



GREEN SHIELD

FIRE SUPPRESSION

Eco-Friendly, Non-Carcinogenic Fire Suppression Hydrogel

Trinity Kem, Founder
Green Shield Fire



THE CRISIS

Across the US, wildfires are becoming more intense, but the outdated methods we use to manage them are taking a toll on the environment and our health. Traditional fire retardants are saving land in the short term, but introducing permanent environmental damage to our water, soil, and species in the long term

THE PROBLEM



- Ammonium Phosphate Plumes: Traditional chemical suppressants can create highly concentrated ammonia clouds upon impact
- Aquatic Devastation: Accidental retardant runs kill local fish species, specifically affecting delicate river ecosystems and salmon populations
- Chemical Footprints: Formulations leak toxic elements into groundwater and soil layers that linger for years, forever chemicals and PFAS leached into environment
- Human Risks: Spraying dry chemical agents poses respiratory irritation and cancer risks to ground crews



THE SOLUTION

Seaweed Polymer Matrix

- Organic alginate extracted from fast-growing ocean marine algae
- Creates a hydrogel shield that isolates forest fuels from heat and oxygen at a cellular level, cooling combustion points instantly
- Unlike other eco-friendly solutions, seaweed doesn't require fresh water to grow, and can grow up to 3 feet per day!

Healthy Bio-Waste

- Created with processed agricultural waste that creates a robust, protective bio-composite material coating over timber
- Decomposes naturally as rich biological fertilizer into the forest soil rather than introducing heavy phosphate salts
- No expensive cleanup operations after a wildfire means the forest can begin repairing itself right away

PRODUCT FORMULATION



- Optimization: Successfully tweaked and adjusted the active molecular ratio this summer to reduce timber charring and carbonization, preserving structural integrity
- Planned Lab Trials: Preparing our America250 funding to enter independent lab testing. Verifying fire resistance, complete non-toxicity for freshwater fish, the environment, and groundwater
- IP Defense Framework: Successfully filed a provisional patent application with the USPTO (May 2026) covering our proprietary dry powder to rehydratable gel formula
- Market Brand Launch: Established brand materials, informational web page, educational social media channels, and founder networking assets

NATIONAL VALIDATION

May 2026: Honored as a Top 10 National Winner out of 30 Semifinalists at the America250 startup pitch competition held at Draper University

Awarded a high-value professional development grant, plus a scholarship and the opportunity to attend the Hero Program at Draper University



PRODUCT COMPARISON

Metric / Feature	Standard Chemical Retardant	Green Shield Fire Suppresant
Primary Material	Ammonium Phosphate / Ferrocyanide additives	Seaweed, Food-Grade Stabilizers & Agricultural Bio-Waste
Aquatic Ecosystem Health	Toxic to trout, creates deadly algae blooms	100% fish-safe, organic decomposition
Ground Timber Health	Forces heavy carbonization / charcoal creation	Minimal char formulation, coats naturally
Soil Health	Corrosive chemical salt accumulation / forever chemicals	Decomposes directly to organic fertilizer, washes away with rain
Human Crew Toxicity	Dermal, ocular, and respiratory hazard	Completely non-carcinogenic & non-irritant, skin safe
Product Deployment	Heavy, liquid concentrate moved by tanker trucks	Light weight, dry powder, easily rehydrated into multi-surface cling gel

QUICK FACTS

- Ships as dry powder: reducing current weight of transportation by 90%
- 1lb of dry powder concentrate yields 10lbs of ready-to-use hydrogel
- Traditional formulas require 10lbs of liquid concentrate to reach a comparable square foot coverage
- Easily clings to vertical surfaces and shows promising longevity, where other foams slide off quickly
- Seaweed grows up to 3 feet per day without the need of freshwater, reducing traditional product manufacturing costs by 50%
- Current leading flame suppressants can cost from \$15-\$70 per gallon of liquid concentrate (Phos-Check)
- Developed for long-term cost savings, easier/cheaper product sourcing, no hazardous production, no environmental cleanup, and less transportation costs (Green Shield Fire)



PRODUCT PACKAGING AND TEST



*treated with GSF, resisted ignition for over 50 seconds



*untreated bare plank, easily ignited & charred

12 MONTH ROADMAP



Fall 2026

Laboratory testing and data collection, Join Draper University; launch strategic outreach to wildland agencies post-fire season

Spring 2027

Scale manufacturing of testing batches for pilot drops with local forestry fire districts, develop availability for consumers

Summer 2026

Initial product testing, America250 Startup win, secured provisional patent, outreach to wildland leaders, website and socials development

Winter 2026/2027

Execute regulatory calibration (U.S. Forest Service QPL specifications); refine utility patent, fire classification certifications, raw-material sourcing and scaling (seaweed beach cleanup & agricultural bio-waste)

Summer 2027

Finalize full USPTO patent filings, initiate formal USFS QPL testing, deploy ground-level and aerial field trials with agency partners, continue scaling raw product supply chain



GREEN SHIELD
FIRE SUPPRESSION

**The Future of Wildland
Defense is GREEN**