Disinfectant sprayer for Foods and Environmentally-friendly Sanitation

“D-FENS”
a novel chlorine dioxide sanitizing spray technology

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Introduction

• Strategy – Technology Transfer:
  ✓ Licensing chemical sanitizer for consumer and industry uses
  ✓ ClO₂ FDA-approved and EPA-registered for many uses

• Chlorine dioxide enhances safety - kills bacteria, molds, viruses, fungi
  ✓ Restaurants
  ✓ Agri-industry – produce rinses
  ✓ Households, camping, on-the-go

• “Army strong” never-fail chemistry:
  ✓ Controlled generation
  ✓ Reduced use of acids & hazardous materials
  ✓ Environmentally-friendly
Food Surface & Equipment Sanitizer –

- “D-FENS” - simple handheld ClO₂ sprayer uses ClO₂ to disinfectant food contact surfaces and food handling equipment

  ✓ Retail, industrial, and household uses.

- D-FENS is lightweight, non-powered, portable alternative to electric, capital-intensive, continuous ClO₂ generators.
Market Opportunities

Fresh Produce Safety

- ClO₂ kills microbes on fresh fruit & vegetables better than bleach.
- Compliant with GAPs, GMPs, and HACCP to help reduce foodborne illness from fresh and cut produce (tomatoes, greens).
- The Portable Chemical Sterilizer is a revolutionary medical sterilizer. Adaptable and scalable as Fresh Produce Pasteurizer
  
 ✓ In-field treatments post-harvest
  ✓ _L. monocytogenes_ on tomatoes
  ✓ Inactivates browning enzyme in sliced apple
Austere environments, Disaster relief, On-the-go, Camping –

• Energy-independent, portable sprayer.

• “Effector” chemistry offers convenience for on-site generation.

• Ideal for austere environments
  ✓ Disaster relief, third-world aid, forward military deployments.

D-FENS IN ACTION
spray on ClO$_2$ and wipe away germs (S. aureus colonies).
Management and Organization

• NSRDEC’s Combat Feeding Directorate is preeminent provider of RDT&E for field feeding equipment.

• Market surveys and in-house testing of commercial technologies
  ✓ Critical capability gaps for Food and Surface Sanitization

• Research funded by the Army’s Environmental Quality program

• Info available at DoD TechLink Booth # 501

• Expert Chemists, Microbiologists, Inventors
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Questions – why license?

• **Strategy - Technology Transfer**: Licensing with consumer or industry products companies
  - tablets, flexible pouches/seals, soluble membranes, packets

• **Cycle Costs** (lab-scale quantities) 1 D-FENS < $3, 1 PCS cycle < $10.
  - inexpensive, safe, dry, available chemicals
  - D-FENS uses COTS flexible pouch sprayer
  - PCS uses COTS compact, rugged plastic suitcase

• **Easy-to-handle**, safe to human health and the environment.

• **Integration with existing mixed-chemical technologies**
  - Enhance safety
  - Inexpensive, available materials
  - Lightweight to lower shipping costs
Opportunity for Investor/Licensee

Strategy - Technology Transfer: licensing with consumer or industry products companies
✓ Tablets, flexible pouches, soluble membranes, packets

• Opportunities in the retail and industrial sanitizer markets
  ✓ Enhance food and food surface safety
  ✓ PLAs (exclusives and non-exclusives available)
  ✓ CRADAs with researchers

• Small-scale batch generation for restaurants and food service
  ✓ Large companies in Consumer Products, Industrial Sanitizers, Water Treatment

• Large-scale for agri-commodities in industry
  ✓ To be tested in collaboration with USDA

• Dual-Use potential for civilians and the military
  ✓ Homeland Security, Emergency responders
  ✓ Global disaster relief, Third-world Humanitarian Aid