MAGNACIDE® H Herbicide

APPLICATION AND SAFETY MANUAL

EPA Registration Number 10707-9

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Manual Revision Date: July 2001

Supersedes: April 1997

Baker Petrolite Corporation makes no warranty of merchantability, fitness for any purpose or otherwise, expressed or implied, concerning this product or its uses which extend beyond the use of the product under normal conditions in accord with the statements made in this manual.

PLEASE SIGN AND RETURN

The attached MAGNACIDE® H Herbicide Application and Safety Manual contains instructions for use concerning this label. Federal law requires that this handbook be in the possession of the applicator. Please acknowledge receipt of this handbook by signing below and returning this page to the address listed below.

Baker Petrolite Corporation
P. O. Box 11192
Bakersfield, CA 93389

_____ _____

Signature Date

_____ _____

Title or Capacity Firm or Organization

RESTRICTED USE PESTICIDE

FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLIOCATOR'S CERTIFICATION.

Manual Revision Date: July 2001

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I. INTRODUCTION

This manual provides information on the proper application and handling of MAGNACIDE® H Herbicide (active ingredient: acrolein, inhibited). MAGNACIDE® H Herbicide is registered with the U.S. Environmental Protection Agency (EPA) under Registration Number 10707-9 for the control of submersed and floating weeds and algae in irrigation canals. The legal uses of MAGNACIDE® H Herbicide are limited to those listed on the EPA registered product label, this manual, and applicable 24(c) (Special Local Need) registrations.

This product is toxic by inhalation; therefore, EPA has classified MAGNACIDE® H Herbicide as a RESTRICTED USE PESTICIDE for retail sale to, and use only by, certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator's certification. The various states each have different requirements concerning record keeping for restricted use pesticides. Contact the appropriate agency in your state for further information.

MAGNACIDE® H Herbicide controls submersed and floating vegetation in irrigation canals. Since 1956 hundreds of field trials have been conducted in the United States using MAGNACIDE® H in cooperation with public and private agencies. In addition, MAGNACIDE® H Herbicide has been widely used for commercial applications since 1959.

MAGNACIDE® H Herbicide is extremely water soluble. Applications are made by injecting the chemical into the flowing water at a point of good mixing, such as downstream of a weir or siphon. Once mixed, the MAGNACIDE® H Herbicide travels downstream as a wave of treated water, bathing the unwanted aquatic vegetation with herbicide. Once the wave of treated water has passed a particular point in the canal, the concentration of MAGNACIDE® H Herbicide at that point drops to zero. No residual chemical remains after passage of the wave. MAGNACIDE® H Herbicide-treated water can be used for irrigation. At use concentrations, MAGNACIDE® H has been found to be compatible with the commonly used materials of construction in drip and conventional irrigation equipment.

Effective dosages range from 1 part per million (ppm, parts of MAGNACIDE® H Herbicide per 1,000,000 parts water) to 15 ppm. In irrigation canals, submersed weed control is obtained at these dosages with application times ranging from 30 minutes to 8 hours. All typical submersed aquatic weed species and algae are susceptible. Floating forms such as watercress, water hyacinth and water primrose are typically not completely controlled at label rates. Emergent species, such as cattails and tules, are not affected.

Although acrolein, the active ingredient in MAGNACIDE® H Herbicide, is toxic, flammable, highly reactive chemically, and a lachrymator, the process of controlling submerged weeds with this product can be carried out safely and effectively. Specialized application equipment permits introduction of MAGNACIDE® H Herbicide with minimal handling. MAGNACIDE® H Herbicide is supplied in United States Department of Transportation (DOT) specification pressurized containers. It is directly forced through a metering device into the irrigation canal, using industrial grade nitrogen gas (typically containing 10 ppm or less of oxygen).

MAGNACIDE® H Herbicide is available in a variety of container sizes, all of which meet DOT specifications for acrolein, inhibited. Container sizes are shown in Table 1.

Table 1. Acrolein Container Sizes

Container Type	Acrolein Net Weight (lbs.)	Acrolein Volume at 60° F (gallons)
Cylinder	58	8.2
Cylinder	370	52.4
Portable Skid Tank	2,300	326.0
Portable Skid Tank	2,450	347.0
Portable Skid Tank	2,500	354.0
Portable Skid Tank	3,000	425.0

All orders are F.O.B. Taft, California. Round trip freight charges for the containers are included in the product billing. Empty containers are to be returned to Taft, California.

Those interested in the commercial application of MAGNACIDE® H Herbicide should contact:

Baker Petrolite Corporation
Crop Protection Chemicals
P. O. Box 11192
Bakersfield, CA 93389
Telephone: (661) 763-5137
FAX: (661) 765-6046
E-mail address: cropprotectionchemicals@bakerpetrolite.com

II. CONTROLLING SUBMERSED AQUATIC VEGETATION WITH MAGNACIDE® H Herbicide

A. Introduction

Aquatic vegetation is a serious pest in many waterways of the world. This is particularly true in irrigation canals where weeds and algae reduce flow below that of the designed capacity of the channel. Unhampered weed growth causes the water level to rise, thus increasing the chance of overflow and levee breaks. Weeds collect silt and debris, necessitating periodic costly cleanouts. Occasionally these weeds break loose, clogging weirs, siphons and other canal structures. Control of this vegetation is a costly, but necessary part of the maintenance of these systems. The process of controlling submersed aquatic vegetation with MAGNACIDE® H Herbicide as described in this manual is an effective means of overcoming many of these problems.

B. Mode of Action on Plants

MAGNACIDE® H Herbicide is a general cell toxicant that reacts with various vital proteins. The dead plant tissues gradually disintegrate and float downstream, without releasing any large masses of vegetation to clog canal structures. The weeds disintegrate slowly and clear out over a period of 3 or 4 days to 2 weeks, depending on the temperature. The time for restoration of the canal to full capacity will, of course, depend on the rate at which the weeds die and disintegrate. However, an increase in capacity may be apparent in a few hours, as the weeds become flaccid.

C. Weed Specificity

MAGNACIDE® H Herbicide appears to be toxic to all submersed algae and weeds. While algae species were easily controlled, pondweeds such as *Zannichellia* sp. and *Potamogeton crispus* were more easily controlled than the forms which also have floating leaves such as *P. nodosus* and *P. illinoensis*. The latter pondweeds are best controlled when immature. Baker Petrolite Corporation has conducted efficacy studies on *Anabaena flos-aquae*, *Lemna gibba*, *Navicilla pelliculosa*, *Selenastrum capricornutum* and *Skeletonema costatum*.

The following species have been controlled by recommended label use rates:

Algae:

Anabaena flos-aquae	(blue-green algae)
Chara sp.	(stoneworts)
Cladophora sp.	(green algae)
Cladophora glomerata	(green algae)
Hydrodictyon reticulatum	
Navicilla pelliculosa	(freshwater diatom)
Selenastrum capricornutum	(green algae)
Skeletonema costatum	(marine diatom)
Spirogyra sp.	(green algae)

Submersed Aquatic Weeds:

Callitriche sp.	(water starwort)
Ceratophyllum demersum	(coontail)
Elodea canadensis	(waterweed)
Heteranthera dubia	(waterstargrass)
Lemna gibba	(duckweed)
Potamogeton crispus	(curlyleaf pondweed)
Potamogeton foliosus	(leafy pondweed)
Potamogeton illinoensis	(pondweed)
Potamogeton nodosus	(American pondweed)
Potamogeton obtusifolius	(pondweed)
Potamogeton pectinatus	(sago pondweed)
Potamogeton richardsonni	(richardson pondweed)
Najas sp.	(naiad)
Zannichellia palustris	(horned pondweed)

III. PRECAUTIONARY STATEMENTS

A. Hazards to Humans and Domestic Animals

DANGER. EXTREMELY FLAMMABLE AND IRRITATING VAPOR AND LIQUID. POISONOUS BY INHALATION, SKIN CONTACT OR SWALLOWING. DO NOT BREATHE VAPOR. CORROSIVE. CAUSES EYE AND SKIN DAMAGE. DO NOT GET IN EYES, ON SKIN OR ON CLOTHING. KEEP AWAY FROM FIRE, SPARKS AND HEATED SURFACES.

When setting up and breaking down application equipment, a full-face air purifying respirator with organic vapor (OV) cartridges jointly approved by the Mine Safety and Health Administration (MSHA) and the National Institute of Occupational Safety and Health (NIOSH) and butyl rubber gloves must be worn. For visual inspection during treatment, chemical splash goggles must be worn. If spilled on clothing, gloves, or shoes, remove them immediately and wash thoroughly with soap and water before reuse. Use with adequate ventilation.

B. First Aid

Have the product container, label or application and safety manual with you when calling a poison control center or doctor, or going for treatment. CALL A PHYSICIAN IMMEDIATELY IN ALL CASES OF SUSPECTED POISONING.

1. If Inhaled

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.
- Call a poison control center or doctor for further treatment advice.

2. If on Skin or Clothing

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15 – 20 minutes.
- Call a poison control center or doctor for treatment advice.

3. If in Eyes

- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after the first five minutes, then continue rinsing eye.
- Call a poison control center for treatment advice.

4. If Swallowed

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by the poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

5. Note to Physician

Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

WARNING SIGNS AND SYMPTOMS: Liquid MAGNACIDE® H Herbicide is absorbed by the skin and is particularly irritating to any lesion and to the eye. The vapors act principally on the mucous membrane of the eyes and respiratory tract. Because of the extreme lachrymatory warning effect, the concentration tolerable by man is far below the minimum lethal concentration.

TREATMENT: Treat exposed area as a chemical burn. Thoroughly flush eyes with water and treat symptomatically. Persons exposed to MAGNACIDE® H Herbicide vapors have a delayed reaction and experience irritation of the respiratory tract. In severe cases, this may progress to pulmonary edema. Therefore, it is advisable to keep persons exposed to MAGNACIDE® H Herbicide under observation for 24 hours following exposure.

C. Environmental Hazards Statement

This product is toxic to fish and wildlife. Keep out of lakes, streams or ponds. Fish, shrimp and crabs will be killed at application rates recommended. Do not apply where they are important resources. Do not apply to water drainage areas where runoff or flooding will contaminate ponds, lakes, streams, tidal marshes and estuaries. Do not contaminate water by cleaning of equipment or disposal of wastes. Notify your state Fish and Game Agency before applying this product. Use only as specified.

IV. RECOMMENDATIONS FOR THE PROPER HANDLING OF MAGNACIDE® H Herbicide

This section has been developed to inform the applicator of the required handling methods for MAGNACIDE® H Herbicide. It summarizes the importance of proper storage, chemically compatible hardware, use of safety equipment, disposal, fire control, first aid and other safety related issues. All persons who handle MAGNACIDE® H Herbicide should be trained thoroughly in correct operation techniques. They should be completely familiar with its properties and with proper emergency procedures.

A. Physical and Chemical Properties

MAGNACIDE® H Herbicide is a formulation containing a minimum of 95% (by weight) acrolein as the active ingredient. Some of the typical physical and chemical properties are shown in the following list.

Formula	(CH_2=CH-CHO)
Molecular weight	56.06
Appearance	clear, colorless to light yellow liquid
Odor	aldehydic (extremely irritating)
Specific gravity at 60°F	0.847
Pounds per gallon at 60°F	7.06
Boiling point (@760 mmHg)	127°F
Freezing point	-124°F
Vapor density	1.93 (air = 1.0)
Flash point	
Tag open cup	-20°F (approx.)
Tag closed cup	-13°F (approx.)
Flammability limits in air	
Lower limit	2.8% (by volume)
Upper limit	31.0% (by volume)
Solubility at 20°C	
Acrolein in water	22% by weight
Water in acrolein	7% by weight
Vapor pressure at 100°F	8.6 psia
Coefficient of expansion at 59°F	0.000762 per degree F
Viscosity at 32°F (Abs.)	0.43 cps
Permissible Exposure Level (PEL)*	0.1 ppm

**PEL as defined by OSHA, United States Department of Labor*

B. Fire and Polymerization Hazards

MAGNACIDE® H Herbicide is a highly volatile liquid. In certain combinations with air, vapors can have an explosive potential if ignition sources are present. Keep away from all sources of heat, sparks and flame.

Liquid MAGNACIDE® H Herbicide is highly chemically reactive and readily forms polymers generating tremendous heat. Contamination of neat material with air, alkalies, or strong acids can initiate polymerization. Contamination with all foreign materials must be avoided. If the product is stored or handled improperly, the polymerization may proceed with sufficient violence to rupture the container.

MAGNACIDE® H Herbicide polymerizes slowly in the presence of air. Therefore, all containers are packaged with a blanket of nitrogen to exclude air. To avoid the possibility of air contamination during use, MAGNACIDE® H Herbicide must be pressured from the container with industrial grade nitrogen (typically containing 10 ppm or less of oxygen). In addition, hydroquinone is added to inhibit oxygen-catalyzed polymerization. However, hydroquinone does not inhibit polymerization catalyzed by alkalies and strong acids.

C. Health Hazards

The occupational exposure levels for acrolein, the active ingredient in MAGNACIDE® H Herbicide are shown in Table 2.

Table 2. Occupational Exposure Levels for Acrolein

PEL (OSHA)	ACGIH
TWA	Ceiling
0.1 ppm	0.1 ppm

PEL = Permissible Exposure Level
OSHA = Occupational Health and Safety Administration
TWA = Time-Weighted Average
ACGIH = American Conference of Governmental Industrial Hygienists
Ceiling – the concentration that should not be exceeded even instantaneously

MAGNACIDE® H Herbicide vapor is toxic and a strong irritant (lachrymator). It is extremely irritating to the eyes, nose, throat and lungs. However, it is practically impossible to unknowingly remain in a vapor-contaminated atmosphere long enough to produce serious physiological effects because of its high lachrymatory activity. The vapor concentration tolerable to man (0.1-1 ppm in air) serves as a warning of its presence and is far below the minimal lethal concentration. Chronic toxicity studies have not revealed any cumulative effects. However, overexposure to the vapor can result in serious injury to the lungs. Additional information is found in Appendix C, *Toxicity*.

Eye contact with MAGNACIDE® H Herbicide liquid will produce severe damage; the chemical must be removed immediately by flushing with large quantities of water. Skin contact with liquid MAGNACIDE® H Herbicide can cause skin irritations ranging from simple reddening of the skin to severe blistering (see "First Aid" section of this manual).

Symptoms of exposure to MAGNACIDE® H Herbicide include irritation of the eyes, throat, and skin, reddening or blistering of the skin, headaches, acute distress in affected areas and cessation of breathing. There is no emergency antidote for MAGNACIDE® H Herbicide.

D. Process Safety Management

Personnel should be aware of the requirements of OSHA Standard 1910.119, Process Safety Management of Highly Hazardous Chemicals. The major objectives of process safety management (PSM) of highly hazardous chemicals is to prevent unwanted releases of hazardous chemicals especially into locations which could expose employees and others to serious hazards. With regard to MAGNACIDE® H Herbicide, PSM applies to a process involving acrolein at or above the 150-pound threshold quantity. To ensure compliance, consult local, state and federal safety regulations.

E. Personal Protective Equipment Use

The applicator, to protect from an accidental splash or spray, must wear a full-face air purifying respirator, with organic vapor (OV) cartridges jointly approved by the Mine Safety and Health Administration (MSHA) and the National Institute of Occupational Safety and Health (NIOSH).and butyl rubber gloves.

Applicators must also have fresh water available in case of accidental irritation to the eyes or skin from MAGNACIDE® H Herbicide liquid or vapors. In addition, the applicator must have a ten (10) pound dry chemical fire extinguisher at his disposal when working with MAGNACIDE® H Herbicide. All of the equipment mentioned above must be provided for the applicator's use during each application. Personnel who may be involved with the storage, transportation, use, disposal or emergency response of MAGNACIDE® H Herbicide must be trained in the safety and health aspects of acrolein, including, but not limited to, the use of personal protective equipment, respiratory protection and emergency response as explained in the relevant OSHA standards.

F. MAGNACIDE® H Herbicide Storage

All containers of MAGNACIDE® H Herbicide should be stored in a secured, well-ventilated area, away from all other chemicals. No alkalies or oxidizing materials should be near. Any electrical equipment should be Class 1 - Division 2 and properly grounded. Do not reuse empty container. Return empty containers to Baker Petrolite Corporation.

If MAGNACIDE® H Herbicide is stored at a single location in quantities greater than 5,000 pounds net, a Risk Management Plan is required. To ensure compliance, consult local, state and federal regulations.

G. Disposal

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

V. SPILL AND FIRE CONTROL PROCEDURE

A. General Information

MAGNACIDE® H Herbicide spills can be deactivated using sodium carbonate (soda ash). This will polymerize the spill forming a hard odorless polymer. Sodium carbonate is to be added to the spill in powder form followed by 10 to 20 volumes of water. The deactivated polymer can then be placed in marked containers for disposal in an approved hazardous waste disposal facility. Never flush MAGNACIDE® H Herbicide into sewers or natural waterways as this can result in biological upset of treatment systems or kill fish in waterways.

B. Recommended Procedure for Handling Spills

1. All personnel responding to a spill of MAGNACIDE® H Herbicide must have completed the appropriate training as outlined in 29 CFR 1910.120 (q), Emergency Response to Hazardous Substance Releases.
2. Evacuate all nonessential personnel to an upwind area.
3. All decontamination personnel must wear self-contained breathing apparatus and appropriate protective clothing.
4. Contain spill by diking with dirt.
5. Add sodium carbonate (soda ash) to the spill in powdered form. Follow by dilution and mixing with water.
6. When deactivation is complete, scoop the polymer in properly marked containers for disposal at an approved hazardous waste disposal facility in compliance with state and/or federal requirements.

C. Recommended Fire Control

Pursuant to local regulations, the appropriate fire department should be notified of the location where MAGNACIDE® H Herbicide is stored.

MAGNACIDE® H Herbicide is highly flammable and produces toxic vapors. All fire fighting personnel must wear self-contained breathing apparatus and protective clothing.

Carbon dioxide or dry chemical extinguishers can be used on small fires. Alcohol-type foam is

recommended for large fires. If the fire can be tolerated without endangering additional personnel or property, then it should be left to burn itself out.

Water spray may be effective if used in large quantities, at least 20 volumes of water per volume of MAGNACIDE® H Herbicide. Use water spray to help disperse vapors and cool containers. For additional details, reference the acrolein Emergency Response Plan (ERP).

VI. DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling. MAGNACIDE® H Herbicide is a water soluble material for the control of submersed and floating weeds and algae in irrigation canals. This material must be applied in accordance with directions in the MAGNACIDE® H Herbicide Application and Safety Manual by a certified applicator or under a certified applicator's supervision. Do not permit dairy animals to drink treated water. Do not use where waters will flow into potential sources of drinking water. Water treated with MAGNACIDE® H Herbicide must be used for irrigation of fields, either crop bearing, fallow or pasture, where the treated water remains on the field OR held for 6 days before being released into fish bearing waters or where it will drain into them.

Information contained in the following pages of this manual will assist the applicator in determining: (1) the proper size orifice through which MAGNACIDE® H Herbicide should be applied; (2) the nitrogen application pressure which should be used; and (3) the proper setup and shut down of the MAGNACIDE® H Herbicide Application Equipment as distributed by Baker Petrolite Corporation.

A. Guide for MAGNACIDE® H Herbicide Application from Cylinders and Portable Skid Tanks

MAGNACIDE® H Herbicide is forced from the container using nitrogen gas and introduced directly into the canal over a period of 15 minutes to 8 hours to form a wave of treated water. Because of its high activity against submersed vegetation, concentrations in the range of 1-15 ppm are required for control. As MAGNACIDE® H Herbicide proceeds down the canal, it moves like a chemical wave, destroying weeds as it moves.

The amount of MAGNACIDE® H Herbicide required is primarily determined by the amount of water flow and weed density in the canal, although velocity, water temperature and water quality must also be considered. Canal flow is generally stated in cubic feet per second (cfs) and the amount of material used can also be expressed in terms of this value. As an example, if MAGNACIDE® H Herbicide is recommended at 1 gallon/cfs, it means that for a canal flowing 10 cfs a total of 10 gallons of material will be needed.

Since MAGNACIDE® H Herbicide is added over a time interval, a wave of treated water is formed that moves downstream, bathing the weeds in herbicide. Once the wave of treated water has passed a particular point in the canal, the concentration of MAGNACIDE® H Herbicide at that point drops to zero. No residual chemical remains after passage of the wave. The amount of herbicide the weeds receive is, therefore, determined by (1) its concentration in the water and (2) the time required for the treated water to pass over the plants. In fast flowing canals (linear velocity greater than 2.5 ft/sec), masses of vegetation may be compacted or bent by the water; channeling will occur preventing the free movement of the treated water through the weeds. . The same situation may prevail in canals heavily infested with weed growth. Consequently, all plants may not receive their proportionate share of the available herbicide and control will be less effective. Therefore, in canals flowing faster than 2.5 ft/sec, the time period of treatment may need to be extended to allow more contact time.

B. Preventive Maintenance Program

By utilizing a preventive maintenance program, the irrigation system will be kept free of weeds throughout the irrigation season, solving water delivery problems and minimizing off-season maintenance created by aquatic weeds. Preventive maintenance programs require less herbicide usage. Better application results will also

be obtained, as the weeds are more susceptible while immature.

It has been determined through various field studies that the most effective and economical method of aquatic weed control is obtained by utilization of a preventive maintenance program. A preventive maintenance program consists of making a series of MAGNACIDE® H Herbicide applications over the irrigation season such that the aquatic weeds are never allowed to reach a "problem" condition. The first MAGNACIDE® H Herbicide application should be made as soon as aquatic weed growth appears (Weed Condition Code A or B). This will normally occur 3 - 6 weeks after the canal receives a constant supply of water. The second and subsequent applications should be made at two to three week intervals, depending upon the regrowth of aquatic weeds. Regrowth will depend on several variables such as water and atmospheric temperatures, species of aquatic plant, turbidity of water, water quality and sunlight conditions.

C. MAGNACIDE® H Herbicide Application Guide

To determine the proper orifice size and nitrogen pressure setting, the following must be determined:

1. The weed growth condition of the canal – Naturally, the more severe the weed growth condition, the more MAGNACIDE® H Herbicide which will be required for control. Use Table 3, Weed Growth Condition Chart, below, to determine the weed growth condition and gallons of MAGNACIDE® H Herbicide per cubic foot per second (cfs).

Table 3. Weed Growth Condition Chart

Condition Code			MAGNACIDE® H Herbicide per cfs
A.	Little algae and pondweed less than 6 inches long	=	0.17 gallons per cfs (for preventive maintenance)
B.	Algae (non-floating) and pondweed less than 12 inches long	=	0.25 gallons per cfs (for preventive maintenance)
C.	Algae (some floating) and pondweed 12 - 24" long	=	0.50 gallons per cfs
D.	Algae (some floating) and mature pondweed	=	1.0 gallons per cfs
E.	Choked conditions	=	1.5 gallons per cfs

NOTE: Water temperatures also affect the amount of MAGNACIDE® H Herbicide required for effective treatment. MAGNACIDE® H Herbicide is less soluble in cooler water and plant reactivity is lowered. The above conditions are for water temperatures above 60°F. Correct the amount of MAGNACIDE® H Herbicide required for effective treatment as follows:

Water Temperatures	Increase Amount of MAGNACIDE® H Herbicide
60°F - 55°F	20%
55°F - 50°F	50%
50°F or below	100%

2. Canal rate of flow – The volume of water that passes a particular reference section in a unit of time. Usually designated as cubic feet per second (cfs). Calculated as mean depth in feet times mean

width in feet times the linear velocity in feet per second.

3. Determine the temperature of the canal water to be treated.

4. Application Time: Normal application times will range from 15 minutes to 8 hours. Items to be considered in selecting an application time are:

   a. Contact time: Since MAGNACIDE® H Herbicide is a contact herbicide, consider the velocity of the canal. In fast flowing canals (2 mph or more) extend the application time to insure good contact. In slower canals (0.5 mph or less), shorten the application time.

   b. Concentration of MAGNACIDE® H Herbicide in parts per million (ppm): The concentration may be controlled by adjusting the application time. Concentrations must not exceed 15 ppm. See Table 5, MAGNACIDE® H Herbicide Concentrations.

After you have determined the above items you can calculate the orifice size and nitrogen pressure setting.

Example A:

1. Weed growth condition: Some algae and pondweed 10 inches in length.
2. Canal rate of flow is 50 cfs.
3. Temperature of 65°F.
4. Application time 3 hours.

Step 1

From Table 3, Weed Growth Condition Chart, we determine a Condition Code B, or 0.25 gallons of MAGNACIDE® H Herbicide per cfs. **NOTE:** Temperature is above 60°F.

Step 2

Determine total gallons of MAGNACIDE® H Herbicide required:
Multiply canal rate of flow (cfs) by weed growth condition code (MAGNACIDE® H Herbicide per cfs) to find the total gallons of MAGNACIDE® H Herbicide required.

50 cfs X 0.25 gallons MAGNACIDE® H Herbicide per cfs = 12.5 gallons of MAGNACIDE® H Herbicide required

Step 3

Determine gallons of MAGNACIDE® H Herbicide per hour. Divide total gallons of MAGNACIDE® H Herbicide by application time to find gallons of MAGNACIDE® H Herbicide per hour.

12.5 gallons MAGNACIDE® H Herbicide / 3 hours = 4.2 gph of MAGNACIDE® H Herbicide

Step 4

Determine orifice size and nitrogen pressure setting. Refer to Table 4, Orifice Flow Table. Locate the gallons per hour of MAGNACIDE® H Herbicide, or the closest number in the table. Read to the left to find the orifice size and read up to find the nitrogen pressure setting. We determine 4.1 gph is the closest number to 4.2 gph and locate the orifice size and pressure setting of:

Orifice Size, Inches	Pressure Setting, psig
0.025	25

Example B:

1. Weed growth condition: Floating algae and floating pondweed 12 - 24" long.
2. Canal rate of flow 120 cfs.
3. Temperature 57°F.
4. Application time 4 hours.

Step 1

From Table 3, Weed Growth Condition Chart, we determine Condition Code C, or 0.50 gallons of MAGNACIDE® H Herbicide per cfs. **NOTE:** Temperature of 57°F will increase rate by 20%.

Step 2

Determine total gallons of MAGNACIDE® H Herbicide required. Multiply canal rate of flow (cfs) by weed growth condition code (MAGNACIDE® H Herbicide per cfs) to find the gallons of MAGNACIDE® H Herbicide. Due to the temperature being below 60°F, we will increase the volume of MAGNACIDE® H Herbicide by 20%.

120 cfs X 0.50 gallons of MAGNACIDE® H Herbicide per cfs = 60 gallons of MAGNACIDE® H Herbicide.

60 gallons MAGNACIDE® H Herbicide x 0.20 (for water temperature) = 12 gallons

60 gallons + 12 gallons = 72 total gallons MAGNACIDE® H Herbicide required

Step 3

Determine gallons of MAGNACIDE® H Herbicide per hour: Divide total gallons of MAGNACIDE® H Herbicide by the application time to find gallons of MAGNACIDE® H Herbicide per hour.

72 total gallons MAGNACIDE® H Herbicide / 4 hours = 18 gph of MAGNACIDE® H Herbicide.

Step 4

Determine orifice size and nitrogen pressure setting. Refer to Table 4, Orifice Flow Table, and locate the gallons per hour of MAGNACIDE® H Herbicide, or the closest number on the table. Read to the left to find the orifice size and read up to find the nitrogen pressure setting. We determine 18.5 gph is the closest number to 18 gph and locate the orifice size and pressure setting:

Orifice Size, Inches	Pressure Setting, psig
0.045	50

The concentration of MAGNACIDE® H Herbicide should not exceed 15 ppm. The concentration in ppm is calculated as follows:

$$\frac{\text{dosage (gal/cfs) x 1,884}}{\text{application time (minutes)}} = \text{ppm (MAGNACIDE® H Herbicide concentration)}$$

Alternately, the treating rate can be calculated using the following formula:

Gallons per Hour (gph) MAGNACIDE® H Herbicide = cfs x 0.032 x MAGNACIDE® Herbicide (in ppm)

Based on the weed growth conditions at the time of treatment, choose the application time and concentration appropriate from Table 5, MAGNACIDE® H Herbicide Concentrations. Insert the flow rate and ppm into the equation and calculate the gallons per hour of MAGNACIDE® H Herbicide required.

Table 4. Orifice Flow Table

Orifice Size (in.)	Nitrogen Pressure Settings									
	6 psig	8 psig	10 psig	15 psig	20 psig	25 psig	30 psig	40 psig	50 psig	60 psig
	Gallons per Hour									
0.014	0.65	0.72	0.85	1.05	1.2	1.3	1.4	1.6	1.9	2.1
0.016	0.85	0.98	1.05	1.3	1.5	1.7	1.9	2.2	2.4	2.6
0.020	1.3	1.5	1.6	2.1	2.4	2.7	2.8	3.3	3.7	4.0
0.025	2.1	2.3	2.6	3.2	3.7	4.1	4.5	5.1	5.9	6.3
0.030	2.8	3.3	3.7	4.6	5.3	5.9	6.4	7.3	8.5	9.2
0.035	3.9	4.5	5.1	6.2	7.2	7.9	9.2	10.5	11.1	12.5
0.045	6.4	7.0	8.5	10.5	11.8	13.1	14.2	16.5	18.5	21.0
0.055	9.8	11.1	12.4	15.0	17.0	20.0	22.0	25.0	27.0	30.0
0.070	15.0	17.0	21.0	25.0	28.0	32.0	35.0	40.0	46.0	49.0
0.081	21.0	24.0	27.0	33.0	38.0	42.0	47.0	53.0	60.0	65.0

Table 5. MAGNACIDE® H Herbicide Concentrations

MAGNACIDE® Herbicide Concentrations Flowing Irrigation Canals Concentration in ppm at Various Gallons/cfs Rates					
Application Time	Weed Condition A Gal/cfs 0.17	Weed Condition B Gal/cfs 0.25	Weed Condition C Gal/cfs 0.50	Weed Condition D Gal/cfs 1.0	Weed Condition E Gal/cfs 1.5
	ppm				
30 Minutes	10.0	-	-	-	-
1 Hour	5.0	7.8	-	-	-
2 Hours	2.6	3.9	7.8	-	-
3 Hours	1.7	2.6	5.2	10.4	-
4 Hours	1.3	2.0	3.9	7.9	11.8
6 Hours	-	1.3	2.6	5.2	7.9
8 Hours	-	1.0	1.9	3.9	5.9

VII. APPLICATIONS FROM CYLINDERS AND SKID TANKS

A. General Instructions

The applicator must wear a respirator when setting up or breaking down application equipment. Once the application equipment is in place, and the treatment in progress, an applicator should monitor the treatment if the containers are not secured. If the containers are secured (e.g., locked enclosures), an applicator may simply check on the treatment periodically (at least every two hours).

Know your procedures thoroughly; rehearse them if necessary before the job. Use only specified equipment as provided by Baker Petrolite Corporation. Application equipment should be inspected prior to and during each application to insure that it is working properly.

Turn all valves cautiously, insuring that there are no leaks and that all hardware is working properly.

Insure that you have fresh wash water available for personal emergency use.

Maintain accurate records of all MAGNACIDE® H Herbicide applications including:

1. Date
2. Time application started and stopped
3. Location
4. Flow of canal (cfs)
5. Water temperature
6. Orifice size and pressure setting
7. Parts per million concentration of MAGNACIDE® H Herbicide
8. Amount of MAGNACIDE® H Herbicide injected
9. Any additional information required by your state Department of Agriculture.

B. Application Instructions

Refer to Figure 1, MAGNACIDE® H Application Set Up, and Figure 2, MAGNACIDE® H Application Kit.

1. Calculate proper orifice size and regulator pressure setting using the appropriate tables shown in Section VI, Directions for Use.

2. Install orifice in orifice assembly (18). Make sure the screen filter is clean and in place. Wrap threads on orifice assembly (both cap and hose ends) with two layers of Teflon® tape to insure that a good seal is obtained. Wrap the threaded portions (14) of the nitrogen (blue) (A) and MAGNACIDE® H Herbicide (orange) (B) assemblies with two layers of Teflon® tape to insure that a good seal is obtained.

3. Secure nitrogen tank to prevent it from falling over. Do not lay tank down on its side. Connect nitrogen regulator (1) to nitrogen tank. Connect nitrogen hose (5) to tee (4).

   Note: It is necessary to examine the integrity of the nitrogen check valve and excess flow valve each time a new cylinder of nitrogen is used.

4. To check excess flow valve:
   Ensure nitrogen tank valve (F) is shut off and nitrogen pressure handle (G) is closed (counterclockwise). Remove check valve and attachments. Excess flow valve should remain attached to the regulator. Open nitrogen regulator pressure handle fully clockwise. Open nitrogen tank valve. Excess flow valve should activate to prevent unrestricted flow of nitrogen. Repair or replace if necessary. Close nitrogen tank valve (F) and nitrogen pressure handle (G).

5. To check integrity of check valve:
   Reinsert check valve only – backwards (arrow pointing toward regulator). Open nitrogen tank valve (F). Turn nitrogen regulator pressure handle (G) clockwise to open, to approximately 10 psi. Listen and

check with finger to see if any nitrogen is escaping through the check valve. Repair or replace if necessary. Close nitrogen tank valve (F) and nitrogen pressure handle (G). Reverse check valve, retape and reassemble nitrogen regulator system in original configuration.

6. Check MAGNACIDE® H cylinder/skid valves, nitrogen intake valve (blue) (C) and MAGNACIDE® H discharge valve (orange) (D) to insure that they are in the closed and secured position. Inspect purging assembly ball valve (blue) (11) and pressure bleed off valve (6) to insure each is closed.

   Note: Put on gloves, respirator and have wash water available before proceeding to Step 7.

7. Remove the plugs from the nitrogen intake (blue) (C) and MAGNACIDE® H Herbicide discharge (orange) (D) valves. Remove any Teflon® tape that may be in the valves. This tape could restrict flow of MAGNACIDE® H Herbicide and the desired application rate would not be obtained. Connect the nitrogen assembly (blue) (A) assembly to the nitrogen intake valve (blue) (C) and MAGNACIDE® H Herbicide assembly (orange) (B) to the MAGNACIDE® H Herbicide discharge valve (orange) (D).

8. Connect MAGNACIDE® H Herbicide injection hose (21) to the MAGNACIDE® H Herbicide assembly at the orifice outlet (19). A weight must be attached to the end of the injection hose (22) to insure that the hose remains submerged. Drop the weighted end of the injection hose into the canal at a point where MAGNACIDE® H Herbicide will mix thoroughly.

9. Connect nitrogen hose (5) to the nitrogen assembly (blue) (A) on the cylinder/skid.

10. In order to pressure test the application system for leaks, slowly open the nitrogen tank valve (F). Adjust regulator (G) to 30 psi. Check for leaks on nitrogen assembly, using soap solution. Retighten connections if necessary. Close nitrogen tank valve (F) and open bleed valve (blue) (6) to relieve nitrogen pressure.

11. Disconnect nitrogen hose at quick coupler (8) on nitrogen assembly (A). Reconnect nitrogen quick coupler (8) to the blue purge valve (9) on orange MAGNACIDE® H Herbicide assembly. Slowly open the nitrogen tank valve (F) and adjust regulator (G) to 30 psi. Open handle on purge valve (11). Check for leaks using soap solution. Retighten connections if necessary. Close nitrogen tank valve (F) and open bleed valve (6) to relieve nitrogen pressure. Reconnect nitrogen line (5) to nitrogen assembly (blue) (A) on the cylinder/skid.

12. Open blue nitrogen intake valve (C) on cylinder/skid slowly. Read cylinder/skid low pressure regulator gauge (7). If reading is greater than desired pressure setting for application (Step 1), the excess pressure must be bled off. Connect the MAGNACIDE® H Herbicide injection hose (21) to the pressure bleed off valve (blue) (6). Bleed the cylinder/skid pressure down below the desired application pressure. After bleeding down, the hose can be purged with nitrogen by closing the cylinder/skid blue nitrogen intake valve (C), opening the nitrogen tank valve (F) and opening the nitrogen pressure handle for 30 seconds. Close the pressure bleed off valve (6) and remove the MAGNACIDE® H Herbicide injection hose (21). Reconnect hose to MAGNACIDE® H Herbicide assembly (orange) (B).

13. Open nitrogen tank valve (F) and set pressure using the nitrogen regulator pressure handle (G) as calculated in Step 1, using pressure bleed off valve (6) as necessary. Check for leaks.

14. Open cylinder/skid blue nitrogen valve (C) slowly. The cylinder/skid will pressurize with nitrogen to the desired setting. Check for leaks.

15. Open orange MAGNACIDE® H Herbicide cylinder/skid discharge valve (D) slowly. You should observe MAGNACIDE® H Herbicide flowing through the injection hose.

16. Check for leaks on the MAGNACIDE® H Herbicide assembly (orange) (B) and injection hose (21). If a leak is detected, close the orange MAGNACIDE® H Herbicide discharge valve (D). If necessary, rinse with water. In most cases, the leak can be repaired by tightening the threaded connections on the

orange MAGNACIDE® H Herbicide assembly and hose.

Note: The orange MAGNACIDE® H Herbicide assembly and injection hose may need to be disassembled and retaped with Teflon® tape to repair the leak. Follow shutdown steps 6, 7, 8, 9 and 20 – 26 to purge MAGNACIDE® H Herbicide from assembly and hose before disassembly of injection equipment.

Repair leak and follow application Steps 7 - 16.

Be sure pressure is readjusted to desired application pressure as determined in Step 1.

17. Make note of time that application began to determine duration of application. Complete application record.

18. Periodically during application check MAGNACIDE® H Herbicide application equipment to insure that equipment is functioning properly. Goggles are to be worn during visual checks.

19. Monitor the nitrogen usage such that the remaining pressure in the nitrogen cylinder never drops below 100 psi during the application. This, in addition to the check valve, will prevent any backflow of MAGNACIDE® H Herbicide vapors into the nitrogen cylinder.

C. Shutdown Procedure

Note: Put on respirator and gloves and have wash water available before proceeding to Step 20.

20. Close orange MAGNACIDE® H Herbicide cylinder/skid discharge valve (D) slowly.

21. Close blue cylinder/skid nitrogen intake valve (C) slowly and secure the valve handle.

22. Remove nitrogen hose from nitrogen assembly (blue) (A).

23. Connect nitrogen hose female quick coupler (8) to the blue purge valve (9) on orange MAGNACIDE® H Herbicide assembly (B). Adjust pressure with the nitrogen regulator pressure handle (G) 10 psi higher than the previously set application pressure. Open handle on purge valve (11). Nitrogen will immediately flow through the application hose and bubbles will be seen in the canal. Let nitrogen flow for at least 60 seconds to purge all MAGNACIDE® H Herbicide out of injection hose. Check any coils for remaining chemical.

24. Open and close orange MAGNACIDE® H Herbicide discharge valve (D) several times to force all MAGNACIDE® H Herbicide in chemical assembly and valve back into container.

25. Close orange MAGNACIDE® H Herbicide discharge valve (D) and secure. Close purge valve (11).

26. Remove nitrogen hose female quick coupler (8) from purge valve (9).

27. Close nitrogen tank valve (F).

28. Bleed pressure from nitrogen line with pressure bleed off valve (6) on regulator.

29. Disconnect nitrogen regulator (1) from nitrogen tank. Wrap regulator in a protective covering to prevent damage.

30. Replace nitrogen tank valve stem cover.

31. Remove nitrogen assembly (blue) (A) from cylinder/skid nitrogen intake valve (C) and install valve plug.

32. Disconnect injection hose (21) from the orange MAGNACIDE® H Herbicide assembly (B).

33. Remove orange MAGNACIDE® H Herbicide assembly from cylinder/skid valve (D) and install valve plug.

34. Secure cylinder/skid bonnet lid.

35. Wash assemblies and application hose with fresh water to remove any remaining traces of MAGNACIDE® H in order to prevent any inadvertent exposure to acrolein vapors.

36. Remove respirator and gloves.

37. Store all equipment properly. Store all personal protective equipment separately from application equipment to prevent contamination.

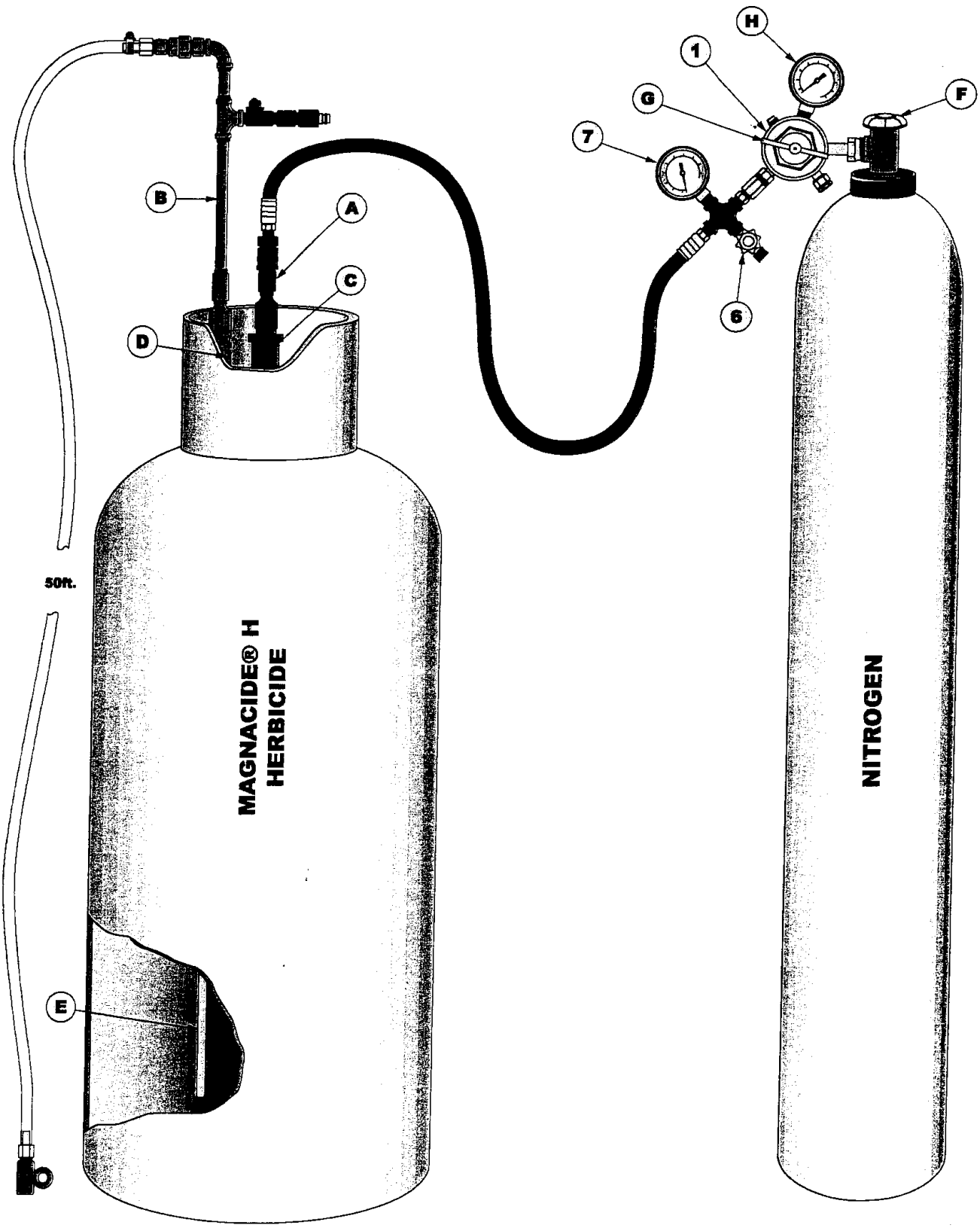
VIII. MAGNACIDE® H APPLICATION SET UP INDEX (for use with Figure 1, MAGNACIDE® H Application Set Up)

A. Nitrogen assembly (blue)
B. MAGNACIDE® H Herbicide assembly (orange)
C. MAGNACIDE® H Herbicide cylinder nitrogen intake valve
D. MAGNACIDE® H Herbicide cylinder discharge valve
E. MAGNACIDE® H Herbicide dip tube (delivers chemical from bottom of cylinder to assembly B)
F. Nitrogen tank valve
G. Nitrogen regulator pressure handle
H. Nitrogen tank high pressure (psi) gauge

1. Nitrogen regulator with high pressure gauge
6. Pressure bleed off valve (blue)
7. Low pressure nitrogen gauge

Figure 1.

MAGNACIDE® H APPLICATION SET UP

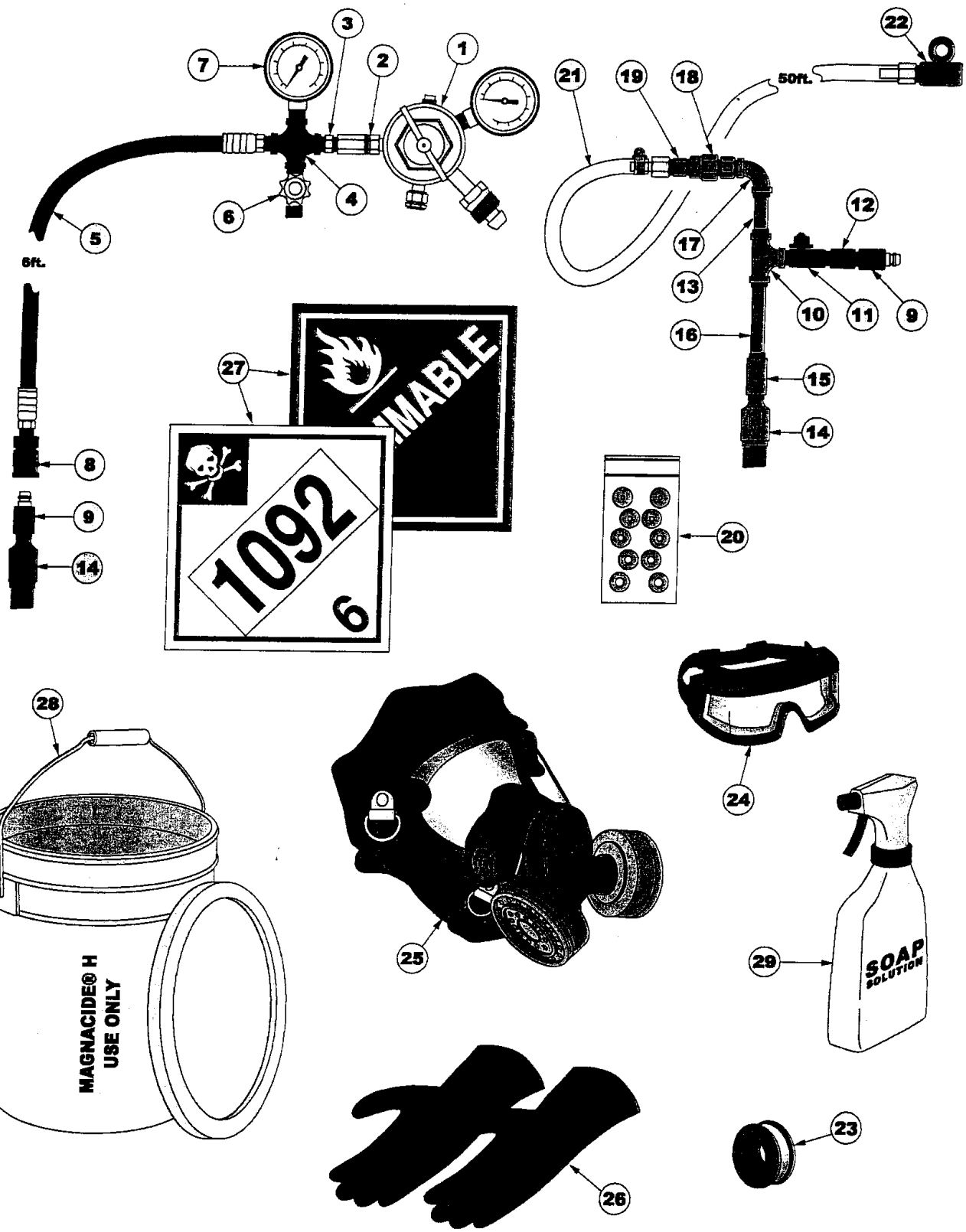


IX. MAGNACIDE® H APPLICATION KIT INDEX
(for use with Figure 2, MAGNACIDE® H Application Kit)

1. Nitrogen regulator with high pressure gauge
2. Excess flow valve
3. Check valve
4. Tee
5. Nitrogen hose
6. Pressure bleed off valve
7. Low pressure nitrogen gauge
8. Nitrogen hose female quick coupler
9, 14. Nitrogen assembly (A)
9 - 19. MAGNACIDE® H Herbicide assembly
18 - 19. Orifice assembly with screen filter
20. One set of orifice plates
21. 50' MAGNACIDE® H Herbicide injection hose
22. Hose end for attaching weight
23. Teflon tape
24. Goggles
25. Respirator
26. Butyl rubber gloves
27. Placards (8 total – 1092 and flammable)
28. Plastic 6-gallon bucket with lid
29. Soap solution

Figure 2.

MAGNACIDE® H APPLICATION KIT



X. EQUIPMENT AND HARDWARE

All hardware used in a MAGNACIDE® H Herbicide system must be chemically compatible. This means that the materials used in the system must not cause a reaction with the MAGNACIDE® H Herbicide or be dissolved or deteriorated by it. If the materials are not compatible, either the materials will be degraded or the MAGNACIDE® H Herbicide will itself degrade, resulting in a polymerization reaction. A polymerization reaction will release heat and pressure and could rupture the container, causing possible damage to personnel or property.

All parts used in the MAGNACIDE® H Herbicide Application Kit have been thoroughly tested for their compatibility with our product. No substitutions should be made without authorization from Baker Petrolite Crop Protection Chemicals.

In addition, all equipment and hardware must be free from all traces of contaminants, especially alkalies (such as ammonia and caustics) and acids. Contamination of MAGNACIDE® H Herbicide with these substances can cause vessels, piping and other hardware to rupture.

XI. TRANSPORTING MAGNACIDE® H Herbicide CONTAINERS

Transportation of hazardous chemicals is regulated by the U. S. Department of Transportation (DOT). The DOT requirements for transporting MAGNACIDE® H Herbicide (acrolein, inhibited) are as follows:

1. Transporting vehicle must be placarded when hauling full, partial or empty containers. Required placards are Inhalation Hazard 1092 and Flammable Liquid, available at cost through Baker Petrolite Corporation. All four sides of the transporting vehicle must have placards displayed. with the 1092 placards (primary hazard) in left or upper position.

2. Driver must carry correct shipping papers at all times. These must include the correctly worded bill-of-lading supplied by Baker Petrolite Corporation or commercial freight line, material safety data sheet for MAGNACIDE® H Herbicide, and Chemtrec emergency response information (supplied with bill-of-lading).

3. Special drivers license requirements are in effect for transporting hazardous materials. For details, contact the Department of Motor Vehicles in your state.

Bills-of-lading for transportation of empty containers are available from your Baker Petrolite Crop Protection Chemicals representative or Baker Petrolite Corporation's Taft, CA office.

XII. RETURN OF EMPTY MAGNACIDE® H Herbicide CONTAINERS

Empty containers are to be returned, freight collect, to:

Baker Petrolite Corporation
19815 S. Lake Rd.
Taft, CA 93268

Please Note: No partly used containers should be returned to Baker Petrolite Corporation without prior notification. For information concerning the return of partly used containers, contact:

Baker Petrolite Corporation
Telephone: (661) 763-5137
E-mail address: cropprotectionchemicals@bakerpetrolite.com

Normally, no credit will be issued for unused material returned from opened cylinders or skid tanks.

A. Preparation for Shipment of Empty Containers

Prepare empty containers for shipment as follows:

1. Relieve container pressure down to 15-25 psig. This is normally accomplished by venting into the irrigation system during treatment.
2. Replace plugs in the inlet and outlet valves and tighten securely.
3. Fasten down valve handles securely.
4. Close lid and secure with latch.
5. Containers must be transported upright. Alert the carrier to secure containers to prevent overturning during transport.

The DOT has special shipping paper requirements for shipment of empty containers which previously contained a hazardous material. Properly worded bills-of-lading for empty containers are available through your technical sales representative or Baker Petrolite Corporation's Taft, CA office. Trucks transporting empty containers must be placarded. It is the responsibility of the shipper to provide necessary placards.

XIII. DISCLAIMER

This document is intended to serve as general information for companies to review and use in implementing their MAGNACIDE® H Herbicide application and safety programs. The information contained herein has been compiled from a number of sources, including information readily available to the public. Although every effort has been made to provide complete and accurate information, Baker Petrolite Corporation cannot accept responsibility, nor shall it be liable, for any inaccuracies of public information sources, misinterpretations or incomplete information which may be contained in this document.

APPENDIX A

Water Measurement Equivalents

Discharge or Rate of Flow	The volume of water that passes a particular reference section in a unit of time. Usually designated as cubic feet per second or miner's inches.
1 cfs	1 cubic foot per second (mean depth (ft) x mean width (ft) x linear velocity (ft/sec)).
Miner's Inch	The quantity of water which will flow through an orifice one inch square under a stated head which varies from 4 to 6 1/2 inches in different localities.
Acre Foot	A commonly employed unit of volume defined as that quantity of water required to cover one acre of land to a depth of one foot or 43,560 cubic feet.
1 cfs	450 gallons per minute
1 cfs	50 miner's inches in Idaho, Kansas, Nebraska, New Mexico, North Dakota, South Dakota, Northern California, Washington and Utah.
1 cfs	40 miner's inches in Arizona, Southern California, Montana and Oregon.
1 cfs	38.4 miner's inches in Colorado.
1 cfs Flowing 1 Hour	1 acre inch.
1 cfs in 12 Hours	1 acre foot.
1 cu. ft. of Water at 25°C	62.2 lb., 7.48 gallons.
1 Gallon Water	8.34 lb.
1 Acre Foot of Water	2.7 million lb.
2.7 lb. Product/Acre Ft.	1 ppm MAGNACIDE® H Herbicide.
1 lb. Product/Million Gallons	0.12 ppm MAGNACIDE® H Herbicide.
1 Acre	43,560 sq. ft., 1/640 square mile.
1 Mile	5,280 feet; 1,760 yards.
1 Kilometer	0.62 miles.
1 Inch	2.54 cm = 25.4 mm.
1 Ounce	28.35 grams.
1 Gram	0.0353 ounces.
1 lb.	453.59 grams.
1 Fluid Ounce	29.57 ml.
1 Pint	473.2 ml.
1 Gallon (U. S.)	0.823 gallon (British)
1 mph	88 ft/min = 1.5 ft/sec.
m^3	264.2 gallons
1.6 kilometers	1 mile
1 m^3/sec.	35.3 cubic ft/sec.
1 hectare	2.47 acres
3.79 liters	1 gallon
2.2046 lbs.	1 kilogram
2.2 mega liters/day	1 cubic foot per second/24 hours

APPENDIX B

MAGNACIDE® H Herbicide Monitor

The MAGNACIDE® H Herbicide monitor is a hand held colorimeter designed to quickly and easily determine the concentration of MAGNACIDE® H Herbicide in irrigation waters. The instrument's compact size and easy operating procedures make it a handy tool for measuring MAGNACIDE® H Herbicide levels in even the most remote irrigation channels.

A simple test determines the parts per million (ppm) of chemical present in the treated water with an accuracy of 0.1 ppm. The monitor readily measures the concentration of MAGNACIDE® H Herbicide in the range of 0.25 to 15.0 ppm. Test results are read directly off the monitor's scale, thus eliminating the need for complicated calculations.

The MAGNACIDE® H Herbicide monitor is furnished in a kit with all necessary equipment to conduct a number of tests. For additional information on the MAGNACIDE® H Herbicide monitor, please contact your technical sales representative.

APPENDIX C

Toxicity

Results of toxicological studies are summarized below:

The acute oral toxicity (LD_{50}) of MAGNACIDE® H Herbicide for rats is approximately 29 mg/kg. The acute dermal LD_{50} of undiluted MAGNACIDE® H Herbicide in rabbits is 231.4 mg/kg.

In a subacute study conducted with male and female rats for 90 days, MAGNACIDE® H Herbicide was added to the drinking water at 0, 5, 13, 32, 80, and 200 ppm. Growth of both sexes was equal or better than the controls. Food efficiency was equivalent to the controls at all levels. Water consumption was reduced by 1/3 at the 200 ppm level for the first 3 weeks, but by the 12th week the animals had apparently adapted to the odor and taste of the MAGNACIDE® H Herbicide in the drinking water. There were no hematological, organ weight or pathological changes that could be attributed to the ingestion of the drinking water containing the MAGNACIDE® H Herbicide.

In a study of skin absorption, rabbits were immersed, except for the head, for one hour in 20 or 100 ppm aqueous solutions of MAGNACIDE® H Herbicide. There was no adverse effect at 20 ppm. At 100 ppm, one rabbit appeared weakened, but returned to normal in 24 hours.

Lactating dairy cows were given MAGNACIDE® H Herbicide in their drinking water at levels of 30, 60, or 90 ppm for 24 hours. There were no adverse effects at 30 and 60 ppm on body weight, water intake, feed and water consumption, and milk and butterfat production. No off-flavor was imparted to the milk. At 90 ppm, the only noticeable effect was 1/4 - 1/3 drop in water and hay consumption with a transitory drop in weight. However, all factors measured returned to normal the following day.

Data on vapor toxicity show that MAGNACIDE® H Herbicide vapor exerts its main action on the eyes and mucous membranes of the respiratory tract; severe exposure may produce serious injury to the lungs. A table of sensory response values is given below.

Atmospheric Concentration (ppm)	Duration of Exposure	Probable Human Response
0.25	5 minutes	Moderate irritation
1.0	5 minutes	Painful irritation
1.0	2 - 3 minutes	Eye and nose irritation
5.5	20 seconds	Painful eye and nose irritation
5.5	1 minute	Practically intolerable
153.0	10 minutes	May be fatal

The odor threshold for acrolein will vary among humans, depending upon the olfactory sensitivity and acuteness. Detection threshold will vary between 0.02 and 1.8 ppm[1].

[1]Carson, B. L., Beall, C. M., Ellis, H. V., Baker, L. H. and Herndon, B. L., Acrolein Health Effects. U. S. Environmental Protection Agency (US EPA), EPA-460/3-81-034, NTIS PB82-161282, 1-121, September 1981.

RESTRICTED USE PESTICIDE
DUE TO A HIGH ACUTE TOXICITY
For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

BAKER HUGHES

Baker Petrolite

MAGNACIDE® H HERBICIDE
(Acrolein, Inhibited)

CONTENTS UNDER PRESSURE

EPA Reg. No. 10707-9 EPA Est. 10707-CA-005

ACTIVE INGREDIENT	BY WEIGHT
Acrolein	95%
INERT INGREDIENTS	5%
TOTAL	100%

This product contains the toxic inert ingredient hydroquinone.
(MAGNACIDE® H Herbicide contains 6.7 pounds of active ingredient per gallon.)

DANGER POISON

KEEP OUT OF REACH OF CHILDREN

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

EXTREMELY FLAMMABLE AND IRRITATING VAPOR AND LIQUID. POISONOUS BY INHALATION. SKIN CONTACT OR SWALLOWING. DO NOT BREATHE VAPOR. CORROSIVE. CAUSES EYE AND SKIN DAMAGE. DO NOT GET IN EYES, ON SKIN OR ON CLOTHING. KEEP AWAY FROM FIRE, SPARKS AND HEATED SURFACES.

When setting up and breaking down application equipment, a full-face air purifying respirator with organic vapor (OV) cartridges jointly approved by the Mine Safety and Health Administration (MSHA) and the National Institute of Occupational Safety and Health (NIOSH) and butyl rubber gloves must be worn. For visual inspection during treatment, chemical splash goggles must be worn. If spilled on clothing, gloves, or shoes, remove them immediately and wash thoroughly with soap and water before reuse. Use with adequate ventilation.

ENVIRONMENTAL HAZARDS

This product is toxic to fish and wildlife. Keep out of lakes, streams or ponds. Fish, shrimp and crabs will be killed at application rates recommended. Do not apply where they are important resources. Do not apply to water drainage areas where runoff or flooding will contaminate ponds, lakes, streams, tidal marshes and estuaries. Do not contaminate water by cleaning of equipment or disposal of wastes. Notify your State Fish and Game Agency before applying this product. Use only as specified.

PHYSICAL AND CHEMICAL HAZARDS

DANGER: Extremely flammable. Contents under pressure. Keep away from fire, sparks and heated surfaces. Do not puncture or incinerate container. Acrolein, the active ingredient in MAGNACIDE® H Herbicide, is highly reactive chemically and readily forms polymers. If alkalies (such as ammonia and caustic) or strong acids are brought in contact with MAGNACIDE® H Herbicide in a closed system, the Herbicide can polymerize with sufficient violence to rupture the container. Do not apply with equipment used for acids and alkalies. Contamination of MAGNACIDE® H Herbicide with any foreign matter must be avoided.

A supply of sodium carbonate (soda ash) should be readily available for deactivating spilled MAGNACIDE® H Herbicide. All spills should be confined and deactivated before disposal. See the MAGNACIDE® H Herbicide Application and Safety Manual for additional information.

FIRST AID

If inhaled:
- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.
- Call a poison control center or doctor for further treatment advice.

If on skin or clothing:
- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

If in eyes:
- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after 5 minutes, then continue rinsing eye.
- Call a poison control center or doctor for treatment advice.

If swallowed:
- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by the poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

Have the product container, label or application manual with you when calling a poison control center or doctor, or going for treatment. CALL A PHYSICIAN IMMEDIATELY IN ALL CASES OF SUSPECTED POISONING.

NOTE TO PHYSICIAN

Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

WARNING SIGNS AND SYMPTOMS: Liquid MAGNACIDE® H Herbicide is absorbed by the skin and is particularly irritating to any lesion and to the eye. The vapors act principally on the mucous membrane of the eyes and respiratory tract. Because of the extreme lachrymatory warning effect, the concentration tolerable by man is far below the minimum lethal concentration.

TREATMENT: Treat exposed area as a chemical burn. Thoroughly flush eyes with water and treat symptomatically. Persons exposed to MAGNACIDE® H Herbicide vapors have a delayed reaction and experience irritation of the respiratory tract. In severe cases, this may progress to pulmonary edema. Therefore, it is advisable to keep persons exposed to MAGNACIDE® H Herbicide under observation for 24 hours following exposure.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
MAGNACIDE® H Herbicide is a water soluble material for the control of submersed and floating weeds and algae in irrigation canals. This material must be applied in accordance with directions in the MAGNACIDE® H Herbicide Application and Safety Manual by a certified applicator or under a certified applicator's supervision. Do not permit dairy animals to drink treated water. Do not use where waters will flow into potential sources of drinking water. Water treated with MAGNACIDE® H Herbicide must be used for irrigation of fields, either crop bearing, fallow or pasture, where the treated water remains on the field OR held for 6 days before being released into fish bearing waters or where it will drain into them.

STORAGE AND DISPOSAL
STORAGE OF MAGNACIDE® H HERBICIDE TANKS

All containers of MAGNACIDE® H Herbicide should be stored in a secured, well-ventilated area, away from all other chemicals. No alkalies or oxidizing materials should be near. Any electrical equipment should be Class 1 - Division 2 and properly grounded. Do not reuse empty container. Return empty containers to Baker Petrolite Corporation.

DISPOSAL

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

NOTICE OF WARRANTY

BAKER PETROLITE CORPORATION MAKES NO WARRANTY OF MERCHANTABILITY FITNESS FOR ANY PURPOSE, OR OTHERWISE, EXPRESSED OR IMPLIED concerning this product or its uses which extend beyond the use of the product under normal conditions in accord with the statements made on this label.

NET WEIGHTS

Cylinder-370 lbs. Skid Tank-2450 lbs.

Acrolein, Inhibited, 6.1, (3), UN 1092, PG I, Toxic-Inhalation Hazard, Zone A, Marine Pollutant, RQ

RC 0601

MANUFACTURED BY: BAKER PETROLITE CORPORATION 12645 W. Airport Blvd., Sugar Land, TX 77478 Customer Care: 800-872-1916