

Secretary Steven Chu, PhD  
Secretary of Energy  
United States Department of Energy  
1000 Independence Ave SW  
Washington, DC

Dear Secretary Chu:

On the other hand, President Obama's comments on hydrofracking for gas are deeply troubling for us. His own Energy Information Agency announced on Monday, January 23, 2012 that the estimate for natural gas reserves in Marcellus shale formations are cut by 66 percent from previous estimate of 410 trillion cubic feet of gas now reduced to about 141 trillion. The Agency also lowered its estimates for shale basins across the United States by 42 percent from 827 trillion down to 482 trillion. Your Agency estimated Marcellus reserves would meet U.S. gas demand for about 6 years down from 17 years in the previous outlook. (pg. 9 in EIA forecast). [http://www.eia.gov/forecasts/aeo/er/pdf/0383er\(2012\).pdf](http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2012).pdf)

Two weeks ago, New York State closed its comment period for the revised draft Supplemental Generic Environmental Impact Statement; consequently we have abundant, current information on the impacts and hazards of this technology and industry practices, some of which are attached. This information encompasses a range of issues and concerns. Some are specific to the NY rdSGEIS, other attachments provide data including health, environment, and financial information which are pertinent to the technology across the country and globe.

Being involved in the on-going, substantial, and un-resolvable problems in Pennsylvania's Susquehanna River Basin, and our substantive research and involvement in protecting the Delaware River Basin, which provides drinking water to almost 20 million people, we are deeply disturbed by the President's comments.

In Bradford County, the Susquehanna River Basin has an area of contamination from gas drilling that covers over 60 square miles and is running uncontrollably. The PA DEP fined Chesapeake \$900,000 for this "incident". Yet, no remediation measures have been taken for the 12 farm owners and multiple homeowners (probably many more are unreported or yet un-discovered) who have completely lost their clean water since the contamination started in September 2010. For the chronology and further information in this link please see: <http://www.damascuscitizensforsustainability.org/2011/11/gas-migration-into-the-susquehanna-river-and-surrounding-area/> This area and Dimock, (in Susquehanna County, PA) have experienced plummeting values of their homes, businesses and properties in addition to suffering health effects and extreme stress from the destruction of their water supplies. Situations of this sort may even cause a secondary mortgage crisis. See map of Bradford County, PA here: <http://66.147.244.96/~damascu5/wp-content/uploads/2011/11/BRADFORD-county-MAP-impacted-Water-wells-SEPT-262011.jpg>

Unfortunately, too many incidents such as these are happening across the country. These problems have inspired hundreds of grassroots groups and many communities that are seeking to protect themselves representing millions of citizens. In New York State alone, more than 100 civic, municipal, community and environmental groups are opposed to fracking. Attachment #15 shows an impressive and growing awareness of the hazards accompanying hydraulic fracturing.

We ask for an opportunity to discuss this information with you, and would like to meet as soon as possible.

Sincerely yours,

Barbara Arrindell, Director  
Joe Levine, Co-Founder  
Ruth Hardinger  
Damascus Citizens for Sustainability  
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cc: Barack Obama email and VIA webform  
James Kvaal-Policy Director  
Sen. Kristin Gillibrand

Sen. Chuck Schumer

Sen. Bernie Sanders  
Congressman Maurice Hinchey  
Gov. Jack Markell  
Gov. Chris Christie  
Gov. Andrew Cuomo  
Scott Stringer, Manhattan Borough President  
community organizations  
widely distributed

**List of some Studies and relevant Letters regarding Hydro-fracking for shale gas.** The title of each article and a quote from each attached article or letter is found below.

## Human Health

### 1. Resnikoff -- Radon in Natural Gas from Marcellus Shale By Marvin Resnikoff, Radioactive Waste Management Associates Executive Summary\* January 10, 2012

"A significant public health hazard associated with drilling for natural gas in the Marcellus Shale formation must be seriously investigated by the New York State Department of Environmental Conservation (DEC) [**and any other permitting agency**]. This hazard is from radioactive radon gas and the potential for large numbers of lung cancer among natural gas customers.

Unlike present sources for natural gas, located in Texas and Louisiana, the Marcellus Shale is considerably closer to New York consumers [**so more radioactivity would arrive in the consumers' homes**]. In addition, the radioactive levels at the wellheads in New York are higher than the national average for natural gas wells throughout the US."

1 -- <http://www.nirs.org/radiation/radonmarcellus.pdf>

### 2. Colborn -- Natural Gas Operations from a Public Health Perspective - PEER REVIEWED article. Printed: **Human and Ecological Risk Assessment: an International Journal** 2011 Copyright Taylor & Francis. available online at: <http://www.endocrinedisruption.com/chemicals.journalarticle.php> For a copy of the published article go to: <http://www.tandfonline.com/doi/abs/10.1080/10807039.2011.605662?prevSearch=colborn&searchHistoryKey=>

"The technology to recover natural gas depends on undisclosed types and amounts of toxic chemicals. A list of 944 products containing 632 chemicals used during natural gas operations was compiled. Literature searches were conducted to determine potential health effects of the 353 chemicals identified by Chemical Abstract Service (CAS) numbers. More than 75% of the chemicals could affect the skin, eyes, and other sensory organs, and the respiratory and gastrointestinal systems. Approximately 40-50% could affect the brain/nervous system, immune and cardiovascular systems, and the kidneys; 37% could affect the endocrine system; and 25% could cause cancer and mutations. These results indicate that many chemicals used during the fracturing and drilling stages of gas operations may have long-term health effects that are not immediately expressed. In addition,

an example was provided of waste evaporation pit residuals that contained numerous chemicals on the CERCLA and EPCRA lists of hazardous substances. The discussion highlights the difficulty of developing effective water quality monitoring programs. To protect public health we recommend full disclosure of the contents of all products, extensive air and water monitoring, coordinated environmental/human health studies, and regulation of fracturing under the U.S. Safe Drinking Water Act."

2 -- <http://www.endocrinedisruption.com/files/GasManuscriptPreprintforweb12-5-11.pdf>

### **3. Written Testimony of Conrad Daniel Volz, DrPH, MPH Before the Senate Committee on Environment and Public Works and its Subcommittee on Water and Wildlife, Joint Hearing ( US Congress) "Natural Gas Drilling, Public Health and Environmental Impacts", April 12, 2011**

"Unconventional gas extraction in deep shale deposits presents considerable risks to public health and safety as well as to environmental resources, particularly water quality and aquatic organisms. My testimony today will cover three critical public health and environmental policy areas related to unconventional natural gas production."

3 - [http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore\\_id=57d1bfd4-9237-488e-999f-4e1e71f72e52](http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=57d1bfd4-9237-488e-999f-4e1e71f72e52)

**4a. & 4b. Letter to Gov. Cuomo regarding need for Department of Health to** conduct a full assessment of the public health impacts of gas exploration and production. In New York State, the DEC did not include this information in the SGEIS. Press release regarding doctors request for health impact study.

4a -- <http://www.psehealthyenergy.org/data/lettertoGovCuomofinal.pdf>

4b -- [http://www.psehealthyenergy.org/data/Release\\_Medical\\_Authorites\\_Urge\\_Cuomo\\_to\\_Order\\_Health\\_Assessment\\_of\\_Fracking\\_final\\_10-5-11.pdf](http://www.psehealthyenergy.org/data/Release_Medical_Authorites_Urge_Cuomo_to_Order_Health_Assessment_of_Fracking_final_10-5-11.pdf)

### **5. American Lung Association Comments to health for the NY rdSGEIS**

"we believe that there is a very real and unacceptable risk that the air emissions will make people sick and could very well shorten the lives of those living in the communities where the extraction will take place...."

5 -- <http://www.lungusa.org/associations/states/new-york/pressroom/assets/dsgeis-comments.pdf>

### **5a - Rampant City Gas Leaks**

Living on Earth, Bruce Gellerman interview with Professor Nathan Phillips, Boston University, Center for Energy and Environmental Studies.

" ... delivering on natural gas's promise, and distributing trillions of cubic feet through a maze of millions of miles of pipelines is fraught with so many potential problems and real dangers that critics say: natural gas might be a bridge to far. .... Leaks in the gas distribution pipeline network costs billions of dollars a year in property damage, explosions kill people and methane contributes to

climate change. In fact, critics say so much more of the powerful greenhouse gas leaks into the atmosphere that, over the short term, natural gas may disrupt the climate more than oil or coal."

5a -- <http://www.loe.org/shows/shows.html?programID=12-P13-00002#feature3>

## Geology

### 6. Paul A. Rubin -- Report for the Delaware River Basin Commission Consolidated Administrative Hearing on Grandfathered Exploration Wells.

"In my professional opinion, vertical exploratory gas wells, as well as horizontal hydraulically fractured wells, create a high risk of contamination of the water resources of the Delaware River Basin. This risk exists not only at the time of drilling but also increases over time, because of a) the likelihood of failure of the well over time, b) the likelihood of eventual migration of toxic natural and drilling-related substances through extensive natural fractures that exist throughout the region, and c) the exacerbation of a) and b) above by natural or drilling-induced seismic activity."

6 -- [http://66.147.244.96/~damascu5/wp-content/uploads/2011/12/Rubin-Report\\_R1.pdf](http://66.147.244.96/~damascu5/wp-content/uploads/2011/12/Rubin-Report_R1.pdf)

### 7. Paul A. Rubin --- Comments on the Scope of the EPA's Proposed Study of Hydraulic Fracturing

Note: he is discussing the entire Appalachian Basin.

"Hydraulic fracturing of shale formations and related surface activities has the potential to permanently and irreparably harm ground and surface water resources in New York State. Extensive existing fracture and fault networks throughout the Appalachian Basin may provide upward pathways for contaminant and gas migration through geologic zones believed to be physically isolated, based on incomplete data. As a result, there are significant health and environmental risks associated with advancing horizontal gas drilling in Otsego County, New York and elsewhere in the Appalachian Basin."

7 -- [http://63.134.196.109/documents/10aug19\\_HydroQuestEPAComments.pdf](http://63.134.196.109/documents/10aug19_HydroQuestEPAComments.pdf)

### 8. Jacobi Tectonics -- Basement faults and seismicity in the Appalachian Basin of New York State. Peer Reviewed: UB Rock Fracture Group, Geology Department, University of Buffalo, The State University of New York, 876 NSC, Buffalo, NY 14260, USA Received 12 November 2001; accepted 26 April 2002

"Landsat lineaments identified by Earth Satellite Corporation (EARTHSAT, 1997) can be groundtruthed across the Appalachian Basin of New York State (NYS). Both fracture intensification domains (FIDs) and faults are observed in outcrop along the lineaments. Confirmation of deep structure associated with the surface structure is provided by both well log analyses and seismic reflection data (primarily proprietary). Additional faults are proposed by comparing the lineament locations with gravity and magnetic data. The result is a web of basement faults that crisscross New York State. By overlaying epicenter locations on the fault/lineament maps, it is possible to observe the spatial correlation between seismic events and the faults. Every seismic event in the Appalachian Basin portion of NYS lies on or near a known or suspected fault. It thus appears that not only are

there more faults than previously suspected in NYS, but also, many of these faults are seismically active."

**QUOTE** from linked Jacobi Tectonics report that is a singular compilation of data on faults and fractures in NY State. This type of compilation is not available for other states, but is referred to in Rubin's EPA paper [http://66.147.244.96/~damascu5/wp-content/uploads/2011/12/Rubin-Report\\_R1.pdf](http://66.147.244.96/~damascu5/wp-content/uploads/2011/12/Rubin-Report_R1.pdf) and the Hazen and Sawyer environmental assessment prepared for New York City [http://www.nyc.gov/html/dep/pdf/natural\\_gas\\_drilling/12\\_23\\_2009\\_final\\_assessment\\_report.pdf](http://www.nyc.gov/html/dep/pdf/natural_gas_drilling/12_23_2009_final_assessment_report.pdf) NYC page on drilling in its watershed (part of the Delaware River Basin) [http://www.nyc.gov/html/dep/html/press\\_releases/09-15pr.shtml](http://www.nyc.gov/html/dep/html/press_releases/09-15pr.shtml)

8. <http://freepages.genealogy.rootsweb.ancestry.com/~springport/pictures350/NYS%20-%20JacobiTectonics.pdf>

## **9. Hazen and Sawyer environmental assessment prepared for New York City**

The West-of-Hudson watershed is a pristine, largely undisturbed landscape, with only minimal industrial activities. These natural and land use factors combine to yield water of very high quality with little or no chemical contamination. Natural gas well development in the West-of-Hudson watershed at the rates and densities observed in comparable formations will be accompanied by a level of industrial activity and heightened risk of water quality contamination that is inconsistent with the expectations for unfiltered water supply systems." ES-2

9 -- [http://www.nyc.gov/html/dep/pdf/natural\\_gas\\_drilling/12\\_23\\_2009\\_final\\_assessment\\_report.pdf](http://www.nyc.gov/html/dep/pdf/natural_gas_drilling/12_23_2009_final_assessment_report.pdf)

## **10. NYC DEP Comments on the rdSGEIS submitted to DEC January 11, 2012**

Earthquakes are now occurring due to fracking

*"Although the WOH (West of Hudson) watershed infrastructure is located in a region of low seismicity, low seismicity does not necessarily mean that induced seismicity will not occur. (p. 30)*

These small events indicate active faults are likely present in the region and could be reactivated by HVHF. At the same time, these events indicate that our infrastructure can withstand limited occurrences of small scale seismic events. Our concern is the unknown impacts of repeated events, larger scale events, or the combination of the two, caused by widespread HVHF." (pg 8)

10. [http://www.nyc.gov/html/dep/pdf/natural\\_gas\\_drilling/nycdep\\_comments\\_on\\_rdsgeis\\_for\\_hvhf\\_20120111.pdf](http://www.nyc.gov/html/dep/pdf/natural_gas_drilling/nycdep_comments_on_rdsgeis_for_hvhf_20120111.pdf)

## **Greenhouse Gases and other topics**

**11. Robert W. Howarth - Some Scientific Failings with the Draft Supplemental Generic Environmental Statement** Statement submitted to the NYS DEC #5a applies here.

“In April of 2011, we published the first scientific analysis of the greenhouse gas footprint of shale gas that included methane emissions (Howarth et al. 2011). Subsequent analyses were published by Hughes (2011) and Wigley (2011), both well before the final version of the draft sGEIS was released. All three studies show that the greenhouse gas footprint of shale gas is worse than that for coal and oil, at time scales of at least 40 years following emission (Wigley 2011) and perhaps a century or longer (Howarth et al. 2011; Hughes 2011). See also Howarth & Ingraffea (2011) and Santoro et al. (2011) (Peer Reviewed [http://www.psehealthyenergy.org/Methane\\_and\\_the\\_Greenhouse-Gas\\_Footprint\\_of\\_Natural\\_Gas\\_from\\_Shale\\_Formations](http://www.psehealthyenergy.org/Methane_and_the_Greenhouse-Gas_Footprint_of_Natural_Gas_from_Shale_Formations) )

**This cumulative perspective is not being taken into account by many agencies, for example.** The New York State rdSGEIS makes no mention whatsoever of these studies.

11 -- [http://www.psehealthyenergy.org/data/Howarth\\_testimony\\_-\\_Oct\\_12,\\_2011.pdf](http://www.psehealthyenergy.org/data/Howarth_testimony_-_Oct_12,_2011.pdf)

## 12. Michelle Bamberger and Robert E. Oswald

IMPACTS OF GAS DRILLING ON HUMAN AND ANIMAL HEALTH Peer Reviewed article, Published in: NEW SOLUTIONS, Vol. 22(1) 51-77, 2012

“Because animals often are exposed continually to air, soil, and groundwater and have more frequent reproductive cycles, animals can be used as sentinels to monitor impacts to human health. This study involved interviews with animal owners who live near gas drilling operations. The findings illustrate which aspects of the drilling process may lead to health problems and suggest modifications that would lessen but not eliminate impacts. Complete evidence regarding health impacts of gas drilling cannot be obtained due to incomplete testing and disclosure of chemicals, and nondisclosure agreements. **Without rigorous scientific studies, the gas drilling boom sweeping the world will remain an uncontrolled health experiment on an enormous scale.**”

12 -- [http://www.psehealthyenergy.org/data/Bamberger\\_Oswald\\_NS22\\_in\\_press.pdf](http://www.psehealthyenergy.org/data/Bamberger_Oswald_NS22_in_press.pdf)

## 13. Elisabeth N. Radow - Homeowners and Gas Drilling Leases: Boon or Bust? PUBLISHED in the New York State Law Journal - Nov/Dec 2011 issue

“Gas companies covet the shale gas deposits lying under homes and farms in New York’s Marcellus Shale region and are pursuing leasing agreements with area property owners. Many homeowners and farmers in need of cash are inclined to say yes. In making their argument, gas companies reassure property owners that the drilling processes and chemicals used are safe. Yet aside from arguments about the relative safety of the extraction process are issues not often discussed, such as the owner’s potential liability and the continued viability of the mortgage. The property owner can be particularly vulnerable when the drilling process involves high- volume, horizontal hydraulic fracturing, or fracking.”

13 -- <http://www.nysba.org/AM/Template.cfm?Section=Home&ContentID=57132&Template=/CM/ContentDisplay.cfm>

## 14. Ronald E. Bishop -- History of Oil and Gas Well Abandonment in New York, submitted to the NYC DEP for the rdSGEIS

“Annual reports from the Division of Mineral Resources, New York State Department of Environmental Conservation over the last twenty-five years portray an oil and gas industry which has consistently neglected to plug most (89%) of its depleted wells. In this regards, the most recent record has been the worst: Plugging percentage rates ranged from 3.5 to 7.1% throughout the 2000's. Further, there is no program, existing or proposed, to periodically monitor and repair plugged and abandoned wells which have begun to leak.”

Similar problems exist in every other place where gas drilling with hydraulic fracturing occurs.

14 -- <http://catskillcitizens.org/learnmore/HistoryOilandGasWellAbandonmentinNewYork.pdf>

15. **Moratoria, Bans, Resolutions, compiled by Keuka Citizens Against Hydrofracking New York and Pennsylvania and A Sampling of Municipalities and Key Organizations in Varied Locations Opposed to Hydrofrack Drilling.**

**This inventory reports activity in the US as well as other countries.**

15 -- <http://marcellusprotest.org/bans-and-moratoria>

16. **Attached is a letter from a co-founder of Damascus Citizens for Sustainability which is focused primarily on the Delaware River Basin.**

Abundant information is also available on our web site: <http://www.damascuscitizensforsustainability.org/>

16 -- <http://www.damascuscitizensforsustainability.org/2012/01/letter-from-joe-levine-to-nys-dec/>

**Financial issues:**

17. **Deborah Rogers, financial analyst, speaking on youtube:** [http://www.youtube.com/watch?feature=player\\_embedded&v=bYzU4bEfJ5U#!](http://www.youtube.com/watch?feature=player_embedded&v=bYzU4bEfJ5U#!)

18. **New York Times, Ian Urbina Drilling Down Series**  
[http://www.nytimes.com/interactive/us/DRILLING\\_DOWN\\_SERIES.html](http://www.nytimes.com/interactive/us/DRILLING_DOWN_SERIES.html)  
**financial information:** <http://www.nytimes.com/2011/06/26/us/26gas.html>

19. **Hydrofracking Offers Short-Term Boom, Long-Term Bust**

*By Jannette M. Barth. published in ENR New York, March 7, 2011*

"Regarding the promise of economic prosperity, studies funded by the gas industry are flawed. They ignore the fact that 70% of gas rig jobs in Pennsylvania are going to people from out of state, according to Laura Fisher, senior vice president of the Allegheny Conference on Community Development. Drilling operations typically involve numerous transient workers, who send earnings to their families in their home states. ....

Although communities could see a short economic boom, independent and academic studies conclude that regions that have encouraged extractive industries experience relatively high poverty and unemployment rates in the long term. Other independent studies show limited multiplier impacts on local economies and any positive impacts are likely to be short-lived."

19 -- [http://newyork.construction.com/opinions/viewpoint/2011/0307\\_HydrofrackingOffers.asp](http://newyork.construction.com/opinions/viewpoint/2011/0307_HydrofrackingOffers.asp)

also see: youtube of talk by Dr. Jannette Barth: **Economic Impact of Gas Drilling in the Marcellus Shale Don't Jump to Conclusions**

<http://www.youtube.com/watch?v=hJxJQBCK9-o>

**19a. A Balance Sheet for New York State: What is New York State's Net Equity from Shale Gas Development?** Prepared by Jannette M. Barth, Ph.D., January 4, 2012

19a -- [http://www.citizenscampaign.org/special\\_features/fracking/documents/CCSE\\_BalanceSheetHandout.pdf](http://www.citizenscampaign.org/special_features/fracking/documents/CCSE_BalanceSheetHandout.pdf)

## **20. Hardinger Letter to Gov. Cuomo re: rdSGEIS**

please see pages 2, 3 and 4 for financial issues and pages 9 and 10 for jobs of this letter and attachments.

"The business of natural gas is a powerful engagement between the stock markets and gas companies selling and buying assets and product. In the endnote here, a chart shows some of that activity. While this can be thrilling for the markets and stock holders, it mirrors the bundled mortgage market which collapsed the housing market a few years ago, there is substantial evidence that this industry's markets carve the same paths of over-exuberance." (quote from Hardinger letter attached)

20 -- <http://www.damascuscitizensforsustainability.org/2012/01/letter-from-ruth-hardinger-to-governor-cuomo/>