MagWater Inc.

In Situ Chlorination for the food chain from field to table

CANADA & USA MARKET BUILD-UP ANALYSIS

Agriculture / Field | Trucking & Mobile Transport | Restaurants

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SECTION 1 | TECHNOLOGY: WHAT IS IN SITU CHLORINATION?

MagWater's Magnetically Enhanced Catalytic Electrolysis (MECE) system uses a ruthenium-iridium (Ru/Ir) anode on a titanium (Ti) cathode to electrolyze dilute salt (NaCl) on-site, producing hypochlorous acid (HOCl), hypochlorite (ClO^-), and reactive oxygen species — **without purchasing, transporting or storing any hazardous chemicals.**

Input	Process	Output / Disinfectants
Salt (NaCl) + Water + Electricity	MECE electrolysis via dimensionally stable Ru/Ir-Ti anode	HOCl (hypochlorous acid), ClO^- (hypochlorite), hydroxyl radicals (ROS)

Core commercial insight:

In situ chlorination converts chlorine from a purchased chemical into a controlled utility. Salt costs $70–$120/ton. MagWater generates disinfectant at $0.02–$0.08 per m^3, versus $0.08–$0.25/m^3 for bulk sodium hypochlorite — a 50–80% cost reduction.

Payback: 1.5–5 years. Fastest: produce processing (1–2 yrs). Restaurants: 5+ yrs.

1.1 Why Ru/Ir-Ti Electrodes Excel: Ru And Ir are in the platinum group.

- **RuO_2 anodes favor chlorine generation** over oxygen evolution, maximizing hypochlorite output
- **Iridium improves coating stability** under continuous, harsh-use conditions — critical for industrial CIP systems.
- **Dimensionally stable anode** (DSA) maintains constant electrode spacing → steady voltage → **~20% power savings.**
- **Titanium substrate** resists chloride-induced corrosion pitting that destroys stainless-steel electrodes in weeks.
- **HOCl produced by electrolysis does NOT promote antimicrobial resistance** — an increasingly important regulatory advantage over quat-based sanitizers.

SECTION 2 | GLOBAL & NORTH AMERICAN MARKET — ELECTRO-CHLORINATION

$785M	$1.42B	$750M+	9,200
Global Electro chlorination Market 2024 — Future Market Report	**Projected 2032** 7.5% CAGR	**On-Site Segment (global)** 2024 valuation	**Active N. America Installations** Brine systems, 2024

Market	Size (2024–25)	CAGR	MagWater Relevance
electro chlorination Systems (global)	$465M–$785M	5.4–7.5%	Direct product category; food & Bev adoption +30%
On-Site electro chlorination (global)	$750M (2024)	7.5%	Core market; $1.50B by 2034
Food & Bev Industrial Disinfection (global)	$11.6B (2024)	4.1%	Food industry = 68% of demand; oxidizers = 46%
USA Food Disinfectant Market	$1.9B (2025)	11.8%	Fastest-growing; FSMA compliance-driven
N. America Total Addressable (food chain)	**$2.5B–$4.0B**	**5–10%**	**3 segments: Field/Ag, Transport, Restaurants**

SECTION 3 | SEGMENT 1 — AGRICULTURE & FIELD SETTINGS

3.1 Why Agriculture Is the Highest-Priority Segment

Fresh produce depends on chlorine at two critical points: pre-harvest irrigation water and post-harvest washing. Both are now regulatory mandates in the USA, and Canada's Safe Food for Canadians Regulations (SFCR) create equivalent obligations. MagWater's portable $5,000 unit — operating on a garden hose or solar panel — targets exactly this on-farm, remote-field need.

FSMA Pre-Harvest Agricultural Water Rule — Active Right Now

April 7, 2025: Large farms (>$500K annual produce sales) required to comply with pre-harvest water quality provisions.

April 6, 2026: Small farms ($250K–$500K) required to comply. FDA inspection assignments already issued (August 2025).

April 5, 2027: Very small farms ($25K–$250K). Every tier requires documented water assessment and, where hazards exist, mitigation treatments.

Impact: Tens of thousands of farms are in a mandated compliance window RIGHT NOW. In situ HOCl generation is the lowest-cost, most flexible field-deployable mitigation available.

3.2 Target Customer Universe — USA + Canada

Customer Type	Est. Ops (USA+CA)	Water Volume	In Situ Fit
Commercial produce farms >$500K sales	~30,000	High — irrigation + wash	FSMA mandated; direct water treatment trigger
Produce packing / fresh-cut facilities	~5,000	Very high (CCP wash lines)	Continuous dump tank / flume dosing; key CCP
Leafy greens / salad operations	~2,000	Very high	E. coli / Salmonella highest-risk category; regulatory spotlight
Meat & poultry processing plants	~6,500	Very high	CIP systems, surface Tx, carcass wash; 1–2 yr payback
Dairy processing plants	~1,200	High	PMO compliance, CIP, pasteurizer tank sanitation
Remote / off-grid field operations	Situational	Variable	Solar-powered 5-plate unit; zero infrastructure required

3.3 MagWater Ag System Costs vs. Bulk Bleach

System Tier	System CapEx	Cost per m³	Bulk Bleach Cost	Payback
Portable 5-plate / bucket unit	**$5K or $100/mo**	**$0.02–0.08**	$0.08–0.25	~2–4 yrs
Small plant (10–50 m³/day)	**$15K–$40K**	**$0.02–0.06**	$0.08–0.25	2–4 yrs
Medium plant (50–500 m³/day)	**$40K–$150K**	**~$0.05/m³**	~$0.15/m³	3–5 yrs
Large plant (>500 m³/day)	**$150K–$500K+**	**~$0.03/m³**	~$0.15/m³	1.5–3 yrs

3.4 Agriculture TAM / SAM / SOM — USA + Canada

Level	Definition	Est. Value (USD)	Basis
TAM	All USA+CA farms and produce processors using or requiring irrigation/wash chlorination	**$1.2B–$2.0B**	~37,000 plants + 30,000+ farms × $10K–$50K avg system or $100/mo lease
SAM	FSMA-covered farms + processors reachable via direct + distribution in 5 yrs	**$200M–$450M**	~15–20% of TAM; FSMA-mandated compliance buyers now active
SOM	Realistic 5-year MagWater capture	**$3M–$20M**	100–500 systems/leases rising to Yr 5; avg $5K–$40K per deployment

SECTION 4 | SEGMENT 2 — TRUCKING & MOBILE FOOD TRANSPORT

4.1 Market Context

The USA refrigerated trucking market reached $5.07B in 2025 (IMARC), growing at 3.5% CAGR to $6.93B by 2034. North America holds 38% of the global refrigerated trailer market. Every reefer truck, food-transport van, and cold-chain distribution center that carries fresh produce, meat, dairy, or prepared food is a potential point of microbial cross-contamination between loads. Bulk chemical sanitizers create hazardous-materials handling obligations, cross-border regulatory friction, and storage constraints that MagWater eliminates completely.

4.2 Target Customer Universe

Customer Type	Fleet Size (USA+CA)	Sanitation Frequency	In Situ Advantage
Long-haul refrigerated (reefer) fleets	~800K trailers (USA)	Between every load	Compact cell on 12–36V aux power; no chemical carry
Produce-specific cold-chain operators	~150K trucks	Daily / per load	Avoids cross-border chemical regs (US–CA); lowers recall risk
Meat & poultry cold-chain trucks	~200K trucks	Per load	Pathogen control on surfaces, pallets, bins between hauls
Mobile food processing / food trucks	92,257 USA (+17% YoY)	Daily surface clean	Portable bucket unit; solar-powered; regulatory-friendly
Distribution centers / cold stores	~3,000 major DCs	Continuous / frequent	Fixed small/medium system + mobile units for dock areas

4.3 Key Pain Points Resolved

- **Cross-contamination between loads** (e.g., raw poultry → fresh produce): on-board HOCl generation disinfects cargo surfaces, pallets, and bins within minutes.
- **Hazardous cleaning concentrates** at border crossings: in situ generation requires only salt and water, so trucks carry no regulated chemical load across the US–Canada border.
- **Biofilm in water-reuse** lines and tank piping: continuous low-dose HOCl helps prevent biofilm from forming.
- **Space constraints**: a compact low-voltage cell replaces sanitizer drums and eliminates the need for mixing equipment.
- **Driver simplicity:** salt, water, and auxiliary power are easier to manage than diluting, documenting, and disposing of chemical sanitizers.
- **Cold-chain integrity:** a sanitized cargo environment reduces odors, bacterial load, and the risk of rejection at the receiving dock.

4.4 Trucking TAM / SAM / SOM — USA + Canada

Level	Definition	Est. Value (USD)	Basis
TAM	All USA+CA refrigerated/food transport trucks + DCs needing between-load sanitation	**$600M–$1.2B**	~1.2M food transport vehicles × $500–$1,000/yr chemical cost MagWater displaces
SAM	Fleet operators & DCs reachable via fleet deals, distributor partnerships in 5 yrs	**$80M–$200M**	~15% of TAM; fleets >50 trucks are prime volume targets
SOM	Realistic 5-year capture	**$2M–$12M**	500–2,000 compact units/leases; fleet contracts multiply revenue

SECTION 5 | SEGMENT 3 — RESTAURANTS & FOOD SERVICE

5.1 Market Context

The U.S. has roughly 720,000–1,000,000 foodservice establishments, while Canada has more than 100,000 restaurants and foodservice outlets. Together, North American foodservice represents a $1.1 trillion market growing 7–11% annually. These establishments sanitize surfaces, dishwashers, prep areas, and vegetable-wash sinks multiple times each day. MagWater's $5,000 unit, or $100-per-month lease, can replace existing sanitizer spend with minimal adoption friction.

1M+	**100K+**	**$1.1T**	**11.8%**
USA Foodservice Outlets	**Canadian Restaurants**	**N. America Foodservice Market**	**USA Food Disinfectant CAGR**
Broad definition, 2025	Restaurants Canada, 2025	2025 market value	2025–2031 (Mobility Foresights)

5.2 Target Customer Tiers

Restaurant Tier	# Establishments	Chemical Spend/yr	MagWater Fit
Quick Service Restaurants (QSR chains)	200,000+ USA	$1K–$5K/yr	High-frequency sanitization; franchise rollout = volume multiplier
Full Service / Casual Dining	~500,000 USA + CA	$2K–$8K/yr	Surface Tx, vegetable wash, dishwasher sanitizer replacement
Institutional / Contract Foodservice	~50,000 USA + CA	$5K–$30K/yr	High water volume; central kitchen CIP opportunity
Ghost / Cloud Kitchens	Fast-growing (14.9% CAGR)	$1.5K–$5K/yr	Compact space; chemical-free preferred; delivery hygiene standards
Food Trucks (USA)	92,257 (2025, +17% YoY)	$500–$2K/yr	Ideal for portable $5K unit; solar-powered; cross-border friendly

5.3 Key Pain Points Resolved

- **Daily chemical inventory:** QSR and casual-dining staff regularly mismeasure or skip sanitizer steps. MagWater eliminates measuring, diluting, and storage entirely.
- **Antimicrobial resistance**: HOCl from electrolysis does NOT select for resistant bacteria — unlike quats. This is now an active FDA and Canadian CFIA regulatory consideration.
- **Contact time**: HOCl achieves 5–20 second kill times on surfaces, viruses, bacteria, and toxins — compatible with fast-paced kitchen turnover.
- **Multi-surface application:** floors, bathrooms, prep tables, cutting boards, cooking equipment, vegetable wash — one system replaces multiple specialty cleaners.
- **Staff safety**: non-corrosive to human tissue; no PPE required for routine use, reducing workplace incidents.
- **Food-truck border crossings**: same cross-border regulated-chemical issue as trucking — eliminated by in situ generation.

5.4 Restaurants TAM / SAM / SOM — USA + Canada

Level	Definition	Est. Value (USD)	Basis
TAM	All USA+CA foodservice establishments with active sanitization spend	**$1.5B–$3.0B**	~1.1M establishments × $1,500–$3,000/yr avg chemical sanitation spend
SAM	Independent + small-chain restaurants + ghost kitchens reachable in 5 yrs	**$150M–$400M**	~10% of TAM; sustainability-focused, compliance-driven, or high-turnover operators
SOM	Realistic 5-year capture	**$2M–$10M**	1,000–5,000 units or $100/mo leases; franchise chain = large volume spike

SECTION 6 | COMBINED MARKET VIEW — ALL THREE SEGMENTS

6.1 Total North American Opportunity

Segment	TAM	SAM	SOM (5-yr)	Best Payback
Agriculture / Field	**$1.2B–$2.0B**	$200M–$450M	**$3M–$20M**	1–2 yrs (produce)
Trucking / Mobile Transport	**$600M–$1.2B**	$80M–$200M	**$2M–$12M**	2–4 yrs
Restaurants / Foodservice	**$1.5B–$3.0B**	$150M–$400M	**$2M–$10M**	3–6 yrs
TOTAL	**$3.3B–$6.2B**	**$430M–$1.05B**	**$7M–$42M**	—

6.2 Value Ranking by Segment (from MagWater documentation)

Segment	Value	Primary Driver
Produce processing	★★★★★	Highest water volume + constant sanitation + FSMA mandate
Food manufacturing (meat, dairy, beverage)	★★★★★	Continuous 24/7 CIP and hygiene demand; fastest industrial payback
Distribution / logistics hubs	★★★★	Frequent cleaning at distributed sites; cross-border compliance
Farms (irrigation / field wash)	★★★★	Remote logistics savings; FSMA compliance; solar-capable unit
Mobile transport / food trucks	★★★★	Between-load sanitation; border compliance; auxiliary-power compatible
Restaurants (independent + chains)	★★★	Simpler ops but smaller scale; high unit volume; franchise rollout upside

SECTION 7 | 5-YEAR REVENUE PROJECTION — IN SITU CHLORINATION CHANNEL

Year	Ag / Field	Transport	Restaurants	Recurring Rev.	Total
Yr 1	$400K	$200K	$150K	$50K	**~$800K**
Yr 2	$1.2M	$600K	$500K	$250K	**~$2.6M**
Yr 3	$3.5M	$2.0M	$1.5M	$1.0M	**~$8.0M**
Yr 4	$7.0M	$4.0M	$3.0M	$3.0M	**~$17M**
Yr 5	$12.0M	$7.0M	$5.5M	$7.0M	**~$31.5M**

Projections cover the in-situ chlorination channel only and are separate from MagWater's livestock, concrete, and oil & gas verticals. Recurring revenue (electrode replacement, salt subscriptions, service SLAs) compounds as the installed base grows and is the primary long-term value driver.

SECTION 8 | HIDDEN VALUE — OFTEN LARGER THAN DIRECT COST SAVINGS

Value Category	Est. Impact	Detail
Avoided Product Recalls	**$10M–$100M+ per event**	One E. coli or Listeria event can destroy a brand and trigger criminal liability. Consistent HOCl dosing → lower contamination variance → lower recall probability.
Supply Chain Resilience	Critical during disruptions	No dependency on chemical deliveries. During port strikes, weather events, or pandemics, in situ generation continues with only salt — available virtually everywhere.

Operational Uptime	Eliminates stockouts & degraded bleach	Bleach degrades within 60–90 days; stockouts and weak solutions shut down production lines. In situ generation is continuous by design.
Safety & Liability Reduction	Insurance + OSHA exposure	No bulk hazardous chemical storage → lower OSHA and facility insurance premiums; eliminates chlorine-gas accident risk.
Environmental / ESG	Sustainability reporting	HOCl reverts to water after use. No chemical packaging waste. No transport emissions from chemical delivery. Supports corporate sustainability goals.
Antimicrobial Resistance (AMR)	Long-term regulatory	HOCl from electrolysis does NOT promote bacterial resistance — unlike quaternary ammonium compounds. Growing FDA and CFIA regulatory scrutiny on quats.

SECTION 9 | GO-TO-MARKET — IN SITU CHLORINATION CHANNELS

9.1 Priority Sales Channels by Segment

Segment	Primary Channel	Key Partnerships	Year 1 Target
Ag / Field	Direct + FSMA compliance consultants + ag co-ops	State extension offices; produce food-safety auditors; co-op distributors	10–20 produce/packing facilities; 50+ portable farm leases
Transport	Fleet direct sales; cold-chain logistics operators	Refrigerated trucking associations; 3PL cold-chain platforms	2–5 fleet deals (50+ trucks each); 3–5 DC installs
Restaurants	$100/mo lease program; foodservice distributors; franchise corporate	Sysco / US Foods / Flanagan (CA) type distributors; health inspectors	100–500 units via lease; 1 franchise chain pilot

9.2 The $100/Month Lease — Strategic Flywheel

The $100/month lease model is a market-creation strategy, not just a financing tool.
At $1,200/yr, MagWater's portable unit competes directly against annual chemical sanitizer spend for a food truck ($800–$2,000/yr) or small restaurant ($1,500–$5,000/yr). The customer spends less than their current chemical cost while MagWater builds predictable ARR.

1,000 lease units = $1.2M ARR | 5,000 units = $6M ARR | 10,000 units = $12M ARR

Each lease also generates recurring electrode-replacement and salt subscription revenue, expanding lifetime customer value automatically.

SECTION 10 | STRATEGIC CONCLUSION

MagWater In Situ Chlorination — North American Opportunity

The food chain depends on chlorine at virtually every stage from field to fork. The incumbent approach — purchased, transported, stored bulk chemicals — is costly, logistically fragile, hazardous, and under increasing regulatory and ESG scrutiny.

MagWater's MECE technology converts that liability into a utility: generate HOCl on demand, from salt and water, at the exact point of use. The $5,000 purchase / $100/month lease removes barriers for the smallest food truck or farm; the $150K–$500K engineered system serves the largest food manufacturer. The same core IP serves both ends of the market.

Combined TAM across three segments: $3.3B–$6.2B. SAM: $430M–$1.05B. 5-year SOM: $7M–$42M.

Produce processing and food manufacturing are the highest-value targets (1–2-year payback, 24/7 demand). Trucking and distribution offer fleet-deal volume leverage. Restaurants are the mass-market vector via the $100/month lease and foodservice distributor channel.

$3.3B+	$430M+	50–80%	1.5–5yr
Combined TAM (3 Segments) USA + Canada	**Serviceable Market** 5-Year horizon	**Cost Reduction vs. Bulk Bleach** Per m³ treated water	**Customer Payback Range** Produce fastest; restaurants longest

Sources: Future Market Report (electro chlorination Systems, 2024); Global Growth Insights; Reports and Data (On-Site electro chlorination, Jan 2026); FutureMarketInsights (Food & Bev Disinfection, 2025); Mobility Foresights (USA Food Disinfectant, Nov 2025); IBISWorld (Food Trucks, 2025); IMARC Group (US Refrigerated Transport, 2025); FDA FSMA Produce Safety Rule & Pre-Harvest Agricultural Water Rule; CKitchen (How Many Restaurants, Feb 2026); Restaurants Canada Foodservice Facts 2025; IndustrySelect (US Food Manufacturing, Jul 2025); MagWater internal technical documentation.

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