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Job Creation, Workers' Regulations and Health Concerns

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Introduction

Hydraulic fracturing, also widely known as “fracking,” has provided America with an energy boom over the past few years. It is a drilling technique used to extract natural gas by fracturing shale formations thousands of feet beneath the earth’s surface.

While the oil and gas industry created roughly one million job opportunities over the course of its developing years, workers’ safety has been a continuing concern in industries that deal with life-threatening tasks. In fact, as the fracking industry continues to grow, so too do concerns about worker’s conditions and their impact on towns whose residents have faced an inflow of workers and some problems particularly in areas where fracking sites have become more common.

Pennsylvania, for example, is a key state in drilling activity and although the Bethlehem region is quite distant from active drilling sites, the social impacts that come along with the industry are of concern to many who are also within miles of fracking regions.

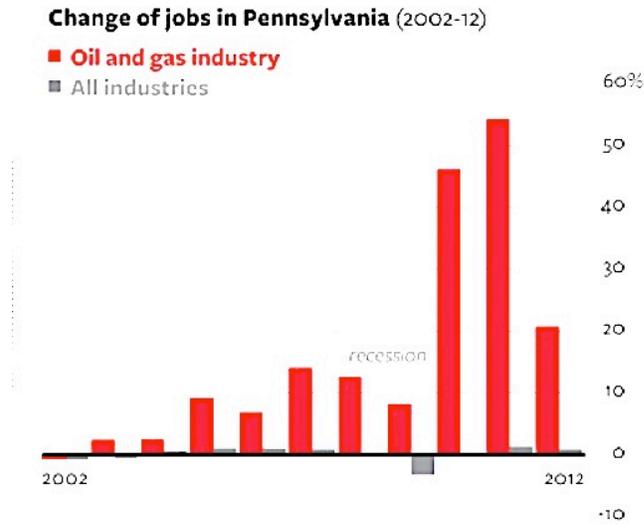
In essence, there are many other shale formations around the United States where drilling activity is on the go. For that matter, it is highly crucial for anyone to be knowledgeable about the end of the spectrum that affects humans in particular.

Discussion

While there are many job opportunities nationwide that come along with new fracking sites, many of them vary in how long they last and whether they are available for locals.

According to Tim Mullaney, a reporter for *USA Today*, “natural gas and oil exploration have created more than 1 million jobs in recent years [nationwide], with as many as 33,000 specifically from natural gas extraction through shale accounts” (2014, p.1). That includes jobs that are also indirectly associated with the shale boom from manufacturing products for drilling and steel for piping, to transporting the gas.

In just Pennsylvania, for example, a state that is at the center of the fracking boom, fracking has been responsible for over 200,000 jobs with just over 30,000 people employed by industries that are directly tied to the fracking boom, according to Tom Corbett, a former pro-fracking Republican governor of Pennsylvania (Foran, 2014).



Source: Bureau of Labor Statistics

Because there are many job opportunities arising that are also not directly associated with the industry, it is difficult to say for sure how many jobs fracking, in particular, has produced. Jobs created directly by fracking consist of natural gas extraction, well drilling, trucking, and engineering. Other specific on-site jobs include field supervisors, ‘treaters’ who are responsible for disposing fracking wastewater, and experienced fracturing equipment operators (Williams, 2014).

With the larger natural gas supply chain comes indirect jobs such as building roads and bridges for transporting the gas, lawyers and bankers who oversee the financing of corporations and regulate new businesses that emerge, and other positions at hotels, restaurants, and bars, which grow as a result of increased profit coming from oil and gas workers’ wages.

Nevertheless, as of 2012, many municipalities across the nation in New York, Vermont, California, Texas, Pennsylvania, and New Mexico have either banned or suspended drilling activity because they find it dangerous. In New York, for example, as of October 9, 2014, there are 80 municipal bans and 100 moratoria, with 86 movements for additional bans or moratoria (Fractracker Alliance, 2014). Moreover, with new pipelines being built and the developing technology, temporary jobs may decline as well, as there will not be a need for as much manual labor.

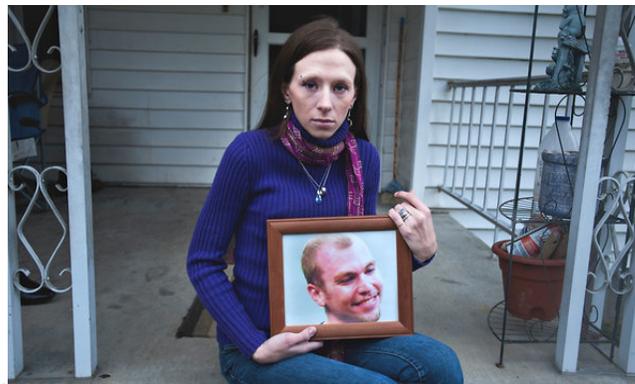
This moderation is also linked to how long the low-level jobs last. Jobs created for locals are short-term, part-time, and generally are for truck drivers, forest and road workers, and hotel and restaurant workers (La Valette, 2012).

Many of those who have been hired until today based on certain qualifications are subject to debate. An on-site job, as mentioned earlier, is “experienced” fracturing equipment operators. Certain companies, however, do not

require applicants to be experienced at all. Instead, some of the requirements listed under certain job ads include “a solid and stable work history,” “able to read, write, speak and understand English,” “able to work on a rotating shift: Days/Nights,” and “willing to work LONG hours,” (Equipment Operators Company, 2014).

Without a doubt, long working shifts pose many dangers for workers both on the site and on the road and has extremely pushed the limits of their safety. In 2012, Timothy Roth and his three friends began driving their truck after working 17 hours at a drilling site in Ohio. They had to drive four hours back to their drilling service company’s shop in West Virginia. Just 10 minutes from their destination the driver fell asleep behind the wheel and lost control of the truck, ultimately leading to Roth’s death (Urbina & Bennett, 2012).

It was not the first time that Roth had been in a car accident where the driver fell asleep behind the wheel after shifts of 20 hours or longer, 6 hours past the legal working limit before driving. Such truck accidents have caused hundred of deaths in the industry in the past decade, (Urbina & Bennett, 2012).



Crystal Roth, Mr. Roth’s wife, explains the troubled life of a fracking employee, New York Times, 2012

Motor vehicle crashes are, in fact, the leading cause of deaths in the industry with more than 300 oil and gas worker deaths in the past decade (Urbina & Bennett, 2012). Since the rise of the industry in 2002, fatality rates in the oil and gas industry have rose to “seven times the national average of all industries” (Urbina & Bennett, 2012). There are, however, other risks that come along with lack of employee education on exposure to chemicals, and how to prevent fatalities within the site.

The chemicals used in the fracking process, for example, pose great dangers for workers. Mike Saroghan, a reporter for the Environment & Energy Publishing, reported that the Occupational Safety and Health Administration, a federal agency otherwise known as OSHA, “believes that the current general industry standards inadequately address the unique hazards encountered during drilling” (2014). OSHA has tried to tighten regulations of gas and oil workers’ safety for years but the industry has been successful in preventing those attempts. As a result companies have been exempt from certain federal safety provisions such as machine safety rules called “lockout-tagout” or “LOTO,” which requires machines to be turned off

when getting repaired so that people, or their limbs, do not get caught in them (Soraghan, 2014).

Another standard derived by OSHA is called Process Safety Management, which is aimed at preventing industrial explosions. It requires employers to develop systems for dealing with hazardous chemicals, “including any use, storage, manufacturing, handling, or the on-site movement of such chemicals, or combination of these activities” (OSHA). However, this is another exemption the fracking industry does not have to comply with.

Early in February of 2014, a natural gas well in Green County, Pennsylvania, exploded when workers capped the leaking gas well. The disaster led to the death of a 27-year-old contract worker who left behind a fiancée pregnant with his child (Colaneri, 2014).

Lack of on-site training has also led to injuries caused by workers being struck by high-pressure lines and moving equipment such as cars backing up, or falling from heights. Such accidents occur because the industry is not required to follow other significant safety provisions. Employers, for example, need not monitor and test requirements for workers’ hearing safety at noisy sites. Nor do they need to abide by EPA’s Clean Water Act spill provisions “requiring chemical storage tank facilities to be fenced and locked” (Soraghan, 2014).

There also is an exemption of the Clean Air Act for a risk-management plan for sites with extremely hazardous chemicals (Soraghan, 2014). Many workers are not educated about the type of chemicals they are working with and the health risks those chemicals pose.

Health effects associated with chemicals in fracking fluid*

Chemical	Percent of volume	Skin, eye & sensory organs	Respiratory	Gastrointestinal & liver	Brain & nervous system	Immune	Kidney	Cardio-vascular & blood	Carcinogen	Mutagen	Developmental	Reproductive	Endocrine disruptor	Other uses	
Diammonium peroxodisulphate	29	■	■	■		■		■						bleach, laboratory cleaning	
Distillates (petroleum), hydrotreated light	17	■	■	■	■							■		kerosene	
Guar gum	15	■	■			■								food additive	
Tetramethylammonium chloride	9	■	■	■	■			■						chemical catalyst	
Vinylidene chloride/ methylacrylate copolymer	6	Not available		■	■									plastic wrap	
Methanol	5	■	■	■	■	■	■	■		■	■	■	■	fuel & chemical synthesis (formaldehyde)	
1, 2, 3 - Propanetriol	4	■	■	■	■		■	■						sweetener & preservative	
2,2',2"-nitrotriethanol	2	■	■	■	■	■	■	■	■			■	■	chemical manufacturing	
Sorbitol	2	■	■	■				■						sweetener & laxative	
Sodium tetraborate decahydrate	2	■	■	■	■		■	■			■		■	cleaning products & insecticides	
Sodium borate (borax)	1	■	■	■	■		■	■			■		■	cleaning products & insecticides	
Acrylamide-sodium 2-acrylamido-2-methyl-1-propanesulfonate	0.9	No health effects													
Ethoxylated branched C7-9, C8-rich alcohols	0.8	■	■											drilling	
Ethoxylated branched C9-11, C10-rich alcohols	0.8	■	■											industrial cleaning	
Sodium hydroxide (lye)	0.8	■	■	■										industrial cleaning	
Acrylamide-sodium 2-acrylamido-2-methyl-1-propanesulfonate	0.6	■	■	■		■								soap & textiles	
Ethoxylated propoxylated 4-nonylphenol-formaldehyde resin	0.6	■	■	■	■	■		■	■	■	■	■		various industrial uses	
Heavy aromatic naphtha	0.4	■	■	■	■					■	■			circuit board manufacturing	
Alcohols, C11-14-isoalcs, C13-rich, ethoxylated	0.4	■	■	■	■					■	■			gasoline & paint thinner production	
Alkylbenzyltrimethylammonium chlorides, benzyl-C10-16	0.4	Not available													
Magnesium silicate hydrate (talc)	0.3	■	■	■	■			■	■					chemical catalyst	
Poly(oxy-1,2-ethanediyl)	0.2	■	■	■		■								various industrial uses	
Alcohols, C12-13-alkyl, ethoxylated	0.2	■	■	■	■									baby powder	
Alcohol ethoxylate C-10/16 with 6.5 EO	0.2	■	■	■	■									pesticides	
Sodium chloride	0.1	■	■	■	■		■	■	■			■		pesticides	
Tetrakis(hydroxymethyl)phosphonium sulfate	0.1	■	■	■	■	■	■	■	■	■	■	■	■	chemical catalyst	
Non-crystalline silica	0.1	■	■	■	■	■	■	■	■					industrial cleaning	
Boric acid	0.0042	■	■	■	■	■	■	■	■			■	■	table salt	
	100.0%													electronics	
														insecticides	

* Dependent upon degree and route of exposure.

Benzene, for example, is a common chemical used in fracking fluid. It is an organic chemical compound that is mainly used as starting material in making other chemicals (American Cancer Society, 2013). It is classified as a carcinogen linked with “leukemia and cancers of other blood cells” (2013).

OSHA has specific standards for exposure to certain chemicals including benzene in any industry. These are called Permissible Exposure Limits, or PELs, which are regulatory limits on the amount or concentration of a substance in the air (OSHA). While the general exposure limit for benzene is 1 part per million, or ppm, (similar to about one inch in 16 miles), the limit at well sites are 10 ppm. “Oil and gas was exempted because exposure to the chemical was considered more likely to be a problem at refineries,” says R. Dean Wingo, a former assistant regional administrator of OSHA (Soraghan, 2014).

Just as breathing most chemicals in high doses can affect the nervous system, inhaling benzene for even a brief amount of time can lead to effects such as drowsiness, dizziness, unconsciousness, and confusion, all health defects that can lead to major injuries on the site.

Airborne dust from respirable crystalline silica, sand used during fracking, is another exposure for which workers must be protected. “Up to 4 tons of silica sand is transported to a single well site,” (Zrinski, 2014). Workers may be exposed to silica as they load sand that is delivered by truck into sand movers via a conveyer belt and while they add the sand into blenders with other fracking fluids before it is sent down wells under high pressures. The dust can, therefore, be released during any of the transporting, moving, and refilling into blenders process (OSHA n.a.).

Exposures to silica is known to cause “lung cancer, pulmonary tuberculosis, airways diseases, and autoimmune disorders (OSHA). Long-term exposures to silica (up to twenty years) can also increase the risk of developing a respiratory disease called silicosis. The most chronic form of silicosis causes difficulty in breathing while in “accelerated silicosis [the lungs begin to swell, which] occurs after exposure to larger amounts of silica over a shorter period of time (5 to 15 years)” (2014). The most extreme version of the disease, however, called acute silicosis develops when a person is exposed to very large amounts in a short amount of time. This causes “the lungs [to] become very inflamed and fill with fluid, [resulting in] severe shortness of breath and low blood oxygen levels (2014).

The National Institute for Occupational Safety and Health (NIOSH) collected 116 samples from 11 fracking sites across five states and “47% of them showed silica exposures greater than the calculated OSHA PEL,” (OSHA), approximately 0.1 mg/m³, with 9% of the samples 10 or more times the PEL.

Unfortunately, many low-level jobs on the fracking site continue to expose workers to noxious chemicals. Jose Lara, a former industry worker, had been working at fracking sites for six years. His job was to climb into and clean wastewater tanks, which he thinks was the cause of his pancreatic and liver cancer (Food and Water Watch). “Despite the noxiousness of the wastewater, Lara was not supplied with any protective clothing or gear nor was he briefed on the toxins he would be exposed to on the job” (Kelly, 2014). Jose Lara is now deceased.

Even with such dire cases as Jose Lara’s, companies are not held responsible for or penalized high enough to make them follow OSHA standards and regulations such as, “Section 5(a)(1) of the Occupational Safety and Health Act [which] places the responsibility for worker safety and health on the employer” (Stelmack, 2014). OSHA recommends many methods of reducing exposures to silica, benzene and other carcinogens. For one thing, contractors can enforce the use of protective gear among their workers. The companies could also monitor the air, improve their engineering controls, and provide for medical monitoring for their workers as general OSHA standards.

While most companies continue to ignore workers’ safety issues, some workers, on the other hand, are also disrespectful of the safety of citizens and the laws in areas they work. The fracking industry has also been the cause of debate over whether having workers come into new towns is causing local residents’ uneasiness.

Workers pouring in towns have led to many unwanted problems, overwhelming the law. Authorities of most states have stated that the “vast majority of workers streaming in are law-abiding,” but they do not refrain from adding that the “drilling industry has also brought with it a hard-working, hard drinking, rough-and tumble” group of men (Levy, 2011).

In Bradford County, one of Pennsylvania’s most heavily drilled areas, the rush of men from Texas, resulted in increased rates of “arrests, traffic violations, protection-from-abuse orders and warrants issued for people who don’t show up in court,” noted law enforcement officials (Levy, 2011). Officials from other towns have also complained of the rise in theft, violence, sexual assaults, drug abuse, bar fights and abduction. A 23-year-old pipe inspector from Lafayette, La., who was found drinking in a bar says, “We definitely do drink a lot. I ain’t going to lie” (Levy 2011).

According to Holly Richmond, reporter for Grist Environmental News, fracking has led to a greater number of sexually transmitted diseases, drug-related crimes, and sexual assaults in areas where the oil and gas industry sets up shop (2013).

The social impacts of the industry are, indeed, an addition to the poor reputation the industry has been building. Perhaps rates of increasing crime will decrease in coming years with fewer job opportunities as fracking technology develops, causing fewer demand for manual labor. Regardless, workers’ safety and

working conditions on sites continue to be a growing issue as companies in the industry fight any attempts to protect workers put forth by OSHA.

Citizens can have a great impact on pushing for an improvement in regulating workers' safety by being actively informed and advocating for stricter on-site safety guidelines. The government will only take into consideration citizens' outlook if the public is consistently alert and outspoken.

Stakeholder Interview

Mark Stelmack is OSHA's area director of the Wilkes-Barre Area Office, a region busy with drilling sites. In that capacity, he manages a full service area office consisting of 15 employees tasked with carrying out duties of the Occupational Safety and Health Administration and enforcing the Occupational Safety and Health Act in a jurisdictional area consisting of 20 counties in Pennsylvania (Stelmack, 2014).

1). What do you think are the most concerning health risks that workers face on fracking sites?

It has been the experience of this office that exposure to respirable crystalline silica to be a very concerning health risk to workers on these sites. Employee exposure to silica above permissible limits has been encountered on many fracturing sites inspected by the Wilkes-Barre office. Workers also face risk from chemical exposures and high noise levels among others.

2). What do you think workers in the oil and gas industry can do in terms of protecting themselves of possible dangers if protection is not provided?

Section 5(a)(1) of the Occupational Safety and Health Act places the responsibility for worker safety and health on the employer. With respect to health hazards encountered on gas sites (as with any worksite) OSHA would expect an employer to work through a hierarchy of controls to protect employees. If a chemical must be used, OSHA would look for an employer to utilize engineering controls to reduce exposures. If the application of all feasible engineering controls does not adequately reduce exposures, the second tier would be the application of administrative controls. Finally, personal protective equipment may be utilized if all feasible engineering and administrative controls still fail to reduce exposures adequately.

3). How effectively, do you think fracking sites are responding to concerns about workers' conditions and health risks?

I believe that hydraulic fracturing contractors are similar to any other industry in regard to employee safety and health. Some companies are more proactive than others. In general, I think the industry is making gains in improving conditions and reducing exposures to employees. OSHA enforcement and outreach efforts throughout the country have highlighted the need for better protections on

hydraulic fracturing sites, in particular, protection against respirable crystalline silica. Industry experts have stepped up their efforts to develop and implement the engineering controls needed to reduce employee exposures to silica and other hazards. The use of ventilation systems and modification to dust producing operations are becoming more prevalent on these sites. While there remains much work to be accomplished before this hazard is eliminated, everyone appears to be moving toward that goal.

4). Considering OSHA’s attempts of trying to tighten regulations for workers in the oil and gas industry for years, and the current problems workers are facing, why/how to you think the industry has been successful in preventing those attempts?

They do have some exceptions to some of the rules depending upon what stage the process is at. For the actual drilling process, I believe they are exempt from lock-out-tag-out and some of the other rules. Why and how that happens is not something that happens at the area office level.

5). What do you think is the future of the industry, in terms of job creation and regulations?

The industry in general is always looking to increase the technology that they utilize. I don’t have any statistical information that would show technological advances in this particular industry resulted in the loss of jobs or any less jobs being available.

I think, just like any industry, if regulations are proposed that they [the industry] do not feel that they could comply with or that it would be an undue burden, they are going to argue against it. There is a new silica rule that is being proposed currently that may fall into this category even though data shows that the proposed rule would greatly benefit employee health. That said, should the proposed silica rule become final, I am confident that both government and industry will work to achieve compliance for the sake of employees.

Key Profiles

Jon Ostroff

Jon Ostroff is the founder and president of the Pennsylvania-based Ostroff Injury Law firm, founded in 1993. He works closely with workers reporting injury cases in the oil and gas industry and has the “record and experience to take on the rich fracking companies” and have them compensate for workers that have been injured under their responsibilities. On his law firm website, there are links to reporting cases and more information on how to contact the firm.

<http://frackinginjurylaw.com/fracking-lawyer/>

OSHA

The Occupational Safety and Health Administration is an agency of the U.S. Department of Labor. It has aimed to improve worker’s protection laws in many

industries across the United States. Since the establishment of the agency in 1971, “workplace fatalities have been cut by 62 percent and occupational injury and illness rates have declined 40 percent” (OSHA). OSHA’s website includes many links to in-depth information about regulations, enforcement, data and statistics, and many more with additional contact information of local regional offices.

<https://www.osha.gov/html/RAmap.html>

State Senator Jim Ferlo

Jim Ferlo has been serving as Pennsylvania’s State Senator since 2002. He is a Democrat representing the 38th Senatorial District comprised of parts of the City of Pittsburgh (Ferlo, 2013). Since the start of the shale gas industry in Pennsylvania, he has advocated for a “more cautious approach for natural gas extraction” (Ferlo, 2013). In 2013, he issued a press release announcing a fracking moratorium legislation known as the Natural Gas Drilling Moratorium Act. For more information on the regarding senate bill and Senator Ferlo’s contact information, please visit <http://www.senatorferlo.com/press-release-senator-ferlo-announces-fracking-moratorium-legislation>.

Emily Husser

Emily Husser graduated from the University of Denver and has been working with JF Kiely Service Company in the Emmaus, Pennsylvania region as an Environmental/Project Coordinator since April 2012. She has also formerly worked as an environmental inspector at Utility Line Service and as a geologist at Earth Engineering Inc. As project coordinator of Kiely, she oversees the operations carried out on fracking sites and makes sure they are properly conducted. She can provide additional hands-on information about what goes on at fracking sites.

(ehusser@jkiely.com)

More Useful Websites

- This OSHA website includes links to certain operations that are carried out during oil and gas well drilling and the potential hazards that come with these operations. The links also include a set of easy-to-understand points on how to avoid hazards that workers may face and corresponding images that provide additional guide.

<https://www.osha.gov/SLTC/etools/oilandgas/drilling/drilling.html>

- Food and Water Watch is a nonprofit consumer organization that aims to safeguard clean water and food in the United States. Its members have conducted an extensive research on the social costs of fracking in Pennsylvania. The unique case study explains in depth their findings on fatalities in the oil and gas industry, social disorder crimes, and sexually transmitted diseases along with their recommendations on further research to determine the long-term social impacts of fracking.

<http://www.scribd.com/doc/170377773/The-Social-Costs-of-Fracking>

- The following link includes an image of a timeline prepared by Paul Horn of Inside Climate News that outlines how the industry may be exempt from a certain federal law. This short article talks specifically about how the Environmental Protection Agency went about classifying most oil and gas waste as non-hazardous.
<http://insideclimatenews.org/news/20141006/how-oil-gas-waste-became-exempt-federal-regulation-timeline>
- Randy Moyer, a frack worker, tells about his four months of experience on a fracking site where his job was to clean tanks and wastewater from contaminated wells. In this four-part video, he explains how his health has been affected (part 1 & 2), the conditions he worked in (part 3), and the illegal dumping going on at the site he worked for (part 4).
(Part1)https://www.youtube.com/watch?v=d8bvo2UVqRY&list=UUyiBQW_M82BcKS3IJF71bQ
(Part2)https://www.youtube.com/watch?v=Ge7BfAx_bL4&index=6&list=UUyiBQW_M82BcKS3IJF71bQ
(Part3)https://www.youtube.com/watch?v=DYNqk8IRLCE&index=5&list=UUyiBQW_M82BcKS3IJF71bQ
(Part4)https://www.youtube.com/watch?v=xqn3wY9f2Pk&list=UUyiBQW_M82BcKS3IJF71bQ&index=4
- Inside Energy is an environmental news reporting website on the energy industries that power America. This series of articles provides information on oil and gas worker safety issues, fatality rates, which states have the leading numbers in worker injuries, and all about the “Dark Side of the Boom” in the oil and gas industry. <http://insideenergy.org/series/dark-side-of-the-boom/>
- Frackcident is an injury law firm that focuses on personal injury cases and aims to help frack workers and neighbors in fracking regions since 1993. The sublinks provide useful information on royalty fraud, chemicals, environmental risks, equipment, and worker safety in the oil and gas industry. There is also an additional link where workers who have been injured at fracking sites can report their case and learn more about lawsuits. <http://frackinginjurylaw.com/fracking-lawsuits/why-is-worksites-safety-such-a-low-priority-in-the-fracking-industry/>

Additional Useful Information

- <http://exploreshale.org>
- <http://www.nytimes.com/interactive/2011/03/01/us/chemicals-and-toxic-materials-in-hydrofracking.html>
- https://www.osha.gov/dte/grant_materials/fy10/sh-20839-10/hierarchy_of_controls.pdf
- <http://www.fracktracker.org/2014/05/worker-safety/>

<http://www.marcellus.psu.edu>

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