

Laundry Detergent, Fracking Chemicals and Cancer

Cornell Holds Forum on Cancer and the Environment

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Ask people what concerns them about gas drilling in the Marcellus shale, and contamination of drinking water and groundwater aquifers usually tops their list. Indeed, at last month's IOGA-NY program in Corning, gas industry representatives spent much of the night trying to ease concerns about the potential contamination of water from chemicals used in hydraulic fracturing (fracking).

"These chemicals are no more dangerous than those found in personal care products and laundry detergent," said Brad Gill, executive director of IOGA-NY. He flashed a slide of the Materials Safety Data Sheet for a common household cleaner on the screen to illustrate that people use products containing chemicals similar to those used in fracking fluid every day.

After last week's forum on Cancer and Environment held at Cornell University, industry folks may want to re-think that analogy. Medical and science researchers from Cornell's Program on Breast Cancer and Environmental Risk Factor (BCERF) demonstrated that many of the chemicals in shampoos, cosmetics and household cleaning products contribute to cancer. In short, they are anything but "safe".

Sunscreen, Plastic Bottles And Laundry Detergents

A wide number of everyday products contain chemicals that mimic hormones, synthetic chemicals that can disrupt normal hormone behavior in our bodies. Many of these are environmental estrogens, said Dr. Suzanne Snedeker. The estrogen receptors in our bodies respond to any estrogen, not just what our body makes, and scientists are concerned that exposure to environmental estrogens – even in low doses – increases the risk of breast cancer.

Environmental estrogens in shampoos, body lotions and sunscreens may be absorbed into our bodies through the skin. Bisphenol-A, used in polycarbonate plastic sports water bottles and the lining of food and beverage cans, is released when exposed to heat. Cleaning products and laundry detergents may contain nonylphenol polyethoxylate, a surfactant that breaks down into an estrogen mimic.

Endocrine Disruptors In Fracking Chemicals

William Kappel, a hydrologist with US Geological Survey (USGS) addressed some of the issues with fracking chemicals and the wastewater from gas wells. While most of the frack fluid is water and sand, about one-half of a percent is chemicals, Kappel said. These include gels to help the sand prop open the fractures, biocides to kill bacteria, and surfactants that act as wetting agents.

One-half of a percent seems small, but small numbers add up, said Kappel. That means that for every 1.5 million gallons of water about 7500 gallons of chemicals are injected into the earth.

While some of the frack water remains in the shale, about 10 to 40 percent is returned to the surface as wastewater. There is also water trapped in the formation that is released during the fracking process. In addition to surfactants, the "produced" water contains salts, heavy metals and even radioactive particles.

Kappel noted that one well in Pennsylvania produced progressively more radioactive waste over time. Drill cuttings and produced water contained radium 226 and radium 228; both produce radon as a product of radioactive decay. Over time, the amounts of radioactive particles in the wastewater increased, with alpha particles measuring up to 18,950 picocuries/liter (pCi/L).

One of the issues facing drilling companies is how to dispose of the drilling wastewater. Injection into underground wells is one option, and Kappel mentioned that non-productive deep wells such as Trenton-Black River wells might provide underground disposal.

In the past, companies have tried to send their wastewater to treatment plants. The problem, however, is that public wastewater treatment plants are not designed to handle the high amounts of salts and other chemicals present in the frack and produced water. Also, heavy metals and some of the chemicals, such as the environmental estrogens from degraded surfactants, remain in the sewage sludge that may ultimately be spread on farmland.

“Surfactants are problematic from a health standpoint,” said Dr. Anthony Hay, a panel member at the forum. Surfactants are, by weight, the largest group of chemicals that show up, and are already found in sludge. Some may pass through the treatment plant and have an impact on the lakes and streams where wastewater is released, Hay said.

Cancer and Shale Mining

Dr. Sandra Steingraber, scientist and author of *Living Downstream*, pointed to new evidence that links at least 35 air pollutants to breast cancer. Most of these are created through the burning of coal and petroleum products, Steingraber said.

One group in particular – polycyclic aromatic hydrocarbons (PAHs) – is generated during shale drilling. This group contains over a hundred chemicals, including benzoate pyrene, which has been found in breast tissue.

In urban areas PAHs are produced by traffic, and studies show a link between traffic density patterns and breast cancer, Steingraber said. In gas drilling, the PAHs also come from trucks: the trucks carrying water to the well, the trucks carrying frack wastewater away from the well, and the generators needed to pump the water and chemicals into the well to fracture the shale.

The most direct way to stop cancer is to stop putting cancer-causing chemicals into the environment, Steingraber said. “To ignore the scientific evidence is to knowingly permit thousands of unnecessary deaths each year.”

To provide a cleaner environment often means confronting industries. Many of these industries try to create an atmosphere that approval of their project, whether it is a hazardous waste site or a drilling rig, is a foregone conclusion, Steingraber said. They try to paint those opposed as being in denial.

“But that is not the case,” said Steingraber. She encouraged people to take an active role in protecting their community. “When citizens stand up and say no, things can be turned around.”