Ethyl leaded gasoline and alternatives

"Honoring the historical record… means leaving a clear trail for subsequent historians to follow." [American Historical Association]

This document provides an overview of public online resources *about the early history of leaded gasoline and the Ethyl Corporation along with alternatives such as fuel alcohol, aka, power alcohol, ethanol, methanol. Critics of leaded gasoline in the 1920s (for example, Alice Hamilton of Harvard) maintained from the beginning that adding lead to gasoline was not only dangerous but also entirely unnecessary since ethyl alcohol, benzene and other fuels performed the same octane-boosting function when blended in basic gasoline. Therefore, to understand the history of leaded gasoline we must also understand the history of its alternatives. This was the underlying argument of my 1993 PhD dissertation and subsequent papers. - Bill Kovarik* bill.kovarik@gmail.com

Recently published

Daniel Stone, *American Poison* - Dutton 2025 - Publishers Weekly review
https://www.publishersweekly.com/9780593473627

Carie Nielsen, Unleaded, Rutgers / Templeton 2021
https://rutgersuniversitypress.org/templeton-press/unleaded/9781978821002/

Environmental History Timeline panel, Dec. 9 2021
https://www.youtube.com/watch?v=uUJsauyMF18

Bill Kovarik, The Conversation, 2021
https://theconversation.com/a-century-of-tragedy-how-the-car-and-gas-industry-knew-about-the-health-risks-of-leaded-fuel-but-sold-it-for-100-years-anyway-173395

In pre-production 2026: "Midge" (tentative title) a documentary drama about Ethyl, Thomas Midgley, and the invention of leaded gasoline, with Vince Piazza, Terence Winter and others

Jan. 6, 2025 - Ancient Romans likely breathed air pollution
https://www.science.org/content/article/ancient-romans-likely-breathed-lead-pollution

Mielke, Howard, and Mark Laidlaw: " Leaded Petrol and Fossil-Fuel Emissions as Interconnected Global Environmental Health Crises" 2026
https://www.researchgate.net/publication/411511925_Leaded_Petrol_and_Fossil-Fuel_Emissions_as_Interconnected_Global_Environmental_Health_Crises The widespread use of leaded petrol represents one of the largest environmental contamination events in modern history. For

much of the twentieth century, combustion of leaded petrol released vast quantities of lead into the atmosphere, resulting in global dispersal of lead-containing particles and widespread human exposure. This article examines leaded petrol and fossil-fuel emissions as interconnected environmental challenges arising from the same industrial era. While the neurological and public health impacts of lead exposure are well established, emerging research suggests that atmospheric lead may also have influenced climate processes.

Bill Kovarik interview with Michael Osakwe on *Misaligned Markets* about Tetraethyl lead August 2026

Online Libraries, Collections & Databases

https://babel.hathitrust.org/ Hathi Trust US historical documents

https://www.gracesguide.co.uk/ Graces Guide - UK database for engineering ($)

http://cnum.cnam.fr/ Conservatoire numérique des Arts et Métiers

https://gallica.bnf.fr/ National Library of France collections

https://www.everycrsreport.com/ Congressional Research Service

https://nepis.epa.gov/ EPA documents Also https://archive.epa.gov/

https://www.empireadc.org/search New York archival sources

https://katalog.slub-dresden.de/.

https://www.toxicdocs.org – Columbia University Toxic Docs collection

https://www.kettering.edu/about/our-history-archives Kettering University

https://invention.si.edu/e-i-du-pont-de-nemours-company-experimental-station-records-1908-1921 Lemuelson center

https://www.industrydocuments.ucsf.edu/ U. Calif. San Francisco industry documents collection

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Ethyl primary document repository
https://drive.google.com/drive/folders/1TQixZjx6OlYAFvxQK5TCY4yZfDrt9egv

Congressional Hearings

Hearings 1800s 1920

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Use of Alcohol in engines, 1907, U. Ill, Perry John Freeman
https://babel.hathitrust.org/cgi/pt?id=uiuo.ark:/13960/t9x08bj2z&view=1up&seq=5&skin=2021

Denatured Alcohol at Home and Abroad - Report Comm Int Rev to House Ways Means, 1909 (Detail about Germ program)
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House Ag hearings 1916 HR 11256
https://babel.hathitrust.org/cgi/pt?id=hvd.hx7e1d&view=1up&seq=5&skin=2021

Hearings 1920 to 1970s

Senate Hearings on high cost of gasoline 1922
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Prohibition hearings / Crampton law 1924
https://babel.hathitrust.org/cgi/pt?id=mdp.39015022467305&view=1up&seq=8&skin=2021
Prohibition hearings 1924
https://babel.hathitrust.org/cgi/pt?id=umn.31951d02120580c&view=1up&seq=3&skin=2021
Prohibition hearings 1926
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Prohibition hearings 1926 Vol 2
https://babel.hathitrust.org/cgi/pt?id=mdp.39015071649383&view=1up&seq=1&skin=2021

1939 Senate Finance Use of alcohol in Farm products May 23, 23, 25, 29
https://babel.hathitrust.org/cgi/pt?id=mdp.39015067125412&view=1up&seq=4&skin=2021

- **1942 Truman War Investigating Comm**ittee

Background
https://www.senate.gov/about/powers-procedures/investigations/truman.htm

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Part 1
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Part 5 Jan 15 1942 Additional Report
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Part 6 July - Aug 1941
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Part 8 Oct 1941 Housing, Contracts, Aluminum
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Part 10 Dec 41 - Feb 42 Labor Recreation Lobbying Dollar A Year
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Part 12 April - July 1942 Conversion Maritime Transport Housing
https://babel.hathitrust.org/cgi/pt?id=uc1.c084289556&view=1up&seq=5&skin=2021

- **Synthetic Rubber hearings March April 1942**

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TEL antitrust **#507 (p. 4697)**
Part 42 Saudi Arabia 1948
https://babel.hathitrust.org/cgi/pt?id=mdp.39015032330758&view=1up&seq=7&skin=2021

- **1942 Gillette Synthetic rubber / Senate Agriculture Committee /**

Part 1 Utilization of farm crops: Alcohol and Synthetic rubber, 1942
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Part 2
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Part 3
https://babel.hathitrust.org/cgi/pt?id=uc1.a0000675843&view=1up&seq=2&skin=2021
Part 4 1942-43
https://babel.hathitrust.org/cgi/pt?id=uc1.b5101571&view=1up&seq=7&skin=2021
Part 6 - 10
https://babel.hathitrust.org/cgi/pt?id=mdp.39015067097090&view=1up&seq=7&skin=2021
Part 8 - 1944
https://babel.hathitrust.org/cgi/pt?id=uc1.b5101572&view=1up&seq=9&skin=2021
Hearings in 1949
https://babel.hathitrust.org/cgi/pt?id=mdp.39015067097256&view=1up&seq=3&skin=2021

Investigation of expanded utilization of farm crops. 1944
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1945 TEL strategic bombing survey
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1945 OIL strategic bombing survey
https://babel.hathitrust.org/cgi/pt?id=mdp.39015019070302&view=1up&seq=11&skin=2021&q1=tetraethyl

1946 Men, Oil and War - Petroleum industry committee
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1966 Leaded gasoline US Senate

Hearings before a Subcommittee on Air and Water Pollution of the Committee on Public Works, United States Senate, Eighty-ninth Congress, second session, on S. 3112...S. 3400...and contamination of the environment from lead and other substances, June 7, 8, 9, 14, and 15, 1966. *Patterson, Kehoe, Hardy
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Notes - # 17 wheat to motor fuel article. #19 Agrigas as subs for lead
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Esso - Shell 1970 industry reaction to “Muskie” amendment requirement to reduce air pollution
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1970 House ways and means / taxing the lead in leaded gasoline
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1972 House Commerce - Inner City Environment
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1974 Senate public works committee May 7-8 1974 - Automotive lead emissions
* Vol 1 Needleman and more
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* Vol 2 Harriet Hardy, lots of industry
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Additional Public works testimony. Samuel S Epstein MD study
Note "Seven Cities Study" p 13, Ref 11 p 26
Also "lead traps" p 36 EPA critique p 38 / p 42 Octane lower, engine maintenance
P 43 aromatic PNAs, photochemical reactive, ltd by emission control devices
P 46 alts = MMT.
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Note- Leo Spano, Tom Reed testimony
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May, June 1979
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1980 US National Alcohol Fuels Commission hearings June 18-19, Dirksen SOB
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1981 House Energy & Commerce Gasohol in Federal Vehicles
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1982 House Energy & Commerce Methanol as alternative transportation fuel Aug 13, Sept 24
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1982 Congressional Research Service, Gasohol (shows how little history was known)
https://babel.hathitrust.org/cgi/pt?id=mou.010103860555&view=1up&seq=4&skin=2021

1984 House Science and Tech Ethanol Production
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1984 House Ways and Means Ethanol tax incentives
https://babel.hathitrust.org/cgi/pt?id=uc1.31210024956391&view=1up&seq=1&skin=2021

1986 CRS to House Energy & Commerce - Alcohol fuels & lead phase down
Technically OK but uncertainty due to “intra-industry” conflicts
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1989 House Energy & Commerce - RFG, CNG, ethanol
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1872 - IRS - David A. Wells, LLD, The Recent Financial Industrial and Commercial Experiences of the United States: A curious chapter in Politico-Economic history, JH Goodsell Publishers, NY, 1872

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C.E. Lucke, Columbia University, and S.M. Woodward, U.S.DA, "The Use of Alcohol and Gasoline in Farm Engines," U.S.D.A. Farmers Bulletin No. 277, (Washington: GPO, 1907).
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https://ia802707.us.archive.org/31/items/NASA_NTRS_Archive_19930091152/NASA_NTRS_Archive_19930091152.pdf
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1933 Bureau of Standards, ethyl alcohol fuel, phase separation, Oscar Bridgeman p 841
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1948 NACA octane scale for aviation fuels
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> *I saw a horrible brown heap on the floor in a corner, which, but for previous experience in this dismal wise, I might not have suspected to be 'the bed.' There was something thrown upon it; and I asked what that was.*
> *''Tis the poor craythur that stays here, sur; and 'tis very bad she is, and 'tis very bad she's been this long time, and 'tis better she'll never be, and 'tis slape she does all day, and 'tis wake she does all night, and 'tis the lead, sur.'*
> *'The what?'*
> *'The lead, sur. Sure 'tis the lead-mills, where the women gets took on at eighteen-pence a day, sur, when they makes application early enough, and is lucky and wanted; and 'tis lead-pisoned she is, sur, and some of them gets lead-pisoned soon, and some of them gets lead-pisoned later, and some, but not many, niver; and 'tis all according to the constitooshun, sur, and some constitooshuns is strong, and some is weak; and her constitooshun is lead-pisoned, bad as can be, sur; and her brain is coming out at her ear, and it hurts her dreadful; and that's what it is, and niver no more, and niver no less, sur.'*

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https://www.youtube.com/shorts/HxvJn_P8lGg
Thomas midgley the man behind leaded gasoline

https://www.youtube.com/shorts/QND8expmPJI
Did leaded petrol create serial killers?

https://www.youtube.com/shorts/I7BOIsI0agw
He invented leaded gas and his own death

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Documents missing or withheld from public archives

Known to exist and be missing

"The Lead Diary," a collection of several thousand original documents from which T.A. Boyd and Charles Kettering refreshed their memories as their memoirs were written in the 1940s. Last reference is in "Green Book" histories by General Motors public affairs officers, 1950s. Unlikely to have been destroyed; probably still held by GM or Ethyl.

Test diaries and day-to-day records of experiments conducted during 1920 - 22 period when tetraethyl lead was discovered by G.M. researchers in Dayton, Ohio. (These are standard sources in history of technology, but are missing in the Ethyl case).

Correspondence and submissions of members of the Surgeon General's Committee concerning alternatives to tetraethyl lead anti-knock agents. Fragments found in the Yale archives. Committee members specifically requested such files to be established at the Public Health Service; however, none are found in the U.S. National Archives RG 90.

Original 1922 - 23 correspondence to Midgley and Kettering from Krause, Hunt, Wilson, Henderson and others concerning the dangers of tetraethyl lead, some of which may have been in the Lead Diary. (Some in US v DuPont lawsuit, 1956).

Minutes of the Board of Directors of the Ethyl Corp 1924 forward

Minutes of the "Medical Committee" of du Pont, G.M. and Standard, 1923 forward

Records or memos concerning the deaths of two G.M. employees in Dayton, Ohio, April, 1924.

“Data of House in Gasoline Quiz Stolen,” Washington Times, Feb 20, 1936. Clip in file of DOJ, NARA, RG 60-57-107.

Yale University 1925 TEL study records - some missing

NARA PHS Service 1920s TEL investigation - some missing

NARA DOJ 1920s - 50s, TEL, Ethyl, DuPont, GM, Standard
Many missing documents

Kettering University - Midgley Unclassified - Many documents incomplete (Access limited in 2022 due to construction).

Individual items lost or missing

Telegrams exchanged between Charles Kettering in Paris and Ethyl Corp.headquarters in New York during Oct., 1924.

Du Pont study of resource base for pure ethyl alcohol fuel, 1919, cited in a memo by T.A. Boyd in 1921.

Reports of the Standard Oil Co.of New Jersey contract with US Industrial Alcohol and use of Alcogas in Baltimore, Md. And Washington DC 1919 - 1922.

Report on the use of the century plant in Mexico for alcohol production, cited in 1922 memo from Midgley to Kettering.

Records or memos relating to "Synthol” and TEL experiments, Dayton G.M. labs, summer 1925.

http://inwent-iij-lab.org/Weblog/2011/05/31/environment-protection-agency-removes-dangerous-tetraethyl-lead-products-at-oil-refinery/ THERE ARE A LOT OF THESE in the developing world. I would suggest research with the Basel Convention folks. http://www.basel.int/