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DIVISION OF WATER QUALITY

Attachment E – Notice of Intent

WATER QUALITY ORDER NO. 2013-0002-DWQ
GENERAL PERMIT NO. CAG990005

STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR RESIDUAL AQUATIC PESTICIDE DISCHARGES TO WATERS OF THE UNITED STATES FROM ALGAE AND AQUATIC WEED CONTROL APPLICATIONS

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item A. x New Applicator B. Change of Information: WDID# WDID# 9 37AP00001, RM# 398604 C. ☐ Change of ownership or responsibility: WDID#

II. DISCHARGER INFORMATION

A. Name HELIX WATER DISTRICT			
B. Mailing Address 9550 LAKE JENNINGS PARK RD			
C. City LAKESIDE	D. County SAN DIEGO	E. State CA	F. Zip 92040
G. Contact Person JOHN CID	H. E-mail address john.cid@helixwater.org	I. Title BIOLOGIST	J. Phone 619-443-1031

III. BILLING ADDRESS (Enter Information *only* if different from Section II above)

A. Name HELIX WATER DISTRICT, ACCOUNTING			
B. Mailing Address 7811 UNIVERSITY AVE			
C. City LA MESA	D. County SAN DIEGO	E. State CA	F. Zip 91942
G. E-mail address accounting@helixwater.org	H. Title ACCOUNTANT	I. Phone 619-466-0585	

IV. RECEIVING WATER INFORMATION

A. Algaecide and aquatic herbicides are used to treat (check all that apply):

1. ☐ Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger.
   Name of the conveyance system: _____
2. ☐ Canals, ditches, or other constructed conveyance facilities owned and controlled by an entity other than the Discharger.
   Owner's name: _____
   Name of the conveyance system: _____
3. X Directly to river, lake, creek, stream, bay, ocean, etc.
   Name of water body: LAKE JENNINGS

B. Regional Water Quality Control Board(s) where treatment areas are located (REGION 1, 2, 3, 4, 5, 6, 7, 8, or 9): Region 9
(List all regions where algaecide and aquatic herbicide application is proposed.)

V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION

A. Target Organisms: ____

Algae, Tamarix spp., Typha spp.

B. Algaecide and Aquatic Herbicide Used: List Name and Active ingredients

Cutrine Plus (copper)

Garlon 3A (triclopyr TEA salt)

Glyphosate Rro 4 (Glyphosate)

C. Period of Application: Start Date AS NEEDED/SEASONAL End Date AS NEEDED/SEASONAL

D. Types of Adjuvants Used: TARGET PRO-SPREADER ACTIVATOR, MAGNIFY

VI. AQUATIC PESTICIDE APPLICATION PLAN

Has an Aquatic Pesticide Application Plan been prepared and is the applicator familiar with its contents?
☒ Yes ☐ No

If not, when will it be prepared? A PESTICIDE APPLICATION CONTRACTOR HAS NOT BEEN SELECTED. THE SELECTED CONTRACTOR WILL BE FAMILIARIZED WITH THE APAP AT THAT TIME.

VII. NOTIFICATION

Have potentially affected public and governmental agencies been notified? ☒ Yes ☐ No

VIII. FEE

Have you included payment of the filing fee (for first-time enrollees only) with this submittal?
☒ YES ☐ NO ☐ NA

IX. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. Additionally, I certify that the provisions of the General Permit, including developing and implementing a monitoring program, will be complied with."

A. **Printed Name:** CARLOS V. LUGO

B. **Signature:** _____ **Date:** 9/30/2014

C. **Title:** GENERAL MANAGER

XI. FOR STATE WATER BOARD STAFF USE ONLY

WDID:	**Date NOI Received:**	**Date NOI Processed:**
Case Handler's Initial:	**Fee Amount Received:** $	**Check #:**
☐ **Lyris List Notification of Posting of APAP**	**Date** _____	**Confirmation Sent** _____

Aquatic Pesticide Application Plan (APAP)

Helix Water District

This Aquatic Pesticides Application Plan has been prepared in accordance with Water Quality Order No. 2013-0002-DWQ, General Permit No CAG990005 of the State Water Resources Control Board.

Introduction

Helix Water District (HWD) in accordance with Water Quality Order No. 2013-0002-DWQ, General Permit No CAG990005 of the California State Water Resources Control Board (SWRCB), has prepared this Aquatic Pesticides Application Plan (APAP). This General Permit shall become effective on December 1, 2013 and shall expire on November 30, 2018. This APAP contains the following elements:

1. Description of the water system to which algaecides and aquatic herbicides are being applied;
2. Description of the treatment area in the water system;
3. Description of types of weed(s) and algae that are being controlled and why;
4. Algaecide and aquatic herbicide products to be used, the method in which they are applied, and the adjuvants and surfactants used;
5. Discussion of the factors influencing the decision to select algaecide and aquatic herbicide applications for algae and weed control;
6. Description of the control structure to be used to control the extent of receiving waters potentially affected by algaecide and aquatic herbicide application and the inspection schedule of the control structure to ensure that it is not leaking;
7. Description of the monitoring program;
8. Description of procedures used to prevent sample contamination from persons, equipment, and vehicles associated with algaecide and aquatic herbicide application;
9. Description of the BMP's to be implemented.
10. Examination of possible alternatives to algaecide and aquatic herbicide use to reduce the need for applying algaecides and herbicides.
11. Algaecide and Aquatic Herbicide Application Log information elements
12. Attachments. MSDS and product information sheets for algaecide and herbicides used by HWD are attached in the following order: **Cutrine Plus**, **Garlon 3A**, and **Glyphosate Pro 4**.

1. Description of the water system to which algaecides and aquatic herbicides are being applied.

Helix Water District (HWD) operates as a public agency under Irrigation District Laws of the State of California. HWD's service area covers nearly 50 square miles in San Diego County and provides water to approximately 250,000 people. Less than 20% of HWD's water source is local runoff. The rest of the water source is a blend of water from the Colorado River and Northern California. This imported water is purchased from the San Diego County Water Authority, who in turn purchases its water from the Metropolitan Water District of Southern California.

HWD owns Lake Jennings, a 9,790 acre-foot reservoir (See **Figure 1**.) Lake Jennings is located within the boundaries of Regional Water Board 9, San Diego. Approximately 95 percent of Lake Jennings' volume is water imported from Northern California and the Colorado River via aqueducts. A small amount of inflow is from ephemeral, unnamed tributaries. Lake Jennings was created by impounding water behind Chet Harritt Dam, constructed in 1962. Lake Jennings serves as a short-term emergency

storage reservoir for HWD's R. M. Levy Water Treatment Plant. The surface elevation of Lake Jennings is lowered when HWD uses water from the lake to produce potable water.

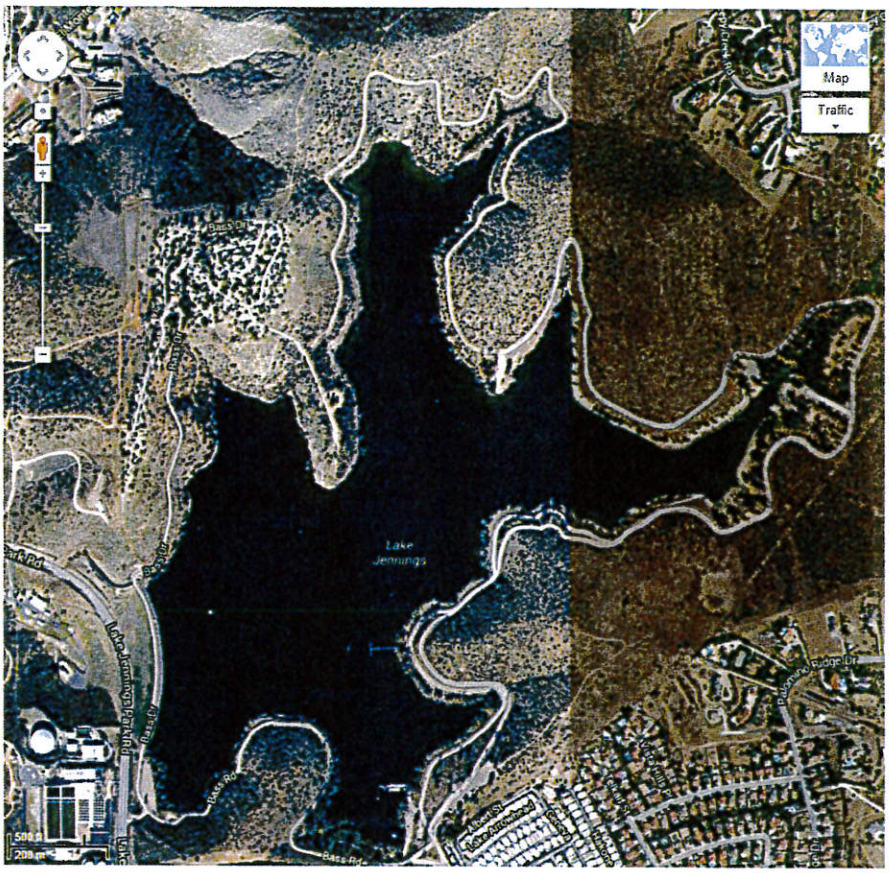

Figure 1. Lake Jennings

2. Description of the treatment area in the water system.

Lake Jennings will be treated for aquatic weeds and nuisance algae. Herbicide will never be applied to open water; aquatic weeds will be treated with herbicide on ground below the ordinary high water mark when the lake is level is down. Weeds submerged in water will not be treated and herbicide will not be applied to the water. Algaecide will be applied to the water in an area adjacent to Chet Harritt Dam and the intake tower to the water treatment plant; these points are in close proximity to each other.

3. Description of types of weeds and algae that are being controlled and why.

- Algae

  Algae are a very large and diverse group of simple, typically autotrophic organisms. Freshwater harmful algal blooms (HABs) can occur anytime water use is impaired due to excessive accumulations of algae. In freshwater, the majority of HABs are caused by cyanobacteria (also called blue-green algae). Cyanobacteria cause a multitude of water-quality concerns, including the potential to produce taste-and-odor causing compounds and toxins that are potent enough

to poison animals and humans. Cyanobacterial toxins (cyanotoxins) have been implicated in human and animal illness and death in over fifty countries worldwide, including at least 35 U.S. States. Human toxicoses associated with cyanotoxins have most commonly occurred after exposure through drinking water or recreational activities. Taste-and-odor compounds and toxins are of particular concern in lakes and reservoirs that are used for drinking water supplies, such as Lake Jennings. Taste-and-odor compounds cause malodorous or unpalatable drinking water, resulting in increased treatment costs. In addition, if great masses of algae are permitted to enter the water treatment plant, the algae can cause operational problems by increasing the amount of suspended material that must be settled out of the water, and excessive algae can lead to water filter clogging. Filter clogging leads to shortened filter run times. Increases in the amount of material that must be settled in the water treatment process and shortened filter run times lead to increased electricity and chemical use in the water treatment plant. It is prudent to reduce the amount of algae in the water source, before it enters the drinking water treatment plant. Lake Jennings primary use is as a drinking water reservoir; therefore, HWD must control algae blooms in the lake to comply with drinking water regulations set forth in Title 22, California Code of Regulations. HWD normally prevents and controls algae blooms by oxygenating and mixing Lake Jennings with a conventional aeration system, which is described in more detail in section 10(a)(iii). In the event that aeration system is not able to prevent or control an algae bloom, Helix Water District must be able to control the algae bloom through the use of algaecide.

- *Tamarix spp.*

Four species of invasive *Tamarix* have been identified in California: *T. ramosissima*, *T. chinensis*, *T. gallica*, and *T. parviflora*. All four are many-branched shrubs or trees less than twenty-six feet tall with small scale-like leaves, from which comes the name saltcedar. Leaves have salt glands, and salt crystals can often be seen on leaves.

Soil salinities increase as a result of inputs of salt from glands on saltcedar leaves. The dome-shaped glands consist of at least two cells embedded in the epidermal pits (Decker 1961). Increased salinity inhibits growth and germination of native riparian species (Anderson 1996). Leaf litter from drought-deciduous saltcedar increases the frequency of fire. Saltcedar is capable of re-sprouting vigorously following fire and, coupled with changes in soil salinity, ultimately dominates riparian plant communities (Busch 1995).

Invasive *Tamarix* will be controlled to prohibit disruption to the structure and stability of the native plant community and degradation of the native wildlife habitat at Lake Jennings.

- *Typha spp.*

  Commonly known as cattails, these native plants have long, slender, grass-like stalks that can grow up to 10 feet in height. Cattails can spread via seeds or root rhizomes. Through rhizomes, plants can form large, interconnected stands that can quickly grow to cover an area of lake bottom. Cattails can be beneficial by providing food and shelter to animals. Conversely, in shallow areas of the lake, they can dominate plant communities, reducing plant diversity and habitat for other organisms. Lake Jennings primary use is as a drinking water reservoir; overgrowth of cattails and consequent plant decomposition must be controlled to prevent eutrophication of the lake. Cattails must be controlled in areas where their growth would threaten the integrity of the earthen portion of Chet Harritt Dam. Cattails can also provide food and shelter to muskrats; muskrat burrowing activity is a threat to dam integrity. Cattails must also be controlled in areas which lead to the dam spillway.

- *Schoenoplectus spp.*

  Commonly called tules or bulrushes, two species of *Schoenoplectus* (synonym: *Scirpus*) are present at Lake Jennings.

  The California Bulrush, or California Tule, *Schoenoplectus californicus* has long, curved triangular stems from 5 to 8 feet in height. This plant can grow in water up to 36 inches or more. Plants tend to grow in a continuous colony parallel to the shore and colonies grow in somewhat circular stands. These plants have clonal growth, with stout rootstocks and long, thick, brown rhizomes.

  The Hardstem Bulrush, or Western Common Tule, *Schoenoplectus acutus* var. *occidentalis* has tall stems that are round in cross-section. The leaves are slender, v-shaped blades that are sheathed around the long stem. Bulrushes have clonal growth, with stout rootstocks and long, thick, brown rhizomes. Hardstem bulrushes grow best on sites with saturated soil or standing water for most of the year, but they are drought tolerant and can persist through several years of dry conditions.

  Lake Jennings primary use is as a drinking water reservoir; overgrowth of tules and consequent plant decomposition must be controlled to prevent eutrophication of the lake. Tules must be controlled in areas where their growth would threaten the integrity of the earthen portion of Chet Harritt Dam. Tules can also provide food and shelter to muskrats; muskrat burrowing activity is a threat to dam integrity. Tules must also be controlled in areas that lead to the dam spillway.

4. Algaecide and Aquatic herbicide products to be used, the method in which they are applied, and the adjuvants and surfactants used.

- **Cutrine Plus**

  The algaecide Cutrine Plus will be used if algae control by chemical means is necessary. Cutrine Plus is a liquid product. The active chemical in Cutrine Plus is chelated elemental copper. Cutrine Plus will be applied, in accordance with label directions, to the water using a spray rig from a boat.

- **Garlon 3A**

  The water-based herbicide Garlon 3A will be used for the control of *Tamarix spp*. Garlon 3A will be applied to *Tamarix* stumps using the cut surface method described on the product Specimen Label using a handheld sprayer. Garlon 3A will only be applied to *Tamarix* stumps that have been exposed to air and cut after the water level of Lake Jennings has been lowered. **Under no circumstances will Garlon 3A be applied to the water of Lake Jennings or to *Tamarix* that is emergent from the water.** After application of Garlon 3A, the water level of Lake Jennings will not be raised for a minimum of two weeks, so that treated stumps are left exposed to air. HWD does not normally raise the water level of Lake Jennings for about three months after the application of herbicide. No adjuvants or surfactants will be used to apply Garlon 3A.

- **Glyphosate Pro 4**

  The herbicide Glyphosate Pro 4 will be used when control of *Typha spp.* and *Schoenoplectus spp.* by chemical means is necessary. Glyphosate Pro 4 will be applied to the target plants with a handheld sprayer in accordance with product label directions. Glyphosate Pro 4 will only be applied to the target plants when the bases of the plants have been exposed to air after the water level of Lake Jennings has been lowered. **Under no circumstances will Glyphosate Pro 4 be applied to the water of Lake Jennings or to target plants that are emergent from the water.** After application of Glyphosate Pro 4, the water level of Lake Jennings will not be raised for a minimum of two weeks, so that treated stumps are left exposed to air. HWD does not normally raise the water level of Lake Jennings for about three months after the application of herbicide. The adjuvant Magnify will be used to apply Glyphosate Pro 4. Glyphosate Pro 4 and Magnify will be tank-mixed in accordance with product label directions.

5. Discussion of the factors influencing the decision to select algaecide and aquatic herbicide applications for algae and weed control.

- Algaecide

The normal method of algae bloom prevention and control in Lake Jennings is conventional aeration. Conventional aeration is extremely successful at preventing and controlling algae blooms in Lake Jennings. Algaecide was applied infrequently in the years before the aeration system was installed and activated and algaecide use has not been necessary since HWD began to operate the aeration system. However, Lake Jennings is a water source for Helix Water District's water treatment plant to produce potable water; therefore, in the event that the aeration system is not able to control an algae bloom, HWD must possess the means to control an algae bloom that algaecide provides.

- Herbicides

In the case of invasive *Tamarix* control, it is sometimes difficult to physically remove the stumps and root systems of the trees without jeopardizing the safety of maintenance personnel. This can be due to size of the established root system and/or the location of the stump and root system. It is also essential that the integrity of the earthen portion of Chet Harritt Dam is not threatened by tree stump and removal operations.

In the case of *Typha* and *Schoenoplectus* control, it is often difficult to physically unearth the extensive rhizomes systems of these plants. Use of herbicide allows control of overspreading of these plants and complete, effective control of the plants in areas leading the dam spillway. In addition, use of herbicide allows control of these plants with minimal disturbance to the earthen portions of Chet Harritt Dam.

6. Description of the control structure to be used to control the extent of receiving waters potentially affected by algaecide and aquatic herbicide application and the inspection schedule of the control structure to ensure that it is not leaking.

- Chet Harritt Dam is the control structure that will be used to control the extent of receiving waters potentially affected by algaecide application, specifically.
- Chet Harritt Dam is inspected for leaks and structural integrity every Tuesday of the week.

7. Description of the monitoring program

The General Permit requires that dischargers comply with the Monitoring and Reporting Program (MRP) outlined in the General Permit. The General Permit encourages Dischargers to form Coalitions with other Dischargers doing similar applications within the same watershed. However, Helix Water District is the only discharger within the Lake Jennings watershed. Therefore, HWD has

prepared and implemented its own, individual MRP (HWD MRP). The MRP is designed to answer **two key questions**:

Question No. 1: Does the residual algaecides and aquatic herbicides discharge cause an exceedance or receiving water limitations?

Question No. 2: Does the discharge of residual algaecides and aquatic herbicides, including active ingredients, inert ingredients, and degradation byproducts, in any combination cause or contribute to an exceedance of the "no toxics in toxic amount" narrative toxicity objective?

The HWD MRP has been written in accordance with the provisions set forth under General Monitoring Provisions contained in Attachment C of the General Permit.

HWD has established the monitoring locations identified in this APAP to demonstrate compliance with the receiving water limitations, discharge specifications, and other requirements in the General Permit. The number and location of samples have been selected to answer the two key questions. The established monitoring locations are shown in **Figure 2. Point 1** is an anchored buoy located at GPS coordinates 32.856565, -116.891122, which is within the algaecide application area, which bounded to the west by Chet Harrit Dam, which is labeled **Dam** in **Figure 2. Point 2** is an anchored buoy located outside of the treatment area, at GPS coordinates 32.858751, -116.88141. Prevailing winds tend to push water at the surface Lake Jennings from the direction of Chet Harritt Dam towards the buoy at Point 1 and on to the buoy at Point 2.

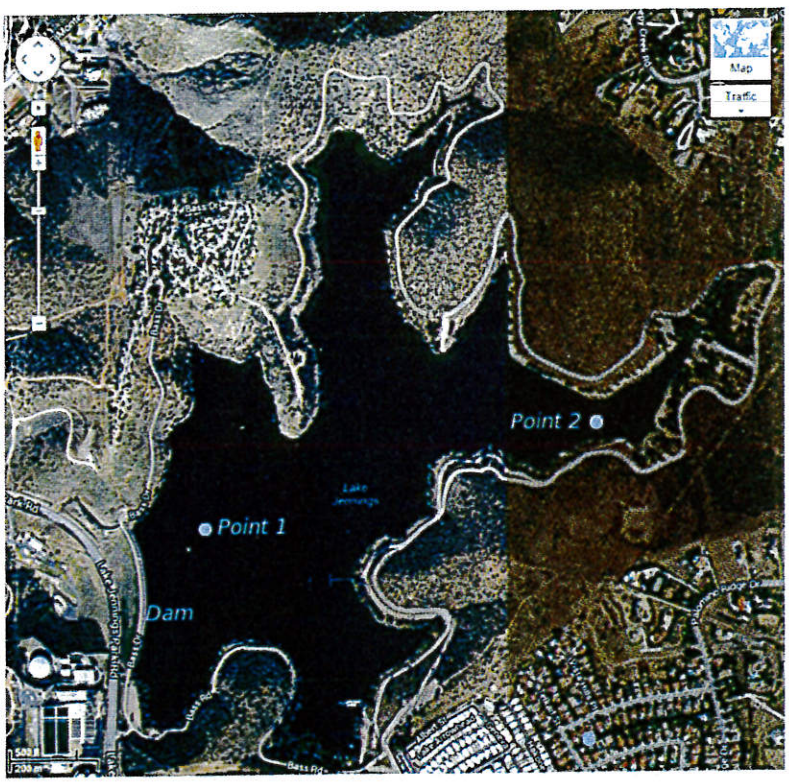

Figure 2.

Three types of monitoring will be performed for each sampling, as specified in the General Permit:

1. **Background Monitoring.** Background monitoring samples shall be collected in the application area just prior to (up to 24 hours in advance of) the application event.
2. **Event Monitoring.** Event monitoring samples shall be collected immediately outside of the treatment area, immediately after the application event, but after sufficient time has elapsed such that treated water would have exited the treatment area.
3. **Post-Event Monitoring.** Post-event monitoring samples shall be collected within the treatment area within one week after the application.

Records of monitoring information shall include the following:

1. The date, exact place, and time of sampling or measurements;
2. The individuals who performed the sampling or measurements;
3. The dates analysis were performed;
4. The individuals who performed the analyses;
5. The analytical techniques or methods used; and
6. Results of analyses.

The monitoring at each sample point will consist of the sample types listed in the following table, **Monitoring Requirements**, from Attachment C of the General Permit:

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Sample Type Requirement	Required Analytical Test Method
Visual	1. Monitoring area description (pond, lake, open waterway, channel, etc.) 2. Appearance of waterway (sheen, color, clarity, etc.) 3. Weather conditions (fog, rain, wind, etc.)	Not applicable	Visual Observation	1	Background, Event and Post- event Monitoring	Not applicable
Physical	1. Temperature[2]	°F	Grab[4]	[5]	Background, Event and Post- event Monitoring	[6]
	2. pH[3]	Number				
	3. Turbidity[3]	NTU				
	4. Electric Conductivity[3] @ 25°C	µmhos/cm				
Chemical	1. Active Ingredient[7]	µg/L	Grab[4]	[5]	Background, Event and Post- event Monitoring	[6]
	2. Nonylphenol[8]	µg/L				
	3. Hardness (if copper is monitored)	mg/L				
	4. DissolvedOxygen[2]	mg/L				

[1] All applications at all sites.

[2] Field testing.

[3] Field or laboratory testing.

[4] Samples shall be collected at three feet below the surface of the water body or at mid water column depth if the depth is less than three feet.

[5] Collect samples from a minimum of six application events for each active ingredient in each environmental setting (flowing water and non-flowing water) per year, except for glyphosate. If there are less than six application events in a year, collect samples during each application event for each active ingredient in each environmental setting (flowing water and non-flowing water). If the results from six consecutive sampling events show concentrations that are less than the receiving water limitation/trigger for an active ingredient in an environmental setting, sampling shall be reduced to one application event per year for that active ingredient in that environmental setting. If the yearly sampling event shows exceedance of the receiving water limitation/trigger for an active ingredient in an environmental setting, then sampling shall return to six application events for that active ingredient in each environmental setting. For glyphosate, collect samples from one application event from each environmental setting (flowing water and non-flowing water) per year.

[6] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136.

[7] 2,4-D, acrolein, dissolved copper, diquat, endothall, fluridone, glyphosate, imazamox, imazapyr, penoxsulam, and triclopyr.

[8] It is required only when a surfactant is used.

8. Description of procedures used to prevent sample contamination from persons, equipment, and vehicles associated with algaecide and aquatic herbicide application

   Measures will be taken to prevent sample collection contamination from persons, equipment and vehicles associated with algaecide and aquatic herbicides application, as follows:

   - Background monitoring sample collection will be carried out prior to application equipment or algaecides being loaded into a boat. Sampling equipment, with particular emphasis on cooler and sample bottles, will be transported separately from algaecides or aquatic herbicides and application equipment on the day of the application event. Background monitoring will take place immediately prior to the application event.

   - For event monitoring, sampling will be carried out after application equipment and all application related equipment and devices including personal protection equipment (PPE) used during the application has been removed from the boat, if no other boats are available to support sampling efforts. Hands will be washed with soap and clean potable water before handling sampling equipment, cooler and sample bottle. During sample bottle handling and sample collection, disposable rubber gloves will be used to collect a water sample. The pre-labeled sample bottle will be completed with time and date of sample collection immediately after removing from the sample cooler and replaced in the cooler immediately after sample collection. Once sampling has been completed, water samples will be delivered immediately to the laboratory, if possible. If background and event samples cannot be delivered the same days, sample bottles will be stored in a laboratory refrigerator until the samples can be delivered the next business day.

9. Description of the BMP's to be implemented:
   - Techniques that help reduce pesticide impacts include:
     - Non-algaecide/herbicide control methods as outlined below (section 10) have been attempted or considered.
     - Pre Treatment surveys are carried out to identify potential treatment areas and timing of pesticide application
     - Adjustments will be made to treatment protocols based upon survey results
     - Pesticide treatments will be performed when no water is being discharged from the lake system
     - Aquatic Pesticide use rates will be per the EPA label and will be limited to ensure compliance with Receiving Water Limitations
     - Partial waterbody treatments or split treatments will be utilized to minimize impacts that might otherwise occur
   - From the aquatic herbicides available, the most effective and safest options have been selected for use in this program.
   - In order to avoid inadvertent or accidental soil or water contamination with aquatic pesticides, application personnel follow the storage, transport, and spill control procedures per USEPA and DPR (Department of Pesticide Regulations) rules, regulations and label instructions.

- Over application is avoided by following the specific product labels for the aquatic pesticides used in the program. Algaecide and aquatic herbicide quantities required for each treatment are pre-calculated and only sufficient material to carry out the treatment is transported for an application event. Application equipment is routinely cleaned and maintained, and all label directions and Department of Pesticide Regulations guidelines are followed as to acceptable application methods as well as weather conditions. Surface applications are not made in winds above I 0 miles per hour.
- The various BMP's being implemented ensures that the APAP will meet the requirements of the general NPDES Permit for the use of aquatic pesticides.
- Licensing: Individuals who supervise the application of aquatic pesticides are certified and/or licensed by the Department of Pesticide Regulations.
- Site Evaluations: As has been detailed in this section and elsewhere, both preliminary and secondary site evaluations are a major aspect of the program, as represented by the extensive surveying carried out by the field crews.
- Alternative Treatments: Staff considers a number of potential alternative control strategies in every situation, and will make use of non-herbicide options when conditions are suitable.
- Treatment Conditions: Every application is made according to label directions, which not only specify the amounts and situations where pesticides may be applied, but the atmospheric and environmental conditions under which they may be applied. If there are conditions where it is determined that the treatment would be ineffective, application staff wait for other conditions.
- Post-treatment: Surveys are also carried out for post-treatment assessment of treatment efficacy and non-target impacts. Survey crews are instructed to look for possible non-target impacts that can be seen with the naked eye, such as dead fish or damage to plants on the shoreline.
- The applicator follows all pesticide label instructions and any Use Permits issued by a CAC (County Agricultural Commissioner);
- The discharger's applicators are licensed by DPR, or work with or under the supervision of someone who is licensed;
- The discharger's applicators comply with effluent limitations
- The discharger's applicators will follow this Aquatic Pesticide Application Plan (APAP);
- The discharger's applicators comply with applicable receiving water limitations; and
- The discharger's applicator will comply with the monitoring and reporting requirements outlined in this APAP.

Aquatic Pesticide Use Requirements:

- License Requirements. Discharger's applicators will be licensed by Department of Pesticide Regulations if such licensing is required for the aquatic pesticide application project
- Application Requirements. The pesticide will be consistent with FIFRA pesticide label instructions and any Use Permits issued by the County Agricultural Commissioner.

- Application Schedule. When requested, the discharger will provide a phone number to persons who request the discharger's application schedule. The discharger shall provide the requester with the most current application schedule and inform the requester if the schedule is subject to change. Information may be made available by electronic means.
- Public Notice Requirements. The Discharger and the affected public agency are one in the same, Helix Water District. Therefore, there is no need to notify other public agencies.

10. Examination of possible alternatives to algaecide and aquatic herbicide use to reduce the need for applying algaecides and herbicides.

    a. Algae

    Evaluation of alternative management options:

    i. No action

    With no action taken, algae blooms would be allowed to exist in Lake Jennings. If a taste or odor causing algae bloom is allowed to exist in Lake Jennings, Helix Water District cannot use water from Lake Jennings to produce potable water.

    ii. Prevention

    HWD's normal algae management strategy is to prevent algae blooms by use of a conventional aeration system, which is described in more detail under the following section, iii. Mechanical or physical methods.

    Lake Jennings is fed with raw surface water, which contains algae cells. Prevention of raw water inflow is not feasible.

    iii. Mechanical or physical methods

    HWD's normal algae management strategy is to prevent algae blooms by use of a conventional aeration system. The aeration system consists of an air compressor located on Chet Harritt Dam, an air diffuser grid that is located on the lake bottom adjacent to the dam, and an air line that connects the air compressor & diffuser grid. The aeration system introduces air bubbles at the bottom of lake. The rising air bubbles push oxygen-poor water up to the surface, where it is reaerated through an exchange with atmospheric oxygen at the water's surface. Prevailing winds tend to push water that has been brought to the surface by the aerator towards the opposite end of Lake Jennings. This aeration system is powerful enough to turn over and oxygenate the entire lake. HWD places the aeration system in operation at the beginning of the season when algae blooms commonly occur and operates the system throughout the

season. Algae blooms are extremely rare in Lake Jennings due to use of the aeration system.

The primary use of Lake Jennings is as source water for a potable water treatment plant; in the event that the aeration system is not able to prevent or control an algae bloom, Helix Water District must able to control unpalatable and/or malodorous algae blooms by other means.

iv. Cultural methods

Helix Water District strives to minimize potential nutrient sources for algae blooms by limiting overgrowth of cattails and tules, and removing fallen trees from the lake water whenever possible. In the event that minimizing nutrient sources does not control algae blooms, Helix Water District must be able to control algae blooms by other means.

v. Biological control agents

Lake Jennings contains a population of fish and zooplankton. Zooplankton and some fish consume algae, but it is unlikely that animal feeding activity would be able to control a rapidly growing algae bloom.

vi. Algaecides

Helix Water District will use the minimum amount of algaecide that is necessary to have an effective algae control program and is consistent with the algaecide product label requirements in the event that algaecide use is necessary.

b. *Tamarix spp.*

Evaluation of alternative management options:

i. No action

Invasive *Tamarix* would be allowed to proliferate. *Tamarix* would disrupt the structure and stability of the native plant community and degrade the native wildlife habitat at Lake Jennings

ii. Prevention

Tamarix seeds can be spread by water. Lake Jennings is filled with water transported from Northern California and the Colorado River. The banks of the Colorado River are infested with *Tamarix*. It would be difficult to prevent

Tamarix from entering Lake Jennings without stopping the inflow of water from the Colorado River.

iii. Mechanical or physical methods

Mechanical controls include mowing, cutting, and root plowing. These methods rarely kill the plant and often stimulate shrubby regrowth. However, HWD will make the effort to remove roots through physical means before resorting to herbicide use.

iv. Cultural methods

Tamarix spreads aggressively, outcompeting native plant species, and often forms monoculture stands when growth is left unchecked. HWD will continually review literature for updated information regarding native plant species that have been found to compete against *Tamarix*.

v. Biological control agents

Diorhabda elongata, the Mediterranean tamarisk beetle (MTB), is a non-native, Old World species of beetle that has been successfully used to suppress *Tamarix*. Release of the MTB is Southern California, the location of Lake Jennings, has been delayed until concerns can be resolved regarding safety of *Tamarix* biological control to nesting habitats of the federally endangered southwestern willow flycatcher, *Empidonax traillii*. HWD will continue to seek information on other possible biological control agents, and if release of the MTB becomes permitted in Southern California.

vi. Aquatic herbicides

Helix Water District will use the minimum amount of herbicide that is necessary to have an effective control program and is consistent with the herbicide product label requirements in the event that herbicide use is necessary.

c. *Schoenoplectus spp.* & *Typha spp.*

Evaluation of alternative management options:

i. No action

Schoenoplectus spp. and *Typha spp.* would likely form monocultures, with dense, impenetrable stands in shallow areas of Lake Jennings. Naturally decaying plant material could lead to eutrophication of the lake and supply a nutrient source to taste and odor causing algae blooms.

ii. Prevention

Schoenoplectus spp. and *Typha spp.* proliferate in the local environment. Their seeds can be spread by air and water from plants both at Lake Jennings and the surrounding local environment. Therefore, it would be difficult to prevent *Schoenoplectus* and *Typha* from growing at Lake Jennings. HWD's goal is to maintain a controlled population of *Schoenoplectus* and *Typha* at Lake Jennings, not to completely eradicate these species.

iii. Mechanical or physical methods

Mechanical or physical control methods are HWD's primary control methods of choice. Plants can be cut down to the base, so that leaves are not able to mature so that they can transport food to their root systems. In addition, plants with roots cut down to below the water level can drown. Anther physical method is to completely pull the roots out of the ground; this is more difficult, since the roots of these plants tend to form interwoven mats under ground.

iv. Cultural methods

There do not seem to be any plants that compete with *Schoenoplectus* and *Typha*. Each species only seems to compete with the other.

v. Biological control agents

Grass carp (white amur) fish have been mentioned as a potential biological control method, but success with using grass carp as a control method appears to be unproven. HWD does not wish to introduce this fish species to Lake Jennings.

vii. Aquatic herbicides

HWD will use the minimum amount of aquatic herbicide that is necessary to have an effective control program and is consistent with the herbicide product label requirements in the event that herbicide use is necessary.

11. Algaecide and Aquatic Herbicide Application Log information elements
    1. Date of application;
    2. Location of the application, both stated and illustrated on diagram of Lake Jennings;
    3. Name of the applicator;
    4. Type and amount of algaecide or aquatic herbicide used;
    5. Application details, such as level of Lake Jennings, time application started and stopped, algaecide and aquatic herbicide application rate and concentration;
    6. Visual monitoring assessment; and
    7. Certification that applicator(s) followed this APAP.

12. Attachments. MSDS and product information sheets for algaecide and herbicides used by HWD are attached in the following order: **Cutrine Plus**, **Garlon 3A**, and **Glyphosate Pro 4**.

applied biochemists®
a business of Arch Chemicals, Inc.

MATERIAL SAFETY DATA SHEET

FOR ANY EMERGENCY, 24 HOURS / 7 DAYS, CALL:	1-800-654-6911 (OUTSIDE USA: 1-423-780-2970)
FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC®:	1-800-424-9300 (OUTSIDE USA: 1-703-527-3887)
FOR ALL MSDS QUESTIONS & REQUESTS, CALL:	1-800-511-MSDS (OUTSIDE USA: 1-423-780-2347)

PRODUCT NAME: **AB CUTRINE-PLUS**

1. PRODUCT AND COMPANY IDENTIFICATION

Supplier
Applied Biochemists (WI)
W175 N11163 Stonewood Drive , Suite 234
Germantown, WI, 53022
United States

Telephone: +12622554449
Telefax: +12622554268
Web: www.appliedbiochemists.com

Manufacturer
Advantis Technologies
1400 Bluegrass Lakes Parkway
Alpharetta, GA 30004
United States of America

REVISION DATE:	09/14/2011
SUPERCEDES:	02/19/2010
MSDS Number:	000000012518
SYNONYMS:	
CHEMICAL FAMILY:	None
DESCRIPTION / USE	None established
FORMULA:	None established

2. HAZARDS IDENTIFICATION

OSHA Hazard Classification:	**Slight Eye Irritant**

Routes of Entry: Eyes Skin Ingestion
Chemical Interactions: None known.
Medical Conditions Aggravated: None known.

Human Threshold Response Data

Odor Threshold: Not established for product.

Irritation Threshold: Not established for product.

Hazardous Materials Identification System / National Fire Protection Association Classifications

Hazard Ratings :	Health	Flammability	Physical / Instability	PPI / Special hazard.
HMIS	1	0	1	
NFPA	1	0	0	

Immediate (Acute) Health Effects

Inhalation Toxicity: Not expected to be an inhalation hazard at ambient conditions. Inhalation of mist or vapor may cause irritation to the mucous membranes of the respiratory tract.

Skin Toxicity: Not expected to be irritating to the skin. Not expected to be toxic from dermal contact.

Eye Toxicity: Contact would be expected to cause minor irritation, consisting of transient redness and swelling. No corneal involvement or visual impairment is expected.

Ingestion Toxicity: Slightly toxic if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Acute Target Organ Toxicity: May cause mild eye irritation. Ingestion may cause mild gastrointestinal discomfort., Inhalation of mist or vapor may cause irritation to the mucous membranes of the respiratory tract.

Prolonged (Chronic) Health Effects

Carcinogenicity: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA.

Reproductive and Developmental Toxicity: Not known or reported to cause reproductive or developmental toxicity.

Inhalation: There are no known or reported effects from chronic exposure except for effects similar to those experienced from acute exposure.

Skin Contact: There are no known or reported effects from chronic exposure.

Skin Absorption: There are no known or reported effects from chronic exposure.

Ingestion: There are no known or reported effects from chronic ingestion except for effects similar to those experienced from single exposure.

Sensitization: This material is not known or reported to be a skin or respiratory sensitizer.

Chronic Target Organ Toxicity:	There are no known or reported effects to humans from repeated exposure to this product.
Supplemental Health Hazard Information :	No additional health information available.

3. COMPOSITION / INFORMATION ON INGREDIENTS

CAS OR CHEMICAL NAME	CAS #	% RANGE
Triethanolamine	102-71-6	
Ethanolamine	141-43-5	
BASIC COPPER CARBONATE	12069-69-1	

4. FIRST AID MEASURES

General Advice:	Call a poison control center or doctor for treatment advice. For 24-hour emergency medical assistance, call Arch Chemical Emergency Action Network at 1-800-654-6911. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
Inhalation:	IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
Skin Contact:	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.
Eye Contact:	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 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Ingestion:	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 a poison control center or doctor. Do not give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Flammability Summary (OSHA):	The product is not flammable., Not combustible., Not explosive, The substance or mixture is not classified as pyrophoric.
Flammable Properties	
Fire / Explosion Hazards:	Will not burn
Extinguishing Media:	Carbon dioxide (CO2) Dry chemical Foam
Fire Fighting Instructions:	Use water spray to cool unopened containers. In case of fire, use normal fire-fighting equipment and the personal protective equipment recommended in Section 8 to include a NIOSH approved self-contained breathing apparatus.
Hazardous Combustion Products:	During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal Protection for Emergency Situations:	Use the personal protective equipment recommended in Section 8 and a NIOSH approved self-contained breathing apparatus.
Spill Mitigation Procedures	
Air Release:	Keep people away from and upwind of spill/leak.
Water Release:	If the product contaminates rivers and lakes or drains inform respective authorities.
Land Release:	Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).The product should not be allowed to enter drains, water courses or the soil.
Additional Spill Information :	Prevent further leakage or spillage if safe to do so. Evacuate personnel to safe areas. Use personal protective equipment as required.

7. HANDLING AND STORAGE

Handling:	Do not take internally. Avoid contact with skin, eyes and clothing. Upon contact with skin or eyes, wash off with water. Avoid breathing mist or vapor.
Storage:	Store in a cool, dry and well ventilated place. Isolate from incompatible materials.

Incompatible Materials for Storage: Refer to Section 10, "Incompatible Materials."

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to keep airborne exposures below the TLV, PEL or other recommended exposure limit.

Protective Equipment for Routine Use of Product

Respiratory Protection : Wear a NIOSH approved respirator if levels above the exposure limits are possible., A NIOSH approved air purifying respirator with organic vapor cartridge and N95 particulate filter. Air purifying respirators should not be used in oxygen deficient or IDLH atmospheres or if exposure concentrations exceed ten (10) times the published limit.

Skin Protection : Avoid contact with skin. Impervious gloves

Eye Protection: Safety glasses with side-shields

Protective Clothing Type: impervious clothing

General Protective Measures: Emergency eyewash should be provided in the immediate work area.

Exposure Limit Data

CHEMICAL NAME	CAS #	Name of Limit	Exposure
Triethanolamine	102-71-6	ACGIH	5 mg/m3 TWA
Ethanolamine	141-43-5	ACGIH	3 ppm TWA
Ethanolamine	141-43-5	ACGIH	6 ppm STEL
Ethanolamine	141-43-5	OSHA Z1	3 ppm TWA 6 mg/m3 TWA
Ethanolamine	141-43-5	NIOSH-IDLH	30 ppm
BASIC COPPER CARBONATE	12069-69-1	ACGIH	1 mg/m3 Calculated as Cu TWA dusts and mists
BASIC COPPER CARBONATE	12069-69-1	OSHA Z1	1 mg/m3 TWA dusts and mists
BASIC COPPER CARBONATE	12069-69-1	NIOSH-IDLH	100 mg/m3

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	liquid
Form	No data.
Color:	No data.
Odor:	No data.
Molecular Weight:	None established
Specific Gravity :	1.220 - 1.230 24 °C
pH :	10.3 - 10.5
Boiling Point:	no data available
Freezing Point:	not applicable
Melting Point:	not applicable
Density:	not applicable
Bulk Density:	no data available
Vapor Pressure:	no data available
Vapor Density:	> 1 (Air = 1.0)
Viscosity:	no data available no data available
Solubility in Water:	completely miscible
Partition coefficient n-octanol/water:	not applicable
Evaporation Rate:	no data available
Oxidizing:	None established
Volatiles, % by vol.:	no data available
VOC Content	no data available
HAP Content	Not applicable

10. STABILITY AND REACTIVITY

Stability and Reactivity Summary:	Stable under normal conditions.
Conditions to Avoid:	High temperatures
Chemical Incompatibility:	Strong acids, Nitrates
Hazardous Decomposition Products:	Carbon oxides, nitrogen oxides (NOx)
Decomposition Temperature:	No data

11. TOXICOLOGICAL INFORMATION

Component Animal Toxicology
Oral LD50 value:

Triethanolamine	LD50	= 7,390 mg/kg	Rat
Ethanolamine	LD50	= 1,700 mg/kg	rat
BASIC COPPER CARBONATE	LD50	= 1,350 mg/kg	rat

Component Animal Toxicology
Dermal LD50 value:

Triethanolamine	LD50	> 2,000 mg/kg	Rabbit
Ethanolamine	LD50	Approximately 1,000 mg/kg	rabbit
BASIC COPPER CARBONATE	no data available		

Component Animal Toxicology
Inhalation LC50 value:

Triethanolamine	A saturated vapor concentration for 8 hours (rats) did not produce any deaths.
Ethanolamine	LC50 1 h > 4.8 MG/L mouse
Ethanolamine	LC50 4 h > 970 ppm mouse
BASIC COPPER CARBONATE	no data available

Product Animal Toxicity

Oral LD50 value:	LD50 Believed to be approximately 3,790 mg/kg rat
Dermal LD50 value:	LD50 Believed to be > 2,000 mg/kg rabbit
Inhalation LC50 value:	no data available
Skin Irritation:	Not expected to be irritating to the skin.
Eye Irritation:	slight irritation
Skin Sensitization:	This material is not known or reported to be a skin or respiratory sensitizer.
Acute Toxicity:	May cause mild eye irritation. Ingestion may cause mild gastrointestinal discomfort.Inhalation of mist or vapor may cause irritation to the mucous membranes of the respiratory tract.
Subchronic / Chronic Toxicity:	Not known or reported to cause subchronic or chronic toxicity.
Reproductive and Developmental Toxicity:	Not known or reported to cause reproductive or developmental toxicity.
Triethanolamine	This product has been tested and was shown not to produce any adverse effects on reproductive function or

	fetal development when administered to laboratory animals.
Ethanolamine	This chemical has been tested in laboratory animals and no evidence of teratogenicity, embryotoxicity or fetotoxicity was seen.

Mutagenicity: Not known or reported to be mutagenic.

Triethanolamine	This chemical has been shown to be non-mutagenic based on a battery of assays.
Ethanolamine	This chemical has been tested in a battery of mutagenicity/genotoxicity assays and the results were negative.

Carcinogenicity: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA.

Triethanolamine	The International Agency for Research on Cancer (IARC) has classified this product or a component of this product as a Group 3 substance, Unclassifiable as to its Carcinogenicity to Humans.
Ethanolamine	This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA. Chemicals of similar structure have been shown not to cause cancer in laboratory animals.

12. ECOLOGICAL INFORMATION

Overview: Toxic to fish and other aquatic organisms.

Ecological Toxicity Values for: **Triethanolamine**

Fathead minnow (Pimephales promelas),	-	(measured, flow-through) 96 h LC50 = 11,800 mg/l
Daphnia magna,	-	(nominal, static). 24 h EC50= 1,850 mg/l
Common shrimp (Crangon crangon)	-	(nominal, renewal). 48 h LC50> 100 mg/l
Green algae (Scenedesmus subspicatus)	-	(nominal, static). 48 h EC50 = 750 mg/l

Ecological Toxicity Values for: **Ethanolamine**

Rainbow trout (Oncorhynchus mykiss)	-	(nominal, static). 96 h LC50 = 150 mg/l
Mosquito fish	-	(nominal, static). 96 h LC50 = 337.5 mg/l

Bluegill	-	(nominal, static). 96 h LC50 = 329.16 mg/l
Fathead minnow (Pimephales promelas),	-	(measured, flow-through) 96 h LC50 = 2,070 mg/l
Goldfish	-	(measured, static) 96 h LC50 = 170 mg/l
Daphnia magna (Water flea)	-	(nominal, static). 24 h LC50= 140 mg/l
Crangon crangon (shrimp)	-	(nominal, renewal). 48 h LC50> 100 mg/l
Brine shrimp	-	48 h LC50= 7,100 mg/l
Daphnia magna (Water flea)	-	48 h EC50= 65 mg/l

13. DISPOSAL CONSIDERATIONS

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THE MATERIAL. THE USER OF THE MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

Waste Disposal Summary : If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

Disposal Methods : As a nonhazardous liquid waste, it should be disposed of in accordance with local, state and federal regulations.

14. TRANSPORT INFORMATION

Land (US DOT): Not Regulated NOT REGULATED AS A DOT HAZARDOUS MATERIAL
Water (IMDG): NOT REGULATED AS A HAZARDOUS MATERIAL,

Air (IATA): NOT REGULATED AS A HAZARDOUS MATERIAL,
Emergency Response Guide Number: Not applicable

15. REGULATORY INFORMATION

UNITED STATES:

Toxic Substances Control Act (TSCA):	This product is regulated under the Federal Insecticide, Fungicide and Rodenticide Act. It must be used for purposes consistent with its labeling.
EPA Pesticide Registration Number:	None established
FIFRA Listing of Pesticide Chemicals (40 CFR 180):	This product is regulated under the Federal Insecticide, Fungicide and Rodenticide Act. It must be used for purposes consistent with its labeling.

Superfund Amendments and Reauthorization Act (SARA) Title III:

Hazard Categories Sections 311 / 312 (40 CFR 370.2):

Health	Immediate (Acute) Health Hazard
Physical	None

Emergency Planning & Community Right to Know (40 CFR 355, App. A):

Extremely Hazardous Substance Section 302 - Threshold Planning Quantity:

ZUS_SAR302	TPQ (threshold planning quantity)	None established

Reportable Quantity (49 CFR 172.101, Appendix):

ZUS_CERCLA	Reportable quantity	Diethanolamine Value: 100lbs
ZUS_SAR302	Reportable quantity	None established

Supplier Notification Requirements (40 CFR 372.45), 313 Reportable Components

ZUS_SAR313	De minimis concentration	Diethanolamine Value: < 1% by weight

Clean Air Act Toxic ARP Section 112r:

CAA 112R	None established

Clean Air Act Socmi:

HON SOC

US. EPA Hazardous Organic NESHAP (HON) Synthetic Organic Chemicals (40 CFR 63.100-.106, Table

1)
07 1999
Group I
DIETHANOLAMINE (2,2'-IMINODIETHANOL)

US. EPA Hazardous Organic NESHAP (HON) Synthetic Organic Chemicals (40 CFR 63.100-.106, Table 1)
07 1999
Group I
ETHANOLAMINE

US. EPA Hazardous Organic NESHAP (HON) Synthetic Organic Chemicals (40 CFR 63.100-.106, Table 1)
07 1999
Group I
TRIETHANOLAMINE

Clean Air Act VOC Section 111:
CAA 111

US. EPA Clean Air Act (CAA) Section 111 SOCMI Intermediate or Final Volatile Organic Compounds (40 CFR 60.489)
01 1996
ETHANOLAMINE

Clean Air Act Haz. Air Pollutants Section 112:
ZUS_CAAHAP None established

ZUS_CAAHRP None established

CAA AP

US. EPA Hazardous Organic NESHAP (HON) Hazardous Air Pollutants (40 CFR 63.100-.106, Table 2)
04 1999
DIETHANOLAMINE (2,2'-IMINODIETHANOL)

State Right-to-Know Regulations Status of Ingredients

Pennsylvania:

CAS #	COMPONENT NAME
141-43-5	Ethanolamine
102-71-6	Triethanolamine

ZUSPA_RTK

Pennsylvania: Hazardous substance list

1989-08-11
ETHANOL, 2-AMINO-

Pennsylvania: Hazardous substance list
1989-08-11
ETHANOL, 2,2',2"-NITRILOTRIS-

New Jersey:

CAS #	COMPONENT NAME
141-43-5	Ethanolamine
102-71-6	Triethanolamine

ZUSNJ_RTK

New Jersey Right to Know Hazardous Substance List (RTK-HSL)
2007-03-01
ETHANOLAMINE MONOETHANOLAMINE ETHANOL, 2-AMINO-
Special Health Hazard - Corrosive

New Jersey Right to Know Hazardous Substance List (RTK-HSL)
2007-03-01
TRIETHANOLAMINE ETHANOL, 2,2',2"-NITRILOTRIS-

Massachusetts:

CAS #	COMPONENT NAME
141-43-5	Ethanolamine
102-71-6	Triethanolamine

ZUSMA_RTK

Massachusetts Right to Know List of Chemicals and Hazard Classifications
1993-04-24
ETHANOLAMINE 2-AMINOETHANOL

Massachusetts Right to Know List of Chemicals and Hazard Classifications
1993-04-24
TRIETHANOLAMINE

California Proposition 65:

CAS #	COMPONENT NAME

ZUSCA_P65	None established

WHMIS Hazard Classification:

Ingredient Disclosure List (WHMIS)
2007-08-24
Threshold limits: 1 Weight percent
1170
Monoethanolamine

Ingredient Disclosure List (WHMIS)
2007-08-24
Threshold limits: 1 Weight percent
1663
Triethanolamine

Ingredient Disclosure List (WHMIS)
2007-08-24
Threshold limits: 1 Weight percent
985
Copper(II) carbonate hydroxide

16. OTHER INFORMATION

MSDS REVISION STATUS :	
SECTIONS REVISED:	First formulated version in SAP.
Major References :	Available upon request.

Dow AgroSciences LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
GARLON* 3A Herbicide

COMPANY IDENTIFICATION
Dow AgroSciences LLC
A Subsidiary of The Dow Chemical Company
9330 Zionsville Road
Indianapolis, IN 46268-1189
USA

Customer Information Number: 800-992-5994
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. Hazards Identification

Emergency Overview
Color: Pink
Physical State: Liquid.
Odor: Ammoniacal
Hazards of product:

DANGER! Combustible liquid and vapor. Causes severe eye burns. May cause allergic skin reaction. May cause skin irritation. May be harmful if swallowed. Vapor explosion hazard. Evacuate area. Keep upwind of spill. Stay out of low areas. Eliminate ignition sources. Toxic fumes may be released in fire situations.

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Health Effects
Eye Contact: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Vapor of amines may cause

swelling of the cornea resulting in visual disturbances such as blurred or hazy vision. Bright lights may appear to be surrounded by halos. Effects may be delayed and typically disappear spontaneously.
Skin Contact: Brief contact is essentially nonirritating to skin. Prolonged contact may cause slight skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Skin Sensitization: Has caused allergic skin reactions when tested in guinea pigs. With the dilute mix, no allergic skin reaction is expected.
Inhalation: Brief exposure (minutes) is not likely to cause adverse effects. Prolonged excessive exposure to mist may cause adverse effects.
Ingestion: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.
Aspiration hazard: Based on available information, aspiration hazard could not be determined.
Effects of Repeated Exposure: For the active ingredient(s): In animals, effects have been reported on the following organs: Liver. Kidney. For the minor component(s): Ethanol. In humans, effects have been reported on the following organs: Central nervous system. Liver. Signs and symptoms of excessive exposure may include: Central nervous system depression. May cause dizziness and drowsiness. Headache.
Cancer Information: Ethanol when not consumed in an alcoholic beverage is not classifiable as a human carcinogen.
Birth Defects/Developmental Effects: For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother.
Reproductive Effects: For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

3. Composition Information

Component	CAS #	Amount
Triclopyr Triethylamine Salt	57213-69-1	44.4 %
Triethylamine	121-44-8	3.0 %
Ethylenediamine tetraacetic acid	60-00-4	2.3 %
Ethanol	64-17-5	2.1 %
Balance	Not available	48.2 %

4. First-aid measures

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.
Skin Contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.
Eye Contact: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.
Ingestion: 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. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after decontamination. Exposure to amine vapors may cause minor transient edema of the corneal epithelium (glaucopsia) with blurred vision, blue haze and halos around bright objects. Effects disappear in a few hours and temporarily reduce ability to drive vehicles. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. Fire Fighting Measures

Suitable extinguishing media

To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

Special hazards arising from the substance or mixture

Hazardous Combustion Products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. May produce flash fire. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. If exposed to fire from another source and water is evaporated, exposure to high temperatures may cause toxic fumes.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Eliminate ignition sources. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Evacuate area. Refer to Section 7, Handling, for additional precautionary measures. Keep unnecessary and unprotected personnel from entering the area. Only trained and properly protected personnel must be involved in clean-up operations. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Pump with explosion-proof equipment. If available, use foam to smother or suppress. Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

Handling

General Handling: Keep out of reach of children. Keep away from heat, sparks and flame. No smoking, open flames or sources of ignition in handling and storage area. Electrically ground and bond all equipment. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Do not get in eyes. Avoid contact with skin and clothing. Avoid prolonged or repeated contact with skin. Do not swallow. Avoid breathing vapor. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage

Minimize sources of ignition, such as static build-up, heat, spark or flame. Store in a dry place. Store in original container. Keep container tightly closed. Do not store near food, foodstuffs, drugs or potable water supplies.

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Triclopyr Triethylamine Salt	Dow IHG	TWA	2 mg/m3 D-SEN
Triethylamine	ACGIH	TWA	1 ppm SKIN
	ACGIH	STEL	3 ppm SKIN
	OSHA Table Z-1	PEL	100 mg/m3 25 ppm
Ethanol	OSHA Table Z-1	PEL	1,900 mg/m3 1,000 ppm
	ACGIH	STEL	1,000 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.
A "skin" notation following the inhalation exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.
It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.
A D-SEN notation following the exposure guideline refers to the potential to produce dermal sensitization, as confirmed by human or animal data.

Personal Protection

Eye/Face Protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Appearance	
Physical State	Liquid.
Color	Pink
Odor	Ammoniacal
Odor Threshold	No test data available
pH	9.5 (@ 10 %) *pH Electrode*
Melting Point	Not applicable
Freezing Point	No test data available
Boiling Point (760 mmHg)	No test data available.
Flash Point - Closed Cup	43 °C (109 °F) *Setaflash Closed Cup ASTMD3828*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammable Limits In Air	**Lower:** No test data available **Upper:** No test data available
Vapor Pressure	Not applicable
Vapor Density (air = 1)	Not applicable
Specific Gravity (H2O = 1)	1.1385 *Digital Density Meter (Oscillating Coil)*
Solubility in water (by weight)	Soluble
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available
Dynamic Viscosity	12.5 mPa.s @ 25 °C
Kinematic Viscosity	No test data available
Explosive properties	No *Thermal* No *Mechanical Impact @ 8 inches* No *Mechanical Impact @ 15 inches* No *Mechanical Impact @ 20.25 inches*
Oxidizing properties	No *EPA OPPTS 830.6314 (Oxidizing or Reducing Action)*
Liquid Density	1.1385 g/cm3 @ 20 °C *Digital density meter*

10. Stability and Reactivity

Reactivity
No dangerous reaction known under conditions of normal use.
Chemical stability
Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions
Polymerization will not occur.
Conditions to Avoid: Active ingredient decomposes at elevated temperatures.

Incompatible Materials: Avoid contact with: Oxidizers.
Hazardous decomposition products
Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Nitrogen oxides.

11. Toxicological Information

Acute Toxicity
Ingestion
As product: LD50, Rat 1,847 mg/kg
Dermal
As product: LD50, Rabbit > 5,000 mg/kg
Inhalation
LC50, 4 h, Aerosol, Rat > 2.6 mg/l
Maximum attainable concentration. No deaths occurred at this concentration.
Eye damage/eye irritation
May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Vapor of amines may cause swelling of the cornea resulting in visual disturbances such as blurred or hazy vision. Bright lights may appear to be surrounded by halos. Effects may be delayed and typically disappear spontaneously.
Skin corrosion/irritation
Brief contact is essentially nonirritating to skin. Prolonged contact may cause slight skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.
Sensitization
Skin
Has caused allergic skin reactions when tested in guinea pigs. With the dilute mix, no allergic skin reaction is expected.
Respiratory
No relevant data found.
Repeated Dose Toxicity
For the active ingredient(s): In animals, effects have been reported on the following organs: Liver. Kidney. For the minor component(s): Ethanol. In humans, effects have been reported on the following organs: Central nervous system. Liver. Signs and symptoms of excessive exposure may include: Central nervous system depression. May cause dizziness and drowsiness. Headache.
Chronic Toxicity and Carcinogenicity
Ethanol when not consumed in an alcoholic beverage is not classifiable as a human carcinogen. For similar active ingredient(s). Triclopyr. Did not cause cancer in laboratory animals.
Developmental Toxicity
For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the active ingredient(s): Did not cause birth defects in laboratory animals.
Reproductive Toxicity
For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.
Genetic Toxicology
For the active ingredient(s): In vitro genetic toxicity studies were negative. For the minor component(s): Ethanol. Animal genetic toxicity studies were negative in some cases and positive in other cases.

12. Ecological Information

Toxicity

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, rainbow trout (Oncorhynchus mykiss), 96 h: 400 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, eastern oyster (Crassostrea virginica), static, 48 h, shell growth inhibition: 56 - 87 mg/l
LC50, water flea Daphnia magna, static, 48 h, immobilization: > 1,000 mg/l

Persistence and Degradability

Data for Component: **Triclopyr Triethylamine Salt**

Chemical degradation (hydrolysis) is expected in the environment. Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).
Chemical degradation (hydrolysis) is expected in the environment.

Data for Component: **Triethylamine**

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
96 %	21 d	OECD 301A Test	pass
25 - 34 %	28 d	OECD 302C Test	Not applicable

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
9.26E-11 cm3/s	0.116 d	Estimated.

Theoretical Oxygen Demand: 3.49 mg/mg

Data for Component: **Ethylenediamine tetraacetic acid**

Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
37 %	14 d	OECD 302B Test	Not applicable

Theoretical Oxygen Demand: 1.37 mg/mg

Data for Component: **Ethanol**

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
> 70 %	5 d	OECD 301D Test	pass

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
3.58E-12 cm3/s	2.99 d	Estimated.

Theoretical Oxygen Demand: 2.08 mg/mg

Bioaccumulative potential

Data for Component: **Triclopyr Triethylamine Salt**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 0.196 - 0.309 Shake flask (OECD 107 Test)
Bioconcentration Factor (BCF): 1; invertebrate; Measured

Data for Component: **Triethylamine**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient, n-octanol/water (log Pow): 1.45 Measured
Bioconcentration Factor (BCF): < 4.9; common carp (Cyprinus carpio); Measured

Data for Component: **Ethylenediamine tetraacetic acid**
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): -5.005 Estimated.
Bioconcentration Factor (BCF): 1.1; fish; Measured

Data for Component: **Ethanol**
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): -0.31 Measured

Mobility in soil

Data for Component: **Triclopyr Triethylamine Salt**
Partition coefficient, soil organic carbon/water (Koc): 4,523 Estimated.
Henry's Law Constant (H): 3.724E-14 atm*m3/mole; 25 °C Estimated.

Data for Component: **Triethylamine**
Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 11 - 146 Estimated.
Henry's Law Constant (H): 1.49E-04 - 1.86E-03 atm*m3/mole; 25 °C Measured

Data for Component: **Ethylenediamine tetraacetic acid**
Mobility in soil: Potential for mobility in soil is high (Koc between 50 and 150).
Partition coefficient, soil organic carbon/water (Koc): 98**Henry's Law Constant (H):** 7.7E-16 atm*m3/mole Estimated.

Data for Component: **Ethanol**
Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 1.0 Estimated.
Henry's Law Constant (H): 5.00E-06 atm*m3/mole; 25 °C Measured

13. Disposal Considerations

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
Proper Shipping Name: COMBUSTIBLE LIQUID, N.O.S.
Technical Name: TRIETHYLAMINE, ETHANOL
Hazard Class: COMBUSTIBLE LIQUID **ID Number:** NA1993 **Packing Group:** PG III

IMDG
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
Technical Name: TRIETHYLAMINE, ETHANOL
Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III
EMS Number: f-e,s-e

ICAO/IATA
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
Technical Name: TRIETHYLAMINE, ETHANOL
Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III
Cargo Packing Instruction: 366
Passenger Packing Instruction: 355

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. Regulatory Information

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and which are listed in 40 CFR 372.

Component	CAS #	Amount
Triethylamine	121-44-8	3.0%

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
Triethylamine	121-44-8	3.0%
Ethylenediamine tetraacetic acid	60-00-4	2.3%
Ethanol	64-17-5	2.1%

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103
This product contains the following substances which are subject to CERCLA Section 103 reporting requirements and which are listed in 40 CFR 302.4.

Component	CAS #	Amount
Triethylamine	121-44-8	3.0%
Ethylenediamine tetraacetic acid	60-00-4	2.3%
Ethanol	64-17-5	2.1%

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.
California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

Toxic Substances Control Act (TSCA)
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	3	2	0

Revision
Identification Number: 50634 / 1016 / Issue Date 05/25/2011 / Version: 6.4
DAS Code: XRM-3724
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

Dow AgroSciences LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

PROKŌZ
Delivering Solutions

HERBICIDE

GLYPHOSATE PRO™ 4

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Glyphosate Pro™ 4**
Active Ingredient: Glyphosate (in the form of its isopropylamine salt)
Chemical Formula: $C_6H_{17}N_2O_5P$

COMPANY IDENTIFICATION:
PROKōZ, Inc.
100 North Point Center E.
Suite 330
Alpharetta, GA 30022

2. COMPOSITION/INFORMATION ON INGREDIENTS

Glyphosate Isopropylamine Salt	CAS No. 38641-94-0	41.0%

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Causes moderate eye irritation. Avoid contact with eyes or clothing.

POTENTIAL HEALTH EFFECTS:

EYE: Moderate eye irritant.

POTENTIAL PHYSICAL HAZARDS: May react with metals such as galvanized or mild steel to produce hydrogen gas, potentially forming a highly combustible gas mixture.

4. FIRST AID

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 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information.

5. FIRE-FIGHTING MEASURES

Flash point: Will not flash

Flammable Limits (LFL-UFL): N/A

Fire and Explosion Hazards: During a fire, product may generate irritating or toxic gasses through thermal decomposition.

Means of Extinction: Use water spray, foam or dry chemical.

Fire Fighting Instructions: Evacuate area and fight fire from a safe distance. Approach from upwind to avoid hazardous vapors and decomposition products. A foam or dry chemical fire extinguishing system is preferred to prevent environmental damage from excessive water run off. If water is used, avoid heavy hose streams. If possible, dike and collect water used to fight fire to prevent/minimize run off.

Fire Fighting Equipment: Self-contained breathing apparatus with full face piece. Wear full firefighting turn-out gear (Bunker gear).

Hazardous Combustion Products: Carbon monoxide, nitrogen oxides, phosphorous oxides.

6. ACCIDENTAL RELEASE MEASURES

Clean up spills immediately. Isolate and post spill area. Wear protective clothing and personal protective equipment as prescribed in Section 8 "Exposure Controls/Personal Protection". Keep unprotected persons and animals out of area.

Small Spill: Absorb spill with inert material such as dry sand, vermiculite or fuller's earth, then place in a chemical waste container.

Large Spill: Dike large spills using absorbent or impervious material such as clay or sand. Recover and contain as much free liquid as possible for reuse. Allow absorbed material to solidify and scrape up for disposal. After removal, scrub the area with detergent and water and neutralize with dilute alkaline solutions of soda ash or lime.

Manufactured for:
PROKōZ, Inc.
100 North Point Center E.
Suite 330
Alpharetta, GA 30022

Emergency Phone: Chemtrec 800-424-9300
Effective Date:
EPA Reg. No. 72112-4

7. HANDLING AND STORAGE

Keep out of reach of children and animals. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal. Wash thoroughly after handling this product.

Store above 10°F (-12°C) to keep product from crystallizing.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: To keep exposure to airborne contaminants below exposure limits, proper ventilation is required when handling or using this product. Local mechanical exhaust ventilation may be required. Facilities storing or using this material should be equipped with an eyewash facility and a safety shower.

Eyewear: Safety goggles are recommended when mixing, loading or cleaning equipment.

Clothing: All pesticide handlers must wear a long-sleeved shirt and long pants and shoes plus socks.

Gloves: Waterproof gloves are recommended when mixing, loading or cleaning equipment.

NOTE: Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear yellow to amber liquid

Odor: Slight amine odor

pH: 4.4

Flashpoint (PMA-4): N/A

Specific Gravity: 1.17 g/ml

Solubility in Water: Emulsifies

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Avoid temperatures above 115°F (46°C) and below 25°F (-5°C)

CHEMICAL STABILITY: Product is normally stable. However, product may decompose if heated.

HAZARDOUS DECOMPOSITION PRODUCTS: Heat and fire may result in thermal decomposition and the release of nitrogen oxides, phosphorous oxides and carbon monoxide.

INCOMPATIBILITY WITH OTHER MATERIALS: Strong oxidizers and bases, mild and galvanized steel.

POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL TOXICITY
Oral LD_{50} (rat): >5,000 mg/kg

ACUTE DERMAL TOXICITY
Dermal LD_{50} (rat, male): >5,000 mg/kg

ACUTE INHALATION TOXICITY
Inhalation LC_{50} (rat): >2.5 mg/L

EYE IRRITANT
Rabbit – Moderate

SKIN IRRITATION
Rabbit – Mild

DERMAL SENSITIZATION
Guinea pig – Non-Sensitizer

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

CARCINOGENICITY:
ACGIH: Not listed
IARC: Not listed
NTP: Not listed
OSHA: Not listed

MUTAGENIC DATA: No evidence of mutagenic effects during *in vivo* and *in vitro* assays.

ADDITIONAL DATA: None.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

MAMMILIAN TOXICITY: This product is considered to be relatively nontoxic to dogs and other domestic animals; however, ingestion of this product or large amounts of freshly sprayed vegetation may result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours.

FISH TOXICITY
96 hour LC_{50}, Rainbow trout – 8.2 µg/L (technical)
96 hour LC_{50}, Bluegill – 5.8 µg/L (technical)

AVIAN TOXICITY
Oral LD_{50}, Bobwhite quail – > 3,800 mg/kg (technical)

BEE TOXICITY: Non-toxic.

13. DISPOSAL CONSIDERATIONS

PESTICIDE DISPOSAL: Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed.

CONTAINER DISPOSAL: For plastic containers, triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For refillable containers, do not reuse the container except for refill in accordance with a valid PROKōZ Repackaging or Toll Repackaging Agreement. If not refilled or returned to the authorized repackaging facility, triple rinse container, then puncture and dispose of in a sanitary landfill, or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For bulk containers, triple rinse (or equivalent) and wash with appropriate cleaners before reusing.

14. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME: Not regulated by DOT.
DOT HAZARD CLASS OR DIVISION: N/A
DOT UN/NA NUMBER: N/A
DOT PACKING GROUP: N/A
REPORTABLE QUANTITY: None
MARINE POLLUTANT: Not Listed
DOT EMERGENCY RESPONSE GUIDE: N/A

15. REGULATORY INFORMATION

FIFRA –
All pesticides are governed under the Federal Insecticide, Fungicide, and Rodenticide Act. The regulatory information presented below is pertinent only when this product is handled outside of the normal use and application as a pesticide.

OSHA HAZARD COMMUNICATION STANDARD STATUS:
Not Regulated

SARA Title III – Section 302 Extremely Hazardous Substances
Not listed

SARA Title III – Section 311/312 Hazard Categories
Immediate

SARA Title III – Section 312 Threshold Planning Quantity
The threshold planning quantity (TPQ) for this product treated as a mixture is 10,000 lbs. This product contains no ingredients with a TPQ of less than 10,000 lbs.

SARA Title III – Section 313 Reportable Ingredients
None

CERCLA – None

CALIFORNIA PROP 65 STATUS –
Not listed

16. OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR.

DISCLAIMER:
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