

Selenium, Ltd. Awarded \$500,000 SBIR Grant for Biofouling Prevention Technology

This grant supports the company's goal to work with industry to develop a safe and cost effective antimicrobial product that will directly address the current and growing need for potable water.

Austin, TX – April 2, 2013 – The National Science Foundation (NSF) has issued a Phase II Small Business Innovation Research (SBIR) grant to biopharmaceutical company Selenium, Ltd. to advance the company's effort to develop a market ready, antimicrobial spacer to be used in reverse osmosis (RO) membrane modules in water filtration systems. Selenium's organo-selenium compounds have been successfully incorporated directly into RO spacers creating a market disrupting, low cost, "green" antimicrobial solution.

As water demands increase and potable water source availability decreases, industry is actively seeking more cost effective solutions for seawater and wastewater reclamation. Currently, much of the energy, chemical and labor costs associated with water filtration are required to address biofilm formation. The current US\$6.9 billion desalination market size is estimated to double by 2016 and given the projected demand and scarcity of water, the market size could be propelled to US\$25 billion by 2025 (Voutchkov, 2012). Primary elements of RO desalination costs are capital and annual operation/maintenance expenditures, which include biofilm cleaning and membrane replacement.

"Over time, bacteria build up in membrane modules which can inhibit filtration performance," said Kris Looney, President of Selenium, Ltd. "Results from our Phase I SBIR Grant report show Selenium's membrane module spacers substantially reduced biofilm mass and thickness, reduced micro-pollutants and showed an 85% improvement in water throughput over the control. These improvements increase energy efficiency and extend the life and functionality of the membrane. Our Phase II project will develop an organo-selenium enabled commercial spacer for independent testing by industry partners."

"The NSF's SBIR program is focused on identifying companies with innovative technology and talented teams capable of bringing products and technologies to commercialization that could have a significant societal impact," said Mr. Thomas Harlan, CEO of Selenium. "Prevention of biofouling on membranes will advance the state-of-the water reclamation industry and provide an economical and safe solution for delivering more clean water to more people. We recognize that the NSF has a highly selective due diligence process and we are honored to be chosen as a recipient of this award and to carry out this important work."

Phase II studies will be carried out in collaboration with Dr. Audra Morse of the Department of Civil and Environmental Engineering at the Texas Tech University School of Engineering and Dr. Ted Reid, Selenium, Ltd. Co-Chief Scientist and Professor at Texas Tech University Health Sciences Center.

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About Selenium, Ltd.

Selenium, Ltd. is a biopharmaceutical company specializing in the prevention of bacterial biofilm formation using molecular coatings of redox active selenium for industrial and medical applications. Seldox™ is made using technology developed by Dr. Ted Reid and Dr. Julian Spallholz, Co-Chief Scientists of Selenium and professors within the Texas Tech University System. Selenium Ltd.'s proprietary chemistry is a "green technology" that inhibits microbial growth on surfaces through a natural, safe catalytic reaction that does not leach chemicals or toxins into the surrounding environment.

Selenium, Ltd. is managed by innovation solutions company, Emergent Technologies, Inc. (www.emergentechnologies.com)

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