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Governor of New York State
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Acting Health Commissioner Howard A. Zucker
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Dear Governor Cuomo and Acting Health Commissioner Zucker,

We, the undersigned physicians, nurses, researchers and public health professionals, write to update you on the alarming trends in the data regarding the health and community impacts of drilling and fracking for natural gas. The totality of the science—which now encompasses hundreds of peer-reviewed studies (Physicians Scientists & Engineers for Healthy Energy (PSE), 2014) and hundreds of additional reports and case examples—shows that permitting fracking in New York would pose significant threats to the air, water, health and safety of New Yorkers. At the same time, new assessments from expert panels also make clear that fundamental data gaps remain and that the best imaginable regulatory frameworks fall far short of protecting our health and our environment.

Concerned both by the rapidly expanding evidence of harm and by the uncertainties that remain, we urge you to adopt a concrete moratorium of at least three to five years while scientific and medical knowledge on the impacts of fracking continues to emerge.

Many of us have previously submitted official comments that highlight various studies and data that raise a range of concerns about impacts to public health. In light of such concerns, New York has wisely maintained a *de facto* moratorium. However, since the close of the last public comment period, the body of scientific studies has approximately doubled in size. Moreover, the pace at which studies are emerging has accelerated: the number of studies on the health effects of fracking published in the first few months of 2014 exceed the sum total of those published in 2011 and 2012 combined. (Mobbs, 2014).

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All together, these new data reinforce the earlier evidence, reveal additional health problems associated with drilling and fracking operations, and expose intractable, irreversible problems. They also make clear that the relevant risks for harm have neither been fully identified nor adequately assessed. While the scope of concerns and new information is far greater than this letter can accommodate, trends in the data include the following:

Evidence linking water contamination to fracking–related activities is now indisputable.

An investigation by the Associated Press has confirmed cases of water contamination in Pennsylvania, Ohio, West Virginia, and Texas (Begos, 2014). Fracking-related contaminants detected in water sources within the last twelve months include methane (Jackson et al., 2013), radium (Vengosh, Jackson, Warner, Darrah, & Kondash, 2014), arsenic (Fontenot et al., 2013), and hormone-disrupting substances (Kassotis, Tillitt, Davis, Hormann, & Nagel, 2014).

Reviewing the entirety of the evidence, the Council of Canadian Academies concluded, “A common claim. . . is that hydraulic fracturing has shown no verified impacts on groundwater. Recent peer-reviewed literature refutes this claim and also indicates that the main concerns are for longer term cumulative impacts that would generally not yet be evident and are difficult to predict reliably. . . . The most important questions concerning groundwater contamination from shale gas development are not whether groundwater impacts have or will occur, but where and when they will occur. . . .” (Council of Canadian Academies, 2014).

The structural integrity of wells can fail. These failures are common, unavoidable, and increase over time as wells age and cement and casings deteriorate.

According to industry data, five percent of wells leak immediately; more than half leak after 30 years (Brufatto et al., 2003). Data from the Pennsylvania Department of Environmental Protection show a 6 to 7 percent failure rate for new wells drilled in each of the past three years. The consequences of gas leaks include risk of explosion, drinking water contamination, and seepage of raw methane into the atmosphere where it acts as a powerful greenhouse gas (Ingraffea, 2013).

Drilling and fracking contribute to loss of well integrity. Drilling creates microfractures in the surrounding rock that cement cannot fill and so opens pathways for the upward migration of liquids and gases. Additionally, high pressure from repeated fracturing can deform cement, further raising the risk of leakage. Age-related shrinkage and deterioration cause cement to pull away from the surrounding rock, reduce the tightness of the seal, thus opening potential portals for contamination. According to one expert panel, “the greatest threat to groundwater is gas leakage from wells from which even existing best practices cannot assure long-term prevention” (Council of Canadian Academies, 2014).

The disposal of fracking wastewater is causally linked to earthquakes and radioactive contamination of surface water. It remains a problem with no solution.

As confirmed by the U.S. Geological Survey, deep-well injection of fracking waste has triggered significant earthquakes in Oklahoma (Sumy, Cochran, Keranen, Wei, & Abers, 2014). A team from Columbia University's Lamont-Doherty Earth Observatory reports similar findings in Ohio and demonstrates how injection of fracking waste can stress geological faults and make them vulnerable to slippage (Davies et al., 2014).

In the United Kingdom, Canada, Mexico and Ohio, geologists have also linked fracking itself to earthquakes (Godoy, 2014; The Canadian Press, 2012; Vukmanovic, 2011). Members of the Seismological Society of America warn that geologists do not yet know how to predict the timing or location of such earthquakes: "We don't know how to evaluate the likelihood that a [fracking or wastewater] operation will be a seismic source in advance." (Kiger, 2014). Researchers further warn that earthquakes can occur tens of miles away from the wells themselves. (Walsh, 2014)

Both the certainties and the uncertainties about the risk of earthquakes from fracking operations raise serious, unique concerns about the possible consequences to New York City's drinking water infrastructure from fracking-related activities. No other major U.S. city provides drinking water through aging, 100-mile-long aqueducts that lie directly atop the Marcellus Shale. Seismic damage to these aqueducts that results in a disruption of supply of potable water to the New York City area would create a catastrophic public health crisis.

At the same time, hauling fracking wastewater to treatment plants has resulted in contamination of rivers and streams with unfilterable radioactive radium (Nelson et al., 2014; Warner, Christie, Jackson, & Vengosh, 2013).

Air quality impacts from fracking-related activities are clearer than ever.

Air pollution arises from the gas extraction process itself, as well as the intensive transportation demands of extraction, processing and delivery. And yet, monitoring technologies currently in use underestimate the ongoing risk to exposed people, especially children (Brown, Weinberger, Lewis, & Bonaparte, 2014; Rawlins, 2014; University of Texas, 2014).

Fracking-related air pollutants include carcinogenic silica dust (Moore, Zielinska, Pétron, & Jackson, 2014), carcinogenic benzene (McKenzie, Witter, Newman, & Adgate, 2012), and volatile organic compounds (VOCs) that create ozone (Gilman, Lerner, Kuster, & de Gouw, 2013). Exposure to ozone—smog—contributes to costly, disabling health problems, including premature death, asthma, stroke, heart attack, and low birth weight (Jerrett et al., 2009).

Unplanned toxic air releases from fracking sites in Texas increased by 100 percent since 2009, according to an extensive investigation by the Center for Public Integrity, InsideClimate News and the Weather Channel (Morris, Song, & Hasemyer, 2014).

We are alarmed that Utah's formerly pristine Uintah Basin now appears on the list of the nation's 25 most ozone-polluted counties (American Lung Association, 2014). Indeed, total annual VOC emissions from Uintah Basin fracking sites are roughly equivalent to those from 100 million cars (Lockwood, 2014). Questions about possibly elevated rates of stillbirth and infant deaths in the area have prompted an ongoing investigation (Stewart & Maffly, 2014).

Community and social impacts of fracking can be widespread, expensive, and deadly.

Community and social impacts of drilling and fracking include spikes in crime, sexually transmitted diseases, vehicle accidents, and worker deaths and injuries (Ghahremani, 2014; Gibbons, 2013; Healy, 2013; Hennessy-Fiske, 2014; O'Hare, 2014; Olsen, 2014). A new investigation by the Associated Press found that traffic fatalities more than quadrupled in intensely drilled areas even as they fell throughout the rest of the nation (Associated Press, 2014).

The Multi-State Shale Research Collaborative's new report, "Assessing the Impacts of Shale Drilling: Four Community Case Studies," documented economic, community government and human services impact of fracking on four rural communities. Among the findings: the advent of fracking brings a rapid influx of out-of-state workers and attendant costs for police, emergency services, road damage, medical and social services. At the same time, increased rent costs bring shortages of affordable housing (Multi-State Shale Research Collaborative, 2014). As medical professionals, we know that these kinds of social impacts bring health consequences, especially for low-income single mothers and their children.

Industry secrecy contributes to unsettled science

Even as evidence of harm continues to emerge, reviews of the science to date note that investigations necessary to understand long-term public health impacts do not exist. Medical and scientific organizations and groups of scholars in the United States, England, Canada, and Australia have, very recently, acknowledged the legitimacy of public health concerns and called for high-quality, comprehensive health studies (Adgate, Goldstein, & McKenzie, 2014; Coram, Moss, & Blashki, 2014; Council of Canadian Academies, 2014; Kovats et al., 2014).

These recommendations echo those made earlier by the U.S. Government Accountability Office. In 2012, the GAO pointed out that drilling and fracking clearly pose "inherent environmental and public health risks." And yet, "the extent of these risks...is unknown" due to lack of serious study of the long-term, cumulative impacts (U.S. Government Accountability Office, 2012).

To explain why science is missing in action, we emphasize the obstacles faced by researchers seeking to carry out the needed research. Specifically, as independent observers have noted, “the gas industry has sought to limit the disclosure of information about its operations to researchers” (Sadasivam, 2014), and prolifically uses non-disclosure agreements as a strategy to keep data from health researchers, among others (Efstathiou Jr. & Drajem, 2013).

Nevertheless, important studies continue to fill research gaps and build a clearer picture of the longer-term and cumulative impacts of fracking. Many such studies currently underway will be published in the upcoming three–to–five year horizon. These include further investigations of hormone-disrupting chemicals in fracking fluid; further studies of birth outcomes among pregnant women living near drilling and fracking operations; further studies of air quality impacts; and further studies of drinking water contamination.

Just as medical professionals assert a sacred oath to ‘first do no harm,’ this is the proper course for New York State to follow in its decision about fracking. Indeed, Governor Cuomo, we hold you to your promise that fracking will not be allowed if the health of all New Yorkers and the quality of all watersheds cannot be protected. Amidst all the uncertainty, this much is very clear: based on the knowledge available to us now, the NYS Department of Health can come to no other determination except to say that this admirable and appropriate standard cannot be met.

Accordingly, and while critical ongoing studies are conducted, we urge that New York State take a leadership role in the nation by announcing a formal moratorium. Given the lack of any evidence indicating that fracking can be done safely – and a wealth of evidence to the contrary –we consider a three–to–five year moratorium to be an appropriate minimum time frame.

Finally, we believe that public health is best served by transparency and inclusiveness – particularly among those who stand to be affected. With a moratorium in place–and as more data on the impacts of fracking emerge–the state should open a comprehensive New York-specific health assessment process that engages and seeks input from the public and the independent medical and scientific community (Concerned Health Professionals of New York, 2013).

Sincerely,

[the list of signatories is on the following pages]

Full references available on the website, along with the latest edition of
COMPENDIUM OF SCIENTIFIC, MEDICAL, AND MEDIA FINDINGS
DEMONSTRATING RISKS AND HARMS OF FRACKING

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