

Written Testimony of Eric Roy, Scientific Founder | Hydroviv

Field Hearing: Addressing the Lead Crisis Through Innovation & Technology before the United States House of Representatives Committee on Science, Space, and Technology

October 15, 2019

Thank you Chairwoman Sherrill, Ranking member Norman, and members of the subcommittee for your invitation to share my views on how scientist-entrepreneurs can be better supported by the Federal Government to develop technologies that predict, detect, and treat water quality issues like the crisis currently underway in Newark. While today's testimony is informed by my experience working at companies that were funded by or sold technology to the Department of Defense, Department of Homeland Security, Environmental Protection Agency (EPA), I am not speaking on behalf of any of these employers or organizations.

Hydroviv is a water filter company that I started as a charitable effort in response to the Flint lead crisis. At the time, I was working for a startup that developed technology used by First Responders and Military personnel to detect chemical warfare agents, explosives, illegal drugs, and other hazardous substances. I was able to use my experience in chemistry and advanced materials as well as my manufacturing connections to build custom water filters that could handle Flint's lead levels, and donated them to families and child-centric organizations. This was never intended to be anything more than a charitable effort run from my apartment, but public awareness of water quality problems in the US has continued to grow, which eventually led to Hydroviv launching nationwide on Shark Tank this past April.

From this and other entrepreneurial pursuits dealing with water, I've learned that companies working on water quality problems face barriers getting their technology in the field that are not encountered by companies that develop solutions for other interests of the Federal Government like defense and homeland security. In this testimony, I will focus on two specific areas where I believe the Federal Government can help reduce these barriers.

The first barrier faced by entrepreneurs that work on water quality problems is fundamental access to the highest priority problems. For these high-priority interests, it would be beneficial for federal agencies to align private sector, academic, and government stakeholders in the same way that they do for Defense and Homeland Security priorities. This deliberate alignment is different than what I've encountered with federal agencies that work on water.

A recent example relevant to this hearing has to do with the water filters that were distributed by the City of Newark to families with high levels of lead in their water. Despite being rated to remove lead, these filters were surprisingly ineffective under real-world conditions, and scientists from various government and academic organizations are actively researching why this is the case. However, according to the scientists that I've spoken to who are working on this problem, the scope of their work is limited to researching the problem and does aim to make improvements to water filtration technology, which is ultimately the problem that needs to be

solved. Moreover, the results of these studies won't be published for months, or even years, which means that the scientists and engineers who are in a position to make improvements on filtration technology have to wait before they can start working on the solution. Active alignment of these scientists by federal agencies would undoubtedly shorten the time it takes to get improved filtration technologies in the hands of impacted citizens.

The second thing I'd like to discuss today is a cost barrier faced by companies that are looking to transition technology from the laboratory to the public. Cost-effective third party validation is a major barrier to entry for water-centric technologies. Without it, technology developers struggle to establish their products as credible and distance themselves from ineffective products that use marketing gimmicks. This is particularly common in the consumer products space because most consumers don't have the expertise or access to tools that would allow them to evaluate a technical product, and the certifying bodies that the government points consumers to for validated products are cost-prohibitive, and therefore serve as a barrier to market entry.

For security interests, the Federal Government reduces these types of barriers by establishing cost-effective programs and providing access to "proving grounds" that allow technology developers to validate their products under real-world conditions so they can go to market. If this existed for companies working on water quality, a successful trial would establish credibility and enable them to go to market with a municipal pilot project or raise investment so they would be able to pay for the costly certifications that governments point consumers to. In turn more prediction, diagnostic, and treatment technologies would graduate from the laboratory to the public, and as a result these innovation areas would become more attractive to outside investment.

I've seen first-hand how alignment between government, academic, and private sector stakeholders can shorten the time to market and lead to more effective technologies. I want to thank everyone for their time and I would be happy to work with members of this subcommittee on anything that has been discussed today.