

## NATURAL RESOURCES

## NY DEC Takes on Fracking

New York is one of a handful of states (others include New Jersey, Maryland, and North Carolina) that have banned hydraulic fracturing, or “fracking,” pending further study and scientific review. A key element of New York’s review is the Supplemental Generic Environmental Impact Statement (SGEIS), a 1,537-page document drafted by the state’s Department of Environmental Conservation (DEC).<sup>1</sup> The SGEIS was issued in September 2011 with a comment period scheduled to close December 12. No fracking permits have been approved in New York, and none will be until the SGEIS is finalized, according to Emily DeSantis, the DEC’s assistant director of public information.

DeSantis says fracking’s public health impacts were “fully considered” in the draft SGEIS. But a letter sent to New York governor Andrew Cuomo on October 5 and signed by more than 250 health and environmental professionals and groups claims otherwise.<sup>2</sup> “The SGEIS contains no human health assessment at all,” says Sandra Steingraber, a distinguished scholar in environmental studies and sciences at Ithaca College. In the letter, signatories including Steingraber asked the DEC to conduct a supplemental analysis of baseline human health status in New York, a systematic identification and review of direct and indirect health effects of fracking, a cumulative health impacts analysis, and potential measures to eliminate those impacts.

“Scientists increasingly say there aren’t enough baseline data to draw firm conclusions about fracking’s health risks,” says Christopher Portier, director of the National Center for Environmental Health and Agency for Toxic Substances and Disease Registry of the Centers for Disease Control and Prevention. “But work done at various sites by state and federal authorities suggests additional research and analysis is warranted.” (Portier was not a signatory to the letter.)

Fracking is a method for liberating natural gas from shale rock deep underground. It generates wastewater polluted with heavy metals, salts, radionuclides, and other hazardous compounds leached from subsurface rock. Anecdotal reports of illness related to fracking operations abound, but they aren’t tracked systematically such that scientists can investigate links to specific exposures, says Robert Sweeney, chairman of the New York State Assembly Standing Committee on Environmental Conservation. Sweeney has called on New York’s state agencies to establish a registry for monitoring allegations of health issues.

But Jeffrey Gordon, director of public affairs with the New York State Department of Health, says such a registry isn’t necessary. “[This department] already has several ongoing health registries, such as the cancer, birth defects, and heavy metals registries, and other ways to access health data—for instance, from hospital admissions,” he says. “The state and county departments of health will investigate complaints of exposure to chemicals used in [fracking].”

“DEC’s focus is on preventing exposure,” says DeSantis in response to the October 5 letter. “If there are no pathways of exposure in the first place, then adverse health impacts cannot occur.” The DEC recommends a 2,000-foot setback between fracking operations and public water supplies and proposes that watersheds associated with unfiltered water supplies to New York City and Syracuse—in addition to wildlife management areas and primary aquifers that supply groundwater for human consumption—be off limits to drilling.<sup>1</sup> State officials had no further comment on the letter or the degree to which human health concerns from fracking will be evaluated.

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assessment, human health, environmental fate and impact, risk assessment and risk management, and informatics and modeling. The emphasis on informatics and modeling, new for this update of the strategy, reflects the need for a way to organize the rapidly growing wealth of data on ENMs.

### Help for Disease-Stricken Coral Reefs?

Coral reefs sequester carbon dioxide, support fisheries, protect the coastline from storms, and help generate tourism revenue. But reefs around the world are being compromised by changing ocean waters and further threatened by opportunistic pathogens such as *Serratia marcescens*, which causes white pox in Caribbean corals. Researchers have discovered that a cocktail of other bacteria isolated from Caribbean reef tracts, when administered under laboratory conditions, helped prevent white pox disease progression in the polyp *Aiptasia pallida*, a coral cousin and surrogate model for coral research.<sup>6</sup> The researchers believe it may be possible to use

beneficial probiotic-like bacteria as a tool for the proactive management of coral reefs.

### EPA Announces Final Plan to Assess Fracking Impact on Water

After months of public meetings and a review by the agency’s independent Science Advisory Board, the EPA recently announced its final research plan for hydraulic fracturing (“fracking”).<sup>7</sup> The study plan encompasses the full cycle of how water is acquired, used, and

disposed of during fracking. The initial research results and study findings will be released in 2012, with a final report expected in 2014.

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A natural gas rig near Rifle, Colorado.

## Artificial Food Color Additives and Child Behavior: Weiss Responds

<http://dx.doi.org/10.1289/ehp.1104409R>

The Food and Drug Administration's (FDA) response to my commentary (Weiss 2012) reflects the wide gulf between how the FDA translates "weight of evidence" into regulatory policy for artificial food colors (AFCs) and how it is translated into meaningful action on behalf of public protection.

The FDA essentially took the position that for a study to be considered as evidence of adverse effects, it must be totally free of uncertainties. The study by McCann et al. (2007) played a large role in provoking the FDA review, but for that study, like almost any epidemiological study, it would be difficult to meet that absolute criterion. It is why *Environmental Health Perspectives (EHP)* publishes so many such studies addressing the same question (e.g., air pollution). But isn't it fair to ask whether any of the negative AFC studies meet that criterion?

In their critique, the FDA faults McCann et al. (2007) because they characterized "... a treatment effect as adverse when it may, in fact, fall within the normal range of childhood behavior." This is an issue discussed over and over again in the pages of *EHP*. Take the example in my commentary (Weiss 2012), modeled on numerous publications in the lead literature (e.g., Lanphear et al. 2005): If developmental exposure to low levels of lead reduces a population IQ (intelligence quotient) by 3 points (3%), from, say, 100 to 97, it is taken as evidence of a major adverse effect. Both scores, of course, fall within the normal range. The same criticism is used by the FDA to dismiss the effect size calculations; that is, the altered behavioral activity seen in published data lies "... in the range of normal activity for children."

The FDA finds the study by McCann et al. (2007) lacking because the authors relied mainly on parental observations. A high proportion of child development research, in fact, enlists parents as observers; hundreds of validated inventories and questionnaires are based on parent ratings. They are the observers, of course, who see the most extensive samples of the child's behavior, especially with younger children. This is the reason I chose parental observations for my own food color study of young children (Weiss et al. 1980) and why we relied on parent ratings for our study of how phthalates mold play behavior in preschool children (Swan et al. 2010).

It is difficult to grasp the FDA argument that AFCs do not possess "inherent"

neurotoxic properties but may provoke neurotoxicity in susceptible subpopulations. Neurotoxicity is neurotoxicity.

The FDA does acknowledge that AFCs may be associated with adverse behavioral outcomes in some (unknown proportion of) susceptible children. As I note in my commentary (Weiss 2012), such a conclusion would prompt decisive action by the U.S. Environmental Protection Agency. Why not the FDA?

I was pleased to hear that the FDA noted the need for further research. My question remains: What parent or institutional review board (IRB) would be convinced that such research is without significant risk, given what we already know? If IRBs would hesitate, shouldn't that prompt the FDA to at least require warning labels on foods containing AFCs that are consumed mainly by children?

Finally, the FDA policy reflects a point of view that is endemic in federal regulatory policy toward potentially toxic chemicals. Namely, a chemical is innocent until proven guilty. Many environmental health researchers believe the proposition needs to be reversed. Some advocate adoption of the precautionary principle. Perhaps, if the FDA had required neurotoxicity testing, especially in young children, before allowing AFCs and other additives to be marketed, we would not be having this debate at all. Harvey Wiley, who became the FDA's first commissioner, recruited his legendary "Poison Squad" volunteers for precisely this purpose. That was in 1902.

*The author declares he has no actual or potential competing financial interests.*

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### ERRATUM

The December Science Selections articles "More Lack in the World" [*Environ Health Perspect* 119:A524 (2011); <http://dx.doi.org/10.1289/ehp.119-a524a>] and "Full of Beans?" [*Environ Health Perspect* 119:A525 (2011); <http://dx.doi.org/10.1289/ehp.119-a525b>] mistakenly reversed the page numbers for the associated research articles. The December Forum article "NY DEC Takes on Fracking" [*Environ Health Perspect* 119:A513 (2011); <http://dx.doi.org/10.1289/ehp.119-a513>] incorrectly suggested that the public comment period for the New York Department of Environmental Conservation's Supplemental Generic Environmental Impact Statement had already closed. *EHP* regrets the errors.

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