

**Proponent Testimony**  
**For**  
**SB 165**  
**From**  
**William Rish, Ph.D.**  
**Before the**  
**Senate Energy and Natural Resources Committee**  
**On**  
**Wednesday, March 21, 2018**

Chairman Balderson, Vice Chair Jordan, Ranking member O'Brien, thank you for the opportunity to provide proponent testimony today on SB 165.

**My qualifications**

My name is Dr. Bill Rish and I am a Principal Engineer at ToxStrategies, an advanced toxicology and risk assessment consulting firm, with an office in Dublin, Ohio. I previously directed the Risk Analysis Center at Hull & Associates, also located in Dublin, Ohio. I have 40 years of experience in environmental risk assessment and have prepared hundreds of human health risk assessments, with 30 years of practice in Ohio.

- I was co-coordinator of the development of the Voluntary Action Program (VAP) generic cleanup standards and the risk assessment procedures rule. I am currently serving on the 5-year review work group on those rules.
- As a Certified Professional under the VAP, I prepared 14 No Further Action Letters on behalf of Ohio EPA and obtained Covenants Not to Sue from Ohio EPA for all 14 sites.
- I also prepared and obtained 10 Urban Setting Designations for groundwater at cities throughout the state of Ohio.
- All of these No Further Actions and Urban Setting Designations required evaluating ecological and human health risks and potential exposure pathways.

**What I was asked to do**

Nature's Own and Duck Creek Energy asked me to consider whether the use of AquaSalina for deicing roadways presents a significant risk to ecological resources or human health.

**How I evaluated risks**

I began by reviewing published studies of third party and independent certification agencies and academic institutions where they evaluated the use of AquaSalina for road deicing based on several parameters, including risks to the natural environment. These studies also compared the environmental impacts and ecological risks across alternative deicing materials. I found that the independent studies used good protocols to compare different products used for deicing, and I agree with their conclusions that environmental impacts and ecological risks associated with AquaSalina are low and significantly less than alternatives, such as using rock salt.

I also reviewed recent extensive investigations by the Conference of Radiation Control Program Directors and the Bureau of Radiation Protection of the Pennsylvania Department of Environmental Protection, where a multi-media pathway analysis has been completed of the potential radiological doses to the public associated with the use of brine from oil and gas wells as a deicing agent. The type of brine in this study has higher radiological levels than AquaSalina. The upper bound dose calculated by the Pennsylvania Bureau of Radiation, based on extensive sampling of radiation along 32 roads treated with oil and gas brine, is approximately 0.5 millirem/year from the brine radiation. Note that this calculated dose conservatively assumed a hunter or jogger exposed to ground external radiation, inhalation (at an elevated inhalation rate), radon, plant consumption, meat consumption, milk consumption, and soil ingestion.

According to the Ohio EPA, background radiation is the normal radiation that is present in the environment from natural sources. These sources include radiation from the sun, cosmic rays, food and water, radiation from naturally occurring elements in the soil and rocks, and some building materials. The majority comes from soil and rocks. In Ohio, the background radiation average ranges from 80 to 240 millirem/year. The accepted value for the average background radiation dose to people living in the United States is 360 mrem/year. The Pennsylvania study estimated an upper bound dose from oil and gas brine deicing of 0.5 millirem/year. The use of AquaSalina for deicing will not result in significant radiological risk from any worker or public exposure pathway.

I used a study of drinking water risks from a large spill of gas well brine, which I recently published in the peer-reviewed scientific journal [Risk Analysis](#), to compare to potential risks to groundwater from runoff and infiltration of AquaSalina. The concentration of chemicals in this type of shale gas brine are much higher than those in AquaSalina. Based on my study and laboratory analysis of AquaSalina chemical content, if 10,000 gallons of AquaSalina was spilled on the ground near a drinking water well, the health risks to an adult or child drinking from that well would be insignificant and well-below levels accepted by U.S. EPA and Ohio EPA.

I compared laboratory data of the chemical content of AquaSalina to Ohio surface water quality criteria. This comparison showed that the proper use of AquaSalina will not result in exceeding Ohio surface water criteria for protection of aquatic species or protection for agricultural use of surface water for any of the substances present in the product. The impact of deicing roads with AquaSalina on surface waters will be much less than that associated with the use of rock salt.

One final comparison was performed. I have read testimony raising concerns about “heavy metals” in brine being used for deicing. Most of the earth’s elements are metals. In the environmental world, the term “heavy metals” refers to the denser metals. Like all metals these can be toxic if taken into the body at high enough levels. But, some of these heavy metals are also essential nutrients for good health when taken into the body at proper levels. That is why vitamin tablets contain them. In fact, based on laboratory analysis of AquaSalina, taking one vitamin containing the recommended daily amount of chromium, copper, selenium, and

zinc puts more of these metals (factors of 42, 47, 3, and 78 higher respectively) into the body than would drinking an 8-ounce glass of AquaSalina (which is not recommended).

**Conclusion**

The use of AquaSalina for deicing paved surfaces will not result in unacceptable ecological or human health risks from chemicals or radiation.

Thank you for your time and attention. I would be happy to answer any questions.