

Help A Reporter Out

Benzene in Gasoline is the New Lead and Forever Chemical

Prepared For the Society of Environmental Journalists Annual Conference April 3-7, 2024

Why is EPA [Still] so Secretive?

A Plea to Environmental Journalists to Fully Investigate Benzene and Aromatics in Gasoline

Burl Haigwood, Author, Gasolinegate, Clean Fuels Development Coalition Advisory Board

In 2013, a Society of Environmental Journalists opinion piece called out EPA as “*incredibly secretive during the Obama Administration.*” ([Will New EPA Head Open Agency to News Media?](#) Beth A. Parke, Executive Director, Society of Environmental Journalists and Joseph A. Davis, Director, SEJ Freedom of Information WatchDog Program). EPA’s penchant for secrecy is just as evident ten years later, despite Administrator Michael Regan’s vow to be “*driven by the science and the rule of law.*”

For decades, the environmental journalist community has exemplified the courage and leadership it takes to get the public and government to understand and act upon policies related to lead in gasoline, secondhand smoke, the health effects of air pollution, climate change, and more recently, wildfires, and forever chemicals.

Meanwhile, [the U.S. Environmental Protection’s Office of Transportation and Air Quality](#) (EPA/OTAQ) has been hiding a terrible truth from the American public – and it is related to every one of the issues above. We are pleading with the environmental journalist community to educate and warn the public about EPA’s dirty air secret. EPA must be made accountable for not reducing the harmful emissions from benzene in gasoline to the greatest degree possible. Only they have the authority and Congress directed to do so in Section (l) of the [Clean Air Act Amendments of 1990](#) (CAAA).

It is No Secret: Benzene is in Gasoline, and its Bad

[EPA allows refiners to have an average of 1.0% benzene in gasoline.](#) While restricting benzene in gasoline reduces evaporative emissions, it does little to reduce the total amount of benzene emissions from vehicles burning all the other “aromatic” octane enhancers. About half of the aromatics in gasoline are **Benzene**, **Toluene methylbenzene**, **Ethylbenzene**, and **Xylene dimethylbenzene**, commonly referred to as **BTEX**. **BTEX and other aromatics** still account for as much as 35% of the content of gasoline in some areas. ([Air Quality Research and Contract Reports: On-Road Vehicles, 2023 Texas Summer Fuel Study](#)) **Story Idea?** Why does the EPA no longer test or require the oil industry to report gasoline's total BTEX and aromatic content?

- ☑ **BENZENE** is a “Group A, known human carcinogen” – **U.S. EPA**
- ☑ **BENZENE** is “Known to be a human carcinogen” – **National Institutes of Health, Center for Disease Control and Prevention, Food and Drug Administration**
- ☑ **BENZENE** is a “Carcinogenic to Humans” - **World Health Organization**
[California Proposition 65 Benzene Warning](#)
- ☑ **BENZENE** exposure can cause leukemia.
- ☑ **BENZENE** can cause cancer, birth defects, or other reproductive harm.
- ☑ **BENZENE** exposure during pregnancy may affect the development of the child. It may also harm the male reproductive system.
- ☑ **1948:** [America Petroleum Institute States, “The Safe Threshold for BENZENE is Zero”](#)
- ☑ **1983:** [American Petroleum Institute President Warns Congress about BENZENE in Gasoline](#)

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HARO Research

What Do We Have to Lose?

EPA should, could, and would save lives if its regulations reduced the amount of [mobile source air toxics](#), which include those coming from benzene, toluene, and xylenes in gasoline, “to the greatest extent possible”—as Congress directed the agency to do so in Section 202 (l) of the CAAA.

- ☑ According to the [U.S. Environmental Protection Agency](#) website that explains its “**Programs to Reduce Smog, Soot, and Other Air Pollution from Transportation**,” “EPA implements national programs and standards for fuels and vehicles that reduce air pollution, including smog, soot, toxic pollutants, and spur investments in the clean vehicle and engine technology. EPA programs to reduce emissions from transportation sources have resulted in less smog and soot, significantly better air quality, and better health for Americans. By 2030, EPA air quality emissions standards for vehicles are projected to prevent **40,000 premature deaths, 34,000 avoided hospitalizations, and 4.8 million workdays lost**” – annually.

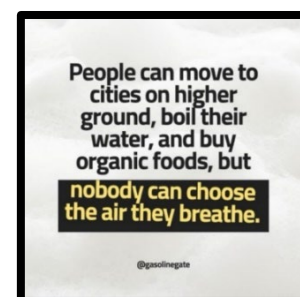


- ☑ **Study: Air pollution causes 200,000 early deaths each year** in the U.S. A New MIT study finds vehicle emissions are the biggest contributor to these premature deaths. ([Jennifer Chu, MIT News Office Publication, August 29, 2013](#))
- ☑ **How will the Nation get to thirty-six percent renewable fuels prescribed by Dr. Perera?** (Please watch “[Fossil Fuels Threaten Children’s Health](#)” Perera, Frederica. 2016. Columbia University’s Mailman School of Public Health. Columbia University’s Mailman School of Public Health.

Climate Change is to **Benzene** As...

In the article below, replace the phrase “Climate Pollution” with [[Reducing BTEX and other aromatics](#)]. You will see that the justifications for educating the public about climate change and benzene in gasoline are almost identical.

“There is one federal agency explicitly tasked with keeping the air clean and controlling pollution to protect the health of every child and the welfare of a nation — the EPA,” said Julia Olson, executive director and chief legal counsel at the Oregon-based law firm Our Children’s Trust. “The agency has done the opposite when it comes to “**climate pollution**” [[Reducing BTEX and other aromatics](#)], and it’s time the EPA is held accountable by our courts for violating the U.S. Constitution and misappropriating its congressionally delegated authority.” [Exclusive: Law firm behind Juliana kids climate case takes on EPA](#), Lesley Clark, *E&E News*, December 11, 2023.



Environmental journalists convinced Congress and most Americans to heed the call about climate change and saving the planet. Now it’s time to hold the EPA and oil companies accountable and get the public to heed the call to reduce BTEX and other aromatics in gasoline to *Save The Humans!* We urge environmental journalists to explore this document's extensive HARO research resources and thoroughly investigate the numerous issues and their connections to current events. Acting now will positively impact history and the most fundamental environmental injustice that affects every person breathing air in every city.

The law is clear. The science is indisputable. Not reducing current levels of BTEX and other aromatics in gasoline is indefensible. **#Gasolinegate**

Gasolinegate is the New Dieselgate

Gasolinegate follows similar tragic storylines in history, such as lead phasedown, tobacco company lawsuits, **benzene** lawsuits, Watergate, and [Dieselgate](#). The U.S. gasoline market is the world's largest. It is also the predominant source of the most harmful carbon, greenhouse gases (GHG), and toxic emissions—far more significant than diesel fuels, power plants, aviation, and **Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)**, i.e., forever chemicals). However, unlike diesel soot, smokestack emissions, or tobacco smoke, gasoline benzene-based octane compound emissions are invisible and odorless. Consequently, for decades, EPA/OTAQ successfully covered up the Light Duty Vehicle (LDV) fleet's multi-billion-dollar damages to public health and the environment.

A legal analysis of FOIA emails explain how EPA/OTAQ got caught obstructing Congressional intent and colluding with oil industry interests to cover up the lethal effects of BTEX in gasoline and thwart the development of readily available, lower-cost, lower-carbon, cleaner-burning, higher-octane alternatives.

While heading the Obama Administration's EPA, Administrator Gina McCarthy wholly deferred to the "experts" EPA/OTAQ in Ann Arbor, Michigan. These EPA "experts" went to extraordinary—even unlawful—lengths to hide the truth from the press and public about the dramatic increases in highly toxic emissions from the U.S. light-duty fleet—which are getting far worse every day despite the EPA's assurances. Refusing to comply with a nondiscretionary duty imposed by Congress in the CAAA—which was determined to avoid a repeat of the socioeconomic and financial disaster inflicted by leaded gasoline—OTAQ colluded with oil interests to obscure the facts. The result damaged the environment and public health.

EPA is Repeating the Tragic History Lesson Learned from **Leaded Gasoline**

One hundred years ago, Henry Ford and John D. Rockefeller battled over the right choice for gasoline octane-boosting compounds, which automakers desperately required to increase engine compression ratios to improve efficiency. Due to its superior octane-boosting properties and benign health effects, Ford championed 30% ethanol blends, warning of the extreme dangers posed by **tetraethyl lead (TEL or lead)**.

Unfortunately for humankind, Rockefeller, Standard Oil, and leaded gasoline prevailed. The result was what many scientists and health experts call the worst human-caused health disaster of all time. The total societal cost of leaded gasoline's adverse health effects is staggering. After the lead was phased out, numerous reputable studies quantified the benefits to the U.S., such as [increased GDP and productivity](#) and reductions in mortality. ([The Secret History of Lead](#), Jamie Kitman, *The Nation*, March 2, 2020. *Gasolinegate*, Ch.1, A History of Illusion and Collusion: The Evolution of Our Benzene Revolution)

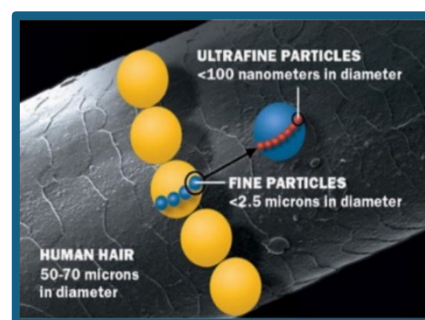
To meet the EPA's lead phasedown requirement, refiners replaced lead additives with **BTEX and other aromatics** to make higher-octane premium grades of unleaded gasoline (e.g., the 87, 88, 93 R+M/2 stickers on the gasoline pump). Higher-octane gasoline can help automakers meet the EPA's emission and efficiency standards, especially for "premium-required" automobiles. One would think the EPA would require as much 120-octane ethanol as possible to replace BTEX and other aromatic octane enhancers. This is especially important, considering premium gasoline grades have higher levels of aromatics. It should be a simple math equation and performance metric -- if [the EPA's MOVES model](#) that measures vehicle and fuel emissions were accurate. The article accessed via the following hyperlink provides information about [the origin and impact of EPA's defective MOVES model](#) and references the [formal request for correction submitted to EPA](#). The MOVES issue is also discussed more on page 8.

As noted earlier, the EPA’s average 1% **Benzene** restriction is “by volume.” This restriction does not take into account the accumulative volume and benzene emissions from the **ETX and other aromatics**. Why does that matter? Based on public fuel survey information, **Reformulated Gasoline (RFG)** areas in Texas and the St. Louis Area have experienced significant increases in the amount of **aromatics, which include BTEX**, in their gasoline. As a result, there are also more **benzene** emissions in the air. Using EPA’s Energy Policy Act Emission Model Calculator, motor vehicle emissions such as **benzene** and **Particulate Matter (PM)** have increased by 20% to 25% based on the fuel properties in these market surveys. There was also an increase in emissions, which have a **high reactivity to form ozone and PM_{2.5}**. ([2023 Texas Summer Fuel Study](#), Page 70)

Meanwhile, [according to the EPA](#), oxygenated fuels [ethanol] help gasoline burn more completely, reducing harmful tailpipe emissions from motor vehicles. The oxygen [ethanol] dilutes or displaces gasoline components such as aromatics [e.g., benzene] and sulfur. Oxygen [ethanol] optimizes the oxidation during combustion. As you will see next, reducing aromatics also reduces other **mobile source toxic emissions**.

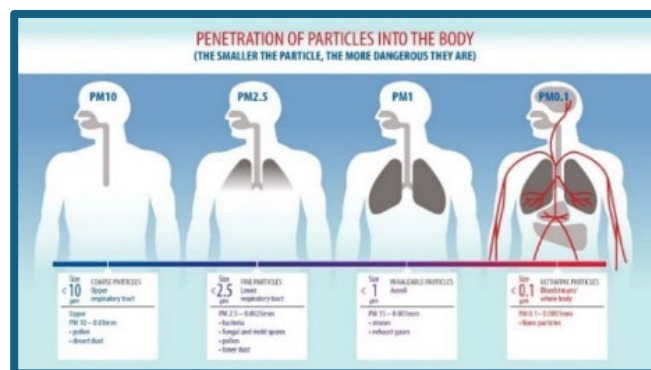
But Wait... There’s More... Than Just Reducing Benzene Emissions

[According to the EPA](#), aromatic hydrocarbons (i.e., **BTEX and other aromatics**) emitted from gasoline-powered vehicles contribute to the formation of **secondary organic aerosols (SOA)**. SOA increases the atmospheric mass concentration of **fine particles (PM_{2.5})**. Vehicle emission control systems cannot capture the products transformed into small and deadly particulate-borne air toxics. **Ultrafine particles (UFPs)** from **BTEX and other aromatics** are so small that they can only be measured by particle number rather than mass. These emissions are classified as **Mobile Source Air Toxics (MSATs)**. ([What’s In Our Gasoline is Killing Us: Mobile Source Air Toxics \(MSAT\) and the Threat to Public Health](#))



Among the worst **UFPs** are carcinogenic **polycyclic aromatic hydrocarbons (PAHs)**, whose harm to young children includes reduced IQ—just like the lead that was added to gasoline. **BTEX and other aromatics** are the only sources of PAHs from light-duty vehicles. [Research suggests fetal exposure](#) to extremely low levels of **PAHs** has been associated with developmental delay at age three and reduced IQ at age five.

The ability of inhaled particles to be captured within the human body, called deposition efficiency, is a function of particle size. Particle deposition efficiency rapidly increases as particles become smaller and smaller.¹ **UFPs** can cross biological membranes, and their mobility within the body is considered high. There is considerable evidence that inhaled **UFPs** can enter the bloodstream and be distributed to other organs in the body. They can even cross the placental barrier.²



¹ Felipe Rodriguez *et al.*, “Recommendations for Post-Euro 6 Standards for Light-Duty Vehicles in the EU” (2019), International Council on Clean Transportation, p. 8: https://theicct.org/sites/default/files/publications/Post_Euro6_standards_report_20191003.pdf (accessed June 11, 2021).

² C. Vyvyan Howard, “Particulate Emissions and Health” (2009): pp. 12-15: <http://www.durhamenvironmentwatch.org/Incinerator%20Health/CVHRingaskiddyEvidenceFinal1.pdf> (accessed Feb. 24, 2021).

Going From Lead to **Benzene**: “Aromatics in Gasoline Are the **New Lead**”

In an ironic example of greenwashing, 100 years ago, the petroleum [oil] industry started marketing “aromatics” to policymakers, the press, and the public, assuring them they were primarily to make gasoline “smell better.” Most experts believe that assurance still smells more like Bull. In 2015, Executive Director of the Environmental and Energy Study Institute, Carol Werner, aptly stated, “**Aromatics [which includes BTEX] in gasoline are the new lead.**” Ms. Werner and other scientific and environmental community members “are concerned that aromatics exist in the environment at unsafe levels.” ([Growing Chorus of Complaints on Chemicals in Gasoline](#), *Morning Consult*, Davis Burroughs, April 22, 2015)

Studies in peer-reviewed journals like the [Journal of Environmental Science and Health](#), [Environmental Health Perspectives](#), and [Particle and Environmental Toxicology](#) have linked the **ultrafine particulate matter (UFPs)** from aromatics to diseases ranging from ADHD to asthma.” UFPs are so small that they can be absorbed into the bloodstream through the lungs or skin.

In a 1987 report to the Senate Environment Committee, the EPA proposed increasing gasoline **BTEX+A** content to 45% or more to replace the octane shortfall created by the phaseout of lead, even though it knew vehicle emissions control systems could not capture the lethal **BTEX+A** emissions.³ Appalled by the horrific economic and social costs imposed by decades of burning leaded gasoline **and recognizing the petroleum industry was trading a poison for a carcinogen, Congress overruled EPA’s proposal to increase the volume of aromatics [which includes BTEX] in gasoline.** After months of intense debate, Congress deemed it necessary to insert a nondiscretionary provision in Section 202 (l) of the CAAA. CAAA Section 202 (l) requires EPA to reduce emissions “to the greatest degree achievable” by encouraging the commercialization of new technologies to improve fuel quality, which Congress knew would require controlling the amount of aromatics in gasoline.

CAAA, Section 202 (l) (2) Standards: “The regulations shall contain standards for such fuels or vehicles, or both, which the Administrator determines reflect the greatest degree of emission reduction achievable through the application of technology which will be available, taking into consideration the standards established under subsection (a) of this section, the availability and costs of the technology, and noise, energy, and safety factors, and lead time. Such regulations **shall** not be inconsistent with standards under subsection (a) of this section. The regulations shall, at a minimum, apply to emissions of **benzene** and formaldehyde.”

Story Idea? However, for over 30 years, in defiance of science, EPA has falsely assured policymakers, the press, and the public that advanced emissions control systems significantly reduce mobile source air toxics (MSATs), when in fact, they dramatically INCREASE the most harmful particulate-borne air toxics. ([Clean Fuels Development Coalition White Paper: The Real Cost of Gasoline is to Our Health](#))

From Lead to **Benzene** to **PAHs** and **Forever Chemicals** is Not a Secret Either

Polycyclic aromatic hydrocarbons (PAHs) are carbon-intensive, carcinogenic, mutagenic, and reprotoxic (CMR) chemicals and are [widely recognized by health experts as ubiquitous endocrine disruptor compounds \(EDCs\)](#). Based on science, the EPA should consider gasoline **PAHs** equally as bad or worse than **PFAS, i.e., forever chemicals.**

³ *Clean Air Standards Attainment Act of 1987*, Report of the Committee on Environment and Public Works to Accompany S. 1894, United States Senate, Report 100-231, November 20, 1987, p. 298.

It would not be an overstatement to say **PAHs** are **PFAS** on steroids--when considering their impact on public health and the environment. [Many experts believe secondary organic aerosols](#), or SOA-bound **PAHs**, are more pervasive, have a higher deposition efficiency, and are less susceptible to remediation than **PFAS** once emitted from the tailpipe and undergo atmospheric transformation. ([Clean Fuels Development Coalition letter to EPA Administrator Michael Regan, August 30, 2022](#))

Agency capture, arrogance, or ignorance?

Regardless of the reasons, EPA/OTAQ continues to deceive Congress, the media, and the public by hiding the health effects of higher than necessary levels of **BTEX and other aromatics** in gasoline. As a result of OTAQ's actions and inactions, they are actively engaged in thwarting the development of readily available lower-carbon (~50%), higher-octane (~120), cleaner-burning, and less expensive alternatives like renewable fuel ethanol. The checks and balances of ethics are simple to understand and uphold. See something, hear something, say something. **Story Idea?**

Freedom of Information Act (FOIA) investigations prove that OTAQ and oil companies colluded to pin BTEX emissions on ethanol. (See *Gasolinegate*, Ch. 8, The Smoking Gun and the Poison Squad: We Are What We Eat. pp. 184-186)



Where There's Smoke, There's Fire

One of the reasons EPA has been able to keep the **BTEX and other aromatics, PAH, PHAS, UFP, and PM_{2.5}** public health pandemic a secret is due to these pollutants being invisible and odorless—unlike tobacco smoke, diesel soot, powerplants, and refinery and fracking operations. However, recent media coverage of wildfires—the most toxic constituents of which are SOA-bound **PAHs**—should make **BTEX and other aromatics** emissions more “real” to the press and public. Daily news reports reveal the increasing threat to human health, with one crucial fact left out by EPA—BTEX and other aromatics are the predominant source of the most harmful pollutants.



“EPA recognizes that aromatics cause PM_{2.5} and that PM_{2.5} kills, as cited in their Mobile Source Air Toxics ruling. In addition, EPA and the Harvard Center for Risk Analysis estimated that exposure to PM_{2.5} originating from gasoline aromatics causes approximately 3,800 and 4,700 premature mortalities and costs the U.S. between \$28.2 and \$34.9 billion annually. A recent MIT study estimated 53,000 PM_{2.5}-related premature deaths from road transportation annually. The benefits of PM_{2.5} reduction alone would justify limiting the aromatic content of gasoline. A study in Environmental Health says that cutting gasoline aromatics in half would have a benefit of between \$7.8 billion and \$17.5 billion, which is greater than the PM_{2.5} related benefits of the 2012 CAFE rule (\$6.6 billion) and the Tier 3 Rule (\$5.4 billion). Eliminating aromatics from gasoline would improve PM_{2.5} mortality rates that rival those of the 2012 Utility MACT rule.” (Remarks of former Ambassador [C. Boyden Gray](#) at the [National Clean Fuels Technology & Health Effects Leadership Forum](#), February 6, 2020.

Articles about the Canadian wildfires quote toxicologists who pinpoint **SOA** and **PAH** emissions as the most harmful to humans (see [Wildfire smoke can harm human health, even when the fire is burning hundreds of miles away – a toxicologist explains why](#). *The Conversation*, June 28, 2023). Yet, it’s likely due to EPA’s failure to acknowledge that SOA-borne **PAH** produced by gasoline **BTEX and other aromatics** is significantly more toxic than wildfire smoke **PM_{2.5}** that environmental journalists are not covering this. After the wildfires are gone, Americans will still be digesting billions of gasoline-derived nanoparticles with every death-by-breath they take.



EPA/OTAQ recognizes the connection between PM and smoke from wildfire but not aromatics—witness recent media coverage of wildfire smoke PM: In a February 12, 2024, *San Francisco Chronicle* article, “California is 'ground zero' for poor air quality and could get worse,” Jack Lee and Sriharsha Devulapalli note “*Still, there are additional nuances to consider with air pollution, like how “wildfire smoke PM_{2.5} is way more toxic than traditional sources of PM_{2.5},”*”

Should’a, Could’a, Would’a, and Didn’t

In October 2011, the Alliance of Automobile Manufacturers (AAM) wrote EPA Administrator Lisa Jackson to urge her agency’s support for higher quality fuels [gasoline] to improve fuel efficiency and reduce carbon and other harmful emissions:

“EPA has long recognized that [vehicle technology and the fuel employed with that technology need to work in concert](#) as an integrated “system” so that vehicles can operate efficiently and achieve the lowest technologically and economically feasible emissions targets...

Furthermore, to help achieve future requirements for the reduction of greenhouse gas emissions, we also recommend increasing the minimum market gasoline octane rating, commensurate with increased use of ethanol. Adding ethanol to gasoline increases its octane rating. To attain necessary octane levels, it is important that refiners not be permitted to reduce base octane ratings in light of the additional octane contribution from higher ethanol.”⁴



Two years later, with Gina McCarthy at the helm, EPA’s Tier 3 Rule became the means to achieve several objectives and save the nation hundreds of billions of dollars annually in health and oil import costs. The “Tier 3 Rule” was the third in a series of required rulemakings under the Clean Air Act to regularly update and address air pollution. In that initial draft of the rule, a March 28, 2013, *New York Times* article, “E.P.A. Plans Stricter Limits for Sulfur in Gasoline” by Matthew Wald, put the spotlight on an EPA proposal “to make the most sweeping changes in gasoline since lead additives were banned.” Tucked inside the EPA’s plan to [cut the amount of sulfur](#) allowed in gasoline was an audacious suggestion that sought to solve all three ethanol challenges at once. “The proposal for a fuel that is 30 percent ethanol could reduce tailpipe emissions and improve fuel economy — and even encourage drivers to use more ethanol.”⁵

⁴ Letter from AAM President and CEO Mitch Bainwol to EPA Administrator Lisa Jackson, October 6, 2011.

⁵ Matthew L. Wald, “Squeezing More from Ethanol”, *New York Times*, May 3, 2013.

Instead, the EPA abruptly reversed course in the Tier 3 Final Rule. EPA turned to its controversial MOVES emissions model, which EPA scientists had deemed defective in a 2015 report. MOVES became the justification for the agency's inaction to reduce **BTEX and other aromatics**. In doing so, many experts believe the EPA's OTAQ violated the Administrative Procedures Act (APA) by collaborating with the American Petroleum Institute (API) and the Coordinating Research Council (CRC).⁶

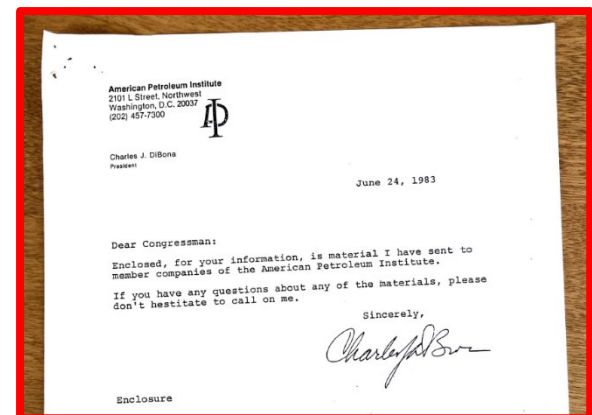
HOWEVER, INSTEAD OF COMPLYING WITH CONGRESSIONAL DIRECTIVES, EPA ABRUPTLY REVERSED COURSE IN THE TIER 3 FINAL RULE.

The CRC is a joint oil and auto technical group dominated by the oil industry. Extensive OTAQ correspondence procured after a multi-year FOIA effort confirms that OTAQ officials collaborated with oil industry experts to manipulate fuel testing data and atmospheric models to shift blame from **BTEX and other aromatics** to ethanol. [You can review Boyden Gray & Associates (BGA) analysis of internal emails obtained via FOIA with [this link](#). The analysis, "EPA Emails Show the Agency Relied on the Oil Industry to Design Anti-Ethanol Fuel Effects Study," details how OTAQ colluded with oil industry representatives.⁷

BGA followed up the FOIA request with a letter to the Department of Justice, which referenced "should" twenty-seven times, "would" forty-three times, and "could" sixteen times. **EPA did not act on any of the BGA recommendations.**

EPA's Secret: They Knew **Benzene** Was Bad and Still Is

Story Idea? What did EPA and the oil industry know, and when did they know it? How could the detrimental health effects of **benzene** in gasoline be kept secret if 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."** ([API 1948 Toxicological Review](#) and ["A Dozen Dirty Documents"](#)) and the U.S. National Institute of Health Center for Disease Control currently states, **"There is no safe exposure level to benzene; even tiny amounts can cause harm."**



[EPA began working to reduce lead emissions soon after its inception](#), issuing the first reduction standards in **1973**, which called for a gradual phasedown of lead to one-tenth of a gram per gallon by **1986**. EPA officially classified **benzene** as a "known" human carcinogen (Category A) under the Risk Assessment Guidelines of **1986**. Yet, their studies documented the problem in **1979**. In their proposed revised Carcinogen Risk Assessment Guidelines, **benzene** is characterized as a known human carcinogen for all routes of exposure based on convincing human evidence and supporting evidence from animal studies. ([EPA 1979, 1985, 1998](#); [ATSDR, 1997](#), [Benzene CASRN 71-43-2 | DTXSID3039242](#))

⁶ In 2009, the CRC certified that it was "organized and operated exclusively for the benefit of, to perform the functions of, and to carry out the purposes" of the American Petroleum Institute. Return of Organization Exempt from Income Tax 2009, <http://bit.ly/2dву5b8>. See CRC Annual Report 80 (2009), available at <http://bit.ly/2fwjtjrw>]

⁷ Adam R.F. Gustafson, Boyden Gray & Associates, "EPA Emails Show the Agency Relied on the Oil Industry to Design Anti-Ethanol Fuel Effects Study", memo to Urban Air Initiative, Nov. 4, 2016.

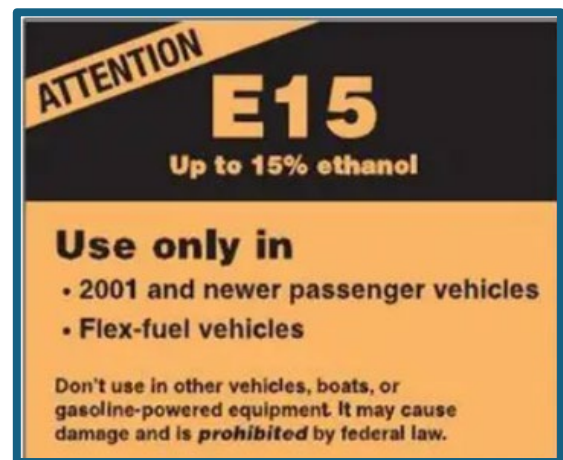
EPA placed **benzene** on the list of chemicals in "[The Emergency Planning and Community Right-to-Know Act of 1986](#)". Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) requires owners and operators of certain facilities that manufacture, import, process, or otherwise use the chemicals on this list to report annually any release of those chemicals to any environmental media over a specified threshold level.

[In December 2022, the Food and Drug Administration issued a statement alerting manufacturers to the risk of benzene contamination.](#) It warned that any drug containing more than two parts per million (ppm) benzene was adulterated and should be recalled.

[According to OSHA's Time-weighted average limit \(TWA\),](#) the employer shall ensure that no employee is exposed to an airborne concentration of benzene over one part of **benzene** per million parts of air (1 ppm) as an 8-hour time-weighted average.

[What organ does benzene affect? According to the National Institutes of Health,](#) benzene targets the liver, kidney, lung, heart, and brain after inhalation or absorption. It is metabolized mainly in the liver by the cytochrome P450 multifunctional oxygenase system.

Story Idea? Why does the EPA require gasoline retailers to place 10% and 15% ethanol labels on every gasoline pump in the U.S., but there is **Not a Benzene Warning Label? Because they can?** [Yet, it appears gasoline pump labeling is the Federal Trade Commission's responsibility, and its mission is also to protect people.](#)



<p>BENZENE</p> <p>BENZENE is a "Group A, known human carcinogen" – U.S. EPA BENZENE is "Known to be a human carcinogen" – National Institutes of Health, Center for Disease Control and Prevention, Food and Drug Administration. BENZENE is a "Carcinogenic to Humans" - World Health Organization.</p>	<p>! WARNING</p> <p>CONTAINS UP TO 90% GASOLINE With BENZENE and/or Toluene methylbenzene Ethylbenzene Xylene dimethylbenzene</p> <p>Up to 10% of This Product Contains Ethanol which Does Not Contain Benzene</p>	<p>Why are you being warned about exposure to BENZENE?</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> BENZENE exposure can cause leukemia. <input checked="" type="checkbox"/> BENZENE can cause cancer and birth defects or other reproductive harm. <input checked="" type="checkbox"/> BENZENE exposure during pregnancy may affect the development of the child. It may also harm the male reproductive system. <input checked="" type="checkbox"/> BENZENE exposure warning labels are required by OSHA, DOT, and California Proposition 65 to be on products. Why are BENZENE WARNING LABELS not required on gasoline pumps? <p>#Gasolinegate</p>
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[The Federal Trade Commission's Mission](#) is to prevent business practices that are anticompetitive, deceptive, or unfair to consumers, enhance informed consumer choice and public understanding of the competitive process, and accomplish this without unduly burdening legitimate business activity.

For GDI, For Better or Worse

It's the fuel. The Sierra Club, National Resources Defense Council, and others have filed lawsuits against the EPA for not developing more technology-forced vehicle and fuel strategies. Yet, the EPA did not mention ethanol or biofuels in its [2023 Automotive Trends Report: Greenhouse Gas Emission, Fuel Economy, and Technology since 1975](#). Perhaps the EPA will change its mind [when the Supreme Court overturns the Chevron doctrine](#).

Instead of staying true to its statement, “**vehicle technology and the fuel employed with that technology need to work in concert,**” EPA/OTAQ did the opposite by continuing to focus on Gasoline Direct Injection (GDI) engine technology – despite knowing about increases in PM emissions. Therefore, EPA/OTAQ does not meet its mission of improving gasoline quality to reduce MSAT emissions to the greatest extent possible. Instead, it appears fuel standards are set by what is most palatable by oil companies and refiners. ([EPA's Renewable Fuel Standard Exemptions for Small Refineries](#))

What could EPA do to solve its GDI engine-focused conundrum? To add insult to public health injury, the increase in particulates is primarily due to aromatics in gasoline, and more ethanol could help reduce emissions. ([“A Review of Particulate Number \(PN\) from Gasoline Direct Injection Engines and their Control Techniques”](#) Mohsin Raza et al., *Energies* (2018): 11(6), 1417: p. 3)

“GDI injects fuel directly into the cylinder instead of port fuel injection (PFI) technology that delivers fuel before the intake port. The goal (result) is less fuel required (greater fuel economy) and reduced emissions. However, GDI engines create PM because of the reduced time for fuel atomization and the fuel impingement resulting from incomplete mixing and partial fuel-rich zones. GDI technology allows for higher compression ratios, which increases power and utilizes ethanol's oxygen fuel and higher-octane characteristics. This technological benefit also negates ethanol's lower BTU differential compared to gasoline.” - Reg Modlin is a former director of regulatory affairs for Chrysler Corporation and a member of the CFDC Advisory Board.

A study by the U.S. Department of Energy's Oakridge National Laboratory (ORNL) further confirms the GDI public health hazard and ethanol benefit. [Researchers at ORNL Fuels, Engines, and Emissions Research Center reported,](#) “Sample GDI engines emit five to 10 times more particulate matter than their PFI counterparts. The tradeoff for fuel economy is higher particulate matter emissions. The particulate size ranges from 5 to 5000 nm in diameter, including very heavy, low-volatility hydrocarbons and tars. **Other potential solutions might be found in low-temperature combustion and cooled-EGR concepts that can cut GDI particle emissions, such as using more ethanol in the gasoline, which adds oxygen that inhibits soot formation.**”

Story Idea? A 2012 Chevy Volt using Ford's 1996 Flexible Fuel Vehicle Technology could get **“99.9 miles per gallon of gasoline”** **if** EPA would enforce Section 202 (I) of the CAAA and the U.S. Congress regards improving environmental, energy, public health, and national security as critical policy objectives. (*Gasolinegate*. Ch.13, Reality EV: The Gaslight is On, But Nobody is Home. pp. 270-273 and Chapter 16: Back to the Fuel Future: Now You Know What We Know)



[Ford Motor Company](#) and other experts validated and quantified that 30% ethanol blends (E30) can substantially reduce fine and ultrafine PM emissions at a much lower cost than **BTEX and other aromatics**. Market tests in [Kansas](#), [Nebraska](#), and [South Dakota](#) show that E30 works in conventional vehicles and is widely accepted by consumers when provided with a choice. *Meanwhile*, the [EPA refuses to certify E30 test fuels for commercial use](#).

EPA has compounded its increased PM emissions GDI problem by creating regulatory roadblocks that prohibit the public from protecting themselves by purchasing higher ethanol blends. Capping the amount of ethanol used in gasoline prevents it from replacing **BTEX and other aromatics** and reducing **MSAT emissions**. ([Lawsuits Likely as EPA Declares US Ethanol Blend Wall](#)) As a result, EPA/OTAQ's inaction continues to needlessly cause premature mortalities and morbidities—from asthma to pre-term births—from womb to tomb.

Ethanol's Speed-to-Market Should be Aligned with EPA's Mission

The EPA/OTAQ should consider allowing consumers to purchase higher ethanol blends because they are the fastest, least expensive, least disruptive, holistic vehicle and fuel technology forcing strategy. How and why? Ethanol supplies are already available for increased blending at every wholesale gasoline terminal in the United States – the system that brings finished gasoline to retail stations.



As a result, there would be several immediate benefits, such as reducing the Nation's geopolitical and economic impact of importing hundreds of billions of dollars of oil annually, reduced government public health care expenditures from reduced emissions from reduced **aromatics in gasoline**, and substantial reductions in carbon emissions. Why? On one hand, **BTEX and other aromatics** are the most carbon-intensive gasoline components. On the other hand, ethanol has about 50% less carbon than gasoline. *“It's time for EPA to seize the moment and act.”* - Reid Detton, Reg Modlin ([The Real Cost of Gasoline Is to Our Health: Time for a Cleaner, More Efficient Fuel](#))

Meanwhile, as if it were a cruel April Fool's joke, the Brazilian government released its plan to invest \$23B in its automotive sector. The plan includes the development of optimized ethanol hybrid engines. Combining the benefits of electric motors and low-carbon liquid fuels that can utilize the current fuel distribution infrastructure. (Jim Lane. [“Brazil moves ahead in sustainable mobility.”](#) *The Digest*. April 1, 2024)

Where Are We Now?

Thirty-three years ago, Congress directed the EPA via OTAQ to use technology-forcing regulations to drive technological advancements that will improve the efficiency of vehicles and fuels and [to] reduce mobile source air toxics to the greatest extent possible. They have not. In 2018, for the third time during four administrations, CFDC and several agriculture,



energy, and environmental organizations submitted written comments to the EPA during its rule-making process to raise the minimum octane standard and reduce the aromatic content in gasoline to reduce mobile source air toxics. They did not and have not.

EPA could help fight anti-ethanol campaigns, encourage consumers to use higher ethanol blends, and support the [Next Generation Fuels Act](#) – because ethanol is *cheaper* (less expensive), *better* (non-benzene higher-octane), *faster* (to market), and *safer* (to breathe) – but they do not. Besides ethanol, can you think of another major consumer product that has not experienced growth after passing the cheaper, better, faster, and safer “better mousetrap” litmus test? Why does the EPA/OTAQ consistently thwart advancing environmentally enhancing vehicle and fuel technology and at least give consumers a choice to protect their environment and public health? **Because they can?** Regardless of whether you lean more to the Red, Blue, or Green side of the political spectrum – you should be concerned.

In 2021, EPA/OTAQ’s [2020 Fuels Regulatory Streamlining \(FRS\) Rule](#) removed the Complex Model from Federal Regulation and eliminated the requirement for oil refineries to report fuel quality to EPA. As a result, the EPA stopped tracking levels of aromatics. **(Story Idea? Review CFDC Comments to EPA to increase the minimum octane standard of gasoline and reduce benzene, BTEX, and aromatics in 2012, 2017, and 2018, and a series of [letters to the former director of the Office of Transportation and Air Quality Christopher Grundler, from Doug Sombke, President of the South Dakota Farmers Union](#))**

On March 24, 2024, the EPA announced its “Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles.” Will EPA/OTAQ miss its fourth opportunity in a decade to reduce vehicle emissions in all cars by limiting aromatics and not restricting the use of lower-carbon, cleaner-burning, less-expensive biofuels? Based on history, the initial reactions from industry, and like Lucy pulling the ball away from Charlie Brown -- [probably not](#).

Like a Stephen Colbert episode of *Meanwhile*, [several states are going rouge allowing retailers to sell E30, Brazil is trying to increase its 27% minimum ethanol requirement to 30%, India will achieve its 20% ethanol blend target by 2025, and there are still other biofuels mandates succeeding around the world. \(Jim Lane. *The Digest*, March 26, 2024\)](#) **Story idea?**

Why do oil companies charge consumers 84 cents more per gallon for “Ethanol Free Gasoline” with more aromatics while they claim ethanol increases the price of gasoline? Why do oil companies charge consumers 50 cents more per gallon for premium gasoline containing at least 10% less expensive 120 octane ethanol? **Because they can.**



Most people agree, beyond a reasonable doubt, that air pollution is terrible and causes sickness, disease, and death. However, some think today’s cars do not emit as much pollution, and gasoline is no longer the culprit. If that were the case, why do you think the air quality in major cities miraculously improved during the COVID lockdown? And if some people don’t believe the increased supply of ethanol drives down prices because of lower gasoline and crude oil demand – why did the [price of crude oil go to ZERO](#) during the same COVID lockdown timeframe?

During the COVID lockdown, truckers trucked, electricity flowed to our homes, and goods were still being manufactured. Because people were not driving to work or other places, a [worldwide reduction in carbon, nitrogen, sulfur, and particulate matter \(-60%\) emissions was reported and confirmed during lockdown periods](#).

A 2022 study by the [Boston University School of Public Health](#) has found that [ultrafine particle concentration](#) [dropped by nearly 50%](#) due to reduced aviation and road activity during the first few months of the pandemic.

Some may wonder, “Why should we fight to clean up gasoline when EVs will replace gasoline.” A Google search “the challenges with electric vehicles” will show you how all alternative fuels face the same marketplace and consumer acceptance vulnerabilities when relying on government support (i.e., Lucy pulling the political incentive football away Charlie Brown). EV incentives and EPA’s new multipollutant rule are excellent examples of EPA’s technology-forcing regulations imposed on automakers.

We, the people, must do everything we can to reduce the consumption of crude oil and gasoline for many reasons. However, the promise of EVs replacing gasoline in the next couple of decades is not a good reason to needlessly burn **billions of gallons of aromatics while we wait**. [Meanwhile, 31.3% of Brazil’s fleet uses high blends of ethanol -- the equivalent of 12+ million vehicles with near-zero carbon emissions](#). That is the world’s largest fleet of clean vehicles in both proportionate and absolute terms. (CFDC Issue Brief: [Reality EV: No Silver Bullet](#) and *Gasolinegate*, Ch.13, Reality EV: The Gaslight is On, But Nobody is Home. [The EPA E15 Ruling Opens the Door for E30](#))

The actions citizens and states are taking because oil companies were caught gaslighting the public on climate change are flooding the headlines. For example, [on January 8, 2024, the U.S. Supreme Court ruled that the State of Minnesota’s lawsuit filed by Minnesota Attorney General Keith Ellison against major actors in the fossil-fuel industry may proceed in state court](#). The Court denied ExxonMobil, the American Petroleum Institute, and three Koch Industries entities' petition to review lower-court decisions, remanding the case to state court. While headlines focus on oil companies' actions regarding climate change, the immediate threat of high levels of benzene and other aromatics in gasoline remains overlooked.

Unlike climate change-related lawsuits, where oil companies claim the impacts can’t be traced back to them, the EPA can easily trace the production of aromatics in gasoline to specific companies and refineries. Furthermore, the provision in Section 202(l) is unique because it constitutes a “legislative endangerment finding” by Congress that BTEX and aromatics in gasoline are as bad (or worse) than leaded gasoline and imposes for the first time “Maximum Achievable Control Technology” standards on gasoline.

Story Idea? The law is clear. The science is indisputable. Not reducing current levels of BTEX and other aromatics in gasoline is indefensible. #EndAgencyCapture and set the EPA and American consumers free.

Environmental Journalists Saving the Humans One Baby-Gallon-Pump-Agency-Article at a Time

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- Reginald Modlin, Biofuels Consultant, Former Director of Regulatory Affairs, Chrysler Corporation, r.modlin@icloud.com
- Plinio Nastari, President, DATAGRO Group & IBIO, Brazilian Institute of Bioenergy & Bioeconomy, see April 1, 2024 article April 2, 2024 article “[Brazil moves ahead in sustainable Mobility](#)” about Brazil’s E40 Hybrid program, plinio@datagro.com
- Doug Sombke, President, South Dakota Farmers Union, DSombke@sdfu.org
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- EPA Administrator Michael Regan, (202) 564-4700, Regan.Michael@epa.gov. Alejandra Nunez, Deputy Assistant Administrator for Mobile Sources, (202) 564-7400. [Air Quality and Transportation](#) | [Org Chart](#) | [Staff Directory](#), Sarah Dunham, Director, (202) 564-1682.
- Christopher Grundler, Former Director, OTAQ, Senior Advisor Crux Alliance, <https://cruxalliance.org/>