

## Where bad science hits the road!

The purpose of this letter is to express our concerns and outrage regarding the spread of radioactive oil and gas waste in Ohio communities. We are asking for your support in opposing the continued use of radioactive oil and gas waste on our roads and in our communities.

The Ohio Department of Natural Resources has tested 151 samples from 150 oil and gas wells. Their findings are extremely disturbing. Results from both conventional and horizontally drilled wells have revealed that both sources of waste contain high levels of Radium-226 and Radium-228.

**Test data from the Ohio Department of Natural Resources shows combined Radium-226 and Radium-228 in 151 samples, with 148 samples exceeding the environmental discharge limit of 120 pCi/L established in the Ohio Administrative Code 3701:1-38-12, Appendix C, Table II.** All 151 samples exceed the federal drinking water standard of 5 pCi/L.

Breaking this down further, of 118 conventional wells tested, all exceeded the drinking water standard and 115 exceeded the environmental discharge limit. All 25 horizontal wells tested exceeded both standards; of out-of-state wells tested, 7 of 8 exceeded the environmental discharge limit; all exceeded the drinking water standard.

We have been told over and over that bine spreading is safe because it is produced by conventional wells and not unconventional horizontal wells. As we suspected all along, this statement is patently false.

<b>Rad-226 (pCi/L)</b>	Horizontal	Conventional	Out-of-state
Range	103 to 2376	3 to 9294	17.5 to 9236
<b>Rad-228 (pCi/L)</b>	Horizontal	Conventional	Out-of-state
Range	70 to 1814	6 to 2340	37.1 to 1091
<b>Combined (pCi/L)</b>	Horizontal	Conventional	Out-of-state
Range	173 to 3264	66 to 9602	54.6 to 9798

Radium-226 is especially dangerous because, unlike many radioactive isotopes, it dissolves readily in water. When this contaminated water is ingested, the body mistakenly recognizes Ra-226 as dissolved calcium and deposits it in bone tissue. **Radium-226 is a bone seeker and causes bone cancer.**

Radium-226 is an "alpha particle emitter," meaning that its atoms have enough radioactive energy to bombard surrounding cell tissues and cause cell mutations. Alpha particles are difficult to detect and have a greater potential for damage in biological tissue. In fact, radon gas - radium in gas form - is the second leading cause of lung cancer in the U.S.

Exposure to even low levels of radium can result in an increased incidence of bone, liver, and breast cancer. The EPA and the National Academy of Sciences' Committee on Biological Effects of Ionizing Radiation have stated that radium is a known human carcinogen (ATSDR ToxFAQs). Allowing the spreading of these alpha particles in the environment is a serious

and irreversible health issue that must be halted now!

We are extremely concerned about the health risks to young children and other members of the public exposed to this radioactive waste through direct skin contact, ingestion of particles from contaminated hands, inhalation of radioactive dust, ingestion of radioactive dust on crops, and via contamination of drinking water supplies.

It is outrageous that no agency in Ohio has stopped this practice of spreading radioactive waste in our communities.

Once this contamination is allowed into the environment, it will migrate via air pathways, water, and biological vectors, contaminating water, soil, crops, other vegetation, wildlife, livestock, and pets. The radioactivity will persist in the environment for millennia. The half-life of radium 226 is 1600 years.

**We need your help to protect the citizens of the State of Ohio over the profits of the oil and gas industry, which is dumping this material onto public roads to avoid having to properly dispose of this highly radioactive waste.** Will you step up and help us halt this unnecessary and deadly practice of spreading oil and gas waste on Ohio roads?