

**Testimony of
Professor David Michaels
The George Washington University**

**Hearing Before the United States Congress
House Natural Resources Committee, Oversight and Investigations
Subcommittee**

***The Denial Playbook:
How Industries Manipulate Science and Policy from
Climate Change to Public Health***

February 26, 2019

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Chairman Cox, Ranking Member Gohmert, Members of the Committee. Thank you for inviting me to testify here today. My name is David Michaels, I am an epidemiologist and Professor of Environmental and Occupational Health at the Milken Institute School of Public Health of George Washington University. From 2009 until January 2017, I served as Assistant Secretary of Labor for Occupational Safety and Health, the longest serving in OSHA's history. From 1998 to 2001, I was Assistant Secretary of Energy for Environment, Safety and Health, charged with protecting the workers, community residents and environment in and around the nation's nuclear weapons facilities. The views expressed today are my own.

Today, you have heard the powerful testimony of three individuals who were victims of disinformation campaigns, run by these three industries: the National Football League, the manufacturers of opioids, and the fossil fuel industry.

Each of these cases is a variation on the playbook perfected by the tobacco industry starting in the 1950s and continuing for decades. Though cigarette manufacturers knew far before the general public that their product caused cancer, they deliberately strategized a way to continue market dangerous products without having to acknowledge their devastating consequences for millions of people.

Big Tobacco understood that by inventing a debate on the science—by claiming that the evidence was in dispute, that more research was needed—it could continue to sell its deadly product and avoid regulation and litigation. Their profits would not be endangered. Eventually, the science showing the dangers of smoking became overwhelming and the industry was forced to acknowledge the truth, but only after decades in which hundreds of thousands of people would become addicted to a product that would ultimately kill them.

Big Tobacco's disinformation campaign playbook has been embraced by firms and industries to evade accountability and prevent or delay safeguards from their products' health hazards for decades – because this playbook works. Individual companies and entire industries have used this strategy for decades, disingenuously demanding *proof over precaution* in matters of the public good. For unethical corporations, there is no better way to stymie government efforts to regulate a product that harms the public or the environment; *debating the science is much easier and more effective than debating the policy.*

In America, people are innocent until proven guilty. Products have no such rights; we should and we must consider them dangerous until proven safe. For decades, the fossil fuel industry has turned the presumption of innocence upside down: manufacturing doubt to make their deadly products look safe while demanding that their harm be proven beyond a shadow of a doubt.

This kind of disinformation campaign was used by polluters to defend the PFAS chemicals that have contaminated drinking water systems across the country, from Michigan to Texas and Louisiana, from Massachusetts to Arizona and California.¹

And, perhaps most importantly for the future of life on this planet, it has been used in a highly sophisticated campaign to cast doubt on the existence and impacts of climate change, manipulating science in order to shape opinions of the public and policy-makers and delay major federal action.

What the cigarette manufacturers realized in the 1950s, when the first studies emerged linking smoking to lung cancer, was that their best strategy was *manufacturing uncertainty*. As a famous 1969 in-house memo put it, “*Doubt is our product* since it is the best means of competing with the ‘body of fact’ that exists in the minds of the general public. It is also the means of establishing a controversy.”²

The playbook was written – and has been repeated time and time again. Tobacco may no longer be using it, but it is the playbook of the fossil fuel industry meant to stop government action on climate change. The industry defending its deadly product will commission scientific studies with flawed methodologies, guaranteed to generate predetermined results. It will demand the raw data from studies done by independent scientists, then re-analyze the data to reach different conclusions – alchemy that is easy for any experienced if unethical data cruncher. It will hire scientists, often way outside their fields of expertise, to make pronouncements that their product is safe, or that there is not enough evidence to take action. It will plant articles, often ghost-written, in legitimate scientific journals, which selectively promote the results of studies that favor their product, while underreporting results showing harm. These scientists will publish studies in ‘vanity journals,’ essentially of their own creation, but which easily fool the public, the press, and policymakers. The industry will hire opinion leaders and publish op-eds under their names, and create front groups to make it look like there is widespread opposition to controlling the exposure in question. And so on, and so on.³

In the case of tobacco, and in most cases where industries have manufactured doubt, the scientific evidence becomes overwhelming and the industry admits the facts they denied for years, but only after much damage is done and many people are hurt.

The National Football League has recognized that jarring hits cause brain damage in football players.

Big Pharma has publicly acknowledged what recent revelations show they knew all along: that their opioids are extremely addictive.

But in the face of overwhelming evidence, the fossil fuel industry has followed the tobacco road. They are defending a product which will be far deadlier than tobacco, unless we take urgently needed action. This industry is still funding scientists to manufacture doubt and is lobbying against meaningful climate action. Too many of our legislators continue to believe their lies.

In the following sections, I provide some additional detail on the three case studies addressed by the other witnesses in today's hearing.

CTE in Football Players

For professional football players, the most severe work-related disease is chronic traumatic encephalopathy, or CTE. Battered by thousands of jarring hits, the brains of too many veteran football players no longer function normally; they undergo a type of progressive degeneration that actually kills brain cells. Many of these men are damaged beyond repair: no cast, no surgery, no medicine, no rehab can change their fates.

The mental anguish and suffering from CTE are enormous and sometimes unbearable, leading to a host of side effects and consequences, including depression, memory loss, impulsivity, violent outbursts (a particular problem given the size and strength of some football players), drug abuse, homelessness, and premature death, sometimes by suicide.

Faced with initial evidence of widespread, progressive, catastrophic brain damage among its former players, the NFL might have taken steps to find out what's happening, or at least how to address it. This is not what happened. Recognizing the challenge posed by CTE to the NFL's incredibly lucrative business, the league instead challenged the *science* behind football-related CTE every step of the way. It hired conflicted scientists who produced studies that minimized the risk of brain damage among football players, and simultaneously attacking studies done by independent scientists that assert what is now widely accepted as truth: the brains of many, many football players have been irreparably damaged by the hits they took—and continue to take—on the field.

The NFL has been engaged in this obfuscation and duplicity since the early 1990s. When the initial signs of a coming epidemic of brain damage first came to light, then-NFL Commissioner Paul Tagliabue responded by announcing the formation of the Mild Traumatic Brain Injuries (MTBI) Committee, charging it “to scientifically investigate concussion and means to reduce injury risks in football.” To staff this committee, he could have turned to independent physicians or renowned brain researchers. He did not do that. Instead, the commissioner turned to people he knew and could trust, some with profound conflicts of interest: representatives from the NFL Team Physicians Society, the NFL Athletic Trainers Society, and NFL equipment managers. These committee members had financial ties to the League and to specific teams, and certainly have some incentive not to acknowledge that football was damaging the brains of their players.

The MTBI's published papers included the reassuring statement that “none of the Committee members has a financial or business relationship posing a conflict of interest to the research conducted on MTBI in professional football.”⁴ The chair of the committee, Dr. Elliot Pellman, was a rheumatologist with no particular expertise in neurology or brain trauma. He was, however, Tagliabue's personal physician, and he and others on the committee were clinical

consultants to various teams. In that capacity, they were personally responsible for determining whether concussed players were too damaged to return. Consciously or not, they were not likely to welcome the idea that sending players who had been knocked woozy right back onto the field might contribute to their risk of long-term brain damage. Independent they were not.

For the first eight years the committee published nothing. But when questioned, the league could point to the committee as proof that it was working the problem. Then, in the following three years, between 2003 and 2006, the MBTI committee published 13 papers, all in the same journal: *Neurosurgery*. One after another, these papers presented conclusions that minimized or denied the existence of any long-term effects of head trauma from playing football. They gave the League and the team owners the results they wanted: pro football simply wasn't that dangerous. The decisions made by the team's physicians were the right ones. The rare concussion was treated appropriately. But then, inevitably, the football players with CTE, like Iron Mike Webster, started to die.⁵

The League and its hired guns delayed and denied as long as they could. I believe the tide was finally turned by a hearing held here in the US House of Representatives, in 2009, when NFL commissioner, Roger Goodell refused to acknowledge a link between football and brain damage among players, and members of Congress made the obvious comparison with tobacco industry's denial of the link between cigarettes and lung cancer. Eventually the NFL's attitude changed, spurred by overwhelming and tragic accumulation of evidence – including suicides of NFL players who killed themselves in ways that allowed pathologists to examine the damage their brains had suffered.

The very serious problem of CTE among football players is not anywhere near solved, and there is certainly a need for more research to better understand the ways that playing football can cause brain injuries and how to prevent them. But as long as the NFL denied the existence of a football-related CTE, no progress could be made—and more lives were irreparably damaged.

Opioids

In the American opioid epidemic, the proximate cause of most of the current overdoses is heroin and black market fentanyl. But many of the individuals we've tragically lost were first sucked into the opioid cycle by the array of drugs produced and marketed *legally* by some of the most profitable pharmaceutical manufacturers in the U.S.—companies whose financial growth has been enabled by persuading physicians of the virtues and safety of their products.

I am not suggesting that these companies are solely responsible for the opioid crisis. Starting in the 1990s, the increased use of opioids for pain brought reduced suffering and welcome relief to many. But there is no question that if the prescription opioids had not been available in virtually unlimited quantities in the subsequent years, this epidemic would not be nearly as extensive. Many individuals who have died by overdose would be alive today.

In 1995, Purdue Pharma, a privately-owned company based in Stamford, Connecticut, introduced OxyContin, the brand-name of a new formulation of oxycodone. This new product featured a much larger dose than earlier versions of oxycodone-based pain killers like Percocet and Percodan, and also promised longer-lasting pain relief (12 hours, as opposed to just four). In

order to get approval for this formulation from the Food and Drug Administration (FDA), Purdue Pharma convinced the agency that while OxyContin was more potent than earlier formulations, the “longer-acting” attribute would make this opioid less likely to cause addiction. Their logic was based on the claim that a more controlled release of oxycodone would be less likely to cause euphoria and craving than short-acting forms. The FDA not only bought this argument, but even permitted the company to claim the medication was less likely to be addictive on its label. Reality soon proved otherwise, however, and patients who became addicted soon realized the pills could be crushed and then snorted or even injected. Meanwhile, the medical officer in charge of the FDA review was hired by Purdue Pharma.⁶

At the same time, the drug industry sought to convince physicians that pain was under-treated in our society (arguably true), that the new pain-killers were a safe way to treat pain because they were virtually non-addictive (very untrue), and they could not easily be abused (outrageously untrue).

How did they do it? They scoured the medical literature and cherry-picked minor studies that said what they wanted to hear—that opioids were safe and non-addictive—and then trumpeted the results.⁷ The industry paid for other studies that exhorted the short-term benefits of opioids for pain following surgery, burns, or some other acute event. The studies were often written either by the doctors on pharma’s payroll or PR ghostwriting flacks.⁸

To minimize the risks of dependency on their products, the industry even invented a whole new diagnosis: *pseudoaddiction*. The idea here was that a craving for opioids accompanied by behavior aimed at obtaining the drugs—*addiction*, in common understanding—was in fact driven by the *still unrelieved pain* for which the patient had been prescribed the opioid in the first place. The concept originated from a single study describing only *a single patient*, and despite the fact that there really is no evidence supporting the concept, it took off. The manufacturers sponsored publications like “Responsible Opioid Prescribing,” informing physicians that signs of pseudoaddiction (rather than true addiction) include requesting drugs by name, demanding or manipulative behavior, seeing more than one doctor to obtain opioids, and hoarding.⁹ And the best way to treat pseudoaddiction? More opioids, of course. A 2015 review of the literature unearthed a grand total of six papers challenging the concept. All were written by physicians *not* paid by the manufacturers.¹⁰ Overwhelming their well-intentioned output were hundreds of articles discussing pseudoaddiction while making no attempt whatsoever to empirically validate the concept. It was not a fair fight, and the results were predictable. The bogus, well-moneyed work overwhelmed the serious science.

The evidence is simply overwhelming: opioid producers suppressed some studies; misrepresented and elevated others; claimed their drugs were neither addictive nor easily abused; and claimed that the most effective approach to addressing patient pain was to continuously increase dose of the drug. But not to worry! These drugs are not particularly addictive. *You don’t believe us?* Just ask our PR campaign. As demonstrated in other industries and going back to the heyday of tobacco, a company or industry’s uncertainty and misinformation campaign about a given product’s harmful impacts needs to unite questionable science with a full-court press of multi-sector public relations. The opioid producers’ three-front campaign targeting regulators, physicians, and the public followed the well-established formula perfected over the decades by

Big Tobacco: Perpetrate ad-hoc “sound science” (i.e., paid-for science with beneficial conclusions) and the motivated manipulation of existing science; hire “key opinion leaders” to promote the products; invent and enrich front groups to advocate the importance of unfettered sales.

In the case of opioids manufacturers also hired physicians who specialized in pain management, who likely believed that pain was under-treated in our healthcare system and that opioids should be used more widely for that purpose. Purdue, Johnson & Johnson, Endo, Teva and the other firms hired “influencer” physicians who could attract the attention of other physicians—the ones who actually write the scripts—and advance the industry narrative in professional circles. These key opinion leaders were quite well paid for their services.

Drug makers paid out millions of dollars to physicians who would make a similar case to their peers, giving direct payments and also bringing the doctors to conferences at luxury resorts and fancy dinners where the companies could promote their products.¹¹ Hundreds of physicians received six figure payments, and thousands of others were payed more than \$25,000 each.¹² This was in addition to the huge, heavily incentivized sales force (600 reps at Purdue alone) employed to meet with physicians at their offices. The system worked. The physicians prescribed larger and larger numbers of pills. The drug companies and the over-prescribing physicians all got very rich.

The other key component of the opioid industry’s marketing effort were front groups with names that sounded like objective, professional societies or patient-advocacy organizations. Many of these well-funded organizations were really just operatives for promoting the producers’ lies. According to the 2017 lawsuit filed by then-Ohio Attorney General Mike DeWine, these groups generated treatment guidelines and programs that encouraged long-term use of opioids. They also did the manufacturers’ dirty work “by responding to negative articles, by advocating against regulatory changes that would limit opioid prescribing in accordance with the scientific evidence, and by conducting outreach to vulnerable patient populations.” The fancily-named American Pain Foundation, for example, produced educational materials for patients, reporters, and policymakers that promoted the benefits of opioids for chronic pain and minimized the risk of addiction. It targeted pain medication for veterans and ran multimedia campaigns to inform patients of their “right” to pain treatment. The organization was so singularly dependent on the manufacturers that in 2012, when the Senate Finance Committee began an investigation into the links between it and the manufacturers, the American Pain Foundation’s board of directors promptly dissolved the organization.⁹

Climate Change

Within the scientific community, there is little doubt that climate change is being driven by human caused greenhouse gas accumulation. Multiple, massive reports have been written on the subject by thousands of climate scientists.¹³ The overwhelming proportion of papers in scientific journals accept this premise.¹⁴ Most climate deniers don’t even publish in scientific journals, often claiming bias against their positions. When they’re not actually torturing the data, they cherry picking the data that suit them. It would be laughable if it weren’t so tragic.

In the 1980s, even into the '90s, the U.S. government enjoyed a tenuous, bipartisan consensus on the problem posed by the ever-accumulating greenhouse gases. As recently as 2000, both candidates vying for the Republicans' presidential nomination, George W. Bush and John McCain, recognized the imperative to reduce greenhouse gases. But that tentative bipartisan consensus fell apart, as the GOP's position came under the influence of libertarian free-market ideologues funded by the fossil fuel industry. Opposing efforts to limit greenhouse gas emissions has become an official plank in the Republican Party platform, and dissenters are unceremoniously drummed out of the party. Remarkably, in the words of Hawaii Senator Brian Schatz, "the Republican Party is the only major political party on the planet that is explicitly dedicated to making climate change worse."¹⁵

How did we arrive at this dispiriting, divided state of affairs? It's pretty simple. The pseudo-scientific and political opposition to acknowledging climate change is aligned—ideologically, tactically, and now politically—with the same gang that has specialized in manufacturing scientific uncertainty since the 1950s. It is the same crowd, funded by the same money, employing the same tactics. This concerted effort, funded by some of the largest corporations, wealthiest families, and most conservative foundations in the United States, has convinced a substantial portion of Americans that government regulations designed to protect their health and their children's health are an attack on the "liberties" of corporations, families, and individuals. Having perfected the art of manufacturing uncertainty about the *proven* dangers of exposure to things like cigarette smoke, lead paint, industrial chemicals, identical strategies are now being employed in what would be the obstructionists' greatest—and quite possibly most dangerous—achievement: denying and undermining the science that documents the atmospheric buildup of greenhouse gases, and the impacts of this accumulation on life on this planet.¹⁶

The Koch brothers are central figures in efforts to manufacture scientific uncertainty. Along with the Tobacco Industry, the Koch donor network has been a primary funder of a local and national chain of anti-regulatory, free-market academic centers, think tanks, and "Astroturf" and "Greenwash" groups, all with names that strike similar chords: Freedom Works, Americans for Prosperity, Enough is Enough, the Coalition Against Regressive Taxation, Get Government Off Our Backs Coalition, International Climate Science Coalition, Center for the Study of Carbon Dioxide and Global Change, and countless more. Each purport to be an independent grassroots operation or coalition, but each is in fact an instrument of one very big business—one with an operating goal of a "small government" that allows people (and corporations) to do what they want, unhindered by government regulation.¹⁷

With climate change issues specifically, the fossil fuel industry has led the fight against environmental protections, with both overt and covert campaigns to manufacture doubt and defend "the principles of free markets and limited government," in the words of one Koch-funded advocacy group.¹⁸ Not coincidentally, these free-market principles are consistent with their donors' efforts to maximize their own wealth. Why should companies be prohibited from operating oil-pipelines that leak, or spewing carcinogens into the air of communities around refineries? Firms controlled by the Koch brothers have done such things—and worse.

These disinformation campaigns are more than public relations disguised as science. The companies' PR experts provide scientists with contrarian sound bites that play well with

reporters, who are mired in the trap of believing there must be two sides to every story equally worthy of fair-minded consideration. The scientists are deployed to influence regulatory agencies that might be trying to protect the public, or to defend against lawsuits by people who believe they were injured by the product in question. The corporations and their hired guns demand that policy be based on “sound science,” but what they want is something that just *sounds like* science but isn’t. Such bought-and-paid-for corporate research is sanctified, while any academic research that might threaten corporate interests is vilified. The scientific process is designed to encourage disagreement and debate—but it requires that participants contribute to those debates in good faith. Instead, each industry’s hired guns manufacture and magnify doubt in order to misinform policymakers and the public – with disastrous consequences for our collective well-being.

This disinformation playbook has caused the sickness and deaths of millions through its use defending tobacco, opioids, asbestos, lead, stain-resistant chemicals, and many more toxic products. And just like the tobacco campaigns that encouraged millions of people to become addicted to a product that will cut years off their lifespans, there is a concerted uncertainty campaign, generously funded by the fossil fuel industry, to stop action to reduce the buildup of greenhouse gases. Make no mistake. The science is now very clear and there is no longer any real debate in the scientific community: this accumulation of atmospheric carbon threatens to dramatically break down climactic systems, and that will cause severe damage to our environment.¹⁹ If we do not take immediate action, these changes will, in turn, make much of the planet uninhabitable, increasing extreme weather events, raise sea levels, reduce our food supply, and alter in terrible and tragic ways the lives of billions of inhabitants of the earth.

Thank you for the opportunity to testify on this very important matter.

Note: For further information about the “Denial Playbook” and ways in which corporations manufacture doubt about scientific evidence, see my book *Doubt is Their Product. How Industry’s War on Science Threatens Your Health*³ and the Union of Concerned Scientists’ *Disinformation Playbook*.²⁰

References

- ¹ https://www.ewg.org/interactive-maps/2017_pfa/
- ² Brown and Williamson. *Smoking and health proposal*. Brown and Williamson document no. 680561778–1786, 1969. Available at: <http://legacy.library.ucsf.edu/tid/nvs40f00>.
- ³ Michaels D. *Doubt is Their Product. How Industry's War on Science Threatens Your Health* New York: Oxford University Press. 2008
- ⁴ Pellman EJ, Viano DC, Tucker AM, Casson IR, Waeckerle JF. Concussion in professional football: Reconstruction of game impacts and injuries. *Neurosurgery*. 2003;53(4):799-814. doi: 10.1093/neurosurgery/53.3.799.
- ⁵ Fainaru-Wada M, Fainaru S. *League of Denial: The NFL, Concussions, and the Battle for Truth*. New York: Random House. 2013.
- ⁶ Meier B. *Pain Killer*. New York: Random House; 2018.
- ⁷ Addiction rare in patients treated with narcotics. *N Engl J Med*. 1980;302(2):123. doi: 10.1056/NEJM198001103020221.
- ⁸ Basen R. DOJ repeats threat to hold opioid prescribers accountable. *Medpage Today* March 9, 2018 <https://www.medpagetoday.com/publichealthpolicy/opioids/71661>.
- ⁹ Dewine M. State of Ohio vs. Purdue Pharma, et al., 2017 Available from: <https://www.ohioattorneygeneral.gov/Files/Briefing-Room/News-Releases/Consumer-Protection/2017-05-31-Final-Complaint-with-Sig-Page.aspx>
- ¹⁰ Greene MS, Chambers RA. Pseudoaddiction: Fact or fiction? An investigation of the medical literature. *Current Addiction Reports*. 2015;2(4):310-317. doi: 10.1007/s40429-015-0074-7.
- ¹¹ Ornstein C, Jones RG. Opioid makers, blamed for overdose epidemic, cut back on marketing payments to doctors. *ProPublica*. June 28, 2018. Available from: <https://www.propublica.org/article/opioid-makers-blamed-for-overdose-epidemic-cut-back-on-marketing-payments-to-doctors>.
- ¹² Kessler A, Chen E. The more opioids doctors prescribe, the more money they make. *CNN*. March 12, 2018. Available from: <https://www.cnn.com/2018/03/11/health/prescription-opioid-payments-eprise>
- ¹⁵ Savransky R. Dem senator: GOP the only major political party dedicated to making climate change worse. *The Hill* April 8, 2018.
- ¹⁶ Oreskes N, Conway EM. *Merchants of Doubt*. New York: Bloomsbury Press; 2010:129.
- ¹⁷ Nesbit J. *Poison Tea: How Big Oil and Big Tobacco Invented the Tea Party and Captured the GOP*. New York: St. Martin's Press; 2016.
- ¹⁸ The Mackinac Center for Public Policy <https://www.mackinac.org/about>. Koch funding is documented here: https://www.sourcewatch.org/index.php/Mackinac_Center_for_Public_Policy
- ¹⁹ The first important paper demonstrating this consensus was Oreskes N. Beyond the ivory tower. The scientific consensus on climate change. *Science*. 2004;306(5702):1686. Several papers examining newer evidence followed this one, and were reviewed and synthesized in Cook J, Oreskes N, Doran PT, et al. Consensus on consensus: a synthesis of consensus estimates on human-caused global warming. *Environmental Research Letters*. 2016;11(4):48002. doi: 10.1088/1748-9326/11/4/048002.
- ²⁰ <https://www.ucsusa.org/center-science-and-democracy/disinformation-playbook#.XG7rOehKhPY>