results showed that ethanol lowered emissions of nitrogen oxides and other pollutants and otherwise altered its slate of test fuels to downplay ethanol’s positive effects.⁴⁰

The emails show that the EPA relied heavily on oil industry employees from Chevron and BP to design the test fuels in a large-scale fuel effects study known as the EPAAct vehicle study. This is important because the EPA used the results of the EPAAct study to update its vehicular emissions model, MOVES2014. All states must use this emissions model to develop and implement plans for compliance with EPA’s air quality standards.

The process of simply adding ethanol to base gasoline is called splash blending. This is what happens in the “real” world and it is what should happen during fuel testing. However, when this is done, the results are not favorable to the oil industry. Simply adding ethanol to gasoline improves gasoline in every way. It lowers carbon, reduces common air pollutants for smog formation, lessens CO2 emissions, reduces sulfur content, and provides clean octane as a replacement for toxic aromatics. This was the exact intent of the Clean Air Act octane amendments.⁴¹

Instead of using this splash blending method, match blending test fuels is the common process. It was used in MOVES Model testing and skews results. In studies with match blended fuels, aromatics are often increased when adding ethanol to the test fuel. The increase in emissions is then blamed on ethanol, when the aromatics are the true culprit.⁴²

By certifying vehicles on gasoline formulations that do not exist, these vehicles then go out into the real world and fall short of standards. Of course, it is not the gasoline maker that is blamed, it is the automaker. The media and public have been so misled on emissions, the related health threat, and the higher cost of gasoline caused by not using more ethanol and fewer aromatics that the auto industry has finally weighed in on the flaws in the fuel testing approach.⁴³ In a Society of Automotive Engineers (SAE)

⁴⁰ Steve VanderGriend, Request for Correction of Information submitted on Behalf of the State of Kansas, the State of Nebraska, the Energy Future Coalition, and Urban Air Initiative Concerning EPA’s EPAAct/V2/E-89 Fuel Effects Study and Motor Vehicle Emissions Simulator Model (MOVES2014), filed Jan. 19, 2017

<https://fixourfuel.com/wp-content/uploads/2017/01/Jan-2017-Request-for-Correction-MOVES2014.pdf>

⁴¹ Boyden Gray & Associates, “fixourfuel.com,” May 4, 2018

<https://fixourfuel.com/wp-content/uploads/2018/06/Memo-re-EPAAct-Emails-20180504c.pdf>

⁴² Steve VanderGriend, Request for Correction of Information submitted on Behalf of the State of Kansas, the State of Nebraska, the Energy Future Coalition, and Urban Air Initiative Concerning EPA’s EPAAct/V2/E-89 Fuel Effects Study and Motor Vehicle Emissions Simulator Model (MOVES2014), filed Jan. 19, 2017

<https://fixourfuel.com/wp-content/uploads/2017/01/Jan-2017-Request-for-Correction-MOVES2014.pdf>

⁴³ Steve VanderGriend, Understanding the Emission Benefits of Higher Ethanol Blends: EPA Modeling Fails to Tell the Whole Story

<https://fixourfuel.com/wp-content/uploads/2017/06/Understanding-Emissions-SVG.pdf>



Beyond a Reasonable DOUBT

paper they went on the record to complain that “no one would ever make fuel in that manner.”⁴⁴ The auto industry has been ready for many years to implement wide-scale use of higher blends of biofuels with the flex-fuel vehicles. But distortion in the media and public perception controlled by billion-dollar oil industry marketing campaigns and lobbyists have slanted the market to the point that the auto industry can’t promote the benefits of higher octane.

There are also legal implications of the EPA’s reliance on the oil industry to design the EPAAct study.⁴⁵

- The EPA’s consultation with a group of oil company employees about the test fuel parameters violated the requirement of the Federal Advisory Committee Act and the EPA’s Scientific Integrity Policy that such committees be balanced, that they be publicly announced and that their meetings be open to the public.
- The EPA’s exclusive reliance on oil industry employees with an incentive to generate results favorable to petroleum and unfavorable to ethanol violated the objectivity requirement of the Agency’s Information Quality Guidelines. It also violated the EPA’s Scientific Integrity Policy, which requires all employees, including scientists and managers, to “[a]void conflicts of interest and ensure impartiality.”
- The EPA’s reliance on oil industry consultants was in violation of the Scientific Integrity Policy’s requirement that scientific findings be “generated and disseminated in a timely and transparent manner.”
- The EPAAct study contributed directly to the emissions factors in the EPA’s new vehicular emissions model, MOVES2014, which each state must use in constructing implementation plans for compliance with EPA’s air quality standards. The EPA’s unlawful reliance on the oil industry to design the EPAAct study compounds the agency’s failure to give the public notice and an opportunity to comment on the MOVES2014 Model, as required by law.

Not only is the science EPA used inaccurate, so is the data it used to compare the cost of aromatics and ethanol. As revealed in a Senate EPW Committee report, the EPA manipulated key cost-benefit analyses and emissions modeling tests to make ethanol appear to be more costly than toxic aromatics. Further, EPA/OTAQ used these efforts to pin the emissions from aromatics on ethanol.⁴⁶

⁴⁴ James Anderson and Timothy Wallington, Ford Motor Company; Robert Stein, AVL Powertrain Engineering Inc.; William Studzinski, General Motors Co., Issues with T50 and T90 as Match Criteria for Ethanol-Gasoline Blends <https://www.sae.org/publications/technical-papers/content/2014-01-9080/>

⁴⁵ Steve VanderGriend, Request for Correction of Information submitted on Behalf of the State of Kansas, the State of Nebraska, the Energy Future Coalition, and Urban Air Initiative Concerning EPA’s EPAAct/V2/E-89 Fuel Effects Study and Motor Vehicle Emissions Simulator Model (MOVES2014), filed Jan. 19, 2017 <https://fixourfuel.com/wp-content/uploads/2017/01/Jan-2017-Request-for-Correction-MOVES2014.pdf>

⁴⁶ Boyden Gray & Associates, Increasing Consistency and Transparency in Considering Costs and Benefits in the Rulemaking Process, ID No. EPA-HQ-OAR-2018-0107, June 13, 2018 <https://docs.google.com/viewerng/viewer?url=http://boydengrayassociates.com/wp->



Beyond a Reasonable DOUBT

Between the “Revolving Door” at EPA and the flawed fuel testing uncovered through FOIA emails, it’s clear that the system we have today is not working. The public should not suffer at the expense of Big Oil trying to limit competition and protect market share. In our next section, we will discuss what can be done to change the system, reduce toxic aromatics and improve the air we breathe.

What We Can Do:

Up to this point, we have focused on the severe health problems associated with the toxins in our gasoline and the not entirely- successful attempts by the government to protect us. But there is hope for change in the future.

First, let’s take a look at what can be done.

The Brazilian government made a firm commitment to clean air and a consumer-focused market for fuel 30 years ago. Brazil called on all its automakers to manufacture vehicles that could run on any combination of ethanol up to 100 percent — and they did. In this open system, technological innovation and a free market created the clear winner. Choice allowed consumers to respond to high oil prices and unhealthy air by increasing their use of ethanol. Consumers controlled their destiny and retained the dynamics of the free market by choosing higher blends of ethanol at the pump based on both cost and performance. As a result, Brazil is the second-largest producer and consumer of ethanol in the world after the United States.⁴⁷

In light of the Brazilian model, OTAQ’s director admitted that its fuel testing process was outdated,⁴⁸ a passive response, and indicative of the problem. How is it that other countries are farther ahead in environmental health, energy independence and free market economics than we are? The short answer is: Their governments are working for their people.

Unelected bureaucrats shouldn’t be picking winners, but enforcing laws without bias, which is Congress’s legislative intent.

When an unelected bureaucrat “regulates” based on their opinion, or that of a special interest group’s lobbyist, the public has no recourse; the public can’t fire them. This is a form of governmental abuse of power and something needs to be done to return the power to the people. Unelected bureaucrats should not be legislators; they should be accountable to the legislators and enforce the laws or mitigate their application, which leads us to the last thing we can do: Hold Congress accountable to do their jobs,

[content/uploads/2018/08/UAI-Comments-on-Increasing-Consistency-of-Cost-Benefit-Analysis-through-MOVES2014-ANPR.pdf](https://www.eia.doe.gov/content/uploads/2018/08/UAI-Comments-on-Increasing-Consistency-of-Cost-Benefit-Analysis-through-MOVES2014-ANPR.pdf)

⁴⁷ U.S. Energy Information Administration, Country Analysis Brief: Brazil, November 21, 2017

https://nangs.org/analytics/download/1073_cc0665f2e3b0d87dfd67814c554eb603

⁴⁸ Margo T. Oge, *Driving the Future*, 2015



Beyond a Reasonable DOUBT

not give them the power to determine market winners or losers or establish direction based on alternative agendas.

Our founding fathers proposed to put the “power to govern” in the hands of people who were accountable, the “representatives” who were subject to being fired by the people. Congress was to be a place to argue over the different perspectives of the public, create clarity concerning what is best for all, and enact laws to preserve the best possible future for the country’s people. Congress needs to be told in no uncertain terms WE THE PEOPLE WANT ACTION.

Thanks to some elected officials recognizing a need for clean air and the inherent value of ethanol as an octane booster and an economic booster, ethanol now comprises nearly 10 percent of the U.S. gasoline pool “by mandate” through the Renewable Fuel Standard (RFS). This mandate has maintained gasoline octane ratings while helping to reduce the volume of aromatics that are added to gasoline. But is regulating really the answer? Is 10 percent the best we can do? In the 100+ years since the production of the first car that was able to run on any combination of ethanol and gasoline, including 100 percent ethanol, the U.S. remains reliant on gasoline, while fuel in Brazil is mandated to have an ethanol blend of 27 percent. The flex-fuel vehicles in Brazil are capable of running on up to E100. Ten percent is not the best we can do.⁴⁹

Biofuels, an Available Solution:

Much of what needs to be done to clean up our air can be done right now with biofuels, without any future technological development. We can clean our air today without jeopardizing our future in any way.

Consider this: While biofuels have been publically chastised, rural America has quietly risen to every occasion to support and benefit numerous public policies, such as energy diversity, public health protection, and sustainable agriculture. While it benefited from a lower tax rate in ethanol’s early years, it no longer receives a direct financial subsidy despite competing with the heavily subsidized oil industry. Biofuels have provided a great return on investment for the American taxpayer/consumer.⁵⁰

One gallon of ethanol can replace up to two gallons of aromatics, which are the most carbon intensive and toxic of the 450+ chemicals in gasoline. Adding ethanol to gasoline allows refiners to reduce toxic/carcinogenic aromatics additives, which means a reduction in mobile source air toxics (MSATs) and ultrafine particles that create dangerous pollution and negative health effects. In addition, ethanol continues to improve its carbon footprint. According to the United States Department of Agriculture

⁴⁹ Lou Ann Hammond, Brazil and Ethanol, August 4, 2006

<https://www.drivingthenation.com/brazil-and-ethanol/>

⁵⁰ Growth Energy, FAQ, Does ethanol receive federal government subsidies?

<https://growthenergy.org/faq/ethanol-receive-federal-government-subsidies/>



Beyond a Reasonable DOUBT

(USDA), by 2022 ethanol's greenhouse gas profile is expected to be almost 50 percent lower than gasoline due to improvements in corn yields and transportation efficiency, further improving air quality.⁵¹

Between 2008 and 2014, U.S. gasoline prices remained well above the \$3 per gallon mark. Without ethanol's contribution to the finished gasoline pool, Merrill Lynch estimated gasoline prices could have been 50¢ per gallon higher.⁵² The Department of Energy concluded that ethanol also reduces crude oil demand which makes crude oil cheaper for the whole world. Therefore, ethanol makes all products cheaper, including food.⁵³

The demand for industrial corn, 95 percent of which is not used for human consumption, has created a new era of sustainable agriculture. Many economists point out that without the demand for biofuels from corn there would be less incentive to farm and fewer farmers.⁵⁴ Before biofuels, corn farmers were paid a subsidy for their corn because there was no market for all the corn produced. Biofuels have significantly reduced the need for farm subsidies today.

When ethanol is added to gasoline, it increases the octane. This helps cars burn gasoline more efficiently and with fewer emissions. Ethanol's high octane will allow automakers to make gains in engine efficiency while reducing carbon intensity without additional manufacturing costs.⁵⁵ Right now, almost all gasoline contains 10 percent ethanol. New gasoline pumps can dispense up to 25 percent ethanol at no extra cost to the retailer or consumer.

Today's U.S. ethanol industry creates economic growth. It has already created more direct jobs than Exxon Mobile has employees and more indirect jobs than the top 10 U.S. oil companies have in total employees. Any movement toward clean air through biofuel expansion also helps government stimulate

⁵¹ U.S. Department of Agriculture, USDA Releases New Report on Lifecycle Greenhouse Gas Balance of Ethanol, January 12, 2017

<https://www.usda.gov/media/press-releases/2017/01/12/usda-releases-new-report-lifecycle-greenhouse-gas-balance-ethanol>

⁵² Southwest FarmPress, Ethanol helps keep gas prices down, April 14, 2011

<https://www.southwestfarmpress.com/grains/ethanol-helps-keep-gas-prices-down>

⁵³ U.S. Department of Energy, Alternative Fuels Data Center, Ethanol Benefits and Considerations

https://www.afdc.energy.gov/fuels/ethanol_benefits.html

⁵⁴ Governing the States and Localities, Ethanol's Crucial Role in Protecting the Farm Economy from China, July 3, 2018

<http://www.governing.com/gov-institute/voices/col-trump-china-ethanol-crucial-role-protecting-farm-economy.html>

⁵⁵ *The Detroit News*, Automakers push Congress for higher fuel standards, April 16, 2018

<https://www.detroitnews.com/story/business/autos/2018/04/16/automakers-push-congress-higher-fuel-standards/33902227/>



Beyond a Reasonable DOUBT

private-sector jobs without subsidizing them. Biofuels support the U.S. Department of Agriculture in meeting its sustainable agriculture and rural economic development objectives.⁵⁶

Biofuels have a direct benefit to the consumer because gasoline blenders/retailers purchase ethanol for about 50¢ less than a gallon of gasoline and these savings are seen by the consumer at the pump. Biofuel producers in the United States spend \$25 billion annually on production inputs — including \$1 billion in labor (339,175 jobs). This generates \$24 billion in economic activity.⁵⁷

We can have more jobs, better fuel, better vehicles, cleaner air, and better health...today.

⁵⁶ Renewable Fuels Association, Analysis Finds U.S. Ethanol Industry Making ‘Significant Contribution to the Economy,’ February 14, 2018 <https://ethanolrfa.org/2018/02/analysis-finds-u-s-ethanol-industry-making-significant-contribution-economy/>

⁵⁷ Agriculture and Biofuels Consulting, LLP, Contribution of the Ethanol Industry to the Economy of the United States in 2017, February 12, 2018 https://ethanolrfa.org/wp-content/uploads/2018/02/RFA-2017-Ethanol-Economic-Impact-01_28_17_Final.pdf



Beyond a Reasonable DOUBT

Conclusion:

It's time to demand a change. If we do not challenge the bad science and misinformation being spread about biofuels, we will be forced to continue using gasoline with toxic aromatics. As we've explained throughout the Beyond a Reasonable Doubt series, there is a healthier and more affordable octane source available today: clean-burning biofuels.

The Urban Air Initiative is committed to its mission to improve air quality and protect public health by reducing the use of toxic aromatics in gasoline. We are focused on increasing the use of clean-burning ethanol as a replacement. If left unchallenged, the petroleum industry will succeed in convincing you, the consumer, that biofuels will damage cars, gasoline pumps, pollute the air, and use excess energy, all while driving up food prices while starving the world. Thankfully, those falsehoods are countered by science, innovation, Mother Nature, common sense, capitalism, agriculture, and courageous public policy makers.

Consider what it means to the economy, to national defense, to public health the next time you fill up your car; think about what you are putting into your gas tank. You are being forced to use one product. You, the consumer, are not being given a choice. This shift in thinking can translate into change.

Right now, mid-level ethanol blends with 15, 20 and even 30 percent have limited availability in certain parts of the country. Choosing those blends will help make a difference in the air you breathe. [Click here](#) to find out if you live near an ethanol blending fuel retailer. If you don't have access to ethanol blends, ask for it. Tell your fuel retailer you'd like access to cleaner fuel options and [tell your elected officials](#) to enforce the Clean Air Act.

It's Congress's job to represent the people and provide for the common good. If the people demand cleaner fuel options, it will outweigh unelected bureaucrats and the billions of dollars Big Oil spends to spin the message. If people demand a choice, the free market will dictate the fuels that end up in our vehicles. And given a fair playing field, with bad science improved and regulations removed, consider what that truly means: cleaner fuel and cleaner air.