

Shale Gas Extraction and Health

- **Much evidence indicates that shale gas extraction, which uses high-volume hydraulic fracturing (HVHF), harms the health of local residents:**
 - (1) Much information exists on the serious health effects of the chemicals used in gas drilling.^{1,2,3}
 - (2) A 12/09 health survey in DISH, Texas found that more than half of the reported symptoms are consistent with the known symptoms from the toxins detected in an air pollution study.⁴
 - (3) Shale gas drilling creates ozone pollution, and a 3/09 study demonstrated that long-term exposure to low levels of ozone increases the risk of death from respiratory illness.⁵
 - (4) A comprehensive review by Witter in 2008 found great potential for health and psychological problems in Colorado residents living near gas development, but little data to analyze. Witter recommends thorough health studies of people living near intensive gas extraction.^{6,7}
 - (5) Hundreds of stories exist of high numbers of people living near gas wells developing serious health problems, such as rare cancers, neurological disorders, and impairment of motor skills.^{8,9,10} The anecdotes are accumulating to a total that requires much denial to ignore.
- **Many fracking chemicals are endocrine disrupters:** Of the 201 specific fracking chemicals identified by the Endocrine Disruption Exchange, 20% are generally accepted endocrine disrupters—chemicals that affect our hormonal systems, interfering with sexual development, immune function, and reproduction.¹¹ Effects occur at extremely low exposure levels of parts per million or billion in air, water, or soil.
- **Health effects of many chemicals to be used in HVHF in NY are not known:** In addition to not knowing the effects of many known chemicals (Draft SGEIS, pp. 5–61 & 5–64), there are 45 products to be used for which DEC has incomplete ingredients (Draft SGEIS, Table 5.3) and 40 compounds whose ingredients are unknown because they are mixtures (Draft SGEIS p. 5–34).
- **26 chemicals¹² to be used in HVHF in NY are classified as hazardous waste, but are not handled as hazardous:** 26 chemicals listed in the SGEIS, pp. 5–45 through 5–52, Table 5.6, are listed as hazardous under sections of one or more of the six major federal environmental laws.¹³ Because of gas industry exemptions, however, they do not need to be treated as hazardous once they come out of a well.
- **A large-scale scientific analysis determining the rates of serious health problems associated with shale gas drilling and HVHF should be done before it is allowed to proceed anywhere:** A study of the rates of serious health problems, such as cancer, respiratory illness, nervous system disorders, birth defects, and developmental disorders, of people living near intensive gas drilling activity is urgently needed. The results should be used to help determine if HVHF is safe enough to be used at all.

“If any one of these....chemicals were emitted or discharged from an industrial facility, reporting to the US EPA would be mandatory, and in most cases permits would require strict pollution limits and companies would be subject to specific cleanup standards. But because these same chemicals are used in natural gas drilling operations they are completely exempt from environmental reporting requirements, and their use is not controlled in any meaningful way.”¹⁴

HVHF has been used intensively in some areas for 10+ years. We need a large-scale, science-based study to determine the relationship between HVHF and serious health issues. It is irresponsible to allow HVHF in NY without knowing the effect it will have on the health of residents.

► **Existing evidence points strongly to HVHF causing serious health problems**

ENDNOTES:

- ¹ The Endocrine Exchange (TEDX) has done a lot of ground-breaking work in identifying chemicals in fracking fluid. An Excel spreadsheet with data on the chemicals they have identified is at <http://www.endocrinedisruption.com/chemicals.fracturing.php>
- ² *Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program* (SGEIS), pp. 5–61 to 5–65.
- ³ Whitty, Julia. Sept. 2, 2009. “How Diesel Exhaust Grows Cancer.” *Mother Jones*. <http://motherjones.com/blue-marble/2009/09/how-diesel-exhaust-grows-cancer>
- ⁴ Earthworks Press Release. Dec. 17, 2009. “Community Health Survey Shows Shale Gas Drilling Threatens Health.” http://earthworksaction.org/PR_DISH_HealthSurveyRelease.cfm
- ⁵ Maugh, T. H. March 12, 2009. “Low-level Ozone Exposure Found To Be Lethal Over Time.” *Los Angeles Times*. <http://articles.latimes.com/2009/mar/12/science/sci-ozone12>
- ⁶ Witter, Roxana, et al. Sept. 15, 2008. “Potential Exposure-Related Human Health Effects of Oil and Gas Development: A White Paper.” http://www.catskillcitizens.org/Gas_Drilling_health_2.pdf
- ⁷ Witter, Roxana, et al. August 1, 2008. “Potential Exposure-Related Human Health Effects of Oil and Gas Development: A Literature Review (2003–2008).” <http://www.ccag.org.au/images/stories/pdfs/literature%20review%20witter%20et%20al%202008.pdf>
- ⁸ Clarren, Rebecca. November/December 2006. “Voices from the Gas Fields.” *Orion Magazine*. <http://www.orionmagazine.org/index.php/articles/article/186/>
- ⁹ Earthworks. “Health Concerns in Colorado’s Oil and Gas Fields.” <http://www.earthworksaction.org/Colohealth.cfm>
- ¹⁰ Amos, Laura. “Hydraulic Fracturing: Family’s Water Well was Contaminated after Hydraulic Fracturing near their Home.” *Earthworks* website. <http://www.earthworksaction.org/cvLauraAmos.cfm>
- ¹¹ The Endocrine Disruption Exchange: <http://www.endocrinedisruption.com/chemicals.fracturing.php> and <http://www.endocrinedisruption.com/endocrine.introduction.overview.php>
Also: <http://www.tcgasmap.org/media/Dr.AdamLawDraftSGEISComments.pdf>
- ¹² **The 26 chemicals, and the number of laws listing them []:**
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|---|-----------------------|---|
| 2-Bromo-2-nitro-1,3-propanediol [1-TRI] | Ethyl Benzene [5] | Naphthalene [6] |
| 2,2-Dibromo-3-nitrilopropionamide (DBNPA) [1-TRI] | Ethylene Oxide [5] | Potassium Hydroxide [2] |
| Acetic Acid [3] | Ferrous Sulfate [2] | Sodium Hydroxide [3] |
| Acrylamide [5] | Formamide [1] | Sodium Sulfate [1] |
| Ammonium Bisulfate [2] | Formic Acid [5] | Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (Dazomet) [1] |
| Butan-1-OL [4] | Fumaric Acid [3] | Thiourea [4] |
| Diethylene Glycol [1] | Glutaraldehyde [1] | Xylene [6] |
| Dodecylbenzene Sulfonic Acid [2] | Hydrochloric Acid [5] | |
| | Isopropanol [2] | |
| | Methanol [5] | |
| | Monoethanolamine [1] | |
- ¹³ The Clean Air Act, Clean Water Act, Superfund Law (CERCLA), Emergency Planning and Community Right-to-Know Act (EPCRA), Resource Conservation and Recovery Act (RCRA), and the Superfund Amendments and Reauthorization Act of 1986 (SARA).
- ¹⁴ Environmental Working Group. June 10, 2008. “Colorado’s Chemical Injection.” <http://www.ewg.org/book/export/html/26648>