

## POSITION PAPER—NEW YORKERS AGAINST FRACKING

### **No Compromise on an Independent, Comprehensive Health Impact Assessment**

by Sandra Steingraber, PhD and Kathleen Nolan, MD, MSL

*As Governor, Andrew Cuomo will continue to be an environmental champion by . . . making sure health and environmental risks are comprehensively studied before natural gas exploration in New York's Marcellus Shale formation occurs.*

—2010 gubernatorial campaign [website](#), Nov. 1, 2010

*Obviously if there was a public health concern that could not be addressed we would not proceed.*

—DEC Commissioner Joseph Martens, *New York Times*, Sept. 20, 2012

### **Summary Statement**

Four years of study and thousands of pages have been devoted to the study of fracking's impact on New York's environment, but no such analysis has been carried out for public health. A thorough investigation of fracking's impact on human health is desperately needed. Still unanswered are three fundamental questions: Will fracking sicken and kill more New Yorkers than it employs? Will the sick and dying have any recourse—other than fleeing their homes and jobs—to protect themselves? And how much will that morbidity and mortality cost? New Yorkers Against Fracking joins the call for a comprehensive Health Impact Assessment (HIA) to determine what high-volume horizontal hydraulic fracturing would mean for the health of New Yorkers. Designed in accord with national and international health guidelines and inclusive of public participation, a comprehensive HIA is the widely accepted standard for prospective health studies. This HIA should include quantitative and economic analyses and must be led by an independent team of expert researchers untethered to gas industry funding or state agencies led by political appointees. An expedient, ad-hoc “review” that is not carried out with transparency and public input and that does not follow the established protocols of a comprehensive HIA is unacceptable. Any public health impact identified during a course of careful study as an unresolvable problem must, by the Governor's own standards, serve to halt the entry of fracking in New York State.

### **Shale Gas: the New Leaded Gas?**

As a framework of comparative understanding, here's a story for our time. In 1922, General Motors discovered that adding lead to gasoline alleviated its tendency to burn explosively under high compression. Solving this problem meant that engines could be made bigger and cars faster. (Ethanol could have served this function, but it could not be patented and was therefore not profitable to the oil companies.) In 1923, when leaded gas hit the market, alarmed public health officials raised urgent concerns about the wisdom of broadcasting a brain poison into public air space. Meanwhile, refinery workers whose jobs involved formulating the lead additive began suffering hallucinations.

These reports reached the U.S. Surgeon General, who convened a meeting in 1925 to address the possible health impacts of lead dust exposure. The result was a moratorium that prohibited the sale of leaded gas until a thorough investigation could be completed.

Immediately, the lead industry helped fund a health study. It found. . .no problems. At least, none that couldn't be easily mitigated.

Medical professionals cried foul. [The study](#) did not take cumulative impacts into account and was not designed to reveal the long-term effects of exposures in early life. Nevertheless, the negative results were reassuring enough to get the moratorium lifted. Leaded gasoline went back on sale.

And stayed on sale for seventy years. As a result, 15.4 billion pounds of lead dust were released from the nation's tailpipes into the air. By the time scientists were able to document, with proof, the [tragic consequences](#)—namely, serious risks for irreversible lead poisoning among those living near busy roadways—three generations of children had been damaged.

Leaded gasoline was finally banned for good in 1990. Even the tightest regulations were unable to control this menace to public health—and to workers. Lead paint is also now banned, and for the same reason. The consequence? Since the sun has set on both leaded gas and leaded paint, the incidence of mental retardation has fallen significantly and average I.Q. has risen. Nevertheless and however outlawed, lead's legacy remains: the soil in urban communities throughout the Northeast is still too full of this toxic metal to grow garden vegetables safely. Thus, the findings of a hasty study, conducted ninety years ago under the influence of a powerful, well-funded industry and accepted by public agencies cowed by that industry, explains why children in many Boston neighborhoods still cannot eat garden carrots or make mud pies in their own backyards without risking cognitive deficits.

With that story in mind, let's look at the decision now facing us here in New York State where we currently have a temporary, de facto moratorium on another industrial practice: unconventional shale gas extraction—fracking. The instrument of that moratorium is the supplemental Generic Environmental Impact Statement (SGEIS), which, four years in the making, is still in draft form. Its first two iterations did not attempt to assess the impact of fracking on public health.

In September 2012, however—responding to a crescendo of concerns by scientists, medical health professionals, and members of the general public—the Department of Environmental Conservation announced that it would, after all, supplement the supplemental GEIS with a health review. Shortly after, the DEC [denied a request](#) from prominent environmental organizations—and, again, prior requests made by hundreds of New York medical professionals and organizations—to design that study as a comprehensive Health Impact Assessment and to give responsibility for its oversight to an independent team of researchers. Instead, Governor Cuomo and DEC Commissioner

Martens have directed the Department of Health to lead the review, whose design has not yet been revealed but apparently will involve only ad-hoc protocols.

New Yorkers Against Fracking is greatly disappointed that, until now, Governor Cuomo and Commissioner Martens have dismissed the call for an independent entity to lead a comprehensive Health Impact Assessment. The public's trust in the Cuomo administration's objectivity and review has been broken given that the DEC gave access to and greatly accommodated with the gas industry in crafting the SGEIS prior to its public release, while leaving independent scientists, engineers, and clinicians largely outside the process of the environmental review. Additionally, the Department of Health has said throughout the review process that a Health Impact Assessment is not necessary. What has changed, and how can the public now have faith that the DOH is capable of conducting the thorough, objective, and patently necessary study that is now under consideration?

### **The Case Against Fracking**

To the larger question of whether or not fracking should be allowed in the state of New York, New Yorkers Against Fracking has an unequivocal and steadfast answer: No. This *no* is not contingent on the results of a single health study, no matter what kind and no matter who carries it out. That is because NYAF opposition to fracking has roots in many places. In addition to our deeply felt concerns about public health, here are five other problems that animate many of us in the NYAF movement:

- **Fracking destroys farmland and natural areas and threatens our economy.** New York is the nation's second biggest wine-producing state. It ranks third among states for overall milk production and is the third-largest producer of organic food in the United States. It also contains some of the largest, unbroken forest canopy in the Northeast. Drilling and fracking operations, which use our land as their factory floor, would industrialize our foodshed, threatening our state's agricultural industry with water, air, and environmental contamination. And [when practiced in forests](#), fracking requires massive clear-cutting in ways that decimate habitat for wildlife and bird populations, silt up streams for fish and amphibians, and diminish the land's ability to filter rainwater and prevent flooding for us. This unacceptable environmental destruction simultaneously undermines the vitality of our state's thriving tourism industry. It also threatens the foundation of our real estate industry as homes could lose their value and insurance companies refuse to cover properties near fracking operations.
- **Fracking is undemocratic and irrational.** It brings riches to a few and risks of ruin to many. It forces participation via compulsory integration and unchosen, avoidable exposures to fracking activities. It gives gas companies the right of priority over long-standing, often carefully planned land use. It has prompted rules that afford greater protections for those whose drinking water is drawn from certain aquifers (inhabitants of Syracuse and New York City) than those whose

water does not (the rest of us). And it denies [citizens without large land holdings](#) a voice in the critical decisions that affect the quality of life for everyone in the community.

- **Fracking destroys the climate.** Fracking operations [leak unburned methane](#)—a potent heat trapping greenhouse gas that is 100 times more powerful than carbon dioxide over a 20-year time frame—at rates from one-third to two times greater than conventional drilling. Those leakage rates mean that natural gas obtained via fracking is either marginally worse than coal for the climate or marginally better. [Either way](#), if fracking is used to span the transition to renewables, the world will be on a pathway that leads to an uptick in warming that significantly exceeds the two-degree increase that is considered the upper limit of safety. New Yorkers Against Fracking agrees with [climatologist Ken Caldeira](#), who says that we cannot solve the climate crisis by “further entrenching a fossil fuel industry that depends on using the atmosphere as a waste dump... The goal is not to do something that is fractionally less bad than what we are doing now; the goal is to deploy energy systems that can actually solve the problem.”
- **Fracking destroys water.** Only one percent of all the water on Earth is available to us as fresh, liquid, drinkable water. When a single well is fracked, several million gallons of this precious water are removed from lakes, streams, or groundwater aquifers, deliberately poisoned with toxic chemicals, and entombed in deep geological strata, up to a mile or more below the water table. Once there, it is permanently removed from the hydrologic cycle—unless it comes back up as poisonous flowback or leaks into our groundwater aquifers.
- **Unenforced regulations are meaningless.** New research from [Toxics Targeting](#) and the [Associated Press](#) clearly shows that the DEC has been unable to remediate—or even locate—derelict, abandoned vertical gas wells and their associated waste pits in western New York. Regulatory neglect extends to ongoing contamination of drinking water supplies. In short, the DEC has failed to regulate this process for decades, and we can expect nothing but more of the same in the future. Some insist that the budget-slashed, short-staffed DEC can grow to meet the need, but we agree with the [editorial board](#) of the *Albany Times Union*: “Our taxpayers will not pay for the privilege of letting someone else make money.”

### **The Case for a Comprehensive Health Impact Assessment**

A thorough investigation of fracking’s impact on human health is desperately needed—and we applaud the Cuomo administration for acknowledging this need. Four years of study and four thousand sGEIS pages have still not answered the three most fundamental questions about hydraulic fracturing in New York State: Will fracking sicken and kill

more New Yorkers than it employs? Will the sick and dying have any recourse—other than fleeing their homes and jobs—to protect themselves? And what is the economic cost of that morbidity and mortality?

[Case studies](#) and [individual reports](#) from other states provide credible evidence of public health risks in communities located near drilling and fracking operations. Although these risks have been acknowledged, no comprehensive assessment has yet been conducted. How many illnesses and deaths are we willing to ignore? Many of the areas currently being drilled are not as densely settled as New York, which is the nation's third most populous state. Small increases in mortality and disease rates in a state with 19.5 million inhabitants would have much more wide-spread consequences and carry much bigger costs than equivalent effects in, for example, western Wyoming or eastern Utah. Must we see these consequences played out before we take action?

New Yorkers Against Fracking is convinced that a thorough, well-designed health study, conducted in good faith and inclusive of long-term, cumulative impacts, will reveal many problems. They will be expensive problems, and not all of them will be capable of mitigation through technological fixes. This is an easy prediction to make. Shale gas extraction via horizontal hydraulic fracking is an inherently dangerous activity. Fracking turns solid bedrock into broken shards whose cracks become potential pathways for contamination, some of it radioactive. Broken shale is not reparable by any known technology. Fracking relies upon and releases from the earth large amounts of greenhouse gases and inherently toxic chemicals, including known carcinogens, while also industrializing the natural and built environments of human communities.

[Risks to public health](#) from fracking arise from every stage of the gas extraction process—from the clearing of land for well pads to the disposal of toxic wastewater to the radon accompanying the gas that travels through pipelines to people's homes—and may affect not only disease rates but also the fundamental conditions for human health. For example, with the onset of drilling and fracking operations, a community may experience dramatic increases in noise pollution, light at night, crime, and truck traffic, along with decreases in the availability of locally grown food, affordable housing, and recreational green space for exercise. All of these changes have health consequences. Traffic-related [noise pollution](#) alone, for example, demonstrably raises the risk of heart attack and high blood pressure and cognitive deficits in children. Those who are harmed by these activities are rarely those who have chosen to pursue them and who have received any benefit.

The execution of a well-designed, expansive study does not mean simply reviewing the published literature that already exists and zeroing out uncertainties as “no effect” defaults. It means aggressively seeking out an array of data sources and bringing a multi-disciplinary approach to their analysis.

Happily, a comprehensive Health Impact Assessment (HIA) is designed to do just that.

Four hallmark features of a comprehensive HIA make it suited to our current situation in New York: First, its sole purpose is to identify the effects of a proposed activity—in this case, fracking—on the **health** of a given population and to describe the distribution of those effects within the population. Second, a comprehensive Health Impact Assessment is **prospective**: it is done in advance of any decision to approve or prohibit the proposed activity. Third, a comprehensive health impact assessment is **wide-ranging**: it must give special consideration to vulnerable sub-populations (for example, pregnant women, infants, children, and the elderly), and it must analyze not only the causes of illness but also the conditions that affect health. (As identified by the National Academies of Science, these conditions include personal behaviors as well as social and economic factors, the built environment, and the physical environment.) Fourth, a comprehensive Health Impact Assessment is **participatory**: throughout the process, it includes elements of public participation in the form of hearings, public reviews, meetings, and stakeholder consultations. Concerns suggested by members of potentially affected communities are included in the scope of the study.

In essence, a comprehensive HIA is a formal set of protocols to be used to forecast, and thus avoid, harm. Its protocols were developed by the U.S. Centers for Disease Control and the [World Health Organization](#) (among others), and they are sanctioned by the [National Research Council](#). A comprehensive HIA is the accepted approach for understanding the health effects of a proposed activity.

The operative word here is *comprehensive*. This adjective has specific meaning in the world of HIAs. There are several types of HIAs—including the “desktop HIA”—which is little more than a review of the available literature and that requires only a few weeks to complete. Only a comprehensive HIA requires public participation and a quantitative analysis. Quantitative analysis is the difference between saying “lowered air quality may increase slightly the risk of pediatric asthma” and saying “increasing truck traffic on rural roadways by \_\_ percent will increase the background level of ozone in neighboring communities by \_\_ percent and is thus predicted to increase the rate of asthma in New York’s rural children by \_\_ percent, leading to \_\_ number of additional children diagnosed with asthma before age five and \_\_ additional pediatric emergency room visits per year.”

New Yorkers Against Fracking supports [the call for a comprehensive HIA](#), as strictly defined by our national and international health agencies. A comprehensive HIA is the only tool of public health inquiry into the effects of fracking that we will accept. New Yorkers Against Fracking will interpret any ad-hoc approach or claim of HIA equivalency as a sign of political expediency and a compromised process. Given the large-scale land use decisions being entertained and the enormous health, economic and environmental implications of our choices, why would we consider using anything but the best possible tool to protect our communities?

We further request that this comprehensive HIA include a formal risk assessment and an economic analysis of the identified health effects. These elements are sometimes included

in a comprehensive HIA but are not mandated. We want them—and New Yorkers deserve them—in this HIA.

It is important to note that the goal of any Health Impact Assessment is not to determine whether a project is approved. By definition, an HIA must precede the roll-out of a proposed activity, but its results are not necessarily determinative of the decision to roll it out or not. Hence, whatever the findings of a comprehensive HIA, the decision to permit or prohibit fracking in New York State continues to rest with Governor Cuomo.

### **Key Elements of a Health Impact Assessment of Hydraulic Fracking in New York State**

New Yorkers Against Fracking considers the following elements to be critical, requisite factors for any comprehensive Health Impact Assessment:

- 1) The SGEIS cannot be finalized until the HIA is finalized.**
- 2) The HIA must be participatory.** The public, especially members of targeted communities, must be engaged at every stage of the HIA, including the scoping process.
- 3) The HIA must be quantitative.** In particular, it must apply quantitative techniques to estimate increases in traffic fatalities and injuries, as well as the health effects from noise pollution (linked to cognitive deficits in children; heart attack and increased blood pressure in adults) and air pollution from drill rigs, trucks, condensers, compressors, and flare stacks (linked to heart attack, stroke, cancer, and diabetes among adults; asthma among children; and preterm birth, and reduced birth size among infants.) [Protocols](#) for estimating morbidities and mortalities for all these parameters exist.
- 4) The HIA must consider health risks from cumulative impacts and across the entire life cycle of shale gas extraction and transport.** This includes radon exposure from pipelines and in homes and apartments at the point of combustion. This also includes air emissions and noise pollution from condensers and compressor stations. This also includes exposure to radium in fracking wastewater.
- 5) The HIA must examine the public health consequences of fracking's socio-economic impacts.** These include projected changes in rates of crime, drunk driving, drug arrests, sexual assault, incidence of teenage pregnancy, and sexually transmitted disease. These include loss of rental housing for low-income families. The HIA must include [sociological data](#) from other states where fracking is already occurring and where an influx of out-of-state money and workers have introduced severe disruptions to social support systems.
- 6) The HIA must examine the public health consequences of altered land use patterns and land disturbance.** Loss of farmland decreases access to fresh, local food. Loss of such access is, in turn, [linked to obesity](#). Land disturbance increases

sedimentation of surface streams, which, when subsequently chlorinated for drinking water, increases the burden of exposure to disinfection byproducts. These byproducts include [trihalomethanes](#), exposure to which is linked to colon and bladder cancers.

**7) The HIA must focus closely on infants, children, and pregnant women as vulnerable subpopulations.** Fracking chemicals and fracking-related air pollutants include numerous reproductive and [developmental toxicants](#). These substances, which have no known safe thresholds of exposure, can, when exposure occurs during prenatal or early life, abort pregnancies or sabotage pathways of child development. Consequences may be life-long. [Emerging evidence from Pennsylvania](#) indicates that, for mothers residing close to gas wells, drilling and fracking operations are associated with low birthweight infants and lower scores on tests of newborn responsiveness

**8) The HIA must examine occupational health risks to workers.** These include, but are not limited to, head injuries, traffic accidents, blunt trauma, [silica dust exposure](#), and chemical exposures. Oil and gas industry workers have an on-the-job fatality rate [seven times](#) that of other industries; silica dust exposure is definitively linked to silicosis and lung cancer. With jobs creation as a central argument for the approval of fracking in New York, we need to understand the health and disability risks that come with these jobs. Can these risks be confined to drilling sites?

**9) The HIA investigators must aggressively seek out health data from other states and consult with independent experts from multiple disciplines.** [Medical gag orders](#) and non-disclosure agreements in states such as Pennsylvania must not prevent the gathering of this data, even if subpoenas are required to obtain it.

**10) The HIA must examine failure rates of well casings over time.** [Important questions have been raised](#) within and without the shale gas extraction industry about the ability of cement to withstand the repeated explosions and intense pressures of fracking. Other important questions have been raised about the [lifespan of well casings](#). Cement and steel are not immortal. At what point does their degradation result in gas leaks? These questions must be addressed by the HIA. If well casings do not provide a permanent, unbreachable seal between drinking water aquifers and the volatile hydrocarbons trapped in shale bedrock and mobilized during fracking operations, then irreparable problems may be created now or in the near and distant future.

**11) The HIA must assess reports of groundwater contamination in other states where fracking is ongoing.** These reports continue to grow in number, and, in some cases, [chemical fingerprinting](#) has linked this contamination to gas fracking. Recent [confirmation](#) by the U.S. Geological Survey of fracking-related hydrocarbons in groundwater wells in Pavillion, Wyoming underscore the urgency of this issue.

**12) The HIA must assess the total health-related economic costs of fracking.** It is possible and necessary to put a price tag on the medical costs of increased disease rates and injuries from fracking. All quantifiable health effects should be monetized using an economic disbenefit analysis, as has already been done for [coal](#). Many [hidden costs](#) of

fracking have been calculated in other states, and these must also be projected for New York State. For example, public health costs attributable to air pollution from gas drilling operations in Arkansas' Fayetteville Shale (a rural area, with low population density) carried an estimated price tag of more than \$10 million for 2008 alone.

**13) The HIA must consider the potential health impacts of fracking to future generations.** These may occur as the result of latent effects (for example, aquifer contamination from corroded and crumbling well casings), loss of biodiversity and degraded natural habitat, or from an economic bust that will likely follow the inevitable depletion of the gas reserves so extracted. Some consequences, such as contamination of water resources, may be irreparable, leaving affected areas essentially uninhabitable. The rights of future New Yorkers are not subservient to those living today. In this, we agree with legal scholar Edith Brown Weiss who [asserts](#), “We have a right to use and enjoy the system but no right to destroy its robustness and integrity for those who come after us.”

**14) Where uncertainties and gaps in data exist, the HIA must apply the Precautionary Principle.** As expressed by the 1998 Wingspread Consensus Statement on the Precautionary Principle: “When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof. The process of applying the Precautionary Principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.” Even a small risk of irreparable harm should not be imposed on unwilling members of a community, no matter how close or distant from fracking sites.

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