What They Knew in 1988...	YEAR	What They Said. What They Did	Gutting the Laws. Ceding Federal Authority to States & Industry
On October 20, 1988, The (federal) Occupational Safety and Health Administration (OSHA) was informed by Louisiana's Department of Environmental Quality (LADEQ) that:	1970	Congress established much of the basic structure of the **Clean Air Act** in 1970 with major revisions in 1977 & 1990 "... to protect public health and welfare nationwide..."	
	1972	**Clean Water Act** 33 U.S.C. §1251 et seq. established the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. **NPDES** (National Pollutant Discharge Elimination System) works to control water pollution by regulating point... sources that discharge pollutants into waters of the United States. Industrial, municipal, and other facilities must obtain permits for any discharge into waters of the United States.	
	1974	**The Safe Drinking Water Act (SDWA)** is the main federal law that ensures that under SDWA, EPA's UIC Program is responsible for ensuring that fluids injected into the ground do not endanger USDWs. **Underground Injection Control (UIC) program ...r**egulates how industrial and municipal waste and other fluids can be pumped into underground strata that contain, or may be a source of, drinking water.	In 2004, EPA declared that chemicals used by hydraulic fracturing, "pose little or no threat" to drinking water."

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Workers employed in the area of cutting and reaming oil field pipe may be exposed to dust particles containing levels of alpha-emitting radionuclides that could pose very serious health risks. We have very little information on the fate and effects of the materials in the aquatic and terrestrial environments and on potential movement of TENR materials into food chains leading to human consumption. There are some very difficult questions concerning potential liabilities for environmental contamination, workplace exposure to radioactive materials, and necessary remedial measures. (LADEQ, 1988)	1976	**Resource Conservation and Recovery Act (RCRA)** governs disposal of solid and hazardous waste. 1984 Solid Waste Amendments required the eventual elimination of land-based dumping.	**Liability under Comprehensive Environmental Response, Compensation and Liability Act CERCLA (Superfund)** Responsible parties "shall be liable for—" [among other things] "**C)** damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from such a release; and **(D)** the costs of any health assessment or health effects study carried out under section 9604 (i) of this title. *(NB: This information sheet lists only some of the ways in which the definition of "hazardous waste" has been tinkered with or diluted over the years.)* *(NB: Section 9604 of CERCLA establishes the Agency for Toxic Substances and Disease Registry. ATSDR is the agency reviewing responses to DCS' Natural Gas Health and Community Impacts Survey.*
	1978		In 1978, EPA reduced hazardous waste standards for several types of large volume "special wastes."
	1980s	Safe Drinking Water Act Amended. =>	Congress amends the SDWA in the 1980s to allow existing oil and gas programs to regulate, provided they [prevent] endangerment of USDWs and include UIC Program components such as oversight, reporting, and enforcement. This is EPA's three-pronged strategy to address the issues posed by these wastes by improving federal programs under existing authorities in Subtitle D of RCRA, the Clean Water Act, and Safe Drinking Water Act."
	1980s	Congress passes **the Hazardous and Solid Waste Amendments (HSWA)**	According to LADEQ's 1988 "Recommended Action Plan,"

		to the Resource Conservation and Recovery Act (RCRA), requiring additional UIC regulations for deep wells injecting hazardous waste. In addition to making the requirements for these wells more stringent, the regulations require that each well operator provide a "no migration petition" that demonstrates that the hazardous waste will not be released from the injection zone for at least 10,000 years or will be rendered non- hazardous by natural processes.	certain steps were immediately necessary and yet, workers and the public remain at risk from scales, dust, produced water, contaminated soil, etc., etc., etc.: 1. Develop and disseminate an interim policy for handling TENR materials and protection for those working with contaminated pipe and equipment. (2. Develop preliminary pathways and potential health effects of exposure to TENR-contaminated materials (inhalation, ingestion, external exposure), as well as fish and shellfish consumption, if applicable. 3. Define and initiate a small strategic sampling effort to answer immediate information needs. 4. Establish a task force to assist in dealing with the TENR-contamination problem. 5. Research and develop legal framework for regulating TENR-contaminated materials. 6. Develop and implement strategies for characterizing and mitigating the problem. This is a nationwide problem, shared by all states in one degree or another. It is therefore important to share information with other states and attempt to develop strategies and solutions which have wide applicability. 7. Identify potential sources of financial, human, and material resources that could be applied to the problem. 8. Obtain funding to deal with the problem.

What They Knew in 1988...	YEAR	What They Said. What They Did	Gutting the Laws. Ceding Federal Authority to States & Industry
	1987		The 1987 Water Quality Act (WQA) added section 402(*l*)(2) to the CWA specifying that EPA and States shall not require NPDES permits for uncontaminated storm water discharges from oil and gas exploration, production, processing or treatment operations, or transmission facilities.
	1988		**Safe Drinking Water Act .** July 6, 1988, EPA issues its Regulatory Determination for Oil, Gas..Development and Production Wastes... From the Sierra Club: "Even before the 'Halliburton Loophole,' Congress amended environmental laws in 1988, **providing special exemptions for the oil and gas industry, including two laws concerning hazardous waste. Because of these exemptions, radioactive materials added to drilling mud and naturally occurring radioactive materials (NORM) extracted along with oil and natural gas, are not classified as hazardous waste, and are not monitored or controlled by the federal government.**" ...the Clean Air Act now categorizes oil and gas operations as a 'minor source' [of hydrocarbon emissions] which makes the production side of the entire industry exempt from the Clean Air Act."
What They Knew in 1988...	YEAR	What They Said. What They Did	Gutting the Laws. Ceding Federal Authority to States & Industry

	1988		"In 1988, EPA issued a regulatory determination stating that control of E&P (oil and gas exploration and production) wastes under RCRA Subtitle C regulations is not warranted…..The exemption, however, did not preclude these wastes from control under state regulations…In addition…the exemption does not mean these wastes could not present a hazard to human health and the environment if improperly managed."
	1990	1990 Amendments to the Clean Air Act of 1970 Authorized programs for Acid Deposition Control Authorized a program to control 189 toxic pollutants, including those previously regulated by the National Emission Standards for Hazardous Air Pollutants Established permit program requirements Expanded and modified provisions concerning the attainment of National Ambient Air Quality Standards Expanded and modified enforcement authority Established a program to phase out the use of chemicals that deplete the ozone layer.	
There are some very difficult questions concerning potential liabilities for environmental contamination, workplace exposure to radioactive materials, and necessary remedial measures. (LADEQ)	1995		The term "hazardous substance" is defined in CERCLA section 101(14) to include substances listed under four other environmental statutes (as well as those designated under CERCLA section 102(a)). The definition excludes "petroleum, including crude oil or any fraction thereof," unless specifically listed or designated under CERCLA. "EPA interprets CERCLA section

While there are over 100 naturally occurring radionuclides, public health problems are usually limited to the 30-odd radionuclides in the uranium and thorium decay series because of their relative abundance and toxicity, and they are generally the result of some technological enhancement of the isotopes. The increased incidence of bone cancer in radium dial painters and lung cancer in fluorospar and uranium miners are examples of undesirable health effects due to exposure to these radionuclides. Other examples of increased population exposure to radiation include the radon problems in several western states due to construction over radioactive tailings and the use of reclaimed phosphate mining land in Florida. (LADEQ, 1988)			101(14) to exclude crude oil and fractions of crude oil including the hazardous substances, such as benzene, that are indigenous in those petroleum substances from the definition of hazardous substance. Under this interpretation, petroleum includes hazardous substances that are normally mixed with or added to crude oil or crude oil fractions during the refining process. This includes indigenous hazardous substances, the levels of which are increased as a normal part of the refining process. However, hazardous substances that are added to petroleum or that increase in concentration as a result of contamination of the petroleum during use are not considered part of the petroleum, and are therefore regulated under CERCLA." The definition of hazardous substance also excludes natural gas, natural gas liquids, liquefied natural gas, and synthetic gas usable for fuel.
What They Knew in 1988...	YEAR	What They Said. What They Did	Gutting the Laws. Ceding Federal Authority to States & Industry
Of particular interest to Louisiana is the growing awareness of related problems of the radioactivity content of produced waters and contamination of equipment and facilities in the oil and natural gas production and processing industries. the radionuclides... can contaminate the environment to the extent that they pose real or potential public health	2004		**Safe Drinking Water Act** Under SDWA, EPA's UIC Program is responsible for ensuring that fluids injected into the ground do not endanger USDWs. In 2004, **EPA declared** that chemicals used by hydraulic fracturing, "pose little or no threat" to drinking water." However, in 2011, **the April 2011 report, "Chemicals Used in Hydraulic Fracturing" issued by the US House of Representative's Committee on Energy and Commerce. (Complete Document: Act 13 Appeal Documents, File 2 of 2, P. 139 and sequential.) This minority report**

risks; Radium-226 has a half-life of 1620 years... investigation and regulatory control of the impacts of most of these sources have been overlooked by federal and state agencies in the past...; lack of strict controls has been due, in part, to the fact that the federal government has limited jurisdiction over TENR, and control was previously left up to the states, which often times did not have adequate programs or staff to deal with the problem. The magnitude of the problem is difficult to estimate, but it is not unrealistic to expect contamination at all oil and gas production sites and pipe handling facilities. Many of these sites, especially the pipe yards, are within city limits and could easily be used for residential or commercial purposes. If buildings were constructed over radium-contaminated soil, the resulting radon concentrations could pose a serious health threat. The environmental consequences and health risks associated with disposal of TENR-contaminated oil field wastes (e.g., incineration and land farming) are largely unknown. Radium 226 and 228 activity was found in all 41 samples of brines in one survey			**makes it clear that Congress knew which public and environmental protections were gutted when they enacted the National Energy Policy Act in 2005:**

Seventy-six percent of the samples tested contained 50 pCi/l of total radium. Produced water samples from Louisiana platforms exhibited total radium activities of 605-1215 pCi/l in a recent study. NRC regulations governing the operations of licensees permit no more than 30 pCi/liter in liquid discharges to unrestricted access areas. (LADEQ, 1988)			
... related problems of the radioactivity content of produced waters and contamination of equipment and facilities in the oil and natural gas production and processing industries. Recent Investigations have Identified radioactive "scale" resulting from the production of oil and associated brines which contained Ra-226 concentrations up to 100,000 pCi/gm [9]. Environmentally high concentrations of naturally-occurring radionuclides (e.g. Ra-226, Pb-210) in precipitates collected from the bottom of oil-water separators and from ditches and pits used for disposal of production water have also been reported. DEQ's Nuclear Energy Division (NED) has recently obtained information indicating radium-226 radioactivity of up to 8,700 pCi/gm in soil contaminated with radioactive scale at pipe	2005	The National Energy Policy Act amended The Safe Drinking Water Act to exclude fracking fluids (except diesel) from UIC program regulations. (2) Regulations of the Administrator under this section for State underground injection control programs may not prescribe requirements which interfere with or impede— (A) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations, or (B) any underground injection for the secondary or tertiary recovery of oil or natural gas, NEPA review excluded oil and gas exploration or development on Department of Interior and US Forest Service lands…where fewer than 5 acres are disturbed.. Excluded on BLM lands where new road builds aren't required. **Please read our excerpts (below, 2011) from the 2011 report, "Chemicals Used in Hydraulic Fracturing" from the US House of Representative's Committee on Energy and Commerce. (Act 13 Appeal Documents, File 2 of 2, P. 139 and sequential.) This minority report makes it clear that Congress knows which public and environmental protections they gutted when they**	**From the April 2011 report, "Chemicals Used in Hydraulic Fracturing" issued by the US House of Representative's Committee on Energy and Commerce.** *P. 142: The BTEX compounds – benzene, toluene, xylene, and ehtylbenzene -- appeared in 60 of the hydraulic fracturing products used between 2005 and 2009. Each BTEX compound is a regulated contaminant under the **Safe Drinking Water Act** and a hazardous air pollutant under the **Clean Air Act**. Benzene also is a known human carcinogen. The hydraulic fracturing companies **injected 11.4 million gallons of products containing at least one BTEX chemical over the 5 year period.** In many instances, the oil and gas service companies were unable to provide the Committee with a complete chemical makeup of the hydraulic fracturing fluids they used. **In these cases, the companies are injecting fluids containing chemicals that they themselves cannot identify.*** *P. 143: Some of these chemicals, if not disposed of safely or allowed to leach into the drinking water supply, could damage the environment or pose a risk to human health. …..**Well failures, such as the use of insufficient well casing, could lead to their release at shallower depths, closer to drinking water supplies.***

storage areas Contaminated piping from refineries has been found in scrap iron yards in New Orleans, Baton Rouge, and Lake Charles. The State of Mississippi has found contaminated pipe used in the construction of bleachers at schools. And, NED has found the concentrations of radium in oil field production ponds to be elevated. Readings made recently in a pipe reaming area at a pipe yard in Houma were such that monitoring of employees would be required if it were a licensed nuclear installation. (LADEQ, 1988)		**enacted the National Energy Policy Act in 2005.**	*P. 143: "While most underground injections of chemicals are subject to the protections of the Safe Drinking Water Act, Congress in 2005 modified the law to exclude 'the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities' from the Act's protections.* ***Unless oil and gas service companies use diesel in the hydraulic fracturing process, the permanent underground injection of chemicals used for hydraulic fracturing is not regulated by the Environmental Protection Agency (EPA)."*** *P. 143:* ***Some of these chemicals, if not disposed of safely or allowed to leach into the drinking water supply, could damage the environment or pose a risk to human health.*** *…..Well failures, such as the use of insufficient well casing, could lead to their release at shallower depths, closer to drinking water supplies.* *P. 143: "While most underground injections of chemicals are subject to the protections of* ***the Safe Drinking Water Act, Congress in 2005 modified the law to exclude 'the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities' from the Act's protections. Unless oil and gas service companies use diesel in the hydraulic fracturing process, the permanent underground injection of chemicals used for hydraulic fracturing is not regulated by the Environmental Protection Agency (EPA)."***
Fifty pCi/liter is the level of activity that distinguishes between hazardous and nonhazardous wastes under proposed EPA regulations. Billions of gallons of	2006		Congress amends The Clean Water Act. According to the EPA website, "The final rule specifies that stormwater discharges from oil and gas-related construction activities are exempt from NPDES permit coverage, except in very limited instances. EPA interprets this exclusion to apply to

produced water carrying TENR contamination are being released annually to the environment, particularly in coastal Louisiana.			construction of drilling sites, waste management pits, and access roads, as well as construction of the transportation and treatment infrastructure such as pipelines, natural gas treatment plants, natural gas pipeline compressor stations, and crude oil pumping stations." (Vacated by the 9th Circuit Court, 2008)
	2008 2009		***122.26(a)(2)*** *The Director may not require a permit for discharges of storm water runoff from mining operations or oil and gas exploration, production, processing or treatment operations or transmission facilities, composed entirely of flows which are from conveyances or systems of conveyances (including but not limited to pipes, conduits, ditches, and channels) used for collecting and conveying precipitation runoff and which are not contaminated by contact with or that has not come into contact with, any overburden, raw material, intermediate products, finished product, byproduct or waste products located on the site of such operations.* ***122.26(e)(8)*** *For any storm water discharge associated with small construction activity identified in paragraph (b)(15)(i) of this section, see 122.21(c)(1). Discharges from these sources, other than discharges associated with small construction activity at oil and gas exploration, production, processing, and treatment operations or transmission facilities, require permit authorization by March 10, 2003, unless designated for coverage before then. Discharges associated with small construction activity at such oil and gas sites require permit authorization by June 12, 2006.* Questions have arisen regarding the impact this litigation may have had on 40 CFR § 122.26(c)(1)(iii). This provision was not at issue in the litigation described above and remains in effect, just as it did prior to the 2006 rule. This provision is included below: ***122.26(c)(1)(iii)*** *The operator of an existing or new discharge composed entirely of storm water from an oil or*

	2008 2009		*gas exploration, production, processing, or treatment operation, or transmission facility is not required to submit a permit application in accordance with paragraph (c)(1)(i) of this section, unless the facility:* *(A) Has had a discharge of storm water resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 117.21 or 40 CFR 302.6 at anytime since November 16, 1987; or* *(B) Has had a discharge of storm water resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 110.6 at any time since November 16, 1987; or* *(C) Contributes to a violation of a water quality standard.*
	2011	**Please review these excerpts from the April 2011 report, "Chemicals Used in Hydraulic Fracturing" issued by the US House of Representative's Committee on Energy and Commerce. (Complete Document: Act 13 Appeal Documents, File 2 of 2, P. 139 and sequential.) This minority report makes it clear that Congress knows which public and environmental protections were gutted when they enacted the National Energy Policy Act in 2005:** *"Last Congress, the Committee on energy and Commerce launched an*	

		investigation to examine the practice of hydraulic fracturing in the United States. ***As part of that inquiry, the Committee asked the 14 leading oil and gas service companies to disclose the types and volumes of the hydraulic fracturing products they used in their fluids between 2005 and 2009*** *and the chemical contents of those products. This report summarizes the information provided to the Committee."* *P. 141: "Between 2005 and 2009, the 14 oil and gas service companies used more than 2,500 hydraulic fracturing products containing 750 chemicals and other components. (NB: The chemicals are listed on P. s 153 – 170 of Appendix A.) Overall, these companies used 780 million gallons of hydraulic fracturing products – not including water added at the well site – between 2005 and 2009."* *P. 141: "And some were extremely toxic, such as benzene and lead.* *P. 141: Fracking products contained 29 chemicals that are (1) known or possible human carcinogens, (2) regulated under the Safe Drinking Water Act for their risks to human health, or (3) listed as hazardous air pollutants under the Clean Air Act. These 29 chemicals were components of more than 650 different products used in hydraulic fracturing.* *P. 141: "The most widely used chemical in hydraulic fracturing (2005-2009)…was methanol….used in 342 hydraulic fracturing products, is a hazardous air pollutant and is on the candidate list for potential regulation under the Safe Drinking*	

		Water Act…. *P. 142: Fracking products contained 29 chemicals that are (1) known or possible human carcinogens, (2) regulated under the Safe Drinking Water Act for their risks to human health, or (3) listed as hazardous air pollutants under the Clean Air Act. These 29 chemicals were components of more than 650 different products used in hydraulic fracturing."* *P. 142: The BTEX compounds – benzene, toluene, xylene, and ehtylbenzene -- appeared in 60 of the hydraulic fracturing products used between 2005 and 2009. Each BTEX compound is a regulated contaminant under the* ***Safe Drinking Water Act*** *and a hazardous air pollutant under the* ***Clean Air Act****. Benzene also is a known human carcinogen. The hydraulic fracturing companies* ***injected 11.4 million gallons of products containing at least one BTEX chemical over the 5 year period.*** *In many instances, the oil and gas service companies were unable to provide the Committee with a complete chemical makeup of the hydraulic fracturing fluids they used. Between 2005 and 2009, the companies used 94 million gallons of 279 products that contained at least one chemical or component that the manufacturers deemed proprietary or a trade secret. Committee staff requested that these companies disclose this proprietary information. Although some companies did provide information about these proprietary fluids, in most cases the companies stated that they did not have access to proprietary information about products they purchased 'off the shelf' from chemical suppliers****. In these cases, the companies are injecting fluids containing chemicals that they themselves cannot identify.*** *P 143: Some of these chemicals, if not disposed of safely or allowed to leach*	

		into the drinking water supply, could damage the environment or pose a risk to human health. …..Well failures, such as the use of insufficient well casing, could lead to their release at shallower depths, closer to drinking water supplies. *P 143: "While most underground injections of chemicals are subject to the protections of the Safe Drinking Water Act, Congress in 2005 modified the law to exclude 'the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities' from the Act's protections. Unless oil and gas service companies use diesel in the hydraulic fracturing process, the permanent underground injection of chemicals used for hydraulic fracturing is not regulated by the Environmental Protection Agency (EPA)."* *P. 143. "Concerns also have been raised about the ultimate outcome of chemicals that are recovered and disposed of a wastewater. This wastewater is stored in tanks or pits at the well site, where spills are possible. For final disposal, well operators must either recycle the fluids for use in future fracturing jobs, inject it into underground storage wells (which, unlike the fracturing process iself, are subject to the Safe Drinking Water Act), discharge it to nearby surface water, or transport it to wastewater treatment facilities.* *P. 143. Footnote 4. "For instance, Pennsylvania's Department of Environmental protection has cited Cabot Oil & Gas Corporation for contamination of drinking water wells with seeP. caused by weak casing or improper cementing of a natural gas well."* *P. 144. "Any risk to the environment and human health posed by fracturing fluids depends in large part on their contents. Federal law, however,*	

		contains no public disclosure requirements for oil and gas producers or service companies involved in hydraulic fracturing, and state disclosure requirements vary greatly. While the industry has recently announced that it soon will create a public database of fluid components, reporting to this database is strictly voluntary, disclosure will not include the chemical identity of products labeled as proprietary, and there is no way to determine if companies are accurately reporting information for all wells." *P. 144. "The absence of a minimum national baseline for disclosure of fluids injected during the hydraulic fracturing process and the exemption of most hydraulic fracturing injections from regulation under the Safe Drinking Water Act has left an informational void concerning the contents, chemical concentrations, and volumes of fluids that go into the ground during fracturing operations and return to the surface in the form of wastewater. As a result, regulators and the public are unable effectively to assess any impact the use of these fluids may have on the environment or public health."* *P. 144. FOOTNOTE 10. "Wyoming, for example, recently enacted relatively strong disclosure regulations…..Other states, however, do not insist on such robust disclosure. For instance, West Virginia has no disclosure requirements for hydraulic fracturing and expressly exempts fluids used during hydraulic fracturing from the disclosure requirements applicable to underground injection of fluids for purposes of waste storage."* *P. 145 OSHA requires chemical manufacturers to create a MSDS for every product they sell as a means to communicate potential health and safety hazards to employees and employers. The MSDS must list all hazardous ingredients if they comprise at least 1% of the product; for*	

		carcinogens, the reporting threshold is 0.1%." *P. 145. "Under OSHA regulations, manufacturers may withhold the identity of chemical components that constitute 'trade secrets.' If the MSDS for a particular product used by a company subject to the Committee's investigation reported that the identity of any chemical component was a trade secret, the Committee asked the company that used that product to provide the proprietary information, if available."* *P. 146. Most commonly used chemical in fracking between 2005-2009 was methanol. "Methanol is a hazardous air pollutant and a candidate for regulation under the SDWA. It was a component in 342 hydraulic fracturing products. Some of the other most widely used chemicals include isopropyl alcohol, which was used in 274 products and ethylene glycol, which was used in 119 products. Crystalline silica (silicon dioxide) appeared in 207 products, generally proppants used to hold open fractures. Table 1 has a list of the most commonly used compounds in hydraulic fracturing fluids."* *P. 147. "Hydraulic fracturing companies used 2-butoxyethanol (2-BE).....According to EPA scientists, 2-BE is easily absorbed and rapidly distributed in humans following inhalation, ingestion, or dermal exposure. …can cause hemolysis (destruction of red blood cells) and damage to the spleen, liver and bone marrow. The hydraulic fracturing companies injected 21.9 million gallons of products containing 2-BE between 2005 and 2009. They used the highest volume of products containing 2-BE in Texas, which accounted for more than half of the volume used. EPA recently found this chemical in drinking water wells tested in Pavillion, Wyoming." (Pennsylvania: 747,416 gallons 2005-2009)* *P. 148. Table of 29 Chemicals that are*	

		(1) known or possible human carcinogens, (2) regulated under SDWA for their risks to human health or (3) listed as hazardous air pollutants under the Clean Air Act. " (Also lists the number of products in which each chemical is found.) Diesel is number 3 on the list, is used in 51 products and, according to EPA, contains benzene, toluene, ethylbenzene and xylenes." *P. 149. 95 products containing 13 different carcinogens. SEE TABLE 2005-2009.* *P. 149. Safe Drinking Water Act Chemicals. "Between 2005 and 2009, the hydraulic fracturing companies used 67 products containing at least one of eight SDWA-regulated chemicals. Overall, they injected 11.7 million gallons of fracturing products containing at least one chemical regulated under SDWA.* *P. 149. Footnote 20. "For purposes of this report, a checmical is considered a 'carcinogen' if it is on one of two lists (1) substances identified by the National Toxicology Program and (20 substances identified by the International Agency for Research on Cancer (WHO).* *P. 150. "The vast majority of these SDWA-regulated chemicals were the BTEX compounds…. Appeared in 60 fracing products used between 2005 & 2009 and were used in 11.4 milion gallons of hydraulic fracturing fluids. Chronic exposure to toluene, ehtylbenzene, or xylenes also can damage the central nervous system, liver, and kidneys.* *P. 150. In addition, the hydraulic fracturing companies injected more than 30 million gallons of diesel fuels or fracturing fluids containing diesel fuel in wells in 19 states. In a 2004 report, EPA stated that the 'use of diesel fue in fracturing fluids poses the greatest threat' to underground sources of drinking water.*	

		P. 150. EPA also has created a Candidate contaminant List which is a list of contaminants that are currently NOT subject onational primary drinking water regulations but are known or anticipated to occur in public water systems and may require regulation under the SDWA in the future. Nine chemicals on that list -- 1-butanol, acetaldehyde, benzyl chloride, ethylene glycol, ethylene oxide, formaldehyde, methanol, n-methyl-2-pyrrolidone, and propylene oxide – were used in hydraulic fracturing products between 2005 and 2009. *P. 151. The Clean Air Act requires EPA to control the emission of 187 hazardous air pollutants, which are pollutants that cause or may cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental and ecological effects. Between 2005 and 2009, the hydraulic fracturing companies used 595 products containing 24 different hazardous air pollutants. (Hydrogen fluoride read more at p 151. Lead. Methanol. Formaldehyde, hydrogen chloride, ethylene glycol.* *USE OF PROPRIETARY AND "TRADE SECRET" CHEMICALS* *The hydraulic fracturing fluids used by the companies were listed on the MSDSs as "proprietary" or "trade secret." The companies used 93.6 million gallons of 279 products containing at least one proprietary component between 2005 & 2009." (This is likely a conservative estimate. We included only those products for which the MSDS says "proprietary" or "trade secret" instead of listing a component by name or providing the CAS number.* *P. 152. A few companies provided proprietary information but in most cases the companies stated that they did not have access to proprietary information about products they*	

		purchased "off the shelf…" In these cases it appears that the companies are injecting fluids containing unknown chemicals about which they may have limited understanding of the potential risks posed to the human health and the environment." *APPENDIX A. P. 153 – 172.*	