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Hydraulic Fracturing Litigation: The Case of Jessica Ernst & the Problem of Factual Causation

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HYDRAULIC FRACTURING LITIGATION: THE CASE OF JESSICA ERNST & THE PROBLEM OF FACTUAL CAUSATION

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ABSTRACT: Modern hydraulic fracturing technology and horizontal drilling have made it possible and profitable for oil and gas companies to extract natural gas from underground shale and coal formations that would otherwise be inaccessible. Horizontal drilling, in particular, has enabled oil and gas companies to turn under-producing reservoirs into profitable extractive sites. However, despite its technological achievements and economic efficiencies, hydraulic fracturing is not without controversy. One of the main concerns is the potential for groundwater contamination. While experts disagree, the preponderance of evidence suggests that hydraulic fracturing can and has resulted in the unintended toxic contamination of nearby groundwater sources. In the United States, hydraulic fracturing litigation is on the rise, and numerous lawsuits have been filed by landowners against oil and gas companies and regulatory agencies in negligence, nuisance, trespass and the rule in Rylands v. Fletcher for the alleged contamination of their groundwater. In Canada, only one such lawsuit has been filed: Ernst v. EnCana Corp. Common law remedies have proved to be unattainable for most plaintiffs in these cases. The uncertain underground geological consequences of hydraulic fracturing make establishing factual causation a significant legal hurdle. A strict regulatory system that imposes a presumption of liability on oil and gas developers is necessary to encourage safe extractive practices and protect the legal interests of landowners.

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I. INTRODUCTION

Hydraulic Fracturing (or 'fracking') litigation is on the rise.[1] In the United States, it is now common for plaintiffs to allege that hydraulic fracturing processes have contaminated groundwater sources.[2] The primary purpose of this paper is to examine the common law remedies available to plaintiffs in these cases. I argue that the common law, because of the requirement of factual causation, is inadequately equipped to provide redress to plaintiffs in these cases. A more proactive approach, through strict regulation, is necessary to protect people and the environment in the face of presently uncertain geological effects of hydraulic fracturing.

In Part II, I will briefly outline the historical origins of hydraulic fracturing, its modern day uses, and the controversy surrounding the practice. In Part III, I will survey contemporary fracking cases and suggest that as a practical matter, plaintiffs will have more success in holding oil and gas companies to account when groundwater contamination is not at issue. In Part IV, I will analyze the pioneering Canadian case of Ernst v. EnCana Corp. and argue that the plaintiff, Jessica Ernst, faces a near insurmountable task in establishing the requirement of factual causation in her pending action against the EnCana Corporation. Finally, in Part V, I will argue that, because of the element of factual causation, tort law is ineffective and cannot achieve its functions (compensation, vindication, punishment, and deterrence) in hydraulic fracturing groundwater contamination cases. A strict regulatory system that imposes a presumption of liability in cases of hydraulic fracking is required.

II. HYDRAULIC FRACTURING

A. A Brief History of Hydraulic Fracturing

Hydraulic fracturing is a technique used to increase oil and gas production from underground oil or gas-bearing rock formations through the injection of high-pressure fracking fluid that fractures reservoir rock, thus releasing trapped natural gas or oil.[3] The fracturing fluid is comprised of water, chemicals, and propping agents such as sand.[4] The propping agents are used to ensure that the fractures created remain propped open after the pressurized injection of the fracturing fluid stops, thus allowing hydrocarbons (e.g., crude oil or natural gas) to flow to production wells.[5] Today, fracking is a very common well-stimulation

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[1] Barclay R. Nicholson, *Analysis of Litigation Involving Shale and Hydraulic Fracturing Litigation*, NORTON ROSE FULBRIGHT, at 1 (2014).

[2] *See* Blake Watson, *Hydraulic Fracturing Tort Litigation Summary*, U. DAYTON SCH. OF L., at 32 (2012).

[3] Envtl. Prot. Agency, *Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States*, 3-2 (2016), EPA/600/R-16/236Fa..

[4] William Cranch, et al., *Responding to Landowner Complaints of Water Contamination from Oil and Gas Activity: Best Practices*, HARVARD L. SCH. EMMET ENVTL. LAW & POL'Y CLINIC AND THE ENVTL. POL'Y INITIATIVE, at 9 (2014).

[5] Envtl. Prot. Agency, *supra* note 3, at 3.2.

technique. In the United States, the jurisdiction that first made use of this technology, some 80,000 wells have been drilled as of 2005,[6] and it is estimated that "over 90 percent of all oil and gas wells . . . are hydraulically fractured."[7] In more appreciable terms, it is estimated that more than fifteen million Americans now live within one mile of a fracking operation.[8]

While hydraulic fracturing is a relatively novel process (having its origins in the 1948 Kansas oil fields),[9] the process of fracturing subsurface rock formations to stimulate underground resource production began as early as the late 1800s,[10] emerging shortly after the beginning of the United States oil boom.[11] Around this time, oil producers were keen to find a solution to the problem of anemic oil wells.[12] Colonel Edward Roberts, a Civil War veteran, developed what would come to be known as the 'Roberts Petroleum Torpedo': the first fracturing technology. The process at that time involved lowering an explosive device (collection of nitroglycerin-filled canisters) into the base of a well and then detonating it to fracture the rock and allow the oil to flow more easily.[13] Roberts claims to have come up with the idea while serving in the Army of the Potomac at the Battle of Fredericksburg,[14] where, in the midst of battle, he observed cannonballs (fired underwater) shatter and break up stone canals.[15] Roberts' subsequently developed 'torpedoes', and though these were met with initial skepticism by well operators, they were ultimately adopted by industry. The technology was demonstrated to have the potential to more than quadruple a well's daily production of oil.[16] This process was colloquially termed 'well-shooting', and despite its associated dangers, was largely successful in breaking up oil-bearing formations to stimulate well production and to increase total resource recovery.[17] While this technology allowed operators to extend the production life of a well, the unrefined technology left much to be desired in terms of truly maximizing a well's productive capacity.[18]

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[6] Jolie Schamber, *Utilizing Home Rule: The Case for Restricting Hydraulic Fracturing at the Local Level*, 31 J. ENVTL. L. & LITIG. 35, 36 (2005).

[7] Allan Ingleson & Tina Hunter, *A Regulatory Comparison of Hydraulic Fracturing Fluid Disclosure Regimes in the United States, Canada, and Australia*, 54 NAT. RESOURCES J. 217, 221 (2014).

[8] Schamber, *supra* note 6, at 36.

[9] Craig Miner, *Discovery! Cycles of Change in the Kansas Oil and Gas Industry*, at 218 (1987).

[10] Carl T. Montgomery & Micheal B. Smith, *Hydraulic Fracturing: History of an Enduring Technology*, J. PETROLEUM TECH., Dec. 2010, 26, 27.

[11] Andrew Nikiforuk, SLICK WATER, at 32 (2015).

[12] *Id.*

[13] *Id.* at 33.

[14] Charles A. Whiteshot, *The Oil Well Driller: A History of the World's Greatest Enterprise*, THE OIL INDUSTRY 755 (The Acme Publ'g Co., 2d ed. 1905).

[15] Nikiforuk, *supra* note 11, at 33 (Roberts noticed that the water "damped" the concussion of the cannonball and forced the energy out "in a butterfly like formation" that fractured the structural integrity of the canal's stone).

[16] Whiteshot, *supra* note 14, at 755.

[17] Montgomery & Smith, *supra* note 10, at 27.

[18] Nikiforuk, *supra* note 11, at 37-8.

In 1949, hydraulic fracturing first emerged as a technology that could further maximize well production.[19] Stanolind Oil injected 1,000 gallons of naphthenic-acid-and-palm-oil (napalm) thickened with gasoline down a wellbore to stimulate a gas-producing limestone formation 2,400 feet beneath the surface.[20] While the productive capacity of this particular well did not significantly improve, in the first year of widespread commercial hydraulic fracturing treatments, 332 wells were 'treated' and the average production increase was around 75%.[21] This marked a turning point in oil and gas extraction in that it allowed industry to target and extract resources from unconventional reservoirs.[22]

Today, modern hydraulic fracturing technology and horizontal drilling have made it possible and profitable for oil and gas companies to extract natural gas from underground shale and coal formations that have historically been inaccessible.[23] Since 1950, in the province of Alberta alone, approximately 171,000 wells have been drilled for the purposes of hydraulic fracturing.[24] Horizontal drilling, in particular, has allowed producers to turn uneconomic reservoirs into economically viable ones.[25] The prevalence and use of this technology has enabled one horizontal well to produce natural gas at a rate of approximately twenty conventional vertical wells and at a fraction of the capital investment.[26] It comes as no surprise then, according to the Alberta Energy Regulator ("AER"), formerly known as the Energy Resources Conservation Board ("ERCB"), from 2008 to 2012 about 5,000 horizontal wells were drilled in Alberta.[27]

B. Controversy

Despite its technological achievements and economic efficiencies, hydraulic fracturing is not without controversy. A chief concern is the contamination of groundwater. Research has shown that fracking fluids (and the chemicals therein) can migrate or leak into underground fresh water sources.[28] Upwards of 600

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[19] Montgomery & Smith, *supra* note 10, at 27.

[20] Keith Luft et al., *Regulatory and Liability Issues in Horizontal Multi-Stage Fracturing*, 50 ALTA. L. REV. 403, 405 (2012).

[21] Montgomery & Smith, *supra* note 10, at 27.

[22] *See* Norman J. Hyne, *Nontechnical Guide to Petroleum Geology, Exploration, Drilling & Production* (PenWell, 3d ed. 2012) "Unconventional" reservoirs are those that have very low permeability and are much less pourous. These deposits require specialized methods (like hydraulic fracturing and horizontal drilling) for production. "Conventional" deposits are those that are sufficiently porous and/or have interconnected pathways that allow hydrocarbons to flow through the target formation to the wellbore with little or stimulation).

[23] Cranch, et al, *supra* note 4, at 9.

[24] Kimberly Howard, *Regulating Hydraulic Fracturing*, 54 ALTA. L. REV. 141, 147 (2016).

[25] Luft et al, *supra* note 20, at 404.

[26] *Id.*

[27] Energy Resources Conservation Board, *ERCB Seeking Feedback on Regulatory Approach for Unconventional Development*, at 30 (2012), www.aer.ca/documents/news-releases/NR2012-13.pdf.

[28] Envtl. Prot. Agency, *Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources*, 6-11, 6-57 (2015), EPA/600/R-15/047 [hereinafter *Water Resources*].

chemicals have been identified in the various fracking fluids used by industry, including methanol, ethylene glycol, diesel fuel, and naphthalene.[29] Many of these chemicals are harmful to human health if consumed or exposed to in sufficient quantities. It is particularly noteworthy that some of these chemicals have the potential to affect the endocrine system, which is the "system of glands and hormones that regulates vital functions such as body growth, response to stress, sexual development, rate of metabolism, intelligence . . . , and the ability to reproduce."[30] Additionally, there is the possibility that the natural gas (methane) contaminates groundwater sources through unintended migration from the fracture zone.[31] While dissolved methane in drinking water is not yet known to be a health hazard, "it is an asphyxiant in enclosed spaces and an explosion and fire hazard."[32]

Despite the toxic and dangerous substances used in and released by hydraulic fracturing, many believe its risks and potential dangers are overstated. One group of researchers (with ties to the industry) believes that "hydraulic fracturing has, for decades, been safely conducted in the completion of thousands of wells in Western Canada [and] this suggest[s] there is no systemic or inherent risk associated with . . . hydraulic fracturing."[33] Despite the above non sequitur, there is some research to suggest that the above statement may contain some truth; at least as far as methane contamination is concerned.[34] For example, a report published by the Center for Rural Pennsylvania (a bipartisan, bicameral legislative agency that serves as a resource for rural policy within the Pennsylvania General Assembly) sampled 233 wells in proximity to Marcellus shale gas wells in rural regions and found:

> When comparing dissolved methane concentrations in the 48 water wells that were sampled both before and after drilling (from Phase 1), the research found no statistically significant increases in methane levels after drilling and no significant correlation to distance from drilling. However, the researchers suggest that more intensive research on the occurrence and sources of methane in water wells is needed.[35]

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[29] The Endocrine Disruption Exchange, *Health Effects Spreadsheet and Summary Statement*, at 4 (2011).

[30] *Id.* at 4-5.

[31] *See* Samuel S. Harrison, *Evaluating System for Ground-Water Contamination Hazards Due to Gas-Well Drilling on the Glaciated Appalachian Plateau*, 21 GROUNDWATER 689, 689 (1983); *see also* Samuel S. Harrison, *Contamination of Aquifers by Overpressuring the Annulus of Oil and Gas Wells,* 23 GROUNDWATER 317, 317 (1985); *see also* Stephen G. Osborn et al., *Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing*, 108 PNAS 8172, 8173 (2011).

[32] Osborn et al., *Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing* 108 PNAS 8172, 8173 (2011).

[33] Luft et al, *supra* note 20, at 436.

[34] *See* Lisa J. Molofsky et al., *Evaluation of Methane Sources in Groundwater in Northeastern Pennsylvania*, 51 GROUNDWATER 333, 333 (2013).

[35] Elizabeth W. Boyer et al, CTR. FOR RURAL PENNSYLVANIA, *The Impact of Marcellus Gas Drilling on Rural Drinking Water Supplies* (2011).

Even the Environmental Protection Agency ("EPA"), at one time, believed that the hydraulic fracturing posed "little or no threat to underground sources of drinking water."[36] However, the EPA has since changed its mind and now believes that "hydraulic fracturing activities can impact drinking water resources under certain circumstances."[37] While experts disagree as to the degree of environmental and health risks associated with hydraulic fracturing, the preponderance of evidence suggests that it can and has resulted in the contamination of underground drinking sources.

III. HYDRAULIC FRACTURING LITIGATION

Seemingly in tandem with the increased public scrutiny of hydraulic fracturing, the number of civil cases involving hydraulic fracturing has risen.[38] However, this rise has only been observed in the United States, a jurisdiction where hydraulic fracturing wells have been dug or permitted in more than twenty states.[39] At the time of writing, in Canada, there has only been one lawsuit filed by a private landowner for property damage caused by hydraulic fracturing:[40] Ernst v. EnCana Corp.[41] The plaintiff, Jessica Ernst, alleges that her well has been contaminated as a result of the defendant's hydraulic fracturing operations near her home.[42] While there have been some recent developments,[43] this first-of-its-kind case is still pending. Therefore, there is a total lack of precedent in Canada on the common law remedies that plaintiffs can receive in hydraulic fracturing groundwater contamination cases. By comparison, in the United States, landowners have filed numerous lawsuits against oil and gas companies alleging, among other things, contamination of groundwater.[44] Since litigation in this area is also relatively novel, the majority of American cases are still pending, if they have not already settled or been dismissed.[45]

There is at least one case demonstrating that plaintiffs might be able to receive substantial monetary damages for groundwater contamination caused by fracking operations. In Fiorentino v. Cabot Oil and Gas, residents of Dimock and Montrose, Pennsylvania sued the defendant for "improperly conducting hydrofracturing and other natural gas production activities that allowed the

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[36] Envtl. Prot. Agency, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs ES-1* (2014).

[37] ENVTL. PROT. AGENCY, *supra* note 3, at 26 (emphasis added).

[38] Nicholson, *supra* note 1, at 1.

[39] *Elizabeth Ridlington et al*., *Fracking by the Numbers*, ENV'T AMERICA RES. & POL'Y CTR., 4 (2016).

[40] Luft et al, *supra* note 20, at 424.

[41] Jessica Ernst v. EnCana Corp., Energy Resources Conservation Board and Her Majesty the Queen in Right of Alberta, [2013] A.B.Q.B 537 (Can.) (Ernst Statement of Claim).

[42] *Id.* ¶13.

[43] *See* Ernst v Alberta Energy Regulator, [2017] S.C.C. 1 (Can.) (one of the named defendants, the ERCB, cannot be held liable in negligence or for breach of 2(b) *Charter* rights).

[44] Nicholson, *supra* note 1, at 105.

[45] Barclay R. Nicholson, *Fracking: Are the Regulators Coming or Not? A Review of the State of the Industry*, 57 ROCKY MT. MIN. L. INST. 13-1, 13-20 (2011).

release of methane, natural gas, and other toxins onto [their] land and into their groundwater."[46] The plaintiffs, comprised of sixty-three individuals, claim that they have experienced "property damage and physical illness, that they live in constant fear of future illness, and that they suffer severe emotional stress."[47] Through a series of settlements and court rulings, only four individual plaintiffs remained when the jury was asked to determine whether the defendant was negligent in drilling two wells and whether the wells created a nuisance in contaminating local water sources.[48] On March 10th, 2016, the jury awarded one family $2.6 million and another $1.4 million. Cabot Oil subsequently filed a motion for a new trial, a motion to set aside the verdict, and a motion for damages remittitur. The case is still pending.[49]

While Fiorentino suggests that plaintiffs might receive substantial monetary damages for proven water contamination, so far it appears that plaintiffs have had more success in suing oil and gas developers when water contamination is not stated as a loss. In Hiser v. XTO Energy Inc., the plaintiff, Ruby Hiser, alleged that her home was damaged by vibrations caused by the nearby drilling activity of the defendant.[50] A jury returned a verdict in her favor on the claims of negligence, private nuisance, and trespass, and awarded her $100,000 in compensatory damages and $200,000 in punitive damages.[51] A similar result was reached in Alford v. East Gas Ohio Co, where a jury assigned $132,000 in damages to a family that experienced excessive noise, fumes, and vibration on their property from the operation of nearby compressor stations run by the defendant company.[52]

The damages awarded in these cases are relatively low compared to those in Fiorentino. However, from a pragmatic perspective, cases which do not allege groundwater contamination as a loss, are easier to plead and prove. They are thus more likely to ensure that plaintiffs have access to a common law remedy. This is because establishing factual causation in hydraulic fracturing groundwater contamination cases is notoriously difficult. Ernst's pending case is a prime example. She might have had a strong claim in nuisance for the incessant and 'intolerable' noise pollution caused by EnCana's compressors,[53] but no such claim appears in her statement of claim; her case focuses solely on groundwater contamination.

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[46] Fiorentino v. Cabot Oil and Gas, 750 F.Supp. 2d 506, 509 (2010).
[47] *Id.*
[48] Watson, *supra* note 2, at 32.
[49] *See id.*
[50] Hiser v. XTO Energy, No. 4:11CV00517 KGB, 2013 WL 5467186, at 1 (E.D. Ark. Sept. 30, 2013).
[51] *Id.*
[52] Watson, *supra* note 2, at 19
[53] Nikiforuk, *supra* note 11, at 100.

IV. CASE STUDY: ERNST V ENCANA CORP

A. Background

In 1982, after earning an undergraduate degree in environmental science from the University of Guelph and a Masters in Science from the Ontario Veterinary College, Jessica Ernst moved out west to find work.[54] She initially worked as a field supervisor and permit agent for Summit Land Consultants before she and her husband (now divorced) started their own land agent business.[55] After the divorce, in 1994, Ernst started her own firm: Ernst Environmental Services. She worked as a consultant for oil and gas companies and specialized in environmental impact assessments of resource extraction on fish, valleys, rivers and archaeological sites.[56]

One of the companies that Ernst worked for during this period was EnCana. She began working for them when they emerged in the Canadian oil and gas market following the merger of two independent oil and gas companies, PanCanadian Energy and Alberta Energy Company Ltd.[57] Today, EnCana is a large, multi-national oil and gas company that conducts extensive natural gas extraction projects in both Canada and the United States.[58] With access to more than seventeen million acres of oil and gas leases, EnCana is one of the biggest energy producing companies in North America.[59] As of 2015, EnCana's Canadian operations had access to approximately 3.7 million gross acres of land and were operating approximately 6,500 producing wells (the vast majority of which are natural gas wells, as opposed to oil-producing wells).[60]

As a consultant for EnCana, Ernst's primary responsibility was to assist the corporation with project consultations. Her role was a facilitative one; she informed all interested parties of the land use and environmental consequences associated with oil and gas development (e.g., consequences of forest fragmentation from wells and pipelines, traditional land uses, fate of endangered species).[61] Ernst's employment relationship with EnCana, though, would not last long because of the drilling that EnCana began near her property.

It is alleged by Ernst that between 2001 and 2006, EnCana engaged in a program of 'shallow drilling' for coal-bed methane gas and other formations from the Horseshoe geological formation located underneath Rosebud, Alberta (Ernst's home town).[62] Some of this 'shallow drilling' was said to be 'experimental' in that EnCana was trying to figure out how to "coax methane out

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[54] *Id.* at 22.
[55] *Id.*
[56] *Id.*
[57] *Our History*, ENCANA CORP., www.EnCana.com/about/history/ (last visited 2016).
[58] *Corporate Presentation,* ENCANA CORP., www.EnCana.com/about/ (last visited 2017).
[59] Nikiforuk, *supra* note 11, at 95.
[60] ENCANA CORP., *Annual Information Form* (2016), http://www.EnCana.com/pdf/investors/financial/annual-reports/2015/annual-information-form-2015.pdf (last visited 2017).
[61] *Id.*
[62] Jessica Ernst v. EnCana Corp., Energy Resources Conservation Board and Her Majesty the Queen in Right of Alberta, [2013] A.B.Q.B 537 (Can.) (Ernst Statement of Claim), at 6.

of 10 to 30 inch-thick coal seems rest[ing] 400 to 600 meters underground."[63] Ernst believes that EnCana had, "in secret fracked 190 gas wells above the so-called base of groundwater protection."[64] This type of shallow hydraulic fracturing greatly increases the chances of underground water contamination. Researchers at Duke University have demonstrated that "[m]ethane concentrations were 17-times higher on average (19.2 mg CH4 L−1) in shallow wells from active drilling and extraction areas than in wells from non-active areas (1.1 mg L−1 mg CH4 L−1)."[65] In 2011, the AER also acknowledged the risks associated with the practice of shallow drilling.[66]

As a result of EnCana's alleged failure to adhere to their own policies of acting ethically and engaging in good public consultation before undertaking these projects, Ernst (who it is fair to say may be regarded as a scrupulous person)[67] submitted her letter of resignation on September 9th, 2004.[68] Subsequently, in 2005, Ernst alleged that she noticed her drinking water was "seriously contaminated with a flammable substance."[69] She alleges that EnCana "directly targeted and hydraulically fractured the geological formations that comprise the Rosebud Aquifer" and that EnCana "knew or should have known that it was perforating and fracturing in-use aquifers that provided potable water to the Ernst Water Well."[70] In 2007, she sued EnCana and the Alberta regulators, the first lawsuit of its kind in Canada.[71] In her 'fresh statement of claim' (i.e. her second amended statement of claim), filed on April 26th, 2012, Ernst lists EnCana, the ERCB, and the Province of Alberta as defendants. She was suing EnCana in negligence, nuisance, the rule in Rylands v Fletcher, and in trespass;[72]

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[63] Nikiforuk, *supra* note 11, at 97.

[64] *Id.* at 137.

[65] Osborn, *supra* note 31, at 8173.

[66] Energy Resources Conservation Board, Gov't of Alberta, *Unconventional Gas Regulatory Framework – Jurisdictional Review 10* (2011).

[67] *See* Nikiforuk, *supra* note 11, at 239. ("In 2011, Ernst was awarded the UNANIMA Woman of Courage Award for her active role in speaking out against the harmful and illegal practices associated with fracking; *see also Woman of Courage Award*, UNANIMA INT'L, http://www.unanima-international.org/what-we-do/programs/women-and-children/woman-ofcourage-award (2011); Ernst has also been internationally recognized as the "Joan of Arc of Alberta" and the "Rachel Carson of the Environment").

[68] *See id*. at 103-04, (In her letter of resignation she wrote, "There are thousands of wells and kilometres of pipelines and roads proposed without adequate or diligent consultation or warning or mitigation planned . . . I cannot in good conscience work for a company operating in such a manner").

[69] *See* Jessica Ernst v. EnCana Corp., Energy Resources Conservation Board and Her Majesty the Queen in Right of Alberta [2013] A.B.Q.B. 537 (Can.) (Amended Statement of Claim) ¶ 56 (2012). While not proven as fact in court, Ernst, in 2005, had her water test by an independent lab. The results demonstrated methane concentrations of 29.4 mg/l dissolved in her water. This is much higher than the test done by Alberta Environment in 2006, which showed only 11.2mg/l to 14.2 mg/l in her water. In her amended statement of claim, Ernst alleges that the Alberta Environment test was negligently done.

[70] Jessica Ernst v. EnCana Corp., Energy Resources Conservation Board and Her Majesty the Queen in Right of Alberta, [2013] A.B.Q.B 537 (Can.) (Ernst Statement of Claim), at 9.

[71] EnCana Corp., *Statement of Defence filed in Response to Jessica Ernst's Fresh Statement of Claim* (2013).

[72] Ernst, *Statement of Claim* (2012), *supra* note 41, at 5-23.

the Province of Alberta for negligent administration of a regulatory regime; and the ERCB for negligent administration of a regulatory regime and for breaching her s. 2(b) rights under the Canadian Charter of Rights and Freedoms[73] ("Charter"). Regarding this last claim, Ernst pleaded that, with full knowledge of her credible complaint, the ERCB's arbitrary decision to restrict Ernst's communication with them until such time as she ceased speaking negatively about the ERCB in public breached her s. 2(b) Charter rights.[74] In total, she is seeking approximately $11 million in damages.[75]

B. Proceedings to Date

This case is moving at a slow pace and is still effectively in the pleadings stage. While Ernst initially filed the action in 2007, the filing of preliminary motions by the defendants has slowed this case; EnCana did not file a statement of defense until 2013.[76] In the same year, the Province of Alberta made an application to have paragraphs from the Ernst's statement of claim struck for being "frivolous, irrelevant or improper;" [77] the ERCB similarly filed an application seeking an order to strike or in the alternative, sought summary judgment. Chief Justice Wittman for the Alberta Court of the Queen's Bench dismissed Alberta's application, but ruled in favor of the ERCB, striking both Ernst's negligence and Charter claims against the regulator.[78] Chief Justice Wittman came to this conclusion on the basis that section 43 of the Energy Resources Conservation Act ("ERCA") provides statutory immunity for the regulator. Section 43 reads:

> No action or proceeding may be brought against the Board or a member of the Board or a person referred to in section 10 or 17(1) in respect of any act or thing done purportedly in pursuance of this Act, or any Act that the Board administers, the regulations under any of those Acts or a decision, order or direction of the Board.[79]

Though finding that Ernst's Charter claim was valid, Chief Justice Wittman stated that the above statutory provision amounted to an "absolute bar to Ernst's claims against the ERCB."[80] Ernst appealed and the Alberta Court of Appeal unanimously upheld Wittman's decision.[81] The Charter issue was appealed to the

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[73] Canadian Charter of Rights and Freedoms, Part I of The Constitution Act, 1982, *being* Schedule B to the Canada Act, 1982, c 11, § 27 (Can.) [hereinafter *Charter*].

[74] Ernst, *Statement of Claim* (2012), *supra* note 41, at 58.

[75] *Id.* at 81-90.

[76] Jessica Ernst v. EnCana Corporation, Energy Resources Conservation Board and Her majesty the Queen in Right of Alberta, 0702-00120 (Sep. 16, 2013) (Alta QB) (EnCana's Statement of Defence).

[77] Ernst v. EnCana Corp., [2013] A.B.Q.B. 537, 6-7, 101.

[78] *Id.* at 130.

[79] *Energy Resources Conservation Act,* R.S.A. 2000, c E-10, s43 (Can.).

[80] Ernst ABQB, 0702-00120 (Sep. 16, 2013) (Alta QB) (EnCana's Statement of Defence), at 130.

[81] Ernst v. EnCana Corp., [2014] A.B.C.A 285, at 19, 30.

Supreme Court of Canada ("SCC"), where in a (somewhat vexing)[82] 5-4 decision, Justice Cromwell, writing for the majority, ruled that Ernst had failed to discharge her burden of demonstrating s. 43 of the ERCA to be unconstitutional. Thus, the immunity provision that "clearly purports to bar her damages claim must apply" and Ernst's claim for Charter damages under s. 24(1) was struck down and the appeal dismissed.[83] This decision has already been subject to criticism and has been held to "misconstrue the place of Charter damages in Canada's constitutional architecture"[84] and to have "worrisome implications for people across the country seeking to hold government appointed decision makers accountable for egregious unconstitutional actions."[85]

While this decision has numerous administrative and constitutional law implications that will likely be explored further by academics, what this decision means for Ernst and her civil action, is simply that she has one less defendant to pursue. Despite the fact that Ernst believes her case was strongest against the ERCB (she found them to be the most 'guilty' party),[86] she is undeterred and will continue her action against EnCana and the Province of Alberta;[87] an action that she has stated she would not be willing to settle.[88] In an early conversation with her lawyer, Murray Klippenstein, when prodded about what she might do in the event of a multi-million-dollar settlement offer, Ernst responded that she would turn it down: "Murray, I'm not doing it for money, I'm doing it for justice."[89]

Ernst's claim against the Province notwithstanding, what then, are her chances of receiving a judgment against the defendant oil and gas company? The only sensible answer to this question is: it depends, especially given the gap that can exist between precedential and authoritative legal materials and the final outcomes of cases.[90] A significant legal hurdle that Ernst will have to overcome is establishing factual causation. Causation is an "essential element" for each of the causes of action (negligence, trespass, nuisance, the rule in Rylands v.

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[82] Lorne Sossin, *Damaging the Charter: Ernst v. Alberta Energy Regulator,* THE COURT.CA (Jan. 20, 2017), http://www.thecourt.ca/damaging-charter-ernst-v-alberta/.

[83] *Ernst* S.C.C., *supra* note 43, at 23 [emphasis added].

[84] *See* Sossin, *supra* note 82; *see also* Julia Kindrachuck, *Statutory Immunity from Charter Damages: Ernst v. Alberta Energy Regulator,* 78 Sask L Rev 379 (2015) ("Even before the case was heard at the SCC, there was consternation over the ABCA judgment and the court's decision to upon the immunity provision in the face of a valid Charter claim. One particularly persuasive argument that subsequently emerged was that "statutory immunity provisions should not prevent plaintiffs from recovering *public law* damages for a regulator's *Charter* breach).

[85] Laura Track, *Shut the Frack Up!*, BC CIVIL LIBERTIES ASS'N (Jan. 11, 2017).

[86] Nikiforuk, *supra* note 11, at 197.

[87] Jessica Ernst, *Jessica Ernst Open Letter to Chief Justice Beverly McLachlin,* ERNST V ENCANA CORPORATION.CA (Jan. 25, 2017).

[88] Alberta Venture, *Verbatim: Jessica Ernst's Case against EnCana and the Alberta Energy Regulator,* ALBERTA VENTURE (Dec. 3, 2015).

[89] Nikiforuk, *supra* note 11, at 200.

[90] Anthony Kronman, *Jurisprudential Responses to Legal Realism*, 73 CORNELL L. REV. 335, 336 (1998).

Fletcher) raised by Ernst.[91] A closer examination of Ernst's negligence claim against EnCana will serve to demonstrate the extent of this issue.

C. Analysis of Negligence Claim: An Issue of Cause-in-Fact

In short, in every negligence claim, the plaintiff bears the burden of establishing that: (1) the defendant owed the plaintiff a duty of care; (2) the defendant did not meet the standard of care that would be exercised by a reasonable person in similar circumstances (i.e. breach of the duty of care); (3) the careless conduct (as a matter of fact) caused the plaintiff's loss; and (4) the loss is a legally recognized one that is not too remote to be recoverable.[92]

Ernst alleges that EnCana owed her "a duty to exercise a reasonable standard of care, skill and diligence" to ensure that their extraction operations near her Rosebud property did not cause "water contamination or other harm to her or her property."[93] She alleges that EnCana breached this duty and caused her underground water supply to be contaminated with "methane, ethane and other hazardous chemicals."[94] Some of the specific claims levied against EnCana include (among others):

> (1) Inadequate or faulty cementing of the wellbores at the EnCana Wells;
>
> (2) Installing inadequate or faulty surface casing at the EnCana Wells;
>
> (3) Drilling, perforating, and fracturing above the Base of Groundwater Protection level as defined by the Water Act;
>
> (4) Failing to conduct adequate and reasonable groundwater testing and monitoring before, during, and after conducting Coal-Bed Methane activities.

EnCana argues that while they owe a general duty of care to the public in carrying out their oil and gas operations, they did not owe Ernst a duty of care seeing as "[. . .] due to the extensive distances between the Ernst Well at the surface locations of the EnCana Wells, there was no reasonably foreseeable potential for harm to occur."[95] Alternatively, if a duty of care is found to exist, EnCana argues that they did not breach it because "at all material times [they] conducted the operations safely, diligently, and in accordance with accepted oilfield practices."[96]

Ernst will likely be able to satisfy the requirements of the two-stage Cooper Test[97] in establishing that EnCana owed her a duty of care. In a case of

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[91] Jeffrey C. King et al., *Factual Causation: The Missing Link in Hydraulic Fracture—Groundwater Contamination Litigation*, 22 DUKE ENVTL L. & POL'Y F. 341, 345 (2012).

[92] Robert M. Solomon et al., *Cases and Materials of the Law of Torts 297* (Thomson Reuters Canada ed., 9th ed. 2015).

[93] Ernst, *Statement of Claim* (2012), *supra* note 41, ¶17.

[94] *Id*. at 18.

[95] EnCana, *Statement of Defence*, *supra* note 76, ¶16.

[96] *Id.* at 17.

[97] Cooper v. Hobart, [2001] S.C.C. 79, at 30.

environmental contamination like this one, "proximity will generally be established on the basis of foreseeable physical harm."[98] In this case, EnCana's alleged unsafe, experimental, and strictly speaking, illegal[99] drilling operations resulted in foreseeable harm to Ernst's property (namely, her freshwater well); falling under a recognized category of proximity in the Cooper Test.[100] Ernst should be able to establish, through expert testimony and her self-compiled and extensive record of EnCana's drilling activities in the region,[101] that EnCana's unconventional drilling and fracturing of the coal seams that comprise the Rosebud aquifer gave rise to a legal duty of care. Accordingly, it was foreseeable that: (1) contamination of the aquifer was possible; and (2) Ernst relied on the aquifer as a source of drinking water.

Additionally, there are no compelling external policy considerations outside the relationship of the parties that would negate such a finding. Policy considerations that EnCana could raise, like 'disincentives to scientific innovation' and/or the 'economic utility of the conduct' are unlikely to convince a court to negate prima facie liability given the grave environmental and public health consequences that can arise from negligently administered hydraulic fracturing operations.[102] This shallow drilling, the lack of consultation, and the breach of various legislative and regulatory measures designed specifically to protect ground water[103] all suggest that EnCana breached the standard of care expected of a reasonably prudent oil and gas developer.

Where Ernst's claim will run into a roadblock is in establishing that EnCana's activities caused her loss. As previously mentioned, she bears the burden of establishing that EnCana's negligent conduct did, as a matter of fact, cause the contamination of her well.[104] More specifically, she will have to prove, on a balance of probabilities, that EnCana's breach of the standard of care was the cause of her loss.[105] The standard test for factual causation in Canada is the 'but-for test.'[106] Despite the existence of variants of this standard (e.g., material

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[98] Lynda Collins & Heather McLeod-Kilmurray, *The Canadian law of Toxic Torts* (Thomson Reuters ed., 2014).

[99] *See* Ernst, *Statement of Claim* (2012), *supra* note 41, ¶16. (Ernst alleges that EnCana's activities were in breach of the following legislative provisions: "ss. 3.060, 6.050 and 6.080(2) of the *Oil and Gas Conservation Regulations*; ss. 4.4, 7.9.9, 7.9.13, 7.10.7.2, and 7.10.11.3 of Guide 56 "Energy Development Applications and Schedules;" Informational Letter IL 91-11; Guide G-8; ss. 36(1) and 49(1) of the Water Act; s. 1.03(b) and 2.8, of the *Groundwater Evaluation Guideline* (Information Required when Submitting an Application under the Water Act); the Alberta Environment Guidelines for Groundwater Diversion; and ss. 109 and 110(1) of the *Environment Protection and Enhancement Act*).

[100] *See Cooper*, S.C.C. at 36.

[101] *See* Jessica Ernst, *Brief Review of Threats to Canada's Groundwater from Oil and Gas Industry's Methane Migration and Hydraulic Fracturing,* A PUB. INT. PROJECT BY ERNST ENVTL SERVICES (Jun. 16, 2013).

[102] Collins & McLoed-Kilmurray, *The Canadian Law of Toxic Torts*, at 103 (2014).

[103] Ernst, *Statement of Claim*, *supra* note 41, 16.

[104] CED 4th (online), *Negligence*, ELEMENTS OF CAUSE OF ACTION: DEFENDANT'S CONDUCT MUST CAUSE PLAINTIFF'S LOSS: GENERAL (II.3.(a)) at 28.

[105] Solomon et al., *supra* note 92, at 596.

[106] *Id.*

contribution), the but-for test applies for the majority of "toxic causation"[107] problems.[108] Application of the but-for test has been summarized as follows:

> As a general rule, a plaintiff cannot succeed unless she shows as a matter of fact that she would not have suffered the loss "but-for" the negligent act or acts of the defendant. A trial judge is to take a robust and pragmatic approach to determining if a plaintiff has established that the defendant's negligence caused her loss. Scientific proof is not required.[109]

Despite this seemingly generous interpretation of the standard, it remains the case that "if the plaintiff does not establish [that the injury would not have occurred without the defendant's negligence] on a balance of probabilities . . . her action against the defendant fails."[110] In toxic tort cases (like water contamination), the "causation element is widely regarded as the single biggest issue to recovery."[111] In these cases, the plaintiff bears the burden of establishing both generic and specific causation. Generic causation refers to the capacity of the substance (e.g., methane and frack fluid chemicals) to cause the injury/damage complained of and specific causation is about whether the substance has actually caused the specific injury/damage.[112] In hydraulic fracturing litigation, satisfying these causal requirements is especially difficult because, generally, the alleged source of the contaminant and the actual contaminated area (e.g., the underground fresh water aquifer) are typically thousands of feet below the earth's surface, thus making the collection of causal evidence difficult, if not impossible. The issue of establishing factual causation has also emerged as a common roadblock in hydraulic fracturing tort litigation in the United States.[113] As far as I am aware, no final judgement has succeeded (in either jurisdiction) against a "well operator, drilling contractor, or service company for contamination of groundwater resulting from hydraulic fracturing."[114]

Therefore, it seems that Ernst faces a difficult task in establishing a causal connection between EnCana's hydraulic fracturing activities in Rosebud and the contamination of her groundwater. For one thing, there is nothing in Ernst's fresh statement of claim to suggest that she has documentary evidence of baseline testing of the chemical composition of her water prior to 2001 (when EnCana is alleged to have begun hydraulic fracturing operations in the Rosebud area). This baseline testing is important because it creates a record of the chemical composition of the water quality prior to EnCana's operations that can be

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[107] *See* Collins & McLeod-Kilmurray, *supra* note 98, at 1 ("A toxic tort can be defined as 'a tort arising from environmental contamination or a toxic product.' Groundwater contamination from fracking is a tort of this variety").

[108] *Id.* at 150.

[109] Clements (Litigation Guardian of) v. Clements, [2012] 2 S.C.R. at 181, at 43.

[110] *Id.* at 8-9.

[111] Collins & McLoed-Kilmurray, *supra* note 98, at 123.

[112] *Id.* at 124.

[113] *See* King et al., *supra* note 91.

[114] Nicholson, *supra* note 1, at 1.

compared with post-operation levels. In this way, baseline data can be useful in determining if and when contamination occurred.[115]

AER Directive 35, s. 2, mandates EnCana (and any other developer) to conduct baseline water well testing before it engages in Coal-Based Methane extraction.[116] The directive specifically requires the operator, prior to drilling, to "test any active water wells and observation wells within a 600 meter (m) radius of the proposed well."[117] In their statement of defense, EnCana claims to have done this testing "before, during and after the operations in question."[118] In theory, this information could be revealed at trial. However, it is important to note that AER Directive 35 only came into effect in 2006, so it is likely that the contamination at issue, if it did occur, occurred prior to the baseline testing done by EnCana. Additionally, the Directive only requires EnCana to test water wells within a 600m to 800m radius of the drilling site. The nearest well alleged to have contaminated Ernst's property is approximately three kilometers away.[119] Technically speaking, it is possible that EnCana could have complied with the Directive and done groundwater testing at wells within this 600m to 800m radius, but such compliance does not necessarily mean that Ernst's well was included. As this action proceeds, it can be imagined that more information will become known relating to the existence, timeliness, and relevance of any baseline water testing. That said, even if credible and relevant baseline testing emerges and demonstrates a significant increase in contaminants in Ernst's water supply, it by no means suggests that the 'causation hurdle' will be easily overcome.

In Anthony v. Chevron USA, Inc., Anthony brought claims against Chevron for the negligent contamination of groundwater and soil on the family ranch. The family presented baseline water testing at trial and was able to demonstrate that the levels of chloride in their well increased from 380ppm in 1973 to 980ppm in 1988;[120] Chevron began hydraulically fracking for oil in "close proximity" to this well in 1971.[121] Through the use of expert testimony, the plaintiffs presented evidence detailing how the aquifer came to be contaminated: the use of high pressure injections over several years caused the fracture to extend upward into the underground, thus resulting in contamination.[122] Circuit Judge Emilio M. Garza found that the expert testimony failed to provide "any evidence establishing the nexus between Chevron's water injection operations and the pollution."[123] Garza stated that the plaintiff was successful in raising "suspicions" about Chevron's operations, but that there was insufficient evidence for a

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[115] King et al., *supra* note 91, at 569.

[116] Alberta, *Directive 035 Baseline Water Well Testing Requirement for Coalbed Methane Wells Completed Above the Base of Groundwater Protection,* Alberta Energy Regulator, s2 (2006).

[117] *Id.*

[118] EnCana, Statement of Defence, *supra* note 76, at 17.

[119] *Id.* at 14.

[120] Anthony v. Chevron USA, Inc., 284 F. 3d 578, 581-82 (5th Cir. 2002).

[121] *Id.* at 582.

[122] *Id.* at 584.

[123] *Id.* at 587.

reasonable jury to conclude that it was more likely than not that Chevron's operations polluted the plaintiff's well.[124] One commentator believes that the evidence presented in Anthony was "more extensive than that submitted by most plaintiffs in similar suits because the plaintiffs were able to prove that contamination occurred . . . as well as factually plausible sources of fluid migration from the defendant's fracturing wells."[125] Still, the plaintiffs were unable to establish a causal connection between hydraulic fracturing and the contamination. This outcome might be explained by the understandable lack of scientific literacy on the part of the judge, but it is still nonetheless potentially demonstrative of the strength of causal evidence that may be required in Ernst's case. Whether Ernst is able to provide baseline water reports is arguably irrelevant if she cannot provide convincing evidence, on a balance of probabilities, that directly links EnCana's drilling activities with the alleged increase in the toxicity of her well. Specifically, it will be difficult to establish that EnCana caused methane/frac-fluid chemicals to migrate out of the frack zone and into the underground aquifer.

One reason for this difficulty is that our understanding of the effects of hydraulic fracturing is far from complete.[126] Part of the problem is that it is difficult to predict how underground geological formations are going to react with any degree of precision when stimulated with high-pressure fracturing fluid. It is accepted that unintended fluid migration from the drilling site is a possibility and that groundwater can be contaminated by fracking fluids and natural gas,[127] but as evidenced in Anthony, a mere possibility is not enough to prove factual causation. Ernst will have to disprove the possibility that intermediary causes, like naturally-occurring methane gas,[128] could be responsible for the rise in methane and not EnCana's hydraulic fracturing operations. Additionally, she will have to prove that methane migration could occur over a distance of three kilometers (the location of her nearest well) and even over six kilometers (the location of her second well). The Duke University study mentioned above found methane concentrations close to active drilling sites to be seventeen times higher than in wells farther removed. However, 'close' for the purposes of this study, meant within one kilometer of an active drilling site; much closer than Ernst's nearest well to EnCana's operations.

V. THE DEFECTS OF TORT: COMMON LAW REMEDIES ARE NOT THE ANSWER

A. Tort Law Deficiencies

With the above analysis in mind, if we assume that the function of tort law is to provide (1) compensation and (2) vindication to the plaintiff and to (3) punish

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[124] *Id.* at 586.
[125] King, *supra* note 91, at 159.
[126] Timothy Fitzgerald, *Frackonomics: Some Economics of Hydraulic Fracturing*, 66:3 Case W. Res L. Rev. 1337, 1361 (2013).
[127] Envtl. Prot. Agency, *supra* note 3, at 6-11, 6-57.
[128] *See* Molofsky et al., *supra* note 34.

and (4) deter the defendant in the pursuit of (5) justice,[129] it is evident that tort common law remedies have yet to fulfill any of these functions in hydraulic fracturing water contamination cases.

For one thing, common law remedies are simply unavailable for the vast majority of plaintiffs in such cases. This is because seemingly all of the relevant causes of action require the plaintiff to establish that hydraulic fracturing was the proximate cause of the loss or harm complained of. Even under the strict liability rule in Rylands v Fletcher, the plaintiff must establish that the defendant's "non-natural" use of the land brought about or accumulated control of a substance that caused damage to the plaintiff's land.[130] As evidenced above and given the current lack of complete understanding of the underground geological effects of hydraulic fracturing,[131] it is a tall order for plaintiffs to establish causation on a balance of probabilities; even given its generous interpretation in Clements v. Clements. In this way, common law remedies are simply out of reach.

Secondly, even when plaintiffs receive compensation from the defendants through settlements, these settlements are not likely deterring the tortious conduct. There have been numerous settlements between plaintiffs and oil and gas companies in the United States, thus serving the compensatory function (though not as a common law remedy), but many of these settlements have been made out-of-court and have been accompanied by a gag order and no admission of guilt by the defendant.[132] In this way, functions two, three, four (and arguably five) of tort law, as outlined above, are not being achieved. Moreover, even if Ernst is successful in her lawsuit and she receives a just remedy, it is important to remember that Ernst's case is a rare one; she has committed her entire life to it. It is likely that others adversely affected by hydraulic fracturing would be unwilling to go this far to hold negligent oil and gas operators to account, and understandably so. Presumably, not many families can sacrifice upwards of a decade of their time and spend hundreds of thousands of dollars in legal fees in pursuing a single lawsuit.

David E. Pierce argues that imposing civil liability on hydraulic fracturing operators would cause operators to limit their use of hydraulic fracturing and may even cause them to abandon the practice altogether.[133] Since "it is not possible to control the precise location of fissures created by the fracturing process," operators would open themselves up to potential liability with each well that they install.[134] Given the difficulty of establishing this liability in the first place, I argue that operators will continue to profit from this 'uncertain'

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[129] Solomon et al., *supra* note 92, at 20-23.

[130] CED 4th (online) *Negligence*, ELEMENTS OF CAUSE OF ACTION: DUTY OF CARE: DUTIES OF AFFIRMATIVE ACTION: STRICT LIABILITY: RULE IN *RYLANDS V FLETCHER* (II.5.(c).(v)) at §229.

[131] Howard, *supra* note 24, at 149.

[132] Jim Efstathiou & Mark Drajem, *Drillers Silence Fracking Claims with Seale Settlements,* BLOOMBERG TECHNOLOGY (Jun. 6, 2013), http://www.bloomberg.com/news/articles/2013-06-06/drillers-silence-fracg-claims-with-sealed-settlements; Nikiforuk, *supra* note 11, at 238; *see also* Watson, *supra* note 2.

[133] David E. Piece, *Developing a Common Law of Hydraulic Fracturing*, 72 U Pitt L Rev 685, 686 (2011).

[134] *Id.*

practice despite lawsuits and, in borderline cases, will simply provide plaintiffs with a settlement offer that will allow the operation to continue at a profitable rate. In this way, the functions of tort law are not being achieved because the threat of a successful tort action is too small to be a deterrent to the continuation of the status-quo. In sum, the ineffectiveness of tort litigation in this area, when combined with the centralization of capital and power in the hands of oil and gas companies, breeds miscalculation at best, and indifference at worst, to the environmental consequences that may arise from hydraulic fracturing.[135] Strict regulation is needed.

B. The Need for Strict Regulation

Tort law can achieve its functions only when it is able to exercise its reactive role and achieve a just form of redress for the plaintiff. A proactive approach is necessary in the case of hydraulic fracturing. Absent any major changes to the element of factual causation in common law toxic tort pleadings, I suggest that, due to the uncertainty of the process of hydraulic fracturing and the potential for great environmental harm, a robust regulatory framework is the best and only means of both: (1) ensuring hydraulic fracturing is done safely; and (2) that private landowners are protected and have an avenue for redress in the event of groundwater contamination. Researchers at Harvard Law School have prepared a report providing recommendations for how government agencies should regulate hydraulic fracturing and have provided four broad recommendations:

> (1) Require baseline testing and adopt statutory presumption of liability;
>
> (2) Establish robust administrative practices for handling water supply complaints;
>
> (3) Facilitate information distribution;
>
> (4) Allow for review of agency determinations.[136]

Under the first recommendation, operators would be presumed liable for the "contamination and diminution of all water supplies" within the mandatory baseline sampling radius (however that is defined), but operators would be able to rebut the presumption "by affirmatively proving certain pre-established defenses, such as the absence of a 'tracer' chemical that fingerprints a chemical release belonging to that operator."[137] Illinois, Pennsylvania, North Carolina, and West Virginia currently have presumptions of liability in place.[138] This presumption of liability would take the issue of proximate causation out of the question by: (1) deterring reckless resource extraction; and (2) providing affected

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[135] Richard L. Able, *A Critique of American Tort Law,* 8:2 Br J Law Soc 199, 199 (1981).
[136] Cranch et al., *supra* note 4, at 6-8 [emphasis added].
[137] *Id.* at 6-7.
[138] *See* Cranch et al., *supra* note 4, at 18 ("In North Carolina, it is presumed that an oil and gas developer is responsible for contamination of all water supplies that are within 5,000 feet of a wellhead").

landowners with a statutory remedy (e.g., compensation for any damage to water supplies).[139]

Alberta appears to have a strong regulatory framework for protecting the environment from the harms of hydraulic fracturing,[140] but some evidence suggests that this framework is nothing more than a 'Paper Tiger'. For one thing, there is no statutory presumption of liability in the legislation or regulations governing oil and gas development in the province. Second, while outside the scope of this paper, there is reason to believe that the industry has a substantial influence over the rules of regulation to the great detriment of the private landowner. Ernst believes that this industry influence was directly responsible for the AER's refusal to hear and address her complaints of water contamination,[141] which ultimately led to her SCC appearance. Regulatory reform is necessary if hydraulic fracturing is to continue in the province. The provincial government would be wise to implement similar regulatory policies to those recommended in the Harvard study and should investigate the possibility of industry corruption in the AER.[142]

VI. CONCLUSION

In this analysis, I have provided some historical context for the modern process of hydraulic fracturing; argued that establishing factual causation is a significant obstacle in holding oil and gas companies liable in groundwater contamination cases; and concluded that, because of the shortcomings of tort law in this area, strict regulation of fracking is necessary to protect people, property, and the environment. Using Ernst as a case study, I have forecasted an issue that the plaintiff may encounter in establishing factual causation in her pending lawsuit, namely: proving the factual nexus between her contaminated groundwater and EnCana's fracking operations.

Until we know more about the precise geological consequences of hydraulic fracturing, a strict system of regulation that imposes a presumption of liability on oil and gas developers is the best available means for promoting safe extractive

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[139] NC Gen Stat §§ 113-421 (2014).

[140] *See generally* Ernst, *Statement of Claim* (2012), *supra* note 41, ¶16.

[141] Local Future, *Fracked! Jessica Ernst v. EnCana,* YOUTUBE (Jun. 5, 2012), https://www.youtube.com/watch?v=ezLu5WGeM-0.

[142] *See* Coral Davenport & Eric Lipton, *The Pruitt Emails: EPA Chief was Arm in Arm with Industry*, N.Y. TIMES (Feb. 22, 2017) ("It is not of no consequence that the current Chair of the AER's board of directors formerly worked as an executive officer for EnCana for 15 years and has more than 35 years of experience working in the industry. Many are concerned about his ability to carry out the duties of his office in an "impartial way". While relevant experience is to be valued on such regulatory boards, impartiality must come first. *See* Emily Mertz, *Groups want Alberta's new Energy Regulator Chair removed,* GLOBAL NEWS (May 3, 2013), http://globalnews.ca/news/ 533718/more-than-30-groups-want-albertas-new-energy-regulator-removed/; Stephen Ewart, *Sharp Criticism of Energy Regulator's Chairman an unresolved issue for Notley,* CALGARY HERALD (Jun. 13, 2015), http://calgaryherald.com/business/energy/ ewart-sharp-criticism-of-protti-as-aer-chairman-an-unresolved-issue-for-notley. The recent appointment of Scott Pruitt to the office of Administrator of the EPA has raised similar concerns").

processes. Such presumptions are no mere pipe dream; they are already in place in four U.S. states. In other words, this is an area where government cannot simply take a backseat. The profitability of hydraulic fracturing and the current lack of deterrence in the form of the threat of significant civil liability creates a regime that, if left to its own devices, will prioritize resource extraction to the detriment of the environment and its inhabitants. Safety, sustainability, and transparency in this sector require effective regulation. A legislated system needs to provide a means of redress (through statutory remedies) for injured private landowners, while also allowing industry to continue with its fracking operations, provided they fully comply with all laws and regulations. A purposeful and accountable regulatory body would accept nothing less.