

Excerpts From: The Secret History of Lead

Jamie Lincoln Kitman, The Nation,
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The Rise of Leaded Fuel

Tetraethyl lead was first discovered by a German chemist in 1854. A technical curiosity, it was not used commercially on account of **“its known deadliness.”**

The story of TEL's rise, then is very much the story of the oil companies' and lead interests' war against ethanol as an octane-boosting additive that could be mixed with gasoline or, in their worst nightmare, burned straight as a replacement for gasoline. For more than a hundred years, Big Oil has reckoned ethanol to be fundamentally inimical to its interest, and, viewing its interest narrowly, Big Oil might not be wrong.

No longer the shambling, anarchic outfit it had been under the inveterate risk-taker W.C. Durant, GM was now to be run in the militarily precise mold of E.I. du Pont de Nemours & Company of Wilmington, Delaware. **Awash in a sea of gunpowder profits from World War I, the du Pont family had been increasing its stake in GM since 1914. By 1920 it controlled more than 35 percent of GM shares** and moved to pack the board, installing professional management, with the du Pont faction taking control of the corporation's all-powerful finance committee.

Fortunately for him, **immediately after joining GM he had given his trusted assistant Midgley two weeks to find something to ignite the new management's interest in funding continued fuel research.** Though it would take somewhat longer than two weeks to fire their masters' enthusiasm, "Midge" succeeded.

As noted earlier, Midgley tested many compounds before isolating tetraethyl lead in December 1921. In the early days, he would attribute the discovery of TEL's antiknock properties to "luck and religion, as well as the application of science." In a 1925 magazine article, he would recall false trails with iodine, aniline, selenium and tellurium before hitting upon lead. **Curiously, his article omitted any reference to the alcohol-gasoline blend he'd patented just five years earlier.**

The Dangers

In March 1922, Pierre du Pont wrote to his brother Irénée du Pont, Du Pont company chairman, that TEL is **“a colorless liquid of sweetish odor, very poisonous if absorbed through the skin, resulting in lead poisoning almost immediately.”** This statement of early factual knowledge of TEL’s supreme deadliness is noteworthy, for it is knowledge that will be denied repeatedly by the principals in coming years as well as in the Ethyl Corporation’s authorized history, released almost sixty years later. Underscoring the deep and implicit coziness between GM and Du Pont at this time, Pierre informed Irénée about TEL before GM had even filed its patent application for it.

But four months earlier, an agitated William Mansfield Clark, a lab director in the US Public Health Service, had written A.M. Stimson, assistant Surgeon General at the PHS, warning that Du Pont was preparing to manufacture TEL at its plant in Deepwater, New Jersey. It constituted a **“serious menace to public health”** he stated, with reports already emerging from the plant that **“several very serious cases of lead poisoning have resulted”** in pilot production.

Stimson was troubled enough by Clark's letter to request that the PHS's Division of Pharmacology conduct investigations; unfortunately, the division's director responded, such trials would be too time-consuming. **He suggested that the PHS rely upon industry to supply the relevant data, a spectacularly poor plan that would amount to government policy for the next forty years.**

In January, on account of lead poisoning, Thomas Midgley was forced to decline speaking engagements at three regional panels of the American Chemical Society, which had awarded him a medal for his discovery. **"After about a year's work in organic lead," he wrote, "I find that my lungs have been affected and that it is necessary to drop all work and get a large supply of fresh air."** He repaired to Miami.

In other words, TEL, the deadly chemical curiosity, was being brought to market without any thought or study as to its public health implications, but rather on the hopeful hunch of a clever mechanical engineer who had just been poisoned by lead. (italics in original)

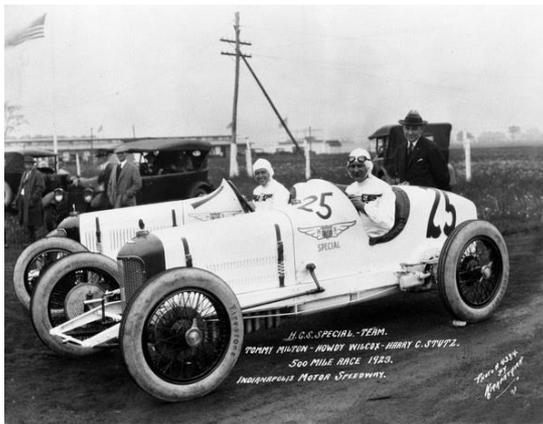
The Profits

Midgley barely scratched the surface of the wealth to come. With a legal monopoly based on patents that would provide a royalty on practically every gallon of gasoline sold for the life of its patent, Ethyl promised to make GM shareholders—among whom the du Ponts, Alfred Sloan and Charles Kettering were the largest—very rich. Profit-free ethanol, indeed. As Kovarik has calculated: “With gasoline sales [in 1923] around six billion gallons per year, 20 percent would come to about 1.2 billion gallons, and three cents gross would represent \$36 million. With the cost of production and distribution running less than one cent per gallon of treated gasoline, more than two thirds of the \$36 million would be annual gross profit. Of course, within a decade 80 percent of the then 12 billion gallon market used Ethyl, for an annual gross of almost \$300 million.”

Selling the Public

Tellingly, Ethyl's earliest advertisements dealt solely with speed and power and invariably neglected to mention its active ingredient: lead. Boasted a September 1927 ad that ran in *National Geographic*: "As an Ethyl user, you have the benefits of greatly increased speed, more power on hills and heavy roads. Quicker acceleration and complete elimination of 'knock.' But the real high compression automobile is here at last! Ethyl gasoline has made it possible! Ride with Ethyl in a high compression motor and get the thrill of a lifetime." With the advent of the Depression in the thirties, Ethyl's advertising nodded to the economic realities of the day but still focused on power. An ad that ran in February 1933 contains a Norman Rockwell-esque portrait of a small boy who is complaining to his embarrassed father, "Gee, Pop—they're all passing you." The accompanying text rubs it in. "They didn't pass you when your car was bright and new—and you still don't like to be left behind. So just remember this: the next best thing to a brand new car is your present car with Ethyl."

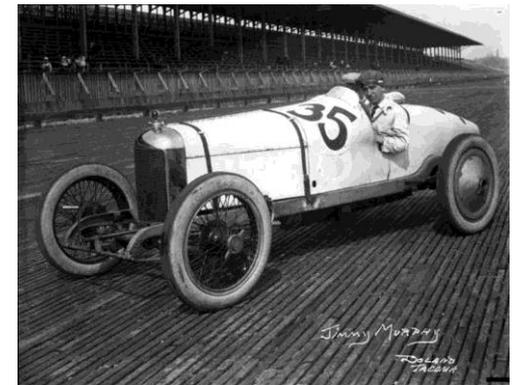
In a public relations coup, Ethyl leaded gasoline fueled the top three finishers at the Indianapolis 500 motor race on Memorial Day, 1923. With demand skyrocketing, Kettering signed exclusive contracts with Standard Oil of New Jersey (now Exxon), Standard Oil of Indiana (later Amoco, more lately merged with BP) and Gulf Oil (owned by the Mellon interests) for East Coast, Midwest and Southern distribution, respectively, of leaded gasoline.



1. Tommy Milton



2. Harry Hartz



3. Jimmy Murphy

More Casualties and a Response

In August, Du Pont's TEL plant opened at Deepwater, New Jersey, across the Delaware River from Wilmington. **Less than thirty days would pass before the first of several TEL poisoning deaths of workers there would occur.** Not surprisingly, given Du Pont's stranglehold on all local media within its domain along the Delaware, the deaths went unreported.

“Of course their [GM officials] object in doing so is fairly clear, and among other things they are not particularly desirous of having the name ‘lead’ appear in this case. That is alright from the standpoint of the General Motors Company but it is quite a question in my mind as to whether the Bureau of Mines would be justified in adopting this name so early in the game.”

The superintendent replied that omission of “the use of the word ‘lead’ in the interbureau correspondence” was intentional to prevent leaks to the papers. **“If it should happen to get some publicity accidentally, it would not be so bad if the word ‘lead’ were omitted as this term is apt to prejudice somewhat against its use.”**

Then, in April 1924, two GM employees engaged in the manufacture of TEL at a pilot plant in Dayton also died of lead poisoning. Large numbers of nonfatal poisonings were noted at this time. Thomas Midgley was said to be “depressed to the point of considering giving up the whole tetraethyl lead program.” But Kettering, emerging from his copper-cooled funk, wouldn’t slow down. Two months later, he would urge Du Pont to step up production. **At the same time, seeking even greater control over Bureau of Mines test results, GM stipulated that “all manuscripts, before publication, will be submitted to the Company for comment and criticism.**

Following its investigation, GM’s medical committee delivered what was apparently a negative and highly cautionary report on TEL. But Irénée du Pont, having undergone some sort of conversion or, possibly, having remembered his family’s lifelong devotion to profit at any cost, wrote Sloan on August 29, 1924, and told him not to worry: **“I have read the doctors’ report and am not disturbed by the severity of the findings.” Another product his firm made—nitroglycerin—was even more hazardous to make, du Pont added breezily, while lead dust from car exhaust was but nothing compared to erosion from lead paint.** Years later, this would become a major plank of TEL supporters’ defense.

In one of its first official acts, the newly formed Ethyl Gasoline Corporation evinced renewed sensitivity to spin (not to mention a justifiably elevated level of paranoia) by insisting that its contract with the Bureau of Mines be modified yet again, to reflect that **“before publication of any papers or articles by your Bureau, they should be submitted to them [Ethyl] for comment, criticism, and approval.”** Thus, as the public health historians David Rosner and Gerald Markowitz have observed, the newly formed Ethyl Corporation was given **“veto power over the research of the United States government.”**

In total, more than 80 percent of the Bayway staff would die or suffer severe poisoning. News of these deaths was the first that many Americans heard of leaded gasoline—although it would take a few days, as the New York City papers and wire services rushed to cover a mysterious industrial disaster that Standard stonewalled and GM declined to delve into.

Asked to assess their liability to families of men who said they were not warned of the dangers, Standard Oil officials said **“the rejection of many men as physically unfit to engage in the work of the Bayway plant, daily physical examinations, constant admonitions as to wearing rubber gloves and using gas masks and not wearing away from the plant clothing worn during work hours should have been sufficient indication to every man in the plant that he was engaged ‘in a man’s undertaking.’”**

The day’s true highlight, however, would be Midgley’s presentation. **The celebrated engineer and Ethyl VP, who had only recently been forced to leave work to recover from lead poisoning, proposed to demonstrate that TEL was not dangerous in small quantities, by rubbing some of it on his hands.** Midgley was fond of this exhibition and would repeat it elsewhere, washing his hands thoroughly in the fluid and drying them on his handkerchief. **“‘I’m not taking any chance whatever,’ he said. ‘Nor would I take any chance doing that every day.’”** *The New York World* cited unbelievable dispatches from Detroit claiming that Midgley **“frequently bathed”** in TEL to prove its safety to skeptics within the industry.

The response of local governments and public health officials to the Bayway disaster was swift and stern. The day of Midgley's peculiar demonstration, the New York City Board of Health banned the sale of TEL-enhanced gasoline, saying that "such mixtures of gasoline, containing lead or other deleterious substances, may be liable to prove detrimental and dangerous to the health and lives of the community, particularly when released as exhaust from motor vehicles." **Within a matter of days Philadelphia, Pittsburgh and the State of New Jersey would ban gasoline containing the lead additive. Ethyl would continue to be sold in the Midwest, but elsewhere on the East Coast its use was unofficially discouraged by authorities.**

By 1924 the government's allegiance and probity were already in question. As C.W. Deppé, owner of the Lilliputian Deppé Motors, put it in a letter to the Secretary of the Interior, Hubert Work: **"May I be pardoned if I ask you frankly now, does the Bureau of Mines exist for the benefit of Ford and the G.M. Corporation and the Standard Oil Co. of New Jersey, and other oil companies parties to the distribution of the Ethyl Lead Dopes, or is the Bureau supposed to be for the public benefit and in protection of life and health?"**

Continuing the Defense

Surgeon General Cumming was not interested in alternatives to lead, even though proof of their existence ought to have immediately thrown the veracity of all Ethyl utterances into question. Speaking in August 1925, for instance, Thomas Midgley had told a meeting of scientists, **“So far as science knows at the present time, tetraethyl lead is the only material available which can bring about these [antiknock] results, which are of vital importance to the continued economic use by the general public of all automotive equipment, and unless a grave and inescapable hazard rests in the manufacture of tetraethyl lead, its abandonment cannot be justified.”**

In 1925 he was appointed chief medical consultant of the Ethyl Corporation and remained in the post until his retirement in 1958. **But it was in Kehoe’s day job, as the outspoken director of the Kettering Laboratory—founded with an initial \$130,000 gift from GM, Du Pont and Ethyl at the University of Cincinnati, where the lead industry paid Kehoe’s salary for half a century—that he really rose to the challenge of promoting TEL.** Against Kehoe’s lab and decades of its pseudo-science, the general and unfunded concerns of the public health community were doomed for close to fifty years.