

This testimony is in opposition to both HB 282 and SB 171. “These bills would enact section 1509.228 of the Ohio Revised Code to establish conditions and requirements for the sale of brine from oil and gas operations as a commodity and to exempt that commodity from requirements otherwise applicable for brine.”

Once again Ohio’s politicians are promoting bills that will harm both the health of the residents of the state as well as contribute to long-term contamination of the environment. The wastes from oil and gas exploration are already exempt from the Federal Resource Conservation and Recovery Act under Section C, however that exemption admits that this does not mean “these wastes would not present a hazard to human health and the environment.” These bills mean that there will be no reporting as to who uses the substance and how much is used.

These bills will allow many contaminants (elemental and aromatic hydrocarbons) to be present in this so-called commodity in quantities far exceeding the ranges specified in the Safe Drinking Water Act (SDWA). It will allow 5.0 ppm of arsenic (500 times SDWA). This element is associated with an increased risk of cancer. It would allow 0.2 ppm of Cadmium (40 times the SDWA). This element causes kidney damage. It would allow 0.05 ppm of Mercury (25 times the SDWA). Mercury is an element known to cause neurological damage. It will allow 0.31 ppm of Benzene (60 times the SDWA). Benzene is a known carcinogen. It will allow 17.5 ppm of Toluene (17 times the SDWA). Toluene also causes neurological, renal and liver problems. It will allow 29 ppm of ethylbenzene (40 times the SDWA) This compound causes liver and kidney problems. It will allow 20,000 picocuries of Radium-226 and 2500 picocuries of Radium 228. The SDWA allow for 5.0 picocuries for both isotopes combined. This means nearly 4000 times the SDWA of radioactive isotopes will be in this commodity.

The half-life for Radium-226 is 1,600 years and is 6.7 years for Radium-228. Each radionuclide releases energy as they decay into radon gas. “Radium can enter the body when it is inhaled or swallowed. Radium breathed into the lungs may remain there for months; but it will gradually enter the blood stream and be carried to all parts of the body, with a portion accumulating in the bones.” It can cause bone cancer and other diseases.

Dave Mansbury, the owner and a major financial benefactor of these bills made some interesting claims in his testimony and additional documentation. None of the evidence that he presented was based on peer-reviewed scientific data and was rather anecdotal in nature.

While AquaSalina might be “400 million year old sea water” to call it “natural” does not decrease its toxicity. The moment this brine is extracted from thousands of feet below the ground, via oil and gas production, this “ancient sea water” is able to release the water-soluble Radium-226 and Radium-228 to the environment.

He claims that the use of his product will help preserve water. This is laughable considering the amount of freshwater that is contaminated every year by road salt from any source. A peer-reviewed study reported that “nearly all of this road salt eventually enters adjacent rivers, streams, and aquifers, with detrimental impacts to both ecosystem function and drinking water supplies.” (1) Now not only will our water be contaminated with chlorides and bromides but we will also get radioactive isotopes as well as aromatic hydrocarbons.

Additionally, we know from studies that road salt has found its way into private water wells. Now, these wells could be contaminated with radionuclides. (2)

The Winter Roadway Maintenance Material Enhancer Evaluation done by Temple University for Pennsylvania DOT referred to by Mr. Mansbury makes no mention of health effects and only discusses performance (see page 68-72) and AquaSalina was not the best performer in all tests conducted. (3)

Contrary to what is claimed in the supplemental materials, this product DOES increase the likelihood of human contact. It was once sequestered in rock strata, now it will be applied to our roads.

To claim safety assurances of this product based on one report by the Ohio Health Department, a report that was not backed by peer-reviewed analysis is incredulous. When the ODNR's Radiation Safety Section found samples from six locations in Ohio to exceed the state's "discharge to environment limits." (4)

Page 6, 15-16 of the supplemental materials provided by Mr. Mansbury shows a lack of meaningful scientific evidence. One cannot compare isotopes like Radium-226 and Radium-228 to Potassium-40. Isotopes differ in their breakdown products and the types of radiation they release during decay (alpha, beta, gamma). Radium is a carcinogen while Potassium-40 is not. Anything that contains potassium is radioactive as one out of every 10,000 potassium atoms is the isotopic Potassium-40. But this isotope is NOT carcinogenic. You will not get cancer from eating bananas. However, Radium-226 gives off gamma radiation (which passes through a body) and can lead to bone, liver and breast cancer. Additionally, the decay product of Radium-226 is Radon gas, known for its ability to cause lung cancer.

The chart presented on page 16 shows various levels of radiation in millrems (not picocuries). Note that, except a few medical tests, most of the higher exposures will never be experienced by the average citizen in Ohio. Citizens know exactly how much radiation these medical tests will expose them to and they make the decision to get the tests. This is not the case in brine spreading and radiation exposure. Children, pets and the ecosystems will be exposed to radiation and other toxic compounds regardless of their desire not to be exposed.

Mr. Mansbury claims that he is just a small business owner who has figured out how to make a toxic substance a commodity. His claims that the product is safe are an insult to the citizens of Ohio. The only winners in this game will be Mr. Mansbury and the Oil and Gas Industry who will not have to pay for injection wells as their wastes will now be spread out for all of Ohio citizens to be exposed to.

1. (<https://pubs.acs.org/doi/10.1021/acs.est.8b04709>)
2. (Gowan, S. W. *Draft: Analysis of the Occurrence and Source of Elevated Chloride in Ground Water in the Vicinity of the Thousand Islands Winery*, Town of Orleans, Jefferson County, New York; Alpha Geoscience: Clifton Park, NY, **2012**.)
3. The Winter Roadway Maintenance Material Enhancer Evaluation April 6, 2018 PA DOT
4. <https://www.dot.state.oh.us/Divisions/Operations/Maintenance/Documents/July12018-AquaSalinaradiactivityemail-TeresaMills.pdf>