



SBIR Road Tour

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Elevated Health Systems, LLC (EHS)

ESP-DLux™ Automated Germicidal Light Biosecurity System

Technology Description and IP Position

Technology/Product/Research Summary:

The ESP-DLux™ includes:

- Industrial strength germicidal lamps, fans and a filter in cylindrical housing;
- Rotating shutter: when closed, unit circulates sanitized air; when open, unit disinfects air and surfaces
- "4 in 1" versatility: Shutter aperture can also be narrowed for Upper Room and Entry Way targeted disinfection
- Multiple sensors for the detection of human/animal occupancy
- Wireless computer interface with user-friendly controls for ease of customization of usage
- Could be wirelessly networked into large systems which continuously sanitize entire bldgs., with funding.

IP Position: Five U.S. Patents



NEED, MARKET OPPORTUNITY & IMPACT

Need: The ESP-DLux™ adapts to the diverse and changing biosecurity needs which arise throughout many industries, using multiple occupancy sensors and wireless controls to automatically and continuously provide the highest level of UVC hygiene appropriate to the enclosed space. Currently, one in twenty five patients entering a hospital acquire an infection there and many are re-admitted due to this, costing an average hospital over \$6M in penalties and expenses annually. Many of these infected patients recover in acute care facilities, assisted living and nursing homes, spreading infection. In agriculture, the \$38B poultry industry recently suffered enormous losses due to Avian Flu, with APHIS stating farm biosecurity has never been more desperately needed. Agencies such as the CDC handle the most dangerous microbes on the planet and recent events demonstrate that human error in hygiene procedures can occur. Laboratories and food and drug manufacturing are all vulnerable to infectious incidents demanding product recall and payment of damages to customers. In the U.S. military, many soldiers contract MRSA and viral epidemics can compromise battle readiness. International air travel is proven to spread novel pathogens globally, including into hospitals.

Target Customer: Hospitals, acute care centers, assisted living and nursing homes, medical offices, research laboratories, veterinary hospitals and clinics, enclosed animal farms, dairies, food production, U.S. military, Homeland Security, industrial and governmental facilities, aviation, mass transportation, schools, correctional facilities, sports, hotels, elevators, and others.

Value to the Customer: Protection of humans/animals and infectious disease liability reduction.

Market Opportunity: Initial addressable market is over 5M units, will grow to 30M+ units

POTENTIAL SBIR/STTR APPLICATIONS and STAGE OF TECHNOLOGY/PRODUCT DEVELOPMENT

Relevant Agencies: The ESP-DLux™ (Extra Sensor Protection and Disinfection using Light) is relevant to (1) Dept. of Health and Human Services, especially the NIH and CDC; (2) USDA, especially APHIS for study of animal health/product applications; (3) the Dept. of Homeland Security; (4) the Joint Science and Technology Office for Chemical and Biological Defense; and (5) all other agencies dealing with infectious disease and biosecurity in human and animal health.

Problem Addressed: The ESP-DLux™ addresses the national and global crisis involving antibiotic resistant microbes, made more urgent with the emergence of the mcr-1 gene in the U.S., as well as viral outbreaks, potential pandemics and bioterror. Experts warn that, without immediate and comprehensive action, the era of modern medicine, initiated with the advent of antibiotics, may soon be over, with catastrophic results for citizens, industries and governments. UVC light is well proven by the CDC, FDA and other agencies to eradicate microbes and reduce infections; however, current UVC products are large, cumbersome, extremely expensive and require constant personnel for operations. The ESP-DLux™ optimizes the germicidal power of UVC light through a system that is automated, effective, adaptable to any environment, safe to humans and animals through sensor technology, and far less expensive than the manually operated products on the market today.

Stage of Technology/Product Development: Units have been successfully tested for mechanical reliability at Via-Christi Regional Hospital and for germicidal efficacy at Affiliated Medical Services, Wichita, KS and at Iowa State University. Beta units are now ready for sale in limited supply.

Company/Team & Business Model

Company Mission: Elevated Health Systems, LLC is dedicated to manufacturing and licensing technology products that reduce transmission of infectious disease in enclosed spaces through the automation of UVC light. EHS believes that containment of pathogens, both naturally occurring and genetically modified for the purpose of bio terror, is a national priority at the governmental and industrial levels. EHS' goal is to create a product that has the flexibility to economically target isolated critical control points within a facility (such as a small veterinary practice) as well as create a comprehensive automated germicidal infrastructure throughout entire buildings and complexes. EHS desires to partner with governmental agencies, private industry and university research, as well as private investors, to revolutionize infection control in order to meet the dangers and demands of the 21st century and beyond.

Key Team Members: EHS Founder Ann DuPuis has a background in Quantitative Electroencephalography (brain function imaging) and Bio/Neuro Feedback; she recognized that a similar sensor/computer interface could automate UVC light and began R&D on the product and filed patents. CEO Dr. John DuPuis, MD has 30 years in medicine and business of medicine. CFO Alan Roberson CPA has 25 years experience in pharmaceutical management and acquisitions. Engineers Randy Westlund and Jon Doltar are former NASA engineers, with frequent deployments to McMurdo Station in Antarctica. Animal Health Advisor is Kevin Maher, whose company GlobalVetLink has a technology product adopted in all 50 states, serves on animal health boards internationally. Microbiology Research Advisor is Dr. James Dickson of Iowa State University, specializing in micropathology in food manufacturing.

Targeted Sectors/Research Areas: Human/animal infection control and all applications of biosecurity.