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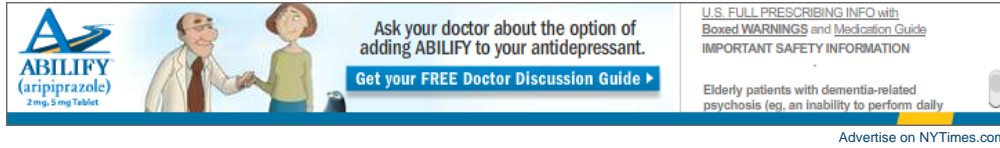
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Drilling Down Series

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Drilling Down

Articles in the Drilling Down series from The New York Times examine the risks of natural-gas drilling and efforts to regulate this rapidly growing industry.

Questions, additional information or related tips can be sent to urbina@nytimes.com.

Dec. 31, 2011 | On Thirsty Ground



Liaan Pretorius for The New York Times

Chris Hayward, a South African farmer, says, "If our government lets these companies touch even a drop of our water, we're ruined."

Hunt for Gas Hits Fragile Soil, and South Africans Fear Risks

By Ian Urbina

A plan to drill for natural gas in the Karoo region of South Africa would use millions of gallons of water in a drought-stricken area.

Graphic: Major Shale Gas Basins

Dec. 1, 2011 | Landowners and Landmen



Ruth Fremson/The New York Times

Learning Too Late of Perils in Gas Well Leases

By Ian Urbina

Americans have signed millions of leases allowing companies to drill for oil and natural gas on their land in recent years. But some of these landowners — often in rural areas, and eager for quick payouts — are finding out too late what is, and what is not, in the fine print.

Documents: Oil and Gas Leases and a Guide to Lease Terms

Oct. 19, 2011 | The Fine Print



Andrew Harrer/Bloomberg News

Rush to Drill for Natural Gas Creates Conflicts With Mortgages

By Ian Urbina

Worried about property values, and landowners signing leases giving companies the rights to drill on their lands without clearance, lenders are reinforcing restrictions.

Documents: Mortgages and Gas Leases
Graphic: Contamination From Drilling

Aug. 3, 2011 | Evidence Surfaces



Jim Wilson/The New York Times

A Tainted Water Well, and Concern There May Be More

By Ian Urbina

Industry executives as well as regulators have said that fracking has never contaminated underground drinking water. But there is at least one documented case.

Documents: A Case of Fracking-Related Contamination
Graphic: Contamination From Drilling

June 27, 2011 | Widespread Skepticism



Kathy Chruscielski

Behind Veneer, Doubt on Future of Natural Gas

By Ian Urbina

Energy companies have worked hard to promote natural gas as the fossil fuel of tomorrow, and they have found reliable allies in Washington. But not everyone agrees.

S.E.C. Shift Leads to Worries of Overestimation of Reserves
Federal Officials Quietly Question Shale Gas

June 26, 2011 | Natural Gas Investments



Brandon Thibodeaux for The New York Times

Insiders Sound an Alarm Amid a Natural Gas Rush

By Ian Urbina

As investment floods into shale wells, concerns about their productivity are spurring talk of a bubble.

Sweet Spots, But Not Many
Overestimating Natural Gas Production
Industry Privately Skeptical of Shale Gas

March 4, 2011 | An Agency's Limits



Kevin Moloney for The New York Times

Politics Seen to Limit E.P.A. as It Sets Rules for Natural Gas

By Ian Urbina

Amid pressure from the industry and Congress, federal regulators are divided over the scope of their powers, leading to limited enforcement and narrowed research.

- [Timeline of Lax Rules for the Natural Gas Industry](#)
- [The Debate Over the Hydrofracking Study's Scope](#)

March 2, 2011 | An Imperfect Solution



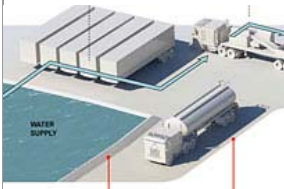
Alistair Fuller/Associated Press

Wastewater Recycling No Cure-All in Gas Process

By Ian Urbina

Though it has helped the natural gas industry reduce its wastewater, recycling has not eliminated all the hazards.

- [Politics, Recycling and Tracking of Natural Gas Waste](#)



Chemicals and Toxic Materials That Come With Hydrofracking

By MIKA GRÖNDAHL, BILL MARSH and GRAHAM ROBERTS

An interactive graphic of waste disposal and other hazards in drilling for natural gas.

February 27, 2011 | The Waste Problem



Todd Heisler/The New York Times

Regulation Lax as Gas Wells' Tainted Water Hits Rivers

By Ian Urbina

A method to extract more natural gas often produces wastewater laced with toxic substances.

- [Natural Gas's Toxic Waste](#)
- [Contaminants in Samples From More Than 200 Wells \(Microsoft Excel Spreadsheet\)](#)



Video: Natural Gas and Polluted Air

By Erik Olsen

A method to extract more natural gas often produces wastewater laced with toxic substances.

Toxic Contamination From Natural Gas Wells



Extracting Natural Gas From Rock

By GRAHAM ROBERTS, MIKA GRÖNDAHL and BILL MARSH

An interactive graphic looking at the process and hazards of hydraulic fracturing.

Related Coverage

- Jan. 29, 2012 [New Report by Agency Lowers Estimates of Natural Gas in U.S.](#)
- Dec. 9, 2011 [E.P.A. Links Tainted Water in Wyoming to Hydraulic Fracturing for Natural Gas](#)
- Nov. 24, 2011 [Officials Push for Clarity on Oil and Gas Leases](#)
- Aug. 18, 2011 [New York Subpoenas Energy Companies Over Claims About Gas Wells](#)
- Aug. 11, 2011 [Panel Seeks Stiffer Rules for Drilling of Gas Wells](#)
- July 30, 2011 [Regulators Seek Records on Claims for Gas Wells](#)
- June 29, 2011 [Lawmakers Seek Inquiry of Natural Gas Industry](#)
- May 6, 2011 [Chu Names Panel to Study Fracking](#)
- April 16, 2011 [Chemicals Were Injected Into Wells, Report Says](#)
- April 7, 2011 [Pennsylvania Calls for More Water Tests](#)

Annotated Documents



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Natural Gas's Toxic Waste

Over the past nine months, The Times reviewed more than 30,000 pages of documents obtained through open records requests of state and federal agencies and by visiting various regional offices that oversee drilling in Pennsylvania.



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Politics, Recycling and Tracking of Natural Gas Waste

The most significant documents on wastewater recycling, with annotations from The Times.



DOCUMENTS

The Debate Over the Hydrofracking Study's Scope

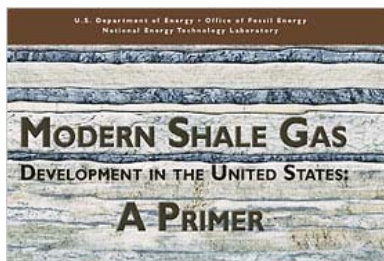
In 2010, Congress urged the Environmental Protection Agency to study the environmental impacts of hydrofracking. The study's findings may lead to changes to federal regulation of the industry.



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Industry Privately Skeptical of Shale Gas

Leaked industry e-mails and reports show growing concerns about a shale gas bubble.



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Federal Officials Quietly Question Shale Gas

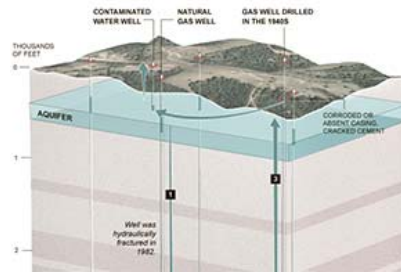
Hundreds of industry e-mails, internal agency documents and reports by analysts show disagreement among government officials and public cheering despite private doubts.



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Mortgages and Gas Leases

Questions have emerged from bankers, credit union officials, insurers, real estate experts and appraisers about the potential impacts that oil and gas leases on residential and farm mortgages.



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A Case of Fracking-Related Contamination

The Times reviewed several thousand pages of documents related to natural gas extraction, focusing on a case where hydraulic fracturing is believed to have contaminated a family's water well.



DOCUMENTS

Archive of Oil and Gas Leases

The Times collected over 110,000 oil and gas leases and related documentation through open records requests sent about hydraulic fracturing and land leases in more than six dozen counties in which the practice is common.

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