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## Fracking Chemicals and Public Health Concerns

**Overview of problem:** The hydraulic fracking process involves the use of fracturing fluid products—water combined with a cocktail of toxic chemicals—to extract gas and oil from shale rock deep beneath the earth's surface. A number of toxic chemicals commonly used in the fracking process have been linked in scientific research to chronic toxicity, teratogenicity, developmental neurotoxicity and carcinogenicity. The potential for public health problems due to exposure to these toxic chemicals is not just hypothetical; studies have detected toxic chemicals present in the ground water and drinking water wells in areas where fuel extraction via hydraulic fracking has occurred. Investigations of water contamination in fracking areas have uncovered more than 1,000 cases across seven states where toxic chemicals have leached into surface and ground water. Further, a *House of Representatives report* on the chemicals used in the fracking process revealed that U.S. hydraulic fracking companies inject more than 10 million gallons of fluid that contain hundreds of chemicals considered to be either possible human carcinogens or known human carcinogens.

**Fracking chemicals and health problems:** Two recent studies examining the potential health hazards associated with proximity to residential fracking (one study suggests a link with proximity to fracking wells in Colorado and an increased risk for congenital heart defects in newborns, and the other suggests a link with fracking proximity in Pennsylvania and low birth weight and low Apgar scores of newborns) are among the latest additions to a growing body of scientific literature linking toxic chemicals commonly used in the fracking process with serious adverse health repercussions. While the full lists of chemicals used in fracking products are considered proprietary and therefore are unknown, some of the most commonly used chemicals that we do know about include: Methanol (vapors can trigger headaches, fatigue and eye damage and high doses can be fatal); Ethylene Glycol (toxic to humans; derivatives and metabolites are teratogenic; ingestion can lead to poisoning and adverse effects of the central nervous system, metabolic acidosis, and kidney damage/failure); BTEX compounds (short-term exposure to these compounds can trigger headaches, dizziness, difficulty breathing, weakness, nausea and vomiting), additionally, long-term exposure and perinatal/neonatal exposure can be serious: Benzene (a known carcinogen), Toluene (among the chemicals linked with developmental neurotoxicity and neurodevelopmental disabilities including loss of IQ points, attention-deficit hyperactivity disorder, dyslexia and autism among other types of cognitive damage, and central nervous system damage in adults), and Ethylbenzene and Xylene (both of which have also been shown to have harmful effects on the central nervous system); Naphthalene (inhalation can cause respiratory problems, nausea, and vomiting; additionally, Naphthalene is among the toxic chemicals that has been detected in human umbilical cord blood; this common PCB contaminant can lead to kidney and liver damage); Lead (among the chemicals linked with developmental neurotoxicity and neurodevelopmental disabilities including loss of IQ points, attention-deficit hyperactivity disorder, dyslexia and autism and other cognitive damage in children; also linked with high blood pressure and nerve disorders in adults); Diesel Fuel (contains toxic compounds such as BTEX and can cause skin

disorders; long-term exposure can lead to severe skin damage and cancer); and then there are Sulfuric Acid, Crystalline Silica, and Formaldehyde (all are potentially harmful if inhaled and can lead to lung damage; all are carcinogenic). Weighing the potential health risks of fracking brings to mind what Henry David Thoreau once said, “The price of anything is the amount of life you exchange for it.”

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