

Testimony to House Democratic Policy Committee Hearing
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Good morning. My name is Jill Kriesky. I speak today on behalf of the Southwest Pennsylvania Environmental Health Project (EHP). I serve as its associate director. The EHP's office is located in McMurray, Pennsylvania, in Washington County. I thank the Committee both for its willingness to hold these hearings in order to increase its members' knowledge of the broad range of impacts that shale gas extraction is having on communities across the Commonwealth and for inviting EHP to participate. I will use my time today to, first, introduce you to the work of the Environmental Health Project, then to describe the health impacts we are seeing among the residents who have visited our office and their families. I will conclude with suggestions for ways in which the legislature can insure that the public's health is protected to the greatest extent possible where natural gas extraction occurs.

The Southwest Pennsylvania Environmental Health Project was established in 2011 with the mission of responding to the needs of individuals and communities in Washington County and southwest Pennsylvania for access to accurate, timely and trusted public health information and health services associated with natural gas extraction. Our team includes public health professionals, an occupational medicine physician, a toxicologist, community outreach specialists, and a media liaison.

We provide the services to residents of southwest Pennsylvania who are suffering symptoms that are plausibly associated with shale gas drilling in their communities. Our goal is to track and help residents to reduce exposures related to negative health outcomes as much as possible. A full menu of our services appears on our website, www.environmentalhealthproject.org. Here is a brief overview of some of them:

- Our nurse practitioner offers exams and consultations to people who think their health may be compromised by nearby gas drilling activities.

- Our health professionals provide referrals, help clients navigate the health care system and consult with environmental health specialists about residents' medical conditions.
- Our public health consultants provide targeted interventions including air and water monitoring, testing and filtration recommendations.
- Our health professionals and public health consultants collect and review HIPAA-compliant data on health symptoms plausibly related to shale gas extraction activities in SWPA.

It is this final activity – the collection of data on health symptoms – that bears further comment. Our nurse practitioner conducts comprehensive interviews with individuals about their health and the health of other family members who reside with them. Together with our team of public health practitioners, the toxicologist, and the occupational medicine physician, she evaluates this data along with information about the location of the nearby shale gas drilling activities, including drilling, fracking, and flaring, and the operation of condensate tanks, compressor stations, and pipelines. We find that almost half of the individuals and their families experience skin rashes or irritation and nausea or vomiting. Dermal symptoms are primarily found in families whose well water quality has changed since the onset of natural gas activity near their homes. More than a third report abdominal pains and difficulty with breathing or coughing. A smaller, but still significant number have had nosebleeds. Eye and throat irritation and headaches and dizziness are also common complaints. In our assessment, for all individuals presenting symptoms, there is a plausible pathway for air exposures from shale gas activities.

In addition, nearly every family on which we have collected data experiences stress or anxiety as a result of the gas industry activity occurring around them. Fatigue and sleep problems often coincide with stress and anxiety symptoms. EHP uses standard indices of community stress to assess personal and community health and to identify ways to respond to this prevalent problem.

In our most recent review of the data our team identified seven symptoms temporally related to shale gas extraction processes, with plausible pathways of exposure to toxins. These are: respiratory, dermal, eye irritation, stress, nausea and vomiting, headaches and neurological symptoms. Not every symptom is seen in every patient as exposures vary with different stages of extraction activity and with weather patterns. Also, individuals have varied levels of health and

sensitivity to chemicals, responding differently to exposures. The overall goal in this effort is to alert the medical community to the presence of these symptoms even while the specific modes of toxicity are still under investigation. We work to provide the most complete and detailed information available to health care providers so they can respond as quickly as possible to affected patients who live in close proximity to shale gas industry. We know of no other similar efforts at the state or federal level.

A related, important finding from our health intake interviews is that residents are finding that their farm and domestic animals are suffering significant health impacts that coincide with nearby gas extraction activities. Animals are more likely than humans to come into contact with fracking fluid or flowback water from walking on or laying in soil and wandering into or drinking water contaminated. Given these more direct exposures and their lower body weight, the animal skin irritations, gastrointestinal problems, spontaneous abortions, and even deaths reported by our clients are, perhaps, not surprising. But animals may serve as sentinels for humans in cases of toxic chemical exposures. They may be the “canaries in the coal mine.”

Details related to both our human and animal findings are on powerpoint slides attached to the printed copy of my remarks. I want to emphasize two points about the data we have gathered here. First, these are the facts. The data are objective observations, systematically collected by a certified nurse practitioner. They are not anecdotes reported by an anti-fracking advocate. Second, while only a few shale gas health impact studies have appeared in refereed journals to date, our findings are consistent with those in articles which have used both case study and survey methodologies to collect data. The citations for those studies are listed in the attached slides as well. In short, there is an increasing amount of verifiable evidence that gas extraction activities is plausibly linked to negative health impacts. In light of this information, the Commonwealth of Pennsylvania has the responsibility to take steps that will limit the exposure of its citizens to this potentially unhealthy industrial activity.

The Environmental Health Project believes that to protect Pennsylvanians’ health will require the state to support clinical and public health efforts to monitor and treat impacted residents. Specifically, we recommend the following:

- Pennsylvania should establish a Commonwealth-wide registry of individuals who report symptoms plausibly linked to shale gas drilling. Such data is invaluable to public health researchers, toxicologists, and physicians who seek to identify specific symptoms associated with exposures to various stages of the gas extraction process.
- The Department of Health should support provision of information and training for health care professionals who see patients with symptoms that may be related to drilling. The chemical exposures from this industry are not well-researched and -understood yet, and the typical primary care physician has neither the time nor resources to research the topic on his/her own.
- The Legislature should strengthen the public health protections in gas extraction areas. Prior to drilling, residents should be told what to do if an accident occurs, similar to the instructions given to workers. Further, there needs to be a direct and immediate notification of people who are living near drilling sites when accidents occur that release potentially dangerous chemicals into the environment.
- The Legislature should revise Act 13 in ways that will clarify and improve the ability of health professionals to diagnose and treat patients. It is crucial that the legislation be amended to require that companies engaged in hydraulic fracturing report the chemical composition of the produced and flowback water resulting from the process so researchers can identify what it is that humans and animals are exposed to when this liquid enters the nearby air, water, and soil pathways. In addition, the existing language which requires a physician treating an individual exposed to fracking chemicals to sign a confidentiality agreement before gaining access to proprietary chemical information should be repealed. The potential time delay and “chilling effect” are obstacles to the treatment of patients that are unacceptable in the face of the possible dangers posed to human health by this industry.
- Finally, at the same time it provides the resources for these immediate health-related needs, the state should contract with an appropriate academic research institution for the independent collection and analysis of exposure and symptoms data to provide a comprehensive understanding of the longer term health impacts associated with shale gas drilling because we see exposures to chemicals with long-term impacts in our work.

Again, I thank you for the opportunity to present today on behalf of the Southwest Pennsylvania Environmental Health Project. I will be happy to try to answer questions at the end of the panel presentations.



Health Symptoms Temporally Associated with Gas Drilling Activities

- Most common symptoms experienced by individuals and families evaluated by Denise DeJohn, CRNP

Symptom	% of Individuals
Skin rash or irritation	48%
Nausea or vomiting	45%
Abdominal pain	38%
Breathing difficulties or cough	41%
Nosebleeds	21%



EHP Pilot Data: Human Health Impacts

Other common complaints from our client population include:

- Anxiety/Stress
- Nervous system including headaches and dizziness
- Eye irritation
- Throat irritation



Animal Health Impacts

- At least 7 reported incidents of pets dying
- Respondents reported dogs getting "sicker" and then dying or disappearing
- One report of multiple goats, kids, and a horse dying unexpectedly.
- 2 goats had evidence of spontaneous abortions
- One dog had 2 litters which included stillborn pups
- At least 3 reports of dogs and cats throwing up regularly, reports of stray animals throwing up, and a cat with diarrhea
- Three reports of skin rash/irritation/hair loss
- Reports of chronic sinus infections and a report of a horse with a nosebleed



Our results are consistent with the following studies using survey (self-reported) and case study data:

- Investigating Links between Shale Gas Development and Health Impacts through a Community Survey Project in Pennsylvania, by N. Steinzor, W. Subra, and L. Sumi, **New Solutions**, Vol. 23, No. 1, 2013.
- Assessment and longitudinal analysis of health impacts and stressors perceived to result from unconventional shale gas development in the Marcellus Shale region, by K. Ferrar, J. Kriesky, C. Christen, L. Marshall, S. Malone, R. Sharma, D. Michanowicz, and B. Goldstein, **International Journal of Occupational and Environmental Health**, 2013.
- Impacts of Gas Drilling on Human and Animal Health, M. Bamberger and R. Oswald, **New Solutions**, Vol. 22, No. 1, 2012.