Local Food Production and Gas Drilling: Are they really compatible?

A compilation of articles, studies and websites that suggest that agriculture and industrialization due to natural gas drilling can not co-exist (at least while drilling is in progress, and perhaps beyond) if we want a healthy, sustainable, local food supply.

Prepared by Martha Goodsell
February 15, 2011
The Impacts of Natural Gas Drilling on Agriculture

- Foodshed concerns
- Food safety and inspections
- Livestock health
- Animal mortality and disposal
- Continuance of toxins through the food chain
- Fencing (or lack there of) where critical
- Chemical contamination and pollution pathways
- Mud and waste water disposal
  - Water quality
  - Water quantity
  - Radioactivity
- Ozone and VOC impacts
- Noise impacts

- Soils and farmland: contamination, compaction, fragmentation
- Shared driveways, rights of ways, pipeline crossings
- Reclamation, drainage and contouring
- Erosion and total dissolved solids
- Invasive species
- Landowner liability
- Legal fees and testing costs
- Insurance premium increases (if even available)
- Hauling fee increases
- Farm income (or loss) and property value decline
- Lost crops, markets and business opportunities
- Mortgages and loan hold ups
- Big rigs on public roads and municipal road use agreements
- Organic certification at risk
- Taxpayer investments in infrastructure
- Costs to the community
**FOODSHEDS**


[http://www.watertowndailytimes.com/article/20090927/NEWS02/309279956](http://www.watertowndailytimes.com/article/20090927/NEWS02/309279956)

Local Foodshed Mapping Tool for New York State. Cornell University Department of Crop and Soil Sciences.  
[http://www.cals.cornell.edu/cals/css/extension/foodshed-mapping.cfm](http://www.cals.cornell.edu/cals/css/extension/foodshed-mapping.cfm)


[http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=4290516&fulltextType=AC&fileId=S1742170508002433](http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=4290516&fulltextType=AC&fileId=S1742170508002433)

[http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=1091328&fulltextType=RA&fileId=S1742170507001767](http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=1091328&fulltextType=RA&fileId=S1742170507001767)


**FARM AND BUSINESS STATEMENTS**


Bartlett, Tim. Lexington Co-operative Market Concerned about Hydrofracking. Received via email Feb 10, 2011.  
[http://tech.groups.yahoo.com/group/NYFoodshed/message/95](http://tech.groups.yahoo.com/group/NYFoodshed/message/95)


[http://groups.yahoo.com/group/BuyLocalNY/message/1097](http://groups.yahoo.com/group/BuyLocalNY/message/1097)
FARMING AND NATURAL GAS IN THE NEWS


**FOOD SAFETY and LIVESTOCK HEALTH**


Jaffee, Ken. “So when cattle drink contaminated water, the USDA will act to protect the food supply, but when farmers’ drink contaminated water the EPA does nothing.” Email.


SHOW ME THE SCIENCE…

Adler, R. Toxicosis of Sheep Following Ingestion of Natural Gas Condensate. Department of Toxicology, Marion Merrell Dow, Inc., PO Box 68470, Indianapolis, IN 46268-0470 (USA). Veterinary Pathology January 1992 vol. 29 no. 1 11-20 http://vet.sagepub.com/content/29/1/11.refs


Veldre IA, Jänne HJ. Toxicological studies of shale oils, some of their components, and commercial products. Environ Health Perspect. 1979 Jun;30:141-6. PMID: 571802 Related citations

Waldner, C. L. and C. S. Ribble, E. D. Janzen, and J. R. Campbell. Associations between oil- and gas-well sites, processing facilities, flaring, and beef cattle reproduction and calf mortality in western Canada. Department of Large Animal Clinical Sciences, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Sask., Canada S7N 5B4. Department of Population Medicine, Ontario Veterinary College, University of Guelph, Guelph, Ont., Canada N1G 2W1 Received 6 September 2000; accepted 24 April 2001 Available online 5 July 2001.


FENCING REQUIREMENTS (OR LACK THEREOF)

Comparison of Oil and Gas Regulations for Safety and Security in the Intermountain West
http://www.oilandgasbmps.org/docs/Public%20Safety%20Comparison.pdf

ANIMAL MORTALITY and DISPOSAL

RISKS


http://www.theithacajournal.com/article/20101121/VIEWPOINTS02/11210317/Fracking-Let-039-s-Get-Real&template=artsemantics&server=MOC-WN0280

Cabot Oil and Gas Corporation. Form 10-K For the Fiscal Year December 31, 2009.

http://online.wsj.com/article/SB10001424052748703303904575293042591061542.html

http://groups.yahoo.com/group/Shaleshock/message/6629

PODGORNEY, Robert. POTENTIAL FOR AIR QUALITY TO LIMIT OIL SHALE DEVELOPMENT IN THE WESTERN UNITED STATES Idaho National Laboratory Arthur Rood, Idaho Falls. 2009.
www.oilshalesymposium.com/fileadmin/user_upload/.../PODGORNEY.pdf

SMITH, Vicki. 7 burned in W.Va. gas well blast likely to survive. KIDK June 7, 2010.


http://www.irrc.state.pa.us/Documents/SCDDocuments/Regulations/2857/COMMENTS_PUBLIC/Document-19441.PDF

SOILS and FARMLAND: Contamination, Compaction, Fragmentation

http://www.onepetro.org/mslib/servlet/onepetropreview?id=SPE-93666-MS&soc=SPE


Lacey, John. Email regarding farm fragmentation impacts. October 13, 2010. Archived at: http://www.mail-archive.com/sustainable_tompkins-l@list.cornell.edu/msg00440.html


New York State Department of Agriculture and Markets. Guidelines for Construction and Restoration at Natural Gas Well Drilling Sites in Agricultural Areas.


WATER QUANTITY


CONSUMPTIVE WATER USAGE

CHEMICALS USED
--- Fracking Chemicals To be Used in NY. Email from Elaine Perkus to NYRAD. October 5, 2010.


Colborn, Thoe. "Chemicals in Natural Gas Operations"- VIDEO. Available at:
http://www.endocrinedisruption.com/chemicals.videoplayer.php

POLLUTION AND PATHWAYS


Damascus Citizens. Toxic Chemicals Released During Oil and Gas Operations. Handout.
http://www.damascuscitizens.org/images/TOXIC CHEMICALS.pdf


DEP Bureau of Oil & Gas Management. “Stray Natural Gas Migration Associated with Oil and Gas Wells.”


Northrup, James L. “The Unique Environmental Impacts of Horizontally Hydrofracking Shale Gas.”


Oil and Gas Accountability Project. Pathways and Sources of Contamination. EARTHWORKS | 1612 K St., NW, Suite 808 | Washington, D.C., USA 20006 http://www.earthworksaction.org/contaminantpathways.cfm

http://www.pittsburghgeologicalsociety.org/naturalgas.pdf

http://www.pressconnects.com/article/20100425/VIEWPOINTS02/4250308/1120/Gas+fracking+and+cement+cracking


WATER QUALITY


BIRKHOLZER, Jens T., ZHENG, Liange, SPYCHER, Nicolas, VARADHARAJAN, Charuleka, and NICO, Peter S.. GROUNDWATER QUALITY CHANGES IN RESPONSE TO CO2 LEAKAGE FROM DEEP GEOLOGICAL STORAGE. Geological Society of America Abstracts with Programs, Vol. 42, No. 5, p. 45 Earth Sciences Division,
WASTE WATER DISPOSAL


SLUDGE and DRILLING MUDS


---. “radionuclides and metals oxidizing and mobilizing in the black shale cuttings will be a potentially much bigger problem than radionuclides in flowback”. Email from geologist forwarded on MarcellusGasInfo list. December 17, 2010. 7:14 pm.


HEAVY METALS


K. Fytianos, E. Charantoni and E. Voudrias. Leaching of heavy metals from municipal sewage sludge. Environmental Pollution Control Laboratory, Chemistry Department, University of Thessaloniki, 540 06, Thessaloniki, Greece. Department of Environmental Engineering, Democritus University of Thrace, 671 00, Xanthi, Greece Environment International Volume 24, Issue 4, May 1998, Pages 467-475
HuYuan Zhang, Bao Wang, XingLing Dong, Lei Feng and ZhiMing Fan Leachability of heavy metals from solidified sludge From the issue entitled "Special Topic on Intelligent Manufacturing" Science in China Series E: Technological Sciences Volume 52, Number 7, 1906-1912, DOI: 10.1007/s11431-009-0124-2


RADIOACTIVITY


MALIZIA, Tracy et al. URANIUM GEOCHEMISTRY IN THE MARCELLUS SHALE: EFFECTS on METAL MOBILIZATION BANK. Geology, SUNY at Buffalo, 411 Cooke Hall, Buffalo, NY 14260, tlbank@buffalo.edu, Department of Geography, Geology, and the Environment, Slippery Rock University, Slippery Rock, PA 16057 Geological Society of America Abstracts with Programs, Vol. 42, No. 5, p. 502


US EPA. “Exemption of Oil and Gas Exploration and Productions Wastes from Federal Hazardous Waste Regulations.”


RADON and DRINKING WATER


RADIOACTIVITY AND THE FOOD CHAIN

Blanco RP, Vera TF, Lozano JC. About the assumption of linearity in soil-to-plant transfer factors for uranium and thorium isotopes and 226Ra. Departamento de Física, Facultad de Ciencias, Universidad de Extremadura, Badajoz, Spain.


Isam Salih MM, Pettersson HB, Lund E. Uranium and thorium series radionuclides in drinking water from drilled bedrock wells: correlation to geology and bedrock radioactivity and dose estimation. Department of Radiation Physics, IMV, Faculty of Health Sciences, Linköping University, Sweden. isam.salih@imv.liu.se Radiat Prot Dosimetry. 2002;102(3):249-58. PMID: 12430963 [PubMed - indexed for MEDLINE]


Rajaretnam G, Spitz HB. Effect of leachability on environmental risk assessment for naturally occurring radioactive materials in petroleum oil fields. University of Cincinnati, Department of Mechanical, Industrial, and Nuclear

Ozone and Volatile Organic Compounds


** – The abstracts of these studies support the concern about radioactivity in the foodshed; however, the entire paper is not written in a language I can read and understand.


NOx 2008 emission link: http://www.ahs2.dep.state.pa.us/eFACTSWeb/criteria_facilityemissions.aspx


Weiss, Jim. Components of Natural Gas and their density. Email to the NYGCG yahoo group. Thursday, September 23, 2010 10:21 PM. http://groups.google.com/group/nygcg---new-york-gas-coordination-group/browse_thread/thread/9e93b8d94e21a614/b4e63c1da337357?hl=en&link=gst&q=September+23#b4e63c1da337357f


Show me the science…


http://www.annualreviews.org/doi/abs/10.1146/annurev.py.27.090189.002145


http://www.eeb.cornell.edu/howarth/GHG%20emissions%20from%20Marcellus%20%20%20November%202010.pdf


ENDOCRINE DISRUPTORS:

http://www.sciencemag.org/content/308/5727/1466.abstract

Colborn, Theo, PhD. "What You Need to Know About Natural Gas Production" TEDX Vidoes.  
http://www.endocrinedisruption.com/chemicals.videoplayer.php


SILICA SAND AND DUST

MSDS Sheet. Canadian Sand and Proppants MSDS for Silica Sand Date Prepared Aug 2009

NOISE


**BATS, SONG BIRDS and BENEFICIAL INSECTS**


**ECONOMIC CONCERNS**


Coffman, Steve. “QUESTIONS YOU NEED TO ASK ABOUT HYDROFRACKING IN OUR FINGER LAKES.” http://www.preservethefingerlakes.com/id60.html


Slottje, Helen. “We know of no insurance carrier that would provide coverage in this instance.” http://un-naturalgas.org/weblog/2010/03/a-we-know-of-no-insurance-carrier-that-would-provide-coverage-in-this-instance/


HEALTH IMPACTS


Earthworks. Health Survey Results of Current and Former DISH/ Clark County Residents. Earthworks Oil and Gas Accountability Project.


Occupational Hazards in Oil and Gas Industry http://www.slideshare.net/mechportal/occupational-hazards


**GENERAL RESOURCES**

Arnold, Carl. “No Regulation Can….” Email sent November 15, 2010


Lewis, Kevin. “A Broad Look at the Environmental Issues of Natural Gas Drilling.”


Sullivan County Gas Drilling Research Task Force; PREPARING FOR NATURAL GAS DEVELOPMENT: UNDERSTANDING IMPACTS AND PROTECTING PUBLIC ASSETS; February 13, 2009


WATER WARS