

RGF's Photohydroionization® Demonstrated to Reduce E. coli and Salmonella on Fresh Beef, Minimizing Meat Quality Impact

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[Environmental Group, Inc.](#) is pleased to share results from a USDA Agricultural Research Service (USDA ARS) study published in [Meat and Muscle Biology](#), affirming the efficacy of its [Photohydroionization®](#) (PHI)

technology in reducing Shiga toxin-producing E. coli (STEC) and Salmonella on fresh beef. This breakthrough

comes amid growing concerns over foodborne illness, including a recent McDonald's-linked outbreak associated with E. coli O157, a strain identified in the study as a key contaminant reduced by PHI.



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With its non-thermal, no-residue processing approach, PHI aligns with industry and consumer demands for cleaner, safer food handling.”

Dr. James Marsden, Executive Director of Science and Technology at RGF

The peer-reviewed study, conducted in collaboration with USDA ARS, Colorado State University, and the University of California at Davis, demonstrates that PHI effectively inactivates pathogens with minimal impact on beef quality. Specifically, PHI's unique combination of UV light and low-level oxidizers reduced bacterial counts by 0.3 to 1.1 log CFU/cm² within 15 to 60 seconds of exposure. This reduction range meets critical safety thresholds while preserving essential beef qualities like color and lipid stability, critical for consumer satisfaction and industry standards.

“Our PHI technology can support beef producers in maintaining safer food handling practices,” said Dr. James Marsden, Executive Director of Science and Technology at RGF®. “With its non-thermal, no-residue processing approach, PHI aligns with industry and consumer demands for cleaner, safer food handling.”

PHI technology's combination of UV light with oxidizing gases enables effective pathogen reduction even on irregular meat surfaces, overcoming limitations seen with other interventions. PHI is a processing aid and therefore, doesn't require labeling. It's an automated, continuous dry treatment and acts without adding water or chemicals. Research by USDA ARS emphasizes that PHI is a suitable last-step intervention to reduce microbial load immediately before packaging, significantly bolstering safety in food processing facilities and addressing current public health priorities.

For further information on RGF's PHI technology and its applications in food safety, please contact: Christopher Portalatin at cportalatin@rgf.com.

Yang, X., Kalchayanand, N., Belk, K.E., Wheeler, T.L. (2019). Photohydroionization reduces shiga toxin-producing *Escherichia coli* and *Salmonella* on fresh beef with minimal effects on meat quality. *Meat and Muscle Biology*. 3(1):105-115. <https://doi.org/10.22175/mmb2018.11.0036>.

Moreira, R. T. (2019). Efficacy of UV Light, Photohydroionization® and Beefxide® on Reducing *Escherichia coli* O157 on Beef Trimmings Used in Ground Beef Production. Master's Thesis, Texas Tech University.

<https://hdl.handle.net/2346/85908>

About RGF® Environmental Group, Inc.

RGF® manufactures over 500 environmental products and has a 40+ year history of providing effective solutions that improve air, water, and food quality without the use of chemicals. RGF® is an ISO 9001:2015 certified research and innovation company, holding numerous patents for wastewater treatment systems, air purifying devices, and food sanitation systems. Situated in the heart of the Port of Palm Beach Enterprise Zone, RGF® Headquarters span 10 acres, with 220,000 square feet of manufacturing, warehouse, R&D, and office facilities. RGF® continues to upgrade its facilities, creating an increased vertical approach to manufacturing, further allowing the company to provide the highest quality and best-engineered products on the market.

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