Testimony submitted by Heather Cantino to House Energy and Nat Res Comm re Sub HB 393 1-18

Mr. Chairman: Based on my decades-long study of endocrine disruption, toxics, and health impacts of oil and gas waste, I view this proposal as dangerous and completely unprotective of human and environmental health. As it problems are intrinsic to the nature of the proposal, they render it irredeemable. It must be rejected for the sake of Ohio's air, water, farmland, and human and animal health.

Oil and gas waste can contain hundreds of toxic constituents, many undisclosed due to trade secrets and weak Ohio and federal regulation. Waste constituents vary from well to well and over time. Most chemicals used in oil and gas operations are not subject to government regulation or health standards. Some don't even have CAS (chemical abstract service) numbers. For example, in one study of 980 products used by the gas and oil industry, less than 1% of the total composition of the product was reported on the product's MSDS in 421 products. 90% of products studied had at least one known potential health effect. Nearly half of the products (47%) contained at least one chemical considered an endocrine disruptor. Such chemicals interfere with the endocrine system, development and reproduction, and even at extremely low doses can have severe lifelong effects on sensitive populations, including babies and children,[i]

Oil and gas *waste* is more toxic even than chemicals used in drilling and stimulating wells. Health effects of forty chemicals and heavy metals from New Mexico oil and gas waste evaporation pits "produced a health profile even more hazardous than the pattern produced by the drilling and fracking chemicals. Upon further investigation, we discovered that 98% of the 40 chemicals found in the pits are listed on USEPA's 2005 CERCLA (Superfund) list and 73% are on the 2006 EPCRA List of Lists of reportable toxic chemicals. Of nine chemicals found to exceed the New Mexico state limits, all are on the CERCLA list and all but one are on the EPCRA List of Lists."[ii]

There are no provisions in this bill or apparently any intent to fully assess the composition of the processed waste on an ongoing basis or to fully evaluate possible hazardous constituents. The bill itself sets out restrictions on the ability of the government to regulate the very activities it would enable, including decreeing only very limited testing and infrequent monitoring of limited parameters, such that safety would be legally impossible to even work toward, let alone ensure. There is not even a requirement for testing by an Ohio-EPA certified lab. And with its provision that "[t]he chief shall not adopt rules or establish or impose additional requirements applicable to commodities governed by division (C)(9)(a) of this section," the law even makes it legally impossible to set higher standards than this dangerous proposal.

While clearly ODOT has no processes or rigorous standards to determine safety of oil and gas waste-based products, neither would ODNR regulation be protective of public health, as its notoriously inadequate regulation of oil and gas operations illustrates. For example, ODNR requires no evaluation of aquifers in well permitting, no water monitoring, and no VOC capture from venting tanks and wells, and rarely imposes a fine for violations of its wholly inadequate rules. It has also not yet implemented rules to support laws passed four years ago or more.

Oil and gas waste can be highly radioactive and contains heavy metals, The bill does not provide any standards for monitoring these hazards, let alone for their removal. Processing waste to completely remove this contamination would obviously be technically very difficult (if even possible) and would certainly not be cheap. But since the bill doesn't require such a standard, it's obviously not expected to be met and is even made impossible by the bill's restrictions on additional regulation! Even evaluating the presence of these contaminants is very expensive, but this bill makes that a non-issue too by making more rigorous testing standards illegal! So much for protecting public health!

Even processed oil and gas waste can contain heavy metals and radiologicals with severe human and environmental health risks. A recent Duke University study showed a buildup of radioactive materials at the bottom of three western Pennsylvania waterways from *treated* conventional oil and gas wastes. According to Dr. Avner Vengosh, professor of geochemistry and water quality at Duke University and a study author, "Despite the fact that conventional oil and gas wastewater is treated to reduce its radium content, we still found high levels of radioactive build-up in the stream sediments we sampled. Radium is attached to these sediments, and over time even a small amount of radium being discharged into a stream accumulates to generate high radioactivity in the stream sediments. While restricting the disposal of *fracking* fluids to the environment was important, it's not enough," Dr. Vengosh stated, concluding, "Conventional oil and gas wastewaters also contain radioactivity, and their disposal to the environment must be stopped, too." The scientist was quoted in a report that stated, "The level of radiation found in stream sediments at the disposal sites was about 650 times higher than radiation in upstream sediments. In some cases, it even exceeded the radioactivity level that requires disposal only at federally designated radioactive waste disposal sites."[iii]

According to the US EPA[iv], chronic exposure to high levels of radium can result in an increased incidence of bone, liver and breast cancer. Ohio shales are known for higher uranium levels than Marcellus shales. From US EPA: "Chronic (long-term) inhalation exposure to uranium and radon in humans has been linked to respiratory effects, such as chronic lung disease, while radium exposure has resulted in acute leukopenia, anemia, necrosis of the jaw, and other effects. Radium and radon are potent human carcinogens. Radium, via oral exposure, is known to cause lung, bone, head (mastoid air cells), and nasal passage tumors. Radon, via inhalation exposure, causes lung cancer. Uranium may cause lung cancer and tumors of the lymphatic and hematopoietic tissues."

When spread on the ground for deicing or dust control, traffic and wind cause radioactive dust to become airborne, where it can be inhaled or deposited on crops or pastureland. Humans can accumulate radium in the bones from direct inhalation or ingestion or from consuming produce or animals that have been exposed to radium. Radium-226 has a half-life of 1,600 years.

I trust that you all have read and will re-read Dr. Julie Weatherington-Rice's letter to the Energy and Nat. Res. Committee on SB 165 on the extreme dangers of spreading conventional oil and gas waste.[v] I hope you take seriously her expert testimony as you consider this dangerous bill with its fatal implications for all the Ohioans who will be breathing, eating, and drinking toxic, radioactive particulates if you go ahead with this ill-considered legislation. Our state's health and wellbeing depend on your actions. Thank you.

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[i] endocrinedisruption.org/assets/media/documents/Multistate%20summary%208-3-17.pdf The report also states, "In the 980 products identified above, there were a total of 649 chemicals. Specific chemical names and CAS numbers could not be determined for 286 (44%) of the chemicals, therefore, the health effects summary is based on the remaining 362 chemicals with CAS numbers."

[ii] biologicaldiversity.org/campaigns/fracking/pdfs/Colborn_2011_Natural_Gas_from_a_public_health_perspective.pdf

[iii] www.phys.org/news/2018-01-radioactivity-oil-gas-wastewater-persists.html. The article quotes another author of the study, Nancy Lauer: "Our analysis confirms that this accumulation of radioactivity is derived from the disposal of conventional oil and gas wastewater after 2011, when authorities limited the disposal of unconventional oil and gas wastewater. The radionuclide ratios we measured in the sediments and the rates of decay and growth of radioactive elements in the impacted sediments allowed us to essentially age-date the contamination to after 2011."

[iv] www.epa.gov/sites/production/files/2016-09/documents/radionuclides.pdf

[v] docs.wixstatic.com/ugd/d264fd_c9229be3afc8407db024c85a648249a4.pdf