SAFETY DATA SHEET

SECTION 1 IDENTIFICATION

Product Identifier: HYDROGEN PEROXIDE AQUEOUS SOLUTION
Manufactured By: Hubbard Hall ,1101 Compton Bridge Road, Inman, SC 29349
Manufactured for: A Growing Alternative, Inc.
Address: 751 Fairview Church Road; Spruce Pine, NC 28777.
Contact telephone number (Product Information): 828-766-6179.
Emergency telephone number (CHEMTREC): 1-800-424-9300.
Recommended use of the chemical: Algaecide and fungicide for the horticulture, agriculture and natural turf industries.

SECTION 2 HAZARDS IDENTIFICATION

Emergency Overview: Causes severe eye irritation and irritation to the skin and respiratory tract. Harmful if swallowed. Product is an oxidizer and contact with combustible material may cause fire.
Inhalation: Inhalation of vapors is irritating to the respiratory system and may cause throat pain and cough. Risk of chemical pneumonitis. Repeated or prolonged exposure may result in sore throat, nose bleeds, chronic bronchitis.
Eye contact: Severe eye irritation, redness, lachrymation, swelling of tissue. Risk of serious damage to eyes.
Skin contact: Irritation. In case of repeated contact, may cause dry skin.
Ingestion: Ingestion causes severe irritation, burns of the upper digestive and respiratory tracts, nausea, vomiting, bloating of stomach, and belching.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Component:	**CAS No.:**	**% by Wt.:**
Hydrogen peroxide	7722-84-1	33.0 %

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

SECTION 4 FIRST-AID MEASURES

Inhalation: Remove to fresh air. If symptoms persist, call a physician.
Eye contact: Rinse immediately with plenty of water, holding eyelids open, for at least 15 minutes. In the case of difficulty of opening the eyelids, administer an analgesic eye wash (oxybuprocaine). Consult with a physician immediately.
Skin contact: Remove and wash contaminated clothing before reuse. Wash off with plenty of water. If symptoms persist, call a physician.
Ingestion: Call a physician immediately. If victim is conscious: (1) if swallowed, rinse mouth with water, and (2) Do NOT induce vomiting. If victim is unconscious but breathing artificial respiration and/or oxygen may be necessary.

SECTION 5 FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water or water spray.
Unsuitable extinguishing media: None identified.
Specific hazards arising from the chemical: Oxygen released in thermal decomposition may support

combustion. Contact with combustible material may cause fire. Contact with flammables may cause fire or explosions, risk of explosion if heated under confinement. Hazardous decomposition products may include oxygen and possibly other hazardous chemicals.
Special protective equipment and precautions for fire-fighters: Evacuate personnel to safe an area. In the event of fire, wear a self-contained breathing apparatus. Where contact with the product is possible wear an acid resistant suit. Keep containers and surroundings cool with water spray. Approach from upwind. Clean contaminated surfaces thoroughly.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Refer to protective measures listed in Sections 7 and 8. Isolate the area. Keep product away from incompatible materials. Prevent further leakage or spillage if it is safe to do so. In case of contact with combustible material, keep material wet with plenty of water.
Methods for cleaning up: Use damming to contain the spill. Soak up with an inert absorbent material or dilute with plenty of water. Do not add chemical products. Treat recovered material as described in the Section 13, Disposal Considerations. Never return spilled product into the original container for reuse.
Environmental precautions: In case of accidental release or spill, immediately notify the appropriate authorities as required by federal, state and local laws and regulations. Do not dump into any sewers, onto the ground, or into any body of water. Dispose of in accordance with all federal, state and local laws and regulations.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling: Use only in well-ventilated areas. Keep away from heat. Keep away from incompatible materials such as organic materials. Use only equipment and materials which are compatible with the product. Before all operations, passivate piping and vessels in accordance with the manufacturer's instructions. Never return unused material to a storage container. Use only in an area with adequate water supply. Containers and equipment used to handle the product should be used exclusively for that product. Do not confine the product in piping between closed valves or in a container without adequate venting.
Storage: Keep in a cool, well ventilated place. Keep away from heat. Keep away from incompatible materials. Keep away from combustible materials. Store in containers with adequate ventilation. Store in the original container. Keep container closed. Store product in an area with secondary containment. Regularly check the condition and temperature of storage containers. Keep product and empty containers away from heat and sources of ignition. Information about special precautions needed for bulk handling is available on request.
Packaging material: Aluminum (99.5%), Stainless steel 304L/316L, or approved grades of HDPE.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

Component	OSHA PEL	ACGIH TLV
Hydrogen peroxide	1 ppm (1.4 mg/m^3) TWA	1 ppm (TWA)

Note for TLV: Excursions may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a workday and under no circumstances should they exceed 5 times the TLV-TWA.
Engineering controls: Ensure adequate ventilation. Utilize other control methods as necessary to comply with the occupational exposure limits.
Personal protective equipment:
Respiratory protection: Use NIOSH approved respiratory protection. Wear an approved full face-piece air-supplied respirator for excessive or unknown concentrations, in confined areas, where there is

insufficient oxygen, for large, uncontrolled emissions, and any time an air-purifying respirator does not give adequate protection.

Hand protection: Wear impervious chemical protective gloves such as PVC or rubber. Take note of the information given by the glove manufacturer concerning permeability and break-through times, and of special workplace conditions (mechanical strain, duration of contact, etc.).
Eye protection: Safety glasses with side-shields must be worn. If splashing is likely to occur, wear tight-fitting chemical resistant goggles or a face-shield over the safety glasses.
Skin and body protection: If splashes are likely to occur, wear chemical protective clothing such as a protective suit or apron and boots made of PVC, rubber or other suitable material.
Hygiene measures: Use only in an area equipped with facilities for quick drenching. When handling product, do not eat, drink or smoke. Handle in accordance with good industrial hygiene and safety practices.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless liquid.
Odor: Odorless
Molecular formula: H_2O_2.
Molecular Weight: 34 g/mol.
pH: 1 - 4.
Freezing point: 33 ºC (27 ºF) (H_2O_2, 33%).
Boiling point/boiling range: 108 ºC (226 ºF) (H_2O_2, 35 %).
Flash point : Not applicable.
Flammability: This product is not flammable.
Flammable limits: Not applicable.
Vapor pressure:
1 mbar (H_2O_2, 50 %) at 30 °C (86 ºF).
12 mbar (H_2O_2, 50 %) (total pressure of H_20_2 and H_2O at 20 °C (68 ºF).
72 mbar (H_2O_2, 50 %) (total pressure of H_20_2 and H_20 at 50 °C (122 ºF).
Relative density / Density: 1.1 (H_2O_2, 27.5 %)
Solubility(ies): Soluble in water and polar organic solvents.
Partition coefficient: n-octanol/water: -1.1.
Viscosity: 1.07 mPa/s (H_2O_2, 27.5 %) at 20 ºC (68 ºF).
Vapor density: 1 (H_2O_2, 50 %).
Surface tension: 74 mN/m (H_2O_2, 27.5 %) at 20 ºC (68 ºF).
Decomposition temperature: Self-accelerating decomposition temperature (SADT): ≥ 60 ºC (140 ºF); slow decomposition: < 60 ºC (140 ºF).

SECTION 10 STABILITY AND REACTIVITY

Reactivity: Potential for exothermic reaction with incompatible materials.
Chemical stability: Stable under recommended storage conditions.
Possibility of hazardous reactions: Avoid contact with acids, bases, metals, salts of metals, reducing agents, organic materials, and flammable materials.
Conditions to avoid: Avoid contamination. To avoid thermal decomposition, do not overheat. Keep at temperature below 60 ºC (140 ºF).
Hazardous decomposition products: Oxygen and possibly other hazardous chemicals.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute oral toxicity (LD50, rat): 1.232 mg/kg (H_20_2, 50 %).
Acute inhalation toxicity (LC50, 4 h, rat): 2.000 mg/m^3 (Hydrogen peroxide).
Acute dermal irritation/corrosion (LD50, rabbit): > 2.000 mg/kg (H_2O_2, 35 %).
Skin irritation (rabbit): No skin irritation (H_2O_2, 10 %).
Eye irritation: Risk of serious damage to eyes (H_2O_2, 33 %).
Irritation (other routes):
Inhalation (mouse): Irritating to respiratory system; RD_{50} = 665 mg/m^3 (Hydrogen peroxide).
Sensitization (guinea pig): Did not cause sensitization on laboratory animals.
Chronic toxicity:

Oral, prolonged exposure (various species): Observed effect on gastrointestinal tract.

Inhalation, repeated exposure [dog, LOEL (Lowest observable effect level]: 14.6 mg/m^3, irritant effects.

Carcinogenicity

Oral, prolonged exposure (mouse): Effects on duodenum; carcinogenic effects.

Dermal, prolonged exposure (mouse): Animal testing did not show any carcinogenic effects.

Remarks: Carcinogenic effect not applicable in humans.

Genetic toxicity:

In vitro: In vitro tests have shown mutagenic effects.

In vivo: Animal testing did not show any mutagenic effect.

SECTION 12 ECOLOGICAL INFORMATION

Acute eco-toxicity

Fishes, *Pimephales promelas* (LC_{50}, 96 h): 16.4 mg/l.
Fishes, *Pimephales promelas* (NOEC, 96 h): 5 mg/l.
Crustaceans (EC_{50}, 48 h): 2.4 mg/l.
Crustaceans NOEC, 48 h): 1 mg/l.
Chronic eco-toxicity
Molluscs (NOEC, 56 Days): 2 mg/l.
Algae, *Chlorella vulgaris* (EC_{50}, growth rate, 72 h): 4.3 mg/l.
Algae, *Chlorella vulgaris* (NOEC, 72 h): 0.1 mg/l.

Mobility

Air: Henry's law constant (H) = 1 Pa-m^3/mol at 20 °C. Volatility not significant. Condensation on contact with water droplets.

Water: Product evaporates slowly.

Soil/sediments: Non-significant evaporation and adsorption.

Persistence and degradability:

Abiotic degradation:

Air, indirect photo-oxidation ($t_{½}$): 16 - 20 h (conditions: sensitizer: OH radicals).

Water, redox reaction ($t_{½}$): 25 - 100 h (conditions: mineral and enzymatic catalysis, fresh water).

Water, redox reaction ($t_{½}$): 50 - 70 h (conditions: mineral and enzymatic catalysis, saltwater).

Soil, redox reaction ($t_{½}$): 0.05 - 15 h (conditions: mineral catalysis).

Biodegradation:

Aerobic ($t_{½}$): < 2 min(conditions: biological treatment sludge; readily biodegradable).
Aerobic ($t_{½}$): 0.3 - 5 d (conditions: fresh water; readily biodegradable).
Anaerobic: Not applicable
Effects on waste water treatment plants: Inhibitor (> 30 mg/l).

Bio-accumulative potential: Does not bio-accumulate.
Other adverse effects: Toxic to aquatic organisms, however, the hazard for the environment is limited due to the following properties of the product: (1) degradation products (H_2O and O_2) are not toxic, (2) product is inherently biodegradable and (3) product does not bio-accumulate.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste from residues and unused products: Dispose of in accordance national, state, and local regulations. For small quantities, dilute with plenty of water and flush into the sewer with plenty of water. For larger quantities, contact manufacturer.
Contaminated packaging: Empty containers. Clean container with water. Dispose of rinse water in accordance with local and national regulations.
RCRA Hazardous Waste
Listed RCRA Hazardous Waste (40 CFR 302): No.
Characteristic RCRA Hazardous Waste (40 CFR 302): Yes (D001: ignitable waste; D002: corrosive waste).

SECTION 14 TRANSPORT INFORMATION

US DOT HMR
UN Proper Shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION
UN Number: 2014
Hazard Class (Subsidiary): 5.1 (8).
Packing Group: II.
Marine pollutant: No.
Labels: 5.1(8).
Emergency information: ERG: 140.

IATA DGR
UN Proper Shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION
UN Number: 2014
Hazard Class (Subsidiary risk): 5.1 (8).
Packing Group: II.
Labels: 5.1 (8).
Restrictions: Forbidden over 40%.

IMO IMDG Code
UN Proper Shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION
UN Number: 2014
Hazard Class (Subsidiary risk): 5.1 (8).
Labels: 5.1 (8).
Packing Group: II.

SECTION 15 REGULATORY INFORMATION

Toxic Substance Control Act (TSCA): In compliance with inventory. All components on composite list considered for transfer.
Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A): Not regulated.
SARA Hazard Designation (SARA 311/312):
Acute Health Hazard: Yes.
Fire Hazard: Yes.
Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65): Supplier notification required; not regulated.
CERCLA Hazardous Substances (40 CFR 302): Not regulated.
New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5): Yes.
Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323): Yes.
California Safe Drinking Water & Toxic Enforcement Act (Proposition 65): WARNING! This product contains a chemical known in the State of California to cause cancer.

SECTION 16 OTHER INFORMATION

NFPA (National Fire Protection Association):
Health = 3; Flammability = 0; Instability = 1; Special =OX
HMIS (Hazardous Material Information System):
Health = 3; Fire = 0; Reactivity = 1; PPE: Supplied by user; dependent on local conditions
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