

Debunking GasLand

Josh Fox makes his mainstream debut with documentary targeting natural gas – but how much of it is actually true?

For an avant-garde [filmmaker and stage director](#) whose previous work has been recognized by the “[Fringe Festival](#)” of New York City, HBO’s decision to air the GasLand documentary nationwide later this month represents Josh Fox’s first real foray into the mainstream – and, with the potential to reach even a portion of the network’s 30 million U.S. subscribers, a potentially significant one at that.

But with larger audiences and greater fanfare come the expectation of a few basic things: accuracy, attention to detail, and original reporting among them. Unfortunately, in the case of this film, accuracy is too often pushed aside for simplicity, evidence too often sacrificed for exaggeration, and the same old cast of characters and anecdotes – previously debunked – simply lifted from prior incarnations of the film and given a new home in this one.

“I’m sorry,” Josh Fox [once told](#) a New York City magazine, “but art is more important than politics. ... Politics is people lying to you and simplifying everything; art is about contradictions.” And so it is with GasLand: politics at its worst, art at its most contrived, and contradictions of fact found around every bend of the river. Against that backdrop, we attempt below to identify and correct some of the most egregious inaccuracies upon which the film is based (all quotes are from Josh Fox, unless otherwise noted):

Misstating the Law

(6:05) “What I didn’t know was that, the Superfund law, and about a dozen other environmental and Democratic regulations.”

- This assertion, every part of it, is false. The oil and natural gas industry is regulated **under every single one of these laws** -- under provisions of each that are relevant to its operations. See [this fact sheet](#) for a fuller explanation of that.

- The process of hydraulic fracturing, to which Fox appears to be making reference here, has never in its 60-year history been regulated under the Safe Drinking Water Act (SDWA). It has, however, been regulated ably and aggressively by the states, which have compiled an impressive record of enforcement and oversight in the many decades in which they have been engaged in the practice.

- Far from being “pushed through Congress by Dick Cheney,” the Energy Policy Act of 2005 earned the support of nearly three-quarters of the U.S. Senate (74 “yea” votes), including the top Democrat on the Energy Committee; current Interior secretary Ken Salazar, then a senator from Colorado; and a former junior senator from Illinois named Barack Obama. In the U.S. House, 75 Democrats joined 200 Republicans in supporting the final bill, including the top Democratic members on both the Energy & Commerce and Resources Committees.

(6:24) “But when the 2005 energy bill cleared away all the restrictions, companies ... began to lease Halliburton technology and to begin the largest and most extensive domestic gas drilling campaign in history – now occupying 34 states.”

- Once again, hydraulic fracturing has never been regulated under SDWA – not in the 60-year history of the technology, the 36-year history of the law, or the 40-year history of EPA. Given that, it’s not entirely clear which “restrictions” in the law Mr. Fox believes were “cleared away” by the 2005 energy bill. All the bill sought to do was clarify the existing and established intent of Congress as it related to the scope of SDWA.

- Interest in developing clean-burning natural gas resources from America’s shale formations began to manifest itself well before 2005. The first test well in the Marcellus Shale in Pennsylvania, for example, was drilled in 2004. In Texas, the first wells in the prolific Barnett Shale formation were spudded in the late 1990s. But even before natural gas from shale was considered a viable business model, energy producers had been relying on hydraulic fracturing for decades to stimulate millions of wells across the country. The technology was first deployed in 1948.

- The contention that current energy development activity represents the “largest ... drilling campaign in history” is also incorrect. According to EIA, more natural gas wells were developed in 1982 than today. And more than two times the number of petroleum wells were drilled back then as well, relative to the numbers we have today. Also, while it may (or may not) be technically true that fracturing activities take place in 34 states, it’s also true that 99.9 percent of all oil and gas activity is found in only 27 U.S. states (page 9, Ground water Protection Council report)

(32:34) “The energy task force, and \$100 million lobbying effort on behalf of the industry, were significant in the passage of the ‘Halliburton Loophole’ to the Safe Drinking Water Act, which authorizes oil and gas drillers exclusively to inject known hazardous materials, unchecked, directly into or adjacent to underground

drinking water supplies. It passed as part of the Bush administration's Energy Policy Act of 2005."

- Not content with simply mischaracterizing the nature of existing law, here Fox attempts to assert that the law actually allows energy producers to inject hazardous chemicals "directly into" underground drinking water. **This is a blatant falsehood.** Of course, if such an outrageous thing were actually true, one assumes it wouldn't have taken five years and a purveyor of the [avant-garde](#) to bring it to light.

- The subsurface formations that undergo fracture stimulation reside thousands and thousands of feet [below formations that carry potable water](#). These strata are separated by millions of tons of impermeable rock, and in some cases, more than two miles of it.

- Once again, to characterize the bipartisan 2005 energy bill as having a "loophole" for hydraulic fracturing requires one to believe that, prior to 2005, hydraulic fracturing was regulated by EPA under federal law. But that belief is mistaken. And so is the notion that the 2005 act contains a loophole for oil and natural gas. As stated, hydraulic fracturing has been regulated [ably and aggressively](#) by the states.

(1:32:34) "Diana DeGette and Maurice Hinchey's FRAC Act [is] a piece of legislation that's one paragraph long that simply takes out the exemption for hydraulic fracturing to the Safe Drinking Water Act."

- Here Fox is referring to the [2008 iteration](#) of the FRAC Act, not the slightly longer (though equally harmful) [2009 version](#) of the bill. The legislation does not, as its authors suggest, "restore" the Safe Drinking Water Act to the way it was in 2004. It calls for a wholesale re-writing of it.

- Here's the critical passage from the FRAC Act: "Section 1421(d)(1) of the Safe Drinking Water Act is amended by striking subparagraph (B) **and inserting**: (B) includes the underground injection of fluids or propping agents pursuant to hydraulic fracturing operations related to oil and gas production activities."

- Why would you need to "insert" new language into a 36-year-old statute if all you were looking to do is merely "restore" it?

Misrepresenting the Rules

(1:00:56) “Because of the exemptions, fracking chemicals are considered proprietary ... The only reason we know anything about the fracking chemicals is because of the work of Theo Colborn ... by chasing down trucks, combing through material safety data sheets, and collecting samples.”

- With due respect to eminent environmental activist and former World Wildlife Fund staffer Theo Colborn, no one has ever had to “chase down a truck” to access information on the materials used in the fracturing process.

- That’s because there’s actually a much easier way to obtain that information: simply navigate to [this website](#) hosted by regulators in Pennsylvania, [this one](#) from regulators in New York (page 130), [this one](#) for West Virginia, [this one](#) maintained by the Ground Water Protection Council and the U.S. Department of Energy (page 63), and [this one](#) on the website of Energy In Depth.

(1:03:33) Dr. Colborn: “Once the public hears the story, and they’ll say, ‘Why aren’t we out there monitoring’? We can’t monitor until we know what they’re using. There’s no way to monitor. You can’t.”

- According to [environmental regulators](#) from Josh Fox’s home state of Pennsylvania, “**Drilling companies must disclose the names of all chemicals to be stored and used at a drilling site** ... These plans contain copies of material safety data sheets for all chemicals ... This information is on file with DEP and is available to landowners, local governments and emergency responders.”

- Environmental regulators from Fox’s **adopted** state of New York also testify to having ready access to this information. From the NY Dept. of Environmental Conservation (DEC) [information page](#): “The [state] is assessing the chemical makeup of these additives and will ensure that all necessary safeguards and best practices are followed.”

- According to the [Ground Water Protection Council](#) (GWPC), “[M]ost additives contained in fracture fluids including sodium chloride, potassium chloride, and diluted acids, present low to very low risks to human health and the environment.” GWPC members include state environmental officials who set and enforce regulations on ground water protection and underground fluid injection.

Mischaracterizing the Process

(6:50) “[Hydraulic fracturing] blasts a mix of water and chemicals 8,000 feet into the ground. The fracking itself is like a mini-earthquake. ... In order to frack, you need some fracking fluid – a mix of over 596 chemicals.”

- As it relates to the composition of fluids commonly used in the fracturing process, greater than **99.5 percent of the mixture** is comprised of water and sand. The remaining materials, used to help deliver the water down the wellbore and position the sand in the tiny fractures created in the formation, are typically components found and used around the house. The most prominent of these, a substance known as guar gum, is an emulsifier more **commonly found in ice cream**.

- From the U.S. Dept. of Energy / GWPC **report**: “Although the hydraulic fracturing industry may have a number of compounds that can be used in a hydraulic fracturing fluid, **any single fracturing job would only use a few of the available additives** [not 596!]. For example, in [this exhibit], there are 12 additives used, covering the range of possible functions that could be built into a fracturing fluid.” (page 62)

- In the documentary, Fox graphically depicts the fracturing process as one that results in the absolute obliteration of the shale formation. In reality, the fractures created by the procedure and kept open by the introduction of proppants such as sand are typically less than a millimeter thick.

(50:05) “Each well completion, that is, the initial drilling phase plus the first frack job, requires 1,150 truck trips.”

- Suggesting that every well completion in America requires the exact same number of truck trips is absurd. As could be guessed, the number of trips required to supply the well site with the needed equipment and personnel will vary (widely) depending on any number of factors.

- As it relates to a source for Fox’s identification of “1,150 truck trips,” none is given – although it appears he may have derived those numbers from a back-of-the-envelope calculation inspired by a chart on page 6-142 of **this document** from NY DEC. As depicted on that page, the transportation of new and used water supplies, to and from the wellsite, account for 85 percent of the trips extrapolated by Fox.

- Unrepresented in this chart is the enormous growth in the amount of produced water that is currently being recycled in the Marcellus – with industry in

Pennsylvania reusing and recycling on average more than **60 percent of its water**, [according to](#) the Marcellus Shale Coalition.

- According to GWPC: “**Drilling with compressed air is becoming an increasingly popular** alternative to drilling with fluids due to the increased cost savings from both reduction in mud costs and the shortened drilling times as a result of air based drilling.” ([page 55](#))

(51:12) “Before the water can be hauled away and disposed of somewhere, it has to be emptied into a pit – an earthen pit, or a clay pit, sometimes a lined pit, but a pit – where a lot of it can seep right back down into the ground.”

- The vast majority of energy-producing states – 27 in total, including all the ones to which Fox travels for GasLand – have explicit laws on the books governing the type of containment structures that must be used for temporarily storing flowback water. A number of producers today choose to store this water in steel tanks, eliminating all risk of that water re-entering the surrounding environment.

- GWPC (May 2009) “In 23 states, pits of a certain type or in a particular location must have a natural or artificial liner designed to prevent the downward movement of pit fluids into the subsurface. ... Twelve states also explicitly either prohibit or restrict the use of pits that intersect the water table.” ([page 28-29](#))

- GWPC (April 2009): “Water storage pits used to hold water for hydraulic fracturing purposes are typically lined to minimize the loss of water from infiltration. ... In an urban setting, due to space limitations, steel storage tanks may be used.” ([page 55](#))

Flat-Out Making Stuff Up

(53:36) “The Pinedale Anticline and the Jonah gas fields [of Wyoming] are directly in the path of the thousand year old migration corridor of pronghorn antelope, mule deer and sage grouse. And yeah, each of these species is endangered, and has suffered a significant decline of their populations since 2005.”

- **0 for 1:** Three species of the pronghorn antelope are considered “endangered,” none of which are found anywhere near the Pinedale Anticline. Those are: the Sonoran (Arizona), the Peninsular (Mexico), and the Mexican Pronghorn (also of Mexico). According to the [Great Plains Nature Center](#): “The great slaughter of the late 1800s affected the pronghorns ... Only about 12,000

remained by 1915. **Presently, they number around one million** and the greatest numbers of them are in Wyoming and Montana.”

- **0 for 2:** Only one species of mule deer is considered “endangered”: the Cedros Island mule deer of Mexico (nowhere near Wyoming). The mule deer populations are so significant in Wyoming today that the state has a [mule deer hunting season](#).

- **0 for 3:** The sage grouse does not currently have a place on the endangered species list, according to the [U.S. Fish & Wildlife Service \(FWS\)](#) – and “robust populations of the bird currently exist across the state” of Wyoming, according to the agency. Interestingly, FWS recently [issued a press release](#) identifying wind development as a critical threat the sage grouse’s habitat.

- That said, producers in the area have taken the lead on efforts to lessen their impact and reduce the number of truck trips required to service their well sites. As part of that project, operators have commissioned a [series of independent studies](#) examining additional steps that can be taken to safeguard the Anticline’s wildlife.

(8:07) “And now they’re coming east. They’re proposing 50,000 gas wells along a 75-mile stretch of the Delaware River and hundreds of thousands more across New York, Pennsylvania, Ohio and West Virginia. From 1972 until now – my whole life – all of this has been protected.”

- Not even the most optimistic scenario for future development in the Marcellus Shale in general, or along the Delaware River in particular, **comes anywhere close** to 50,000 natural gas wells. A recent [study by Penn State Univ.](#) projects that by the year 2020, producers will have developed 3,587 shale gas wells. [A study](#) conducted for policymakers in the Southern Tier of New York predicted a maximum of 4,000 wells for that region.

- Where Fox comes up with his 50,000 figure is unknown. The protections to the area apparently in place since 1972 to which he refers are also unknown.

(19:27) “One thing was resoundingly clear: If the industry’s projections were correct, then this would be the end of the Catskills and the Delaware River Basin as we knew it. And it would mean a massive upheaval and redefinition of all of New York State and Pennsylvania.”

- According to the [Energy Information Administration](#), Pennsylvania is already home to 55,631 active natural wells; New York, [according to DEC](#), is home to roughly 14,000. Again, even assuming the most active development scenario, Marcellus wells are expected to account for less than 10 percent of all wells in these two states over the next 10 to 20 years – not exactly the type of dramatic “upheaval” and “redefinition” that Fox suggests in his film.

(31:32) “In 2004, the EPA was investigating a water contamination incident due to hydraulic fracturing in Alabama. But a panel rejected the inquiry, stating that although hazard materials were being injected underground, EPA did not need to investigate.”

- No record of the investigation described by Fox exists, so EID reached out to Dr. Dave Bolin, deputy director of Alabama’s [State Oil & Gas Board](#) and the man who heads up oversight of hydraulic fracturing in that state. In an email, he said he had “**no recollection**” of such an investigation taking place.

- That said, it’s possible that Fox is referring to EPA’s study of the McMillian well in Alabama, which spanned several years in the early- to mid-1990s. In 1989, Alabama regulators conducted four separate water quality tests on the McMillian well. The results indicated no water quality problems existed. In 1990, EPA conducted its own water quality tests, and found nothing.

- [In a letter sent in 1995](#), then-EPA administrator Carol Browner (currently, President Obama’s top energy and environmental policy advisor) characterized EPA’s involvement with the McMillian case in the following way: “Repeated testing, conducted between May of 1989 and March of 1993, of the drinking water well which was the subject of this petition [McMillian] **failed to show any chemicals that would indicate the presence of fracturing fluids**. The well was also sampled for drinking water quality, and no constituents exceeding drinking water standards were detected.”

- For information on what actually did happen in Alabama during this time, and how it’s relevant to the current conversation about the Safe Drinking Water Act, please [download the fact sheet](#) produced last year by the Coalbed Methane Association of Alabama.

(1:28:06) “Just a few short months after this interview, the Pennsylvania Department of Environmental Protection suffered the worst budget cuts in history, amounting to over 700 staff either being fired or having reduced hours and 25 percent of its total budget cut.”

- [DEP press release](#), issued January 28, 2010: “Governor Edward G. Rendell announced today that the commonwealth is strengthening its enforcement capabilities. At the Governor's direction, the Department of Environmental Protection **will begin hiring 68 new personnel** who will make sure that drilling companies obey state laws and act responsibly to protect water supplies. DEP also will strengthen oil and gas regulations to improve well construction standards.”

Recycling Discredited Points from the Past

Weston Wilson (EPA “whistleblower”): “One can characterize this entire [natural gas] industry as having a hundred year history of purchasing those they contaminate.” **(33:36)**

- Mr. Wilson, currently on staff at EPA’s Denver office, was not part of the team of scientists and engineers that spent nearly five years studying hydraulic fracturing for EPA. That effort, released in the form of a [landmark 2004 study](#) by the agency, found “no evidence” to suggest any relationship between hydraulic fracturing and the contamination of drinking water.

- Wilson has a [well-documented history](#) of aggressive opposition to responsible resource and mineral development. Over his 35-year career, Mr. Wilson has invoked “whistleblower” status to fight dam construction in Colorado, oil and gas development in Montana, and the mining of gold in Wyoming.

- Wilson in [his own words](#): “The American public would be shocked if they knew we make six figures and **we basically sit around and do nothing.**”

Dunkard Creek: Fox includes images of dead fish along a 35-mile stretch of Dunkard Creek in Washington Co., Pa.; attributes that event to natural gas development. **(01:23:15)**

- Fox’s attempt to blame the Dunkard Creek incident on natural gas exploration is contradicted by an EPA report – issued well before GasLand was released – which blamed the fish kill on an algal bloom, which itself was fed by discharges from coal mines.

- [EPA report](#): “Given what has been seen in other states and the etiology of this kill, we believe the toxin from this algae bloom led to the kill of fish, mussels, and salamanders on Dunkard Creek. ... The situation in Dunkard Creek **should be considered a chronic exposure** since chloride levels were elevated above

the criteria for long periods of time.” (issued 11/23/09)

- **Local PA newspaper calls out Fox:** “One glaring error in the film is the suggestion that gas drilling led to the September fish kill at Dunkard Creek in Greene County. That was determined to have been caused by a golden algae bloom from mine drainage from a [mine] discharge.” ([Washington \(Pa.\) Observer-Reporter, 6/5/10](#))

Mike Markham: Fox blames flammable faucet in Fort Lupton, Colo. on natural gas development

- But that’s not true [according to the Colorado Oil & Gas Conservation Commission \(COGCC\)](#). “Dissolved methane in well water **appears to be biogenic [naturally occurring] in origin**. ... There are no indications of oil & gas related impacts to water well.” (complaint resolved 9/30/08, signed by John Axelson of COGCC)

- Context from our friends at ProPublica: “Drinking water with methane, the largest component of natural gas, isn't necessarily harmful. The gas itself isn't toxic -- the Environmental Protection Agency doesn't even regulate it -- and it escapes from water quickly, like bubbles in a soda.” ([Abrahm Lustgarten, ProPublica, 4/22/09](#))

Lisa Bracken: Fox blames methane occurrence in West Divide Creek, Colo. on natural gas development.

- That assertion has also been debunked by COGCC, which visited the site six separate times over 13 months to confirm its findings: “Stable isotopes from 2007 consistent with 2004 samples indicting gas bubbling in surface water features is of biogenic origin.” (July 2009, [COGCC presentation by Margaret Ash](#), environmental protection supervisor)

- Email from COGCC supervisor to Bracken: “Lisa: As you know since 2004, the COGCC staff has responded to your concerns about potential gas seepage along West Divide Creek on your property and to date **we have not found any indication that the seepage you have observed is related to oil and gas activity**.” ([email from COGCC’s Debbie Baldwin to Bracken, 06/30/08](#))

- More from [that email](#): “These samples have been analyzed for a variety of parameters including natural gas compounds (methane, ethane, propane, butane, pentane, hexanes), heavier hydrocarbon compounds including benzene,

toluene, ethylbenzene, xylenes (BTEX), stable isotopes of methane, bacteria (iron related, sulfate reducing, and slime), major anions and cations, and other field and laboratory tests. **To date, BTEX compounds have not been detected in any of the samples.**"

Calvin Tillman: Fox interviews mayor of DISH, Texas; blames natural gas development, transport for toxins in the air, benzene in blood.

- Tillman in the press: "Six months ago, nobody knew that facilities like this would be spewing benzene. Someone could come in here and look at us and say, 'You know what? They've sacrificed you. You've been sacrificed for the good of the shale.'" ([Scientific American, 3/30/10](#))

- A little more than a month later, Texas Dept. of State Health Services debunks that claim: "Biological test results from a Texas Department of State Health Services investigation in Dish, Texas, indicate that residents' exposure to certain contaminants **was not greater than that of the general U.S. population.**" ([DSHS report](#), May 12, 2010)

- [More from the agency](#): "DSHS paid particular attention to benzene because of its association with natural gas wells. **The only residents who had higher levels of benzene in their blood were smokers.** Because cigarette smoke contains benzene, finding it in smokers' blood is not unusual."

Anything we miss? Guess we'll be seeing you at the movies. Maybe not this one, though.

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