

## Environmental Health Project: PA's Natural Gas Boom

### *What Went Wrong? Why Does It Matter? What Can We Do Better to Protect Public Health?*

#### PA Environment Digest Blog / July 25, 2022

<https://paenvironmentdaily.blogspot.com/2022/07/environmental-health-project-pas.html>

On July 21, the [Environmental Health Project](#) and [HealthFirstPA](#) held an educational webinar entitled-- Pennsylvania's Shale Gas Boom: How Policy Decisions Failed to Protect Public Health and What We Can Do to Correct It.

The program provided an overview of the findings of the Environmental Health Project's white paper, "[Pennsylvania's Shale Gas Boom: How Policy Decisions Failed to Protect Public Health and What We Can Do to Correct It.](#)" [[Read more here.](#)]

Here are the opening remarks of the four presenters who took part--

- **Rev. Mitchell C. Hescox**, President and CEO of The [Evangelical Environmental Network](#).
- **Beth Weinberger** (MPH, PhD) EHP's Director of Research and Policy
- **Makenzie White** (MPH, LMSW) EHP's Public Health Manager
- **Alison L. Steele** (MBA) EHP's Executive Director

[Click Here to watch the video](#) of the entire webinar, including the Q/A on demand.

#### Introduction

**Rev. Mitchell C. Hescox**, President and CEO of The [Evangelical Environmental Network](#), introduced the program--

"Thank you very much, John, and it truly is an honor to be here with my friends and colleagues from the Environmental Health Project.

Caring about children is a primary responsibility of the Evangelical Environmental Network. I'm an ordained clergy person, but my work is trying to protect and save children.

And here in Pennsylvania, we have a tremendous problem of protecting our children, especially from the pollution and the methane, and its VOCs [volatile organic compounds] and cancer-causing ingredients.

Health First Pennsylvania is a dedicated bunch of health professionals, health advocates, parents, faith leaders, all dedicated to trying to make the use and extraction of fossil fuels, especially methane, in Pennsylvania, as safe as possible, and to limit the damage.

We know that, for children living, and pregnant mothers living close by well pads or other natural gas facilities, that they suffer tremendous amount of health impacts, from birth defects, to lower birth weight, to exposure to cancer-causing VOCs and other toxins; it's a problem.

And today, we're gonna hear from the ethics of work of EHP on how our state government has failed to defend, to protect our children and the citizens of Pennsylvania from this real problem.

It is a real problem, it's a concern, and it should be a concern to all of us.

Now, I come from an evangelical conservative faith perspective. We have a biblical moral mandate for my beliefs to care for our children, to care for people.

To care for the least of these is one of the biggest things that we're taught, and we're also taught to love our neighbors.

I believe it's really difficult to love our neighbors when we expose them to harmful chemicals that really change and threaten their lives.

That's why I am so honored to give this introduction to this event for the Health First PA team, to support this event in its entirety, and to thank EHP, and especially its team members... who I'll turn it over to now, to carry on with this excellent presentation of how we failed our children and our people.”

## **What Went Wrong?**

**Beth Weinberger** (MPH, PhD), EHP's Director of Research and Policy, discusses policy decisions made by Pennsylvania legislators, governors, and agencies that jeopardized the health and welfare of residents and continues to do so--

“Thank you all for being here. I wanna talk for a minute about how we came to do this research, and then provide some examples and insights from our work.

I've been with EHP since the beginning, so about 10 years, and the seed of this research was planted after a conversation I had in EHP's early years, with a parent of a child whose elementary school was situated between multiple Marcellus Shale well pads.

And it sparked this immediate reaction, you know, how does an elementary school end up flanked by well pads?

Emissions, particulate matter, all volatile organic compounds and other chemicals.

And then I took a step back and thought, "Really, how did this school end up flanked by well pads?"

Given what's known, and even what's not known about the dangers of shale gas emissions, were there decisions made along the way that could've protected public health, that could've protected these children and school staff from exposures?

And if so, what were those decisions, and who were the decision makers?

These questions are important, I believe, because it wasn't all inevitable; the situation we find ourselves in is a product of decisions by people in power.

Decisions could've gone another way, and Pennsylvania communities would have been better protected.

In fact, decisions could still go another way, and communities could be better protected.

We knew that, even 10 years ago, it would be evident that there were health risks. And in the last few years, there's more and more research about both risks and impacts.

The Pennsylvania government, over the last 10 years, has never really gone to the people to provide a picture of the risk that they are facing, and what, if anything, they can do to protect themselves, and what they can expect their government to do.

Horizontal drilling with high intensity hydraulic fracturing was a new technology and a new method for [natural] gas extraction in many ways, but at the same time, it wasn't altogether new.

The state has had ample experience with industries emitting toxins into the air or leaking into water sources, the state has had ample knowledge of what, in part, was being emitted into the air and making their way to ground or surface water.

The state, in this instance, wasn't really starting from square one; it didn't need years to understand the problem.

One of the concerning emissions has been diesel, for instance, and we've known quite a lot about the dangers of diesel emissions for health, including the health of pregnant women and children.

So we wanted to look at what happened, and what went so wrong.

We used as our starting point for thinking about these decisions, the Bush-Cheney administration and the Environmental Policy Act of 2005, which excluded shale gas and oil, the whole shale gas and oil sector from long established regulations like the [federal] Clean Air Act and Safe Drinking Water Act, plus, exclusion from regulations over hazardous waste.

Released from a lot of federal oversight, it left this big, blank slate for states to regulate the industry in whatever manner suited them.

So the feds modeled extensive industry deference at the expense of public health protections, and then the states fell in line after that.

So our [\[white\] paper traces](#) these broad contours of decision making in Pennsylvania state government, but more importantly, it looks at specific decisions made, and actions taken or not taken.

There are public health protections baked into government policies and practices.

These could potentially have been employed by the General Assembly, governor's office, and the DOH [Department of Health], but those bodies of government chose not to adequately employ public health policies and practices.

And so we examined how they chose to play to these roles.

We looked into discrete decisions to make the point that over the past 10 years, in the public sector, both elected officials and career professionals looked away from the public health problem when they could have taken it head on.

Looking at these decisions, which I'll give some examples in a moment, led us to three overarching trends in Pennsylvania's approach to governance.

First, that there's a huge gap between the reliable public health research and the policies or initiatives that Pennsylvania's Department of Health and other government policy makers have promoted.

Public health actions are meant to be based on strong evidence and consistency of findings, not perfect evidence. Yet, policy makers have consistently justified their inaction by citing a lack of sufficient knowledge about health impacts.

We saw this looking away from the evidence as a real abdication of responsibility.

Second, we saw this trend of regulations, which do generally provide a degree of safety for the public, but there's a common misconception that they are truly health-protective; they are not.

The widespread presumption of safety touted by the industry and Pennsylvania government officials means that the burden of proof that emissions aren't causing harm often falls to the affected individuals and communities.

With respect to shale gas development in Pennsylvania, the promise of economic benefits overshadowed concerns over health impacts.

In an attempt to attract more economic benefits, policies were created to satisfy [natural] gas companies, and not to protect residents.

So let me provide some examples, starting with the General Assembly's use of its power to legislate, and its power over the state budget.

And I wanna say, not every elected official or every state employee was acting in bad faith and ignoring the public health risks. We know that many, many have good intentions, and went into public service to make Pennsylvania a better place.

Many legislators voted in the minority on bills prioritizing industry actors, but those in control, we argue, decided not to protect public health.

So starting in Act 13, passed in 2012, which I know lots of people are familiar with, that was really an act of deference to the oil and gas industry. [[Read more here.](#)]

Much of it was reduced by, reversed by the courts, but some of it remained. And in any case, it reflected where the majority of lawmakers were on these issues.

So Act 13, included an impact fee [on each shale gas well], but we found no evidence that any of this revenue was allocated to support the Department of Health in evaluating residents' complaints or concerns about local infrastructure.

It [Act 13] allowed the state to preempt local ordinances and override municipalities who wanted to place, more limits on shale gas activities, and it permitted companies to designate certain chemicals used in their operation as trade secrets, preventing public disclosure of compounds that would help health care providers better treat their patients, and researchers better examine impacts on human health.

It further forbids doctors from sharing information, even amongst each other or with patients.

Pennsylvania courts did eventually declare some aspects of the legislation to be unconstitutional, but it was their foundational framework for shale gas governance.

Secondly, the General Assembly has a power over resources given to agencies tasked with protecting public health. Over the years, the General Assembly consistently underfunded efforts that could've shed light on public health risk.

The General Assembly refused, for instance, to fund a shale gas health registry for years, eventually providing only a fraction of the funds necessary for an effective registry.

Agencies tasked with protecting public health and the environment, such as DOH [Department of Health] and the DEP [Department of Environmental Protection], have pointed out that they lacked adequate resources to conduct the full breadth of their responsibilities.

And again, these were decisions made by lawmakers; they were not some sort of cosmic inevitabilities.

Lastly, lawmakers, Republicans mainly, took largely symbolic actions to appear to be studying the potential risks of shale development, proposing panels or committees that were stacked with those friendly to the industry, and not impartial experts or public health or physicians.

At face value, investigative initiatives like advisory bodies seem like positive steps, but at several points in time, it really was merely political theater.

So the General Assembly had the opportunity to take a number of positive actions to ensure public health was protected from harms posed by shale gas development, and the majority in the Legislature decided not to.

The General Assembly could have permitted all municipalities to enact ordinances that protect public health and allowed them to decide whether or not to host shale gas development at all.

It could have required industry transparency of chemical information, so doctors and patients could have productive conversations about exposure and risk and health outcomes.

It could have allocated sufficient funding and legislative directives to state agencies tasked with protecting public health, and it could have discontinued the rhetoric of committees and commissions used primarily as stalling tactics, and instead, acted immediately on the available science, and used time and energy and resources better.

As for governors' decision making, when confronted with this fast-growing industrial sector, three governors-- Rendell, Corbett, and Wolf-- had the power to influence the debate in the state on a large scale, the power to negotiate, to submit a budget, they had executive orders powers, veto powers, and control over state agencies, such as the DOH and the DEP.

So to provide just a couple of examples from the governor's office, Gov. Corbett, most simply created the appearance of taking a look at all the issues surrounding shale gas operations, including health.

He created the Marcellus Shale Advisory Commission in 2011. The stated goal was to bring together a diverse set of experts to generate perspective and recommendations around the development of shale gas operations in Pennsylvania, since it was a new technology. [[Read more here](#) - [Copy of Report](#)]

The commission contained a relatively large number of industry members and supporters, but there was not one medical or public health professional on that commission.

**[Note:** Dr. Eli Avila, Secretary of Health, was a member of the [Commission](#) and other health professionals from the University Of Pittsburgh and Troy Community Hospital were on work groups.]

Interestingly, even with this skewed membership on the commission, it did formulate a category of recommendations that would have provided public oversight of the industry, and would have empowered the DOH to play an important role in the shale gas arena, but nothing came of it.

The DOH, perhaps, at the behest of Governor Corbett, or without funding from the General Assembly, did not enact the majority of the recommendations.

Implementing many of the recommendations for protecting communities would have been a good decision, but the state government looked at the set of recommendations and decided not to proceed.

Governor Wolf came into office saying he had the intent to ensure that industry operations were done right from an environmental and a health standpoint and he made some decisions that did set him apart from his predecessors.

He supported a moratorium on drilling in the Delaware River Basin, and on new leasing and state parks and forests, which is good.

He also wanted to bring this [\[health effects\] registry](#) to fruition after all these years, which did happen during his term.

But with regard to his agencies, he didn't do anything really significant for the thousands of people exposed to shale gas sites.

He did say the health consequences need to be examined, but a look at his DEP and DOH reveals otherwise.

The governors could all have taken more direct action in demanding health protections, relying perhaps on the constitutional guarantee of clean air and pure water.

The governors could have worked harder with the General Assembly to pass legislation, directed the agencies they oversee to include health protections and policies regulating the industry or serving communities.

They could have used their bully pulpits to advocate for health protective policies and to inform the public about their health risks.

Lastly, one might expect that the Department of Health would play a significant role in this emerging and expanding public health problem, but it did not. It did not.

When confronted with this industrial sector, admittedly the DOH exercises a very limited power. They have very limited power, based on the governor and the General Assembly, but what's important here is that by and large, it made decisions that did not create public health protections.

First, returning to the idea of a [health] registry, eventually, finally money was allocated, and the DOH was given the go ahead to populate it with old complaints and new complaints, but it was not done in a way that engaged residents, and it was hard to find, and it wasn't easy to register.

Second, as an example, the DOH staff fielded questions and requests from communities, but they largely let communities down due to inaction.

DOH was understaffed, to be sure, but the decision was also made to limit the time and personnel to address this growing problem. Additionally, the DOH did not have any kind of enforcement power in this arena when it did find flaws.

Lastly, the DOH took a particularly troubling stand on the state of academic purity of research on the associations between exposure to industry emissions and health risks, or identified health impacts.

This position was articulated in a study written by members of both the Colorado and Pennsylvania Health Departments.

Dr. Levine, then secretary of the Department of Health, had a couple of ways that she could have evaluated these studies, the vast majority of which found associations between exposure and health impacts, and which built upon each other, fortifying those findings.

Brian Schwartz, a physician and researcher at Johns Hopkins University, has said, "The body of the evidence is large, growing and consistent." [\[Read more here](#) - and below.]

Dr. Levine, however, chose to say there wasn't good enough evidence, which leads the Department of Health and the government, more generally, to do almost nothing but wait.

The DOH, with the right leadership in the governor's office and appropriate funding could have assumed a more important presence in the wider shale gas and health discussion, proactively seeking out information and advice from a broad spectrum of experts, researchers, and community leaders.

It could have provided communities with guidance and information to help them protect themselves and their families from harmful shale gas emissions.

Lastly, it could have pressed the governor or other regulatory agencies and lawmakers to be more cautious in the face of mounting research promoting health protective policies and raising a warning flag that shale gas is not as safe as the industry led the public to believe."

## **Why Does It Matter?**

**Makenzie White** (MPH, LMSW), EHP's Public Health Manager, talks about health impacts felt by residents living in proximity to shale gas development, including higher risks of respiratory issues, heart disease, poor birth outcomes, and cancer.

"I'm just gonna talk briefly about some of the health impacts that were the result of these policy decisions.

We know from hundreds of studies, government reports, and media investigations, that a variety of infrastructures, whether we're talking about compressor stations, pipelines, well pads, etc, can release a variety of toxic chemicals into the air, including particulate matter, volatile organic compounds, other hazardous air pollutants, diesel emissions, and silica dust.

Wastewater can also have various heavy metals and radioactive materials present that can harm health.

Health exposures can also occur from spills or leaks.

These toxic chemicals not only get into the air, but also the water and soil.

Part of the concern with shale gas development is that it disrupts the natural environment, such as land and water.

It creates extensive infrastructure in multiple stages and sites, and produces large amounts of liquid and solid waste.

Humans are exposed through either inhalation, ingestion, or skin contact.

The magnitude of exposure is impacted by a variety of factors, such as how often someone's exposed, the length of time in which someone is exposed, the toxicity, et cetera.

As shale gas development increases, so do reports of illness.

Researchers are continuing to make progress in understanding health conditions associated with closer proximity, and they've identified four primary types of health outcomes in shale gas development.

The first is immediate acute effects, which appear in the nervous, respiratory, cardiac, and dermal systems.

The second is delayed effects, which occur after an accumulation of toxics in the body, or after a chemical interacts with an existing health condition.

Third is protracted effects, occurring from the body's inability to completely expel a toxic before another exposure intensifies it.

And lastly, chronic effects from neuro-toxins, carcinogens, and particulate matter. These effects typically result from long term exposures from substances. However, a single significant dose can precipitate the onset of disease.

Since the start of fracking, there have been many concerns about potential health impacts, which have led to several states and other countries imposing bans or moratoriums.

More than two dozen epidemiological studies have been conducted to examine poor health outcomes for those living in proximity.

There are now over 70 studies looking at specific health impacts for those in proximity, and many find similar conclusions.

Symptoms reported have included worsening or development of asthma, headaches, fatigue, upper and lower respiratory complaints, low birth weight, babies born with congenital heart defects or neural tube defects, heart failure, stress, anxiety, depression, and cancer.

So what does this really look like for an impacted family?

As an example, this is one report that is from the Department of Health's complaint logs.

A resident reported to the Department of Health high levels of methane were exiting from the [natural] gas line that was passing through their yard, specifically, measuring at 44.1 milligrams per liter, with the Department of Environmental Protection's action level at 7 milligrams per liter.

DEP conducted water testing and shared the information, at which point, the Department of Health expressed concerns that the identified levels of methane represent a fire and explosion threat.

The report specifically states, quote, "DEP stated the well cap has been loosely placed on the well to facilitate venting," but that, basically, there was nothing the DEP could do to correct the situation, since they did not know the source of methane.

DOH suggested the residents connect to municipal water, to which the residents informed them they could not afford to connect to city water and pay for its use.

No resolution is noted in this record.

This example is just one of so many stories of individuals who have been impacted by shale gas development.

More specifically, this was a complaint pulled from the redacted Pennsylvania Department of Health natural gas drilling log issue documentation, which predated the current oil and gas registry.

Sometimes when harm is evident, or the risk of harm is very high, public health institutions or officials will have to act with imperfect information.

We have seen this in public health responses throughout history, including most recently with COVID-19.

Public health institutions and legislators had to make decisions with knowledge known at the time to protect the health of the public.

Waiting for a new set of research studies which will not be ready for months or years can put community members at unnecessary risk if, instead, the exposure could be blocked long enough for public health officials to understand the problem and develop a possible remedy.

Pennsylvania's governmental bodies largely ignored this precautionary approach in the face of known and unknown exposures to shale gas development.

It is not too late to change this story; we can still take action to protect the health of Pennsylvanians and ensure a healthier future for all.

And there can be no mistaking that an enormous health burden is falling squarely on residents living in proximity to shale gas development.”

## **How Can We Do Better?**

**Alison L. Steele** (MBA, EHP’s Executive Director, outlines a framework for policymakers that, if incorporated, would go a long way toward helping to protect the health of Pennsylvanians from the harmful effects of shale gas development--

“So Beth has provided an overview of the decisions and actions on the part of state government that got us to where we are today.

And McKenzie has described the growing body of knowledge pointing to the health harms associated with shale gas development, and why the policy decisions we've summarized have real public health consequences.

I'm going to wrap up with what the state can be doing better to understand the risks, understand what happened and what could have been done better, and how to move forward with a more health protective approach to shale gas development in Pennsylvania.

And I do wanna note that while this [\[white\] paper is Pennsylvania](#) specific, these lessons can be applied anywhere.

So in examining the gap between what happened and what could have happened, we identified four key areas that need attention from decision makers, starting now.

And those areas are equity, transparency, authority, and accountability.

And one or more of these was missing from each of the examples that Beth and McKenzie provided earlier, and I'll go into a little bit of what each of these ideals means to us.

So the first is equity.

We know that communities hosting any type of infrastructure, whether it's well pads, pipelines, power plants, processing facilities, petrol chemical hubs, waste facilities, these communities need to have some kind of say in the process, including not only where and how these activities happen, but if a project is going to happen at all within their borders.

Based on our own conversations over the years, we know that residents from these communities have frequently expressed that they had little opportunity to voice their concerns, or that it was too late to do anything by the time they knew decisions were being made.

Government agencies need to provide a more widely available, easy to use resource for residents to identify upcoming projects and mobilize around shared concerns.

And there absolutely has to be a stronger effort on the part of the government to incorporate those concerns into the decision making process.

The playing field is not level, and it is the responsibility of government to protect the health and welfare of all of its residents, starting by creating ways to ensure equity for marginalized communities.

And that brings us to the second point of transparency.

We also know that if a state agency or other government body opens an investigation or conducts monitoring, which, currently, is a rare occurrence, there's very little visibility into what information is gathered, who's examining it, or how it is used in the decision making process.

For example, simply going through a performative step of conducting air quality monitoring is not enough.

Very often, when air quality monitoring happens, the monitoring net is too wide, or the monitors aren't placed in locations where they can gather useful information, or the data gathered is then averaged over days or even weeks, missing critical information that could be very important in assessing the situation.

So this kind of data collection needs to be happening with an eye toward human health impact, and it frequently is not.

Furthermore, the information needs to be shared in such a way that implications can be easily understood and accessed by people being impacted, and people making decisions that affect those being impacted.

The public health process gets its strength from gathering information about exposure factors.

If we don't know what chemicals are being put into the ground, what radioactive materials are coming out of the ground, what people are breathing or drinking or coming into contact with as part of their jobs, we, as public health professionals, can't do our jobs.

There needs to be better information and better access to it. There needs to be access to what's currently known, what still isn't known, who in the government is making what decisions based on that information, and what the health implications are of those decisions.

And that brings me to the next pillar of this framework, which is authority.

There are agencies designed to protect public health and our natural resources. And, particularly with the State Department of Health, they have not been given the resources or even the authority to do that work effectively.

EHP was called in the 2020 Grand Jury report on fracking as having stepped in to gather data and provide guidance where the Department of Health did not. [[Read more here.](#)]

And to be fair, we know that these agencies are limited by the directives they receive from the governor, and the funding they receive from the state legislature, but our elected officials in Harrisburg, who are, at the end of the day, public servants, need to understand the concerns of their communities, and respond accordingly.

And once again, it should not be the responsibility of impacted residents to be fighting this fight, but we do need to ensure that there are people in government who are educated on these issues and will work to protect Pennsylvanians.

And in order to do that, they need to be able to grant the appropriate authority and resources to the premier public health agency of the state.

Imagine, if you will, a well-funded and well-staffed government agency with the bandwidth to respond to concerns, to go out to sites and analyze, collect and analyze air and water samples where people are experiencing adverse health outcomes, and provide better education and guidance that references research being done on this subject.

That picture looks very different from what we have right now.

And so finally, that brings us to our last point of accountability.

We know that policy makers in Harrisburg have not been held accountable for the decisions that Beth described at the beginning of the webinar, much as industry operators are not being held accountable for various actions tied to health impacts that McKenzie described a few minutes ago.

We know that there needs to be a better support mechanism for residents who do choose to flag violations from operators and log health concerns that they're experiencing, and that information needs to be put to use in order to help address incidents as soon as they happen, and hopefully, prevent future ones.

The limited resources that are currently available to the public on this front are poorly funded, and therefore largely unknown or hard to access.

We've heard stories from numerous residents who don't bother to attempt logging complaints because they feel like they have, in the past, not gotten a meaningful or timely response.

Many more residents don't even know what resources are available to them.

And so these trends lead to lost trust among residents who don't believe that there's a system in place that's going to protect them, and ultimately, violators aren't being held accountable for their actions.

There is some truth to that.

So ultimately, this is where widespread education about the health impacts of shale gas development is a critical piece of this solution, because the narrative has been influenced by industrial interests for so long that it shapes public perception of the issues.

Shifting this narrative means putting legislators in office who can craft bills to address oversights and push more health protections.

It means putting a governor in office who can provide clear mandates and resources to the agencies he oversees.

It means making sure that all public officials know that this issue has been serious and growing for far too long, and that it's still on track to get worse before it gets better.

Part of our push behind developing this white paper was to assemble a narrative from the past 10 plus years to help us understand how we got here.

And we've already received a lot of great feedback from people who are either new to the issue, or never saw all of the pieces assembled in this way, and, and this feedback comes from partner organizations and legislators alike.

And while this document provides a great primer on Pennsylvania's history with shale gas, and a great framework for how to move forward, these efforts cannot stop with the creation of a document.

We need everyone's help to take action and keep moving this effort forward.

Ways to do that include writing op-eds and letters to the editor, to help shift the narrative that has been so dominant for so many years.

It means making calls to your local representatives to let them know how you feel, and we saw this work to great effect this week in Allegheny County, as council members responded to what they were hearing from their constituents about fracking in county parks.

It also means sharing informational resources with concerned residents, and organizing groups who can then use that information to support their own efforts.

There are plenty of resources available on [the [Environmental Health Project's](#)] website: talking points, position statements, summaries of health studies, the white paper, and a comprehensive resource directory, which are all available for free, for your reference.

We recognize that every community's different, with its own unique challenges and priorities, and that one approach that works well somewhere, may not translate well somewhere else.

And so that's why we've kept this solution framework intentionally broad, because solutions may look different in different situations.

But these four pillars of equity, transparency, authority, and accountability are all representative of things that we're generally missing in what we saw related to policy making around shale gas development, and those are the areas where we all need to focus to correct this course.

Much like the various health studies that we list in the white paper, each one takes a different piece of the issue and, and contributes to a clearer picture of health harms.

Everyone here, everyone listening today, we each need to play our own parts and contribute to this broader effort, all while ensuring that everyone has a place at the table, that the groups that need support in elevating their voices are getting that support.

And all the while, EHP will be here keeping public health part of the conversation, and fighting for stronger protections.

One last thing I will leave you with before we move into the Q&A portion of the webinar is this final thought and request: we encourage you, as you take action, to let us know what you're doing, how it's going, what's working and what's not.

We hope that EHP's assembled resources and ongoing efforts can complement your own work, and if they are, we'd like to know how.

Effective advocacy by and for impacted residents requires a groundswell of support in order to combat the pervasive but false narrative that gas is the cleanest, safest, and most obvious solution to the energy, climate, and public health crises that we're facing.

We know that in order to protect public health, we need to support a just transition away from fossil fuels, and we know that the only way we're gonna be able to do that is together.

[Click Here to watch the video](#) of the entire webinar, including the Q/A on demand.

[Click Here for a copy of the EHP white paper](#) - "Pennsylvania's Shale Gas Boom: How Policy Decisions Failed to Protect Public Health and What We Can Do to Correct It."

For more information, visit the [Environmental Health Project](#) and [HealthFirstPA](#) websites.

### **Body Of Evidence Is 'Large, Growing,' 'Consistent' And 'Compelling'**

*The following testimony on unconventional shale gas development and health impacts was given to the [Senate Democratic Policy Committee on June 2, 2022](#) by **Brian S. Schwartz, M.D.**, Professor of Environmental Health and Engineering, Epidemiology and Medicine at [Johns Hopkins Bloomberg School of Public Health](#)*

*Dr. Schwartz is also the founding director of the [Geisinger Health System Environmental Health Institute](#) in Danville and affiliated with the [Geisinger Department of Population Health Sciences](#). Dr. Schwartz endorses the work of the Environmental Health Project in his comments--*

"Thank you, Senator. And I thank you all for the opportunity to speak here today.

I'm a professor in the Johns Hopkins Bloomberg School of Public Health. And I'm also appointed as a professor in the Department of Population Health Sciences at Geisinger in Danville, Pennsylvania.

And there at Geisinger, I am the founding director of the Environmental Health Institute, which we founded in 2007. And over the last 15 years, I've spent regular time in Danville.

We founded the Environmental Health Institute in 2007. So when this industry and its drilling took off in the late 00s, you know, 2009, 2010, we were sort of in the right place at the right time.

And we were charged with evaluating how environmental exposures could be affecting Geisinger's patients.

**I am a physician and an environmental epidemiologist, and I have led many studies of the fracking industry and health at Geisinger.**

**All of our studies are funded by the National Institutes of Health, which requires rigor and its funded science. And all of our research ideas are subjected to peer review before we're funded.**

Finally, I've read the [Environmental Health Project's report](#). I find it an excellent analysis, and I agree with its [findings and conclusions](#). [[Read more here.](#)]

## **Large-Scale Industrial Project**

I was asked to come here today to talk about the fracking industry and health.

**This industry is a large-scale industrial engineering project that involves a number of impacts on communities and their environments.**

It involves many steps over time, clearing land, building roads, preparing the surface, bringing in chemicals and large volumes of water, bringing in large and heavy equipment like drilling engines and compressor engines.

Then drilling and hydraulic fracturing. Receiving returned liquids and processing them at the surface. Receiving and processing gas at the surface.

Sending the gas through pipelines. And also a disposing of the waste stream.

And this requires monitoring of the safety of all of these steps.

Now, I'm using a shorthand calling this the fracking industry, but that's really kind of doing a disservice because that's just one short phase of this multi-phase and long-lasting industry.

**Over 10,000 wells are operating in the state. And so this illustrates the huge scale of the impact.**

**As we think about how this can affect health, we have to think about all these accumulating effects and how this can happen over time.**

## **What Do Communities Experience**

Now, what's a community's experience?

They experience truck traffic and their diesel exhaust emissions, transient workforces, air pollution, including volatile organic compounds, particulate matter, ozone, oxides of nitrogen and fugitive methane emissions.

There's often large withdrawals of surface water. There can be groundwater impacts with chemicals and ending up in groundwater near these operations.

Importantly, these operations are very visible, not only is there truck traffic, but there's odor and vibration and light and noise.

Many of these visible things can cause stress and people who live around these.

**And so what's important, as we think about health, is that we have a mix of exposures that can affect health in many ways.**

And these can be cumulative and increase in their effects over time for both acute, that is, short occurrence, and then chronic health effects.

### **Multiple Peer-Reviewed Studies**

And so, at this point there's quite a few studies. We've heard from the prior speaker about all the different studies that have been done.

My group at Geisinger now has nine peer-reviewed publications on fracking and health in top scientific and medical journals. [\[Read more here.\]](#)

These are peer-reviewed, which means that it's very difficult to pull a fast one on scientists because we have to respond to all of the comments that they provide to us after they review our manuscript before it is published.

The prior speaker spoke about distance, but when we look at fracking activity in communities, we're not only evaluating the distance, we're also evaluating the total number, the size of the wells in terms of the total depth and the gas production, the phase of the well development. And so it's not just about proximity.

We've studied a range of common, severe, and impactful health outcomes across the lifespan at virtually all ages.

**We've done both electronic health record-based studies and questionnaire-based studies.**

**In the electronic health records, we go into the electronic health records on millions of patients in the Geisinger system over 20 years, but only about 12 or 13 during this industry.**

We've studied asthma exacerbations. We find out when people with asthma went to the emergency room and went to get hospitalized and figured out what was going on in terms of fracking at that time.

We've looked at hospitalizations for congestive heart failure, adverse birth outcomes, including preterm birth, high-risk pregnancy, and birth weight.

We've looked at mental health in pregnant women and mental health diagnosis and treatment in adolescents, all with electronic health records.

So we know the date. We know when medications were prescribed. We know when testing was done. We know when diagnoses were obtained and provided by healthcare providers.

We've also done questionnaire-based studies and looked at a variety of symptoms like the other studies you heard about and have published several papers on nasal and sinus and headache and depression symptoms.

Many of the findings of our studies have been found before us or replicated by other investigators in Pennsylvania and other states.

Finally, this industry has fugitive emissions of methane and the burning of gas releases carbon dioxide.

And finally, many of the resources from this industry are going into plastics production.

And so all of these have very significant impacts on climate change. And climate change is happening now, it's affecting health now, and it's affecting the health of Pennsylvanians now.

**So this industry has local, regional, and global impacts on health. And I want to emphasize that our studies are of Pennsylvania residents.**

**And while Maryland and New York have prohibited this industry, the state with the most health studies has not. And that is Pennsylvania.**

### **Should We Believe The Findings**

**So I was asked-- is there enough evidence? And should we believe these findings?**

**I think we should believe these findings.**

In epidemiology and in public health, we look at the body of evidence. And the body of evidence is large, growing, and consistent.

Many people ask us to prove whether this industry is causing these problems, but epidemiologic studies cannot prove anything. We look at the body of evidence.

Don't forget that long after public health professionals concluded that cigarette smoking caused lung cancer, tobacco companies continued to claim that it had never been proven.

So this is just a common strategy used by industry to delay. And it is not a compelling reason not to act.

So why is the existing evidence compelling? Well, we have studies from many groups of independent investigators. We have studies using different study designs, including some that more formally evaluated causality using specific cause and effect frameworks.

There are studies from many parts of the United States, but as I said, most of the evidence is from Pennsylvania.

The studies that we have selected are biologically-plausible health outcomes where we study health outcomes that we do not expect could be affected by this industry.

We do not have to find anything, but when we pick outcomes that we believe could be, we do.

We find in our studies that as somebody's value of their unconventional natural gas development activity metric goes up, the risk or severity of the health outcome goes up.

And in epidemiology, we call this a dose response relation. And this is very important to find.

We also really evaluate the robustness of our findings.

As I often say, epidemiologists find stuff and then we try to make it go away. We try to control for cigarette smoking, and we try to control for other things. And if it goes away, we tend not to believe it.

**But all of our findings are very robust.**

**Finally, nothing else has changed in this region as rapidly as the fracking industry in the same time and places.**

**The industry criticizes our findings but offers no alternative explanation for how all of these various health outcomes could be caused by something else.**

**They have not offered any plausible alternatives. They just claim that there's no proof of causation.**

**But there's certainly enough evidence to act.**

As we've heard from prior speakers, we should be protecting public health.

As I said, the best studies on health impacts have been from Pennsylvania. And Pennsylvania has not acted.

And I'm here to tell you that there is sufficient evidence to act now.

Thank you.”

[Click Here for links to Geisinger research papers.](#) [Click Here to papers by Dr. Schwartz.](#)

[Click Here to read more about the Senate hearing.](#)

### **Related Articles:**

-- Senate Hearing: [Body Of Evidence Is 'Large, Growing,' 'Consistent' And 'Compelling' That Shale Gas Development Is Having A Negative Impact On Public Health; PA Must Act](#)

-- Environmental Health News: [Public Health In PA Ignored During Fracking Rush - Report](#)

-- New Penn State Study [Finds Runoff From Conventional Oil & Gas Wastewater Dumped On Unpaved Roads Contains Pollutants That Exceed Human-Health, Environmental Standards](#)

-- Oil & Natural Gas Facility [Health Impacts Assessment Bill Introduced In The House](#)

-- Environmental Health Project Profile: [Dr. John Stolz, Duquesne University - Monitoring Impact Of Shale Gas Extraction On Private Water Wells, Groundwater In SW PA \[PaEN\]](#)

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