AGENDA

Eau Claire County

• LOCAL EMERGENCY PLANNING COMMITTEE •

Date: Thursday, June 11, 2020

Time: 4:00 p.m.

*via remote access **ONLY.**

*Event link below can be used to connect to meeting and interact (by the chair) from computer or through the WebEx Meeting smartphone app.

Join WebEx Meeting: https://eauclairecounty.webex.com Meeting ID: 145 061 4370 Password: ngBP5Rs7Z88

Meeting audio can be listened to using this Audio conference dial in information below

Audio conference: 1-415-655-0001 Access Code: 145 061 4370

1. Call to order by Chair Pro-Tempore
2. Roll Call
3. Election of Chair and Vice Chair / Discussion – Action
4. Appointment of Committee Clerk / Discussion – Action
5. Confirmation of meeting notice
6. Public Comment **(15 minute maximum)**
7. Review – Approval of the February 20, 2020 Minutes / Discussion – Action PAGES 2-4
8. Review/Approval of Off-Site Response Plans / Discussion – Action
    a. Nestle Nutrition Eau Claire PAGES 5-77
    b. Nestle Gateway PAGES 78-139
    c. Sam's Club #8185 PAGES 140-157
    d. Wal-Mart #1669 PAGES 158-186
9. Agency Updates / Discussion
10. Local Hazardous Materials Spill Response Team Report / Discussion
11. LEPC Appointments/Reappointments / Discussion
12. Proposed Business items for Next Meeting / Discussion
13. Adjourn

Prepared by: Samuel Simmons, Program Assistant, Eau Claire County Emergency Management

Please note: Upon reasonable notice, efforts will be made to accommodate the needs of disabled individuals through sign language, interpreters or other auxiliary aids. For additional information or to request the service, contact the County ADA Coordinator at 715-839¬6945 (FAX) 715-839¬1669 or (TDD) 715-839¬4735 or by writing to the ADA Coordinator, Human Resources Department, Eau Claire County Courthouse, 721 Oxford Ave., Eau Claire, Wisconsin 54703

MINUTES

Eau Claire County

• LOCAL EMERGENCY PLANNING COMMITTEE •

Date: Thursday, February 20, 2020

Time: 4:00 p.m.

Location: *Eau Claire County Courthouse, 721 Oxford Ave, Rooms 1301/1302, Eau Claire, Wisconsin 54703*

Members Present: Pat LaVelle, Ray Henning, Darrell Christy, Jack Running, Jamie Burkhardt, Marisa Stanley, Robert, King, Frank Neibauer, Thomas Lochner, James Hager
Members Absent: Derek Thomas, Jason Knecht, Don Henning, Steve Vargo, Tim Boehnan, Elizabeth Dohms
Staff Present: Tyler Esh, Sam Simmons

1. Call to Order and confirmation of meeting notice

   Chairman LaVelle called the meeting to order at 4:00 p.m. and confirmed the meeting notice.

2. Public Comment **(15 minute maximum)**

   None.

3. Introductions / Discussion

   Introductions were made with no new members to introduce.

4. Review – Approval of the December 19, 2019 Minutes / Discussion – Action

   The Committee reviewed the December 19, 2019 Minutes.

   ACTION: Motion by Jack Running to approve the December 19, 2019 minutes as presented. Darrell Christy seconded. Motion carried by unanimous consent.

5. Hazardous Materials Strategic Plan / Discussion – Action

   The Committee reviewed the Hazardous Materials Strategic Plan. Tyler Esh, Emergency Management Coordinator for Eau Claire County, outlined the only changes were to facilities and LEPC members. Tom Lochner's name was left off the LEPC members portion of the plan, but staff has amended the plan to add his name.

   ACTION: Motion by Jack Running to approve the Hazardous Materials Strategic Plan as presented. Tom Lochner seconded. Motion carried by unanimous consent.

Prepared by: Samuel Simmons, Clerk, Local Emergency Planning Committee

6. Review/Approval of Bylaws / Discussion – Action

   Mr. Esh outlined the Committee Bylaws, last updated in 2013, that must be approved annually.

   ACTION: Motion by Darrell Christy to approve the Bylaws as presented. Ray Henning seconded. Motion carried by unanimous consent.

7. LEPC Compliance Inspector Designation / Discussion – Action

   Mr. Esh noted that Wisconsin Emergency Management (WEM) must be designated as Compliance Inspector on an annual basis. Chairman LaVelle and others inquired when WEM inspects. Mr. Esh explained that they usually only inspect if facilities haven't reported on hazardous materials.

   ACTION: Motion by Frank Neibauer to designate Wisconsin Emergency Management as Compliance Inspector. James Hager seconded. Motion carried by unanimous consent.

8. Agency Updates / Discussion

   Mr. Esh informed the Committee of a pipeline safety training that will be held on April 1, 2020. He also mentioned the Stop the Bleed classes on March 3, 2020 and Skywarn Weather Spotter training on March 31, 2020.

   James Hager and Eau Claire Fire discussed a recent fire incident at WRR. The initial call was for a structure fire. Mr. Hager estimated the fire had been burning for about 15 minutes before it was discovered. Sand was used in place of water to extinguish the fire. It was a good response effort overall.

9. Local Hazardous Materials Spill Response Team Report / Discussion

   Eau Claire Fire reported 23 carbon monoxide incidents, 12 gas leaks, and few fuel spills for 2020 so far. The Hazmat team was on standby during the WRR incident.

10. LEPC Appointments/Reappointments / Discussion

    Mr. Esh reminded LEPC members up for reappointment in April 2020 to contact Eau Claire County Administration if interested in reappointment.

11. Proposed Business items for Next Meeting / Discussion

    The next LEPC meeting will be on May 28, 2020 at an off-site location. The meeting time might be adjusted to accommodate a tour. Mr. Esh will work on securing a location.

Prepared by: Samuel Simmons, Clerk, Local Emergency Planning Committee

12. Adjourn

ACTION: Chairman LaVelle moved to adjourn the meeting; Ray Henning made a second. Meeting adjourned at 4:18 p.m. by unanimous consent.

Respectfully Submitted,

Samuel Simmons
Clerk, Local Emergency Planning Committee

Prepared by: Samuel Simmons, Clerk, Local Emergency Planning Committee

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN

TRANSMITTAL FORM AND REVIEW GUIDE

COUNTY: Eau Claire

NEW ☐ UPDATE ☑ FINAL UPDATE ☐

Facility ID No. : 16906

Facility Name: Nestle Nutrition

Facility Address: 1200 Nestle Ave, Eau Claire, Wisconsin 54703

STATEMENT OF PLANNING PROCESS

This plan has been prepared in accordance with state and local requirements and is ready to be made a part of the County Emergency Operations Plan (EOP) / Emergency Response Plan (ERP) upon Wisconsin Emergency Management (WEM) / State Emergency Response Commission (SERC) acceptance. This plan meets the facility off-site planning guidance as established by WEM / SERC. Acceptance of this plan is for planning purposes and does not verify facility compliance with the requirements of EPCRA.

FACILITY SIGNATURES:

I have reviewed the attached plan and to the best of my knowledge, all facility information is true, accurate, and complete. The plan is consistent with facility emergency plans and procedures.

Adam Bourget — Facility Coordinator

4-8-20 — Date

COUNTY SIGNATURES

I have reviewed the attached plan and to the best of my knowledge, all information is true, accurate, and complete.

_____ — County Local Emergency Planning Committee Chair

_____ — Date

_____ — County Emergency Management Director

_____ — Date

WEM / SERC ACCEPTANCE:

This plan has been reviewed and meets the off-site planning guidance as established by WEM / SERC.

_____ — WEM Regional Director

_____ — Date

NOTE: Facility Off-Site Plan Review Guide attached: Yes ☑ No ☐

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN
TRANSMITTAL FORM AND REVIEW GUIDE

COUNTY: Eau Claire
NEW ☐ UPDATE ☑ FINAL UPDATE ☐
Facility ID No. : 16906
Facility Name: Nestle Nutrition
Facility Address: 1200 Nestle Ave, Eau Claire, Wisconsin 54703

FACILITY OFF-SITE PLAN REVIEW GUIDE

EPCRA Facility Off-Site Plan Elements		Page Number Reference
1)	The facility identification with address.	4
2)	Facility Coordinator / Alternate Coordinator	4
3)	Extremely Hazardous Substances (EHS) chemicals Identified with CAS numbers and maximum amount	4 - 5
4)	Primary emergency responders identified	7
5)	Support and resources available from facility	6
6)	General Information / Assumptions (Disclaimer)	8
7)	Hazard analysis summary	6 - 7
8)	Special facilities affected	9 -12
9)	Population protection	8
10)	Special considerations	8
11)	Site Plan / Facility Layout	18 (Appendix 1)

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN

TRANSMITTAL FORM AND REVIEW GUIDE

COUNTY: Eau Claire

NEW ☐ UPDATE ☑ FINAL UPDATE ☐

Facility ID No. : 16906

Facility Name: Nestle Nutrition

Facility Address: 1200 Nestle Ave, Eau Claire, Wisconsin 54703

12) Distribution list:

Facility

Fire Department of jurisdiction

Wisconsin Emergency Management- Region Office

Designated Hazmat team

County Emergency Management Office

Adjacent County Emergency Management Office when impacted by vulnerability zone

13) Required Attachments

A.	Vulnerability Zone map highlighting special facilities	13 -17
B.	Safety Data Sheet (SDS) for each EHS	19 - 64 (Appendix 2)
C.	Vulnerability Zone Calculations	65 - 70 (Appendix 3)
D.	Transportation route(s) map	None

Nestle Nutrition
Facility Off-Site
Emergency Response Plan

Facility #16906
Nestle Nutrition
1200 Nestle Ave
Eau Claire, Wisconsin 54703

Eau Claire County Office of Emergency Management
721 Oxford Avenue
Suite 3344
Eau Claire, Wisconsin 54703

TABLE OF CONTENTS

RECORD OF CHANGES

Change	Date Changed	Change Made By
Created	August 2017	JA
Updated	February 2020	SS

SECTION 1: FACILITY INFORMATION

A. Address

Nestle Nutrition
1200 Nestle Ave
Eau Claire, Wisconsin 54703

B. Facility ID

16906

C. Map

D. Emergency Contacts

<u>Primary:</u>
Adam Bourget
Phone: 715-839-9440
24 Hour: 715-456-9394
adam.bourget@us.nestle.com

<u>Secondary:</u>
Rod Maukstad
Phone: 715-839-9440
24 Hour: 715-556-3724
rodney.maukstad@us.nestle.com

E. Extremely Hazardous Substances

Ammonia Chemical ID: 30027 CAS: 7664417 **ERG: Guide 125**	**Inventory:** Max Daily Amount (lbs): 9050 Ave. Daily Amount (lbs): 8900 Number of days on site: 365	**Storage:** Container: Tank Inside Building Location: Engine Room E. Side of Bldg, Area 5, Ubiquitous-piped in Engine Room
Nitric Acid Chemical ID: 30028 CAS: 7697372 **ERG: Guide 137**	**Inventory:** Max Daily Amount (lbs): 23978 Ave. Daily Amount (lbs): 13800 Number of days on site: 365	**Storage:** Container: Tank Inside Building, Other Location: CIP Room, Center of Process Area, Tank Farm SE Corner of S Warehouse, Ubiquitous-Piped throughout facility

Sulfuric Acid Chemical ID: 30026 CAS: 7664939 **ERG: Guide 137**	**Inventory:** Max Daily Amount (lbs): 89162 Ave. Daily Amount (lbs): 60000 Number of days on site: 365	**Storage:** Container: Tank Inside Building (3), Battery, Other Location: Wastewater Room-SE Corner of Building, Tank Farm Area, CPA Battery-Battery Storage and Exchange Room Ubiquitous-Throughout facility in forklifts

F. Hazardous Substances

Nitrogen (Cryogenic Liquid) Chemical ID: 4739 CAS: 727379 **ERG: Guide 121**	**Inventory:** Max Daily Amount (lbs): 158922 Ave. Daily Amount (lbs): 95000 Number of days on site: 365	**Storage:** Container: Above Ground Tank (4) Location: Outside Building-East Side of Building, Balance/Surge Tank in Powder Packaging, Process utility room (South of Steritank room 2nd floor), Filter Room (2nd Floor)
Phosphoric Acid Chemical ID: 447188 CAS: 7664382 **ERG: Guide 154**	**Inventory:** Max Daily Amount (lbs): 78679 Ave. Daily Amount (lbs): 18000 Number of days on site: 365	**Storage:** Container: Tank Inside Building (2) Location: Tank Farm Area, CPA
Potassium Hydroxide Chemical ID: 447190 CAS: 1310583 **ERG: Guide 154**	**Inventory:** Max Daily Amount (lbs): 53436 Ave. Daily Amount (lbs): 27000 Number of days on site: 365	**Storage:** Container: Tank Inside Building, Other Location: Tank Farm Area, Goss Totes and other small ingredient containers
Propane Chemical ID: 4741 CAS: 74986 **ERG: Guide 157**	**Inventory:** Max Daily Amount (lbs): 325125 Ave. Daily Amount (lbs): 250000 Number of days on site: 365	**Storage:** Container: Above Ground Tank Location: NE edge of property, near Truax Blvd
Propylene Glycol (Heat Transfer Fluid) Chemical ID: 34276 CAS: 57556 **ERG: Guide 115**	**Inventory:** Max Daily Amount (lbs): 95046 Ave. Daily Amount (lbs): 95046 Number of days on site: 365	**Storage:** Container: Other-Pipe (2) Location: “Chilled Water” Pipelines throughout plant (Heat Transfer Fluid), “Tower Water” Pipelines throughout the plant (Heat Transfer Fluid)

Sodium Hydroxide Chemical ID: 30030 CAS: 1310732 **ERG: Guide 154**	**Inventory:** Max Daily Amount (lbs): 60748 Ave. Daily Amount (lbs): 32000 Number of days on site: 365	**Storage:** Container: Tank Inside Building (2), Other-Pipe, Plastic or Nonmetallic Drum Location: Bulk Tank-Tank Farm on SE Corner of South Warehouse, Wastewater Room (Bulk Tank), Ubiquitous-Piped throughout facility, Various containers in chemical storage room

G. Resources/Support Available

The Plant has an in-house Emergency Plan and an Emergency Response Team. Members of the Team are trained and equipped to the Hazardous Material Technician Level, IC Procedure, Confined Space Rescue, First Aid, CPR, Ammonia Handling, as well as the Plant's propane and sprinkler systems. The ERT at each plant and its equipment can be called to back up the other facility.

The facility also utilizes the following:

Chemical Emergency Monitoring Equipment

- PH meters (fixed or portable)
- NH3 detectors
- Combustible gas indicator
- Oxygen concentration meter

Personal Protective Equipment

- Self-contained breathing apparatus (SCBA) 4
- Level B Quantity.....12
- Fully protective turnout gear.....4
- Shock absorbing lanyard.....4
- Body harness.....3

H. Hazard Analysis

Nestle Nutrition-Eau Claire is a food production facility. This facility primarily makes food for hospital use and infant formula. There is always an average of one hundred to two hundred twenty-five (100-225) employees on site. The size of the building is 540,000 square feet. The EHS products are used for ingredients, pH adjustment, cleaning, cooling, and an alternate fuel source.

The EHS substances are Ammonia, Nitric Acid, and Sulfuric Acid. Each of these substances are stored in tanks which are contained in the event of a leak.

The worst case scenario criteria are:
Neutral Air Stability (Class F)
Night Time
Open Country
3.35 mph wind
1/10 IDLH (Immediately Dangerous to Life and Health) concentration
Rapid release of maximum quantity of chemical in a single vessel (10 min.)

The evacuation radius, as calculated by CAMEO software, for a 4,700 pound Ammonia release was determined to be greater than 10 miles. It is estimated that 109,536 people (46,692 housing units) may be affected by the

release.

The evacuation radius, as calculated by CAMEO software, for a 18,612 pound Nitric Acid release was determined to be 1.9 miles. It is estimated that 16,345 people (7,527 housing units) may be affected by the release.

The evacuation radius, as calculated by CAMEO software, for a 70,503 pound Sulfuric Acid release was determined to be less than 0.1 miles. It is estimated that the impact would only extend to the employees at the facility.

The reevaluation scenario criteria are:
Neutral Air Stability (Class D)
Open Country
11.9 mph wind
1/10 IDLH (Immediately Dangerous to Life and Health) concentration
10 minute release of maximum quantity of chemical in a single vessel

Reevaluation of a 4,700 pound release of Ammonia using more realistic variables in the CAMEO model yields an evacuation radius of 1 mile. The population in this area is estimated to be 6,198 people (2,987 housing units).

Reevaluation of a 18,612 pound release of Nitric Acid using more realistic variables in the CAMEO model yields an evacuation radius of 0.5 miles. The population in this area is estimated to be 1,997 people (965 housing units).

Reevaluation of a 70,503 pound release of Sulfuric Acid using more realistic variables in the CAMEO model yields an evacuation radius of less than 0.1 miles.

I. Access to Facility
Staff are onsite 24/7.

SECTION 2: OUTSIDE RESOURCES

A. Primary Response Agencies

Fire:	**EMS:**	**Law:**	**Emergency Management:**
Eau Claire Fire Dept. Station 9 3611 Campus Road Eau Claire, WI 54701 Phone: 715-834-6868	Eau Claire Fire Dept. Station 9 3611 Campus Rd Eau Claire, WI 54701 Phone: 715-834-6868	Eau Claire Police Department 721 Oxford Avenue Suite 1400 Eau Claire, WI 54703 Phone: 715-839-4701	Eau Claire Office of Emergency Management 721 Oxford Avenue Suite 3344 Eau Claire, WI 54703 Phone: 715-839-4736

B. Hazardous Materials Response Teams
Eau Claire County has a Level B hazardous materials response team. For Level B response, the local Fire Chief notifies the Level B team of a response needed through the Eau Claire County Emergency Communications Center. For Level A responses by the Type 1 Regional Hazardous Materials Response Team, requests shall be made through the WEM Duty officer by the county Emergency Management Director.

C. Other Outside Assistance
See the County-Wide Hazardous Materials Strategic Plan for a listing of resources.

SECTION 3: POPULATION/ENVIRONMENTAL PROTECTION

A. **Shelter-In-Place**
The lead time for a hazardous materials incident may be very short. As a result, there may not be time enough for safe evacuation, especially when extremely toxic chemical fumes are involved. An evacuation under these considerations may expose the population to dangerous toxic chemicals and the decision may be made to shelter-in-place. Preferred areas for protective sheltering would be interior hallways, rooms without windows or exterior doors, enclosed stairways and rooms on the side of the building away from where the hazard is approaching. Doors, windows, and other potential air leaks should be sealed up to prevent toxic fumes from entering.

B. **Evacuation**
Experience indicated that shelter space would need to be provided for only 30% of the population within the initial isolation and evacuation zones and the remaining 70% would seek shelter with family and friends outside the risk zone. All public schools listed are eligible evacuation shelters.

C. **Nearby Shelters**
None.

SECTION 4: VULNERABILITY ZONES

A. General Information and Assumptions
The vulnerability zones set forth in the Plan are based on the EPA Technical Guidance for Hazards Analysis. The zones are based on a credible worst-case scenario and identify the potential area for impact should an air-borne release of a single EHS chemical occur.

The vulnerability zones are NOT intended to be used as a guide for population protection in fire-related incidents. Fire incidents were considered in the development of this plan and the plan provides basic information about the facility for first responders to employ. However, in an actual fire situation at this facility, the Incident commander is strongly recommended to reference the fire department own individual agency pre-emergency plans and standard operating procedures as well as the county's Emergency Operations Plan – Annex K: Fire and Rescue, as they may relate to this facility when making decisions at an incident involving fire.

Further, fire departments that would respond to an incident at this facility are strongly encouraged to meet with facility representatives to determine ways to minimize an event at the facility and to determine what additional information and factors should be taken into consideration in the event of a fire, should one occur.

The field incident commander shall determine the actual response to an incident and the affected area may vary from the planning vulnerability zone identified in this Plan. Depending on wind speed and direction, the amount of material released and other pertinent factors, the ACTUAL vulnerability zone may be smaller, and in some instances larger, than the credible worst-case vulnerability zone identified herein. The vulnerability zones determined in the Plan are for general PLANNING PURPOSES.

B. Special Facilities Affected

"I" Care Day Care Center Inc 2821 Fairfax St Eau Claire, WI 54720 715-552-1234	**A Child's World Early Learning Center** 2857 Western Ave Eau Claire, WI 54703 715-835-7021	**Altoona Early Education Center** 701 W Seventh St Altoona, WI 54720 715-832-5543
Altoona Elementary School 157 Bartlett Ave Altoona, WI 54720 715-839-6050	**Altoona Family Child Care Center** 819 S Hillcrest Pkwy Altoona, WI 54720 715-552-5437	**Altoona High School** 711 7th Street West Altoona, WI 54720 715-839-6031
Altoona Middle School 1903 Bartlett Ave Altoona, WI 54720 715-839-6030	**Aurora Residential** 1302 Arien Ct Eau Claire, WI 54703 715-835-9202	**Aurora Residential Alternative** 3635 Livingston Ln Eau Claire, WI 54701 715-838-0719
Azura Memory of Eau Claire 3712 Damon St Eau Claire, WI 54701 715-832-6696	**Babes in Toyland Childcare** 4430 Tower Dr Eau Claire, WI 54703 715-830-9432	**Beautiful Minds Child Care** 2821 Fairfax St Eau Claire, WI 54701 715-834-4360
Bethel Christian School 2361 N Hastings Way Eau Claire, WI 54703 715-835-8866	**Brighter Beginnings Early Learning** 1612 Truax Blvd Eau Claire, WI 54703 715-831-9944	**Broadview University** 4955 Bullis Farm Rd Eau Claire, WI 54701 715-855-6600
Care Partners 887 Briar Ln Altoona, WI 54720 715-598-7401	**Care Partners Assisted Living** 3325 Birch St Eau Claire, WI 54701 715-514-3709	**Children's House Montessori** 415 E Lake St Eau Claire, WI 54701 715-835-7861
Chippewa Falls County Altrntv 2820 E Park Ave Chippewa Falls, WI 54729 715-723-5542	**Chippewa Falls Halmstad Elementary School** 565 South Ave Chippewa Falls, WI 54729 715-726-2415	**Chippewa Falls High School** 735 Terrill St Chippewa Falls, WI 54729 715-726-2406
Chippewa Falls Middle School 750 Tropicana Blvd Chippewa Falls, WI 54729 715-726-2400	**Chippewa Falls School District** 1130 Miles St Chippewa Falls, WI 54729 715-726-2417	**Chippewa Manor Retirement** 756 Irvine St Chippewa Falls, WI 54729 715-726-2123
Chippewa Valley Montessori Charter School 400 Cameron St Eau Claire, WI 54703 715-852-6950	**Chippewa Valley Technical College - Business Education Center** 620 W Clairemont Ave Eau Claire, WI 54701 715-833-6200	**Chippewa Valley Technical College-Emergency Service Education Center** 3623 Campus Rd Eau Claire, WI 54703 715-855-7500
Chippewa Valley Technical College-Energy Education Center 4000 Campus Rd Eau Claire, WI 54703 715-855-7502	**Chippewa Valley Technical College-Health Education Center** 615 W Clairemont Ave Eau Claire, WI 54701 715-833-6417	**Chippewa Valley Technical College-Manufacturing Education Center** 2320 Alpine Rd Eau Claire, WI 54703 715-874-4600
Circle Friends Early Learning 1750 Hallie Rd Chippewa Falls, WI 54729 715-552-9696	**City of Altoona** 1303 Lynn Ave Altoona, WI 54720 715-839-5192	**City of Eau Claire** 203 S Farwell St Eau Claire, WI 54701 715-839-4947
Clearwater Care Center 2120 Heights Dr Eau Claire, WI 54701 715-832-1681	**Color My World Child Care** 1903 Western Ave Eau Claire, WI 54703 715-835-2060	**Community Based Residential** 1930 Cleveland St Eau Claire, WI 54703 715-832-7904

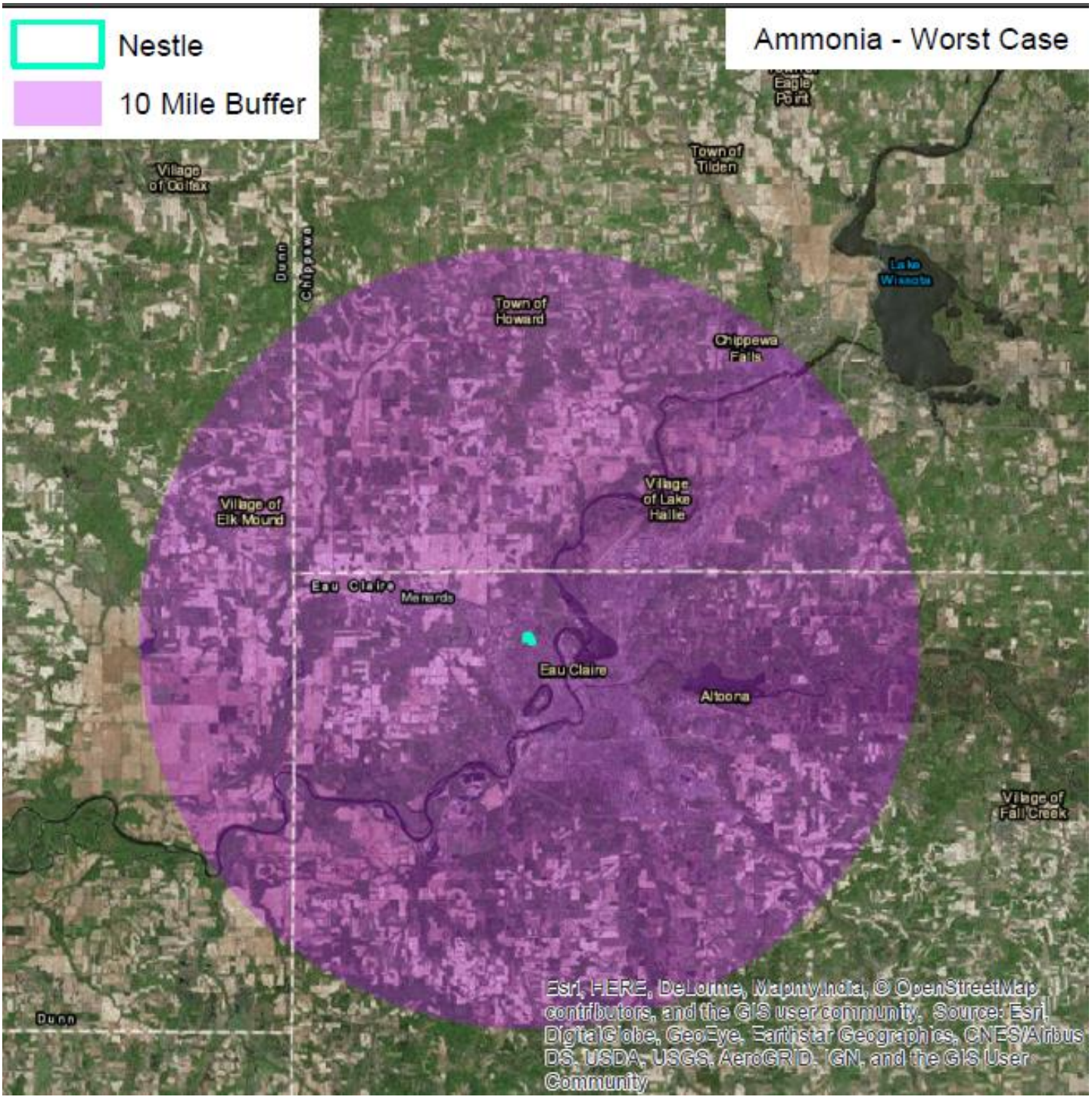
Country Terrace of Altoona 1511 Devney Dr Altoona, WI 54720 715-835-3474	**Days Gone By Early Learning** 3221 Lorch Ave Eau Claire, WI 54701 715-835-1234	**Dearwood** 2011 N 60th Ave Eau Claire, WI 54703 715-830-0518
Delong Middle School 2000 Vine Street Eau Claire, WI 54703 715-852-4900	**Dove Healthcare- South Eau Claire** 3656 Mall Dr Eau Claire, WI 54701 715-552-1035	**Dove Healthcare- West Eau Claire** 1405 Truax Blvd Eau Claire, WI 54703 715-552-1030
Eau Claire Academy 550 N Dewey St Eau Claire, WI 54703 715-834-6681	**Eau Claire County Courthouse** 721 Oxford Ave Eau Claire, WI 54703 715-839-4710	**Eau Claire County Jail** 710 2nd Ave Eau Claire, WI 54703 715-839-4702
Eau Claire Extension Office 227 1st St W A Altoona, WI 54720 715-839-4712	**Eau Claire Family Child Care** 2140 Sherwin Ave Eau Claire, WI 54701 715-834-5439	**Eau Claire KinderCare** 2115 Fairfax St Eau Claire, WI 54701 715-832-8099
Eau Claire Police Department 740 2nd Ave Eau Claire, WI 54703 715-839-4972	**Elk Mound High School** 405 University St Elk Mound, WI 54739 715-879-5521	**Elk Mound Middle School** 302 University St Elk Mound, WI 54739 715-879-5595
Family Tree 2005 Agnes St Eau Claire, WI 54701 715-832-3663	**Family Tree Child Care Center** 320 Division St Altoona, WI 54720 715-894-7529	**Federal Bureau of Investigation** 216 Pinnacle Way #310 Eau Claire, WI 54701 715-835-3761
Flynn Elementary School 1430 Lee St Eau Claire, WI 54701 715-852-3300	**From the Roots Early Learning Center, LLC** 2912 London Rd Eau Claire, WI 54701 715-514-4881	**GCBK Group Homes Inc** 2821 Beverly Hills Dr Eau Claire, WI 54701 715-855-7701
Genesis Child Development Center 418 N Dewey St Eau Claire, WI 54703 715-830-2275	**Giggles Child Care Center** 1626 Starr Ave Eau Claire, WI 54703 715-833-8767	**Grace Edgewood Asst** 2512 Spooner Ave Altoona, WI 54720 715-832-5813
Grace Lutheran Communities 3410 Sky Park Blvd Eau Claire, WI 54701 715-832-3003	**Grace Lutheran Communities- River Pines** 206 N Willson Dr Altoona, WI 54720 715-598-7800	**Grace Lutheran Foundation Inc** 822 Porter Ave Eau Claire, WI 54701 715-832-3003
Grace School Age Child Care 3410 Sky Park Blvd Eau Claire, WI 54701 715-832-3039	**Grace Willowbrook** 4868 Otteson Ln Eau Claire, WI 54701 715-835-0429	**Grace Woodlands** 3214 Gala St Eau Claire, WI 54703 715-831-8100
Gracelands Daycare LLC 1711 Bellinger St Eau Claire, WI 54703 715-832-4310	**Hand in Hand- A Place-Children** 800 Wisconsin St Eau Claire, WI 54703 715-833-7744	**Harbor House** 3712 Damon St Eau Claire, WI 54701 715-832-6696
Heatherwood Assisted Living & Memory Care 4510 Gateway Dr Eau Claire, WI 54701 715-598-2768	**Heritage Court Memory Care** 3515 E Hamilton Ave Eau Claire, WI 54701 715-831-8200	**Heritage Court Memory Care** 3515 E Hamilton Ave Eau Claire, WI 54701 715-831-8200
Heritage Senior Living at Oakwood Hills 3706 Damon St Eau Claire, WI 54701 715-831-9118	**Holy Ghost Elementary School** 436 Main St Chippewa Falls, WI 54729 715-723-6478	**Hope Lutheran Preschool** 2226 Eddy Ln Eau Claire, WI 54703 715-832-2998

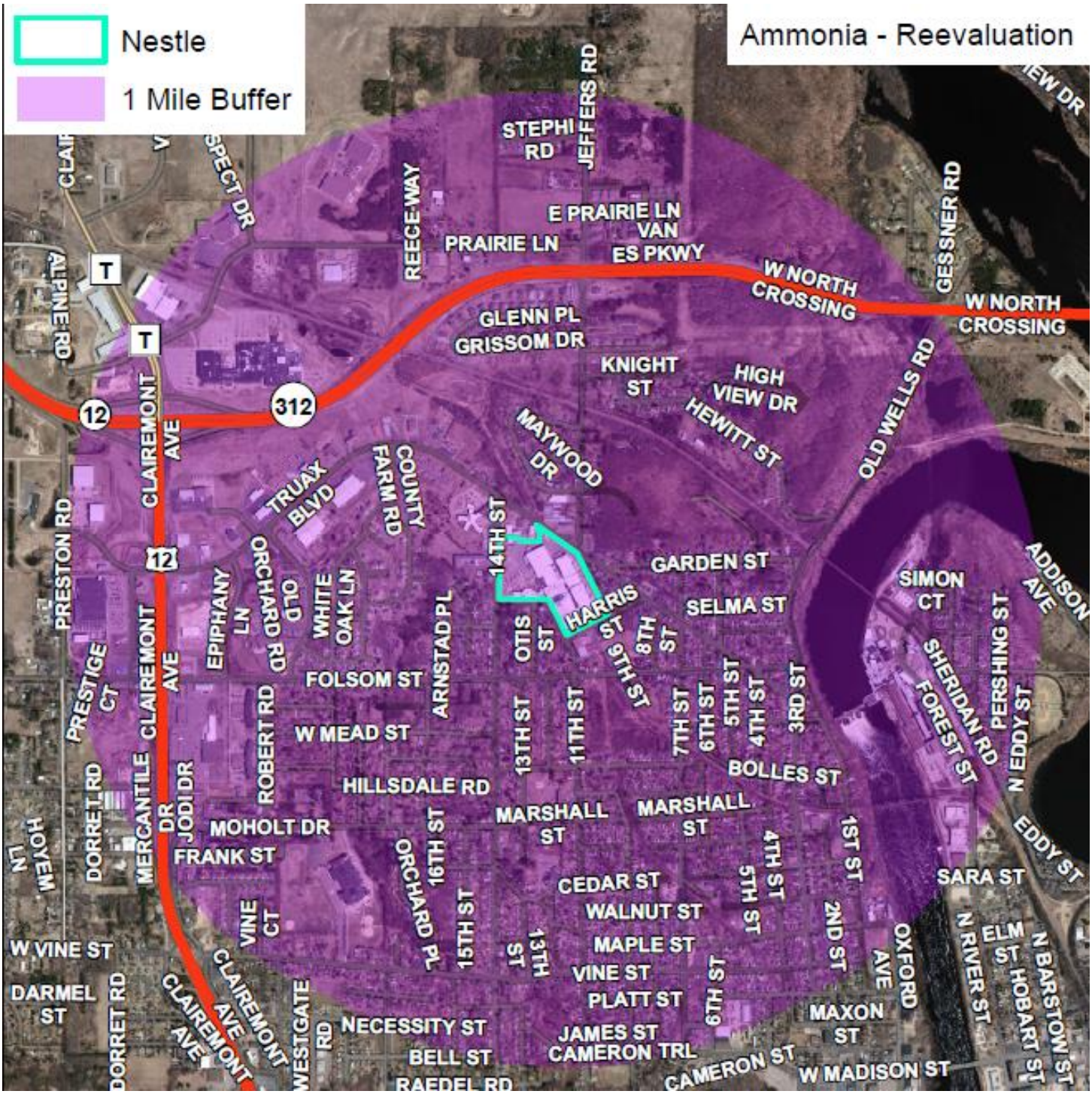
Immanuel Lutheran High School, College, & Seminary 501 Grover Rd Eau Claire, WI 54701 715-836-6621	**Kids Kingdom Mcp Llc** 3628 Spooner Ave Altoona, WI 54720 715-514-3381	**Lake Hallie Memory Care** 4407 124th St Chippewa Falls, WI 54729 715-738-0011
Lakeshore Elementary School 711 Lake Street Eau Claire, WI 54703 715-852-3400	**Learn-A-Lot Preschool & Daycare** 2834 W Princeton Ave Eau Claire, WI 54703 715-834-0308	**Learning Center** 1721 Westgate Rd Eau Claire, WI 54703 715-598-1819
Liberty Christian School 6027 60th Ave Chippewa Falls, WI 54729 715-723-0336	**lil dudes-N-divas Daycare** 3631 E Hamilton Ave Eau Claire, WI 54701 715-598-7003	**Little Bloomers Child Care Center** 3980 Tamara Dr Eau Claire, WI 54701 715-839-1050
Little Jungle Childcare 5433 Star Ridge Rd Eau Claire, WI 54703 715-874-6300	**Little School House. LLC** 2328 N Hillcrest Pkwy Altoona, WI 54720 715-214-6609	**Little Star 2** 428 1st St W Altoona, WI 54720 715-271-0743
Little Star Daycare 2245 Hayden Ave Altoona, WI 54720 715-832-1513 ext. 4	**Locust Lane Elementary School** 3245 Locus Ln Eau Claire, WI 54703 715-852-3700	**Luther Midelfort Clairemont** 733 W Clairemont Ave Eau Claire, WI 54703 715-838-5222
Manz Elementary School 1000 E. Fillmore Ave Eau Claire, WI 54701 715-852-3900	**Marshfield Clinic** 1002 W Clairemont Ave Eau Claire, WI 54701 715-858-4099	**Marshfield Clinic** 1262 W Clairemont Ave Eau Claire, WI 54701 715-858-4610
Mayo Clinic - Luther Campus 1221 Whipple St Eau Claire, WI 54703 715-838-3311	**Mayo Clinic Health System** 1400 Bellinger St Eau Claire, WI 54702 715-838-5222	**McDonnell Central Catholic High School** 1316 Bel Air Blvd Chippewa Falls, WI 54729 715-723-9126
McKinley Charter School 1266 McKinley Road Eau Claire, WI 54703 715-852-6900	**Meadowview Elementary School** 4714 Fairfax Street Eau Claire, WI 54701 715-852-4000	**Memorial High School** 2225 Keith St Eau Claire, WI 54701 715-852-6300
Mike Wilson House 2409 Rudolph Rd Eau Claire, WI 54701 715-838-9967	**Milestone Senior Living- Eau Claire** 5512 Renee Dr Eau Claire, WI 54703 715-210-0178	**Mound View Elementary School** 455 University St Elk Mound, WI 54739 715-879-5744
Natural Resources Conservation 1304 N Hillcrest Pkwy # A Altoona, WI 54720 715-832-6547	**New Hope Inc** 10875 40th Ave Chippewa Falls, WI 54729 715-720-7360	**North High School** 1801 Piedmont Rd Eau Claire, WI 54703 715-852-6600
Northstar Middle School 2711 Abbe Hill Dr Eau Claire, WI 54703 715-852-5100	**Oak Gardens Place** 342 Twin Oak Dr Altoona, WI 54720 715-598-3447	**OakLeaf Surgical Hospital** 1000 OakLeaf Way Altoona, WI 54720 715-831-8130
Oakwood Villa 2512 New Pine Dr Altoona, WI 54720 715-833-0400	**Oakwood Villa** 2512 New Pine Dr Altoona, WI 54720 715-839-7027	**Our House Senior Living- Memory Care** 733 W Hamilton Ave Eau Claire, WI 54701 715-832-3970
Parkview Elementary School 501 Jefferson Ave Chippewa Falls, WI 54729 715-720-3750	**Popular Place** 3012 Milton Rd Eau Claire, WI 54703 715-832-1745	**Putnam Heights Elementary School** 633 W MacArthur Ave Eau Claire, WI 54701 715-852-4200

Rachel's Place Early Learning 2226 Eddy Ln Eau Claire, WI 54703 715-832-1414 ext. 2200	**Real Life Co-Op** 4115 Jeffers Rd Eau Claire, WI 54703 715-835-7622	**Redeemer Christian Preschool** 601 Fall St Eau Claire, WI 54703 715-835-5239
Regis Child Development Center 2114 Fenwick Ave Eau Claire, WI 54701 715-830-2274	**Regis High School** 2100 Fenwick Ave Eau Claire, WI 54701 715-830-2271	**Robins Elementary** 3832 E Hamilton Ave Eau Claire, WI 54701 715-852-4600
Sacred Heart Hospital 900 W Clairemont Ave Eau Claire, WI 54701 715-717-4121	**Saint Charles Borromeo Primary School** 429 W Spruce St Chippewa Falls, WI 54729 715-723-5827	**Sandy's Helping Hands Daycare** 1639 Ludgate St Chippewa Falls, WI 54729 715-723-8168
Shared Blessings Child Development Center 520 E Grand Ave Chippewa Falls, WI 54729 534-220-7051	**Sisters of St Benedict** 2120 Heights Dr Eau Claire, WI 54701 715-852-6221	**Sleepers to Sneakers** 1303 Margaret St Eau Claire, WI 54701 715-834-6794
South Middle School 2115 Mitscher Ave Eau Claire, WI 54701 715-852-5200	**Southview Elementary School** 615 A St Chippewa Falls, WI 54729 715-726-2411	**St Mark's Lutheran School** 3307 State St Eau Claire, WI 54701 715-834-5782
Stay N Play 417 William St Eau Claire, WI 54703 715-833-8331	**Syverson Lutheran Home** 816 Porter Ave Eau Claire, WI 54701 715-832-1644	**The Classic at Hillcrest Greens** 2455 Sawgrass Pl Altoona, WI 54720 715-839-0200
The Kiddie Patch Early Learning Center 4605 London Rd Eau Claire, WI 54701 715-833-9464	**The Learning Tree Child Care Center** 2140 Sherwin Ave Eau Claire, WI 54701 715-834-5439	**University of Wisconsin Eau Claire** 105 Garfield Ave P.O. Box 4004 Eau Claire, WI 54702 715-836-4636
Westridge 3841 96th St Chippewa Falls, WI 54729 715-720-1309	**YMCA-St. Mary's Elementary School** 1828 Lynn Ave Altoona, WI 54720 715-830-2278	**Youthful Minds Learning Center** 827 S Hillcrest Pkwy. Altoona, WI 54720 715-894-7529

C. Vulnerability Zone Map

See attached maps.


Nestle
10 Mile Buffer
Ammonia - Worst Case
Village of Colfax
Dunn
Chippewa
Town of Tilden
Eagle Point
Lake Wissota
Town of Howard
Chippewa Falls
Village of Elk Mound
Village of Lake Hallie
Eau Claire
Menards
Eau Claire
Altoona
Village of Fall Creek
Dunn
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community. Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community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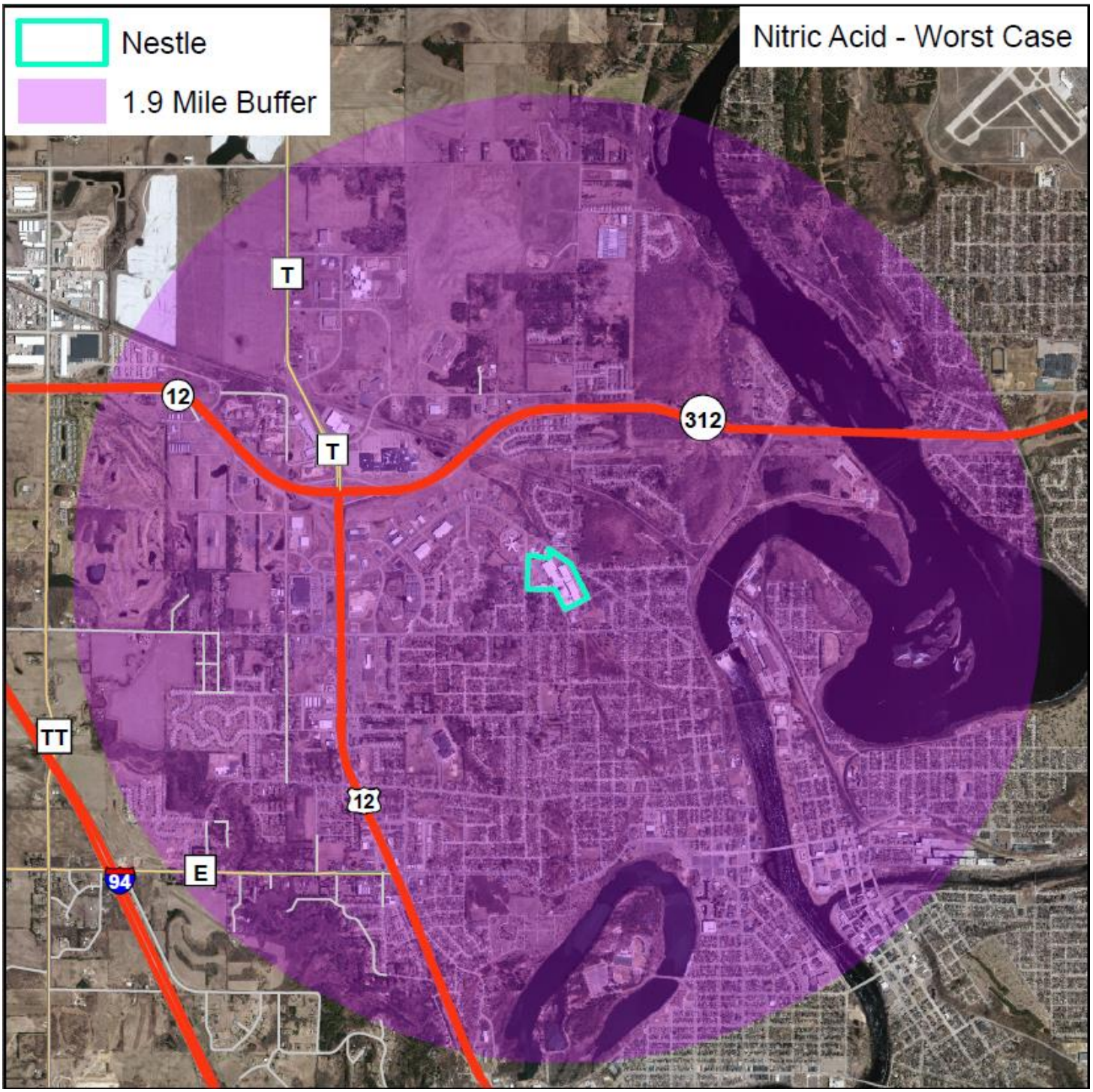
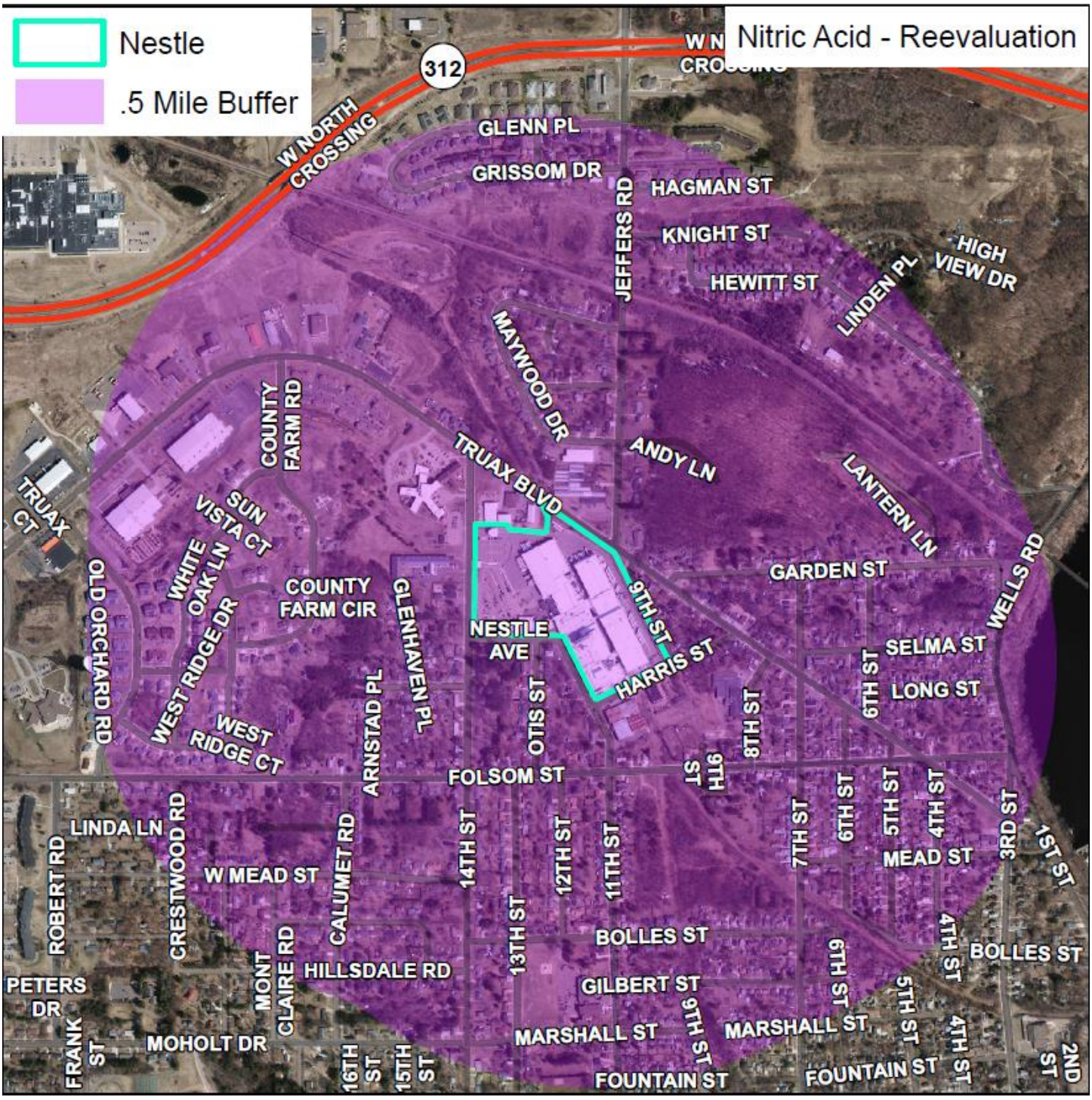
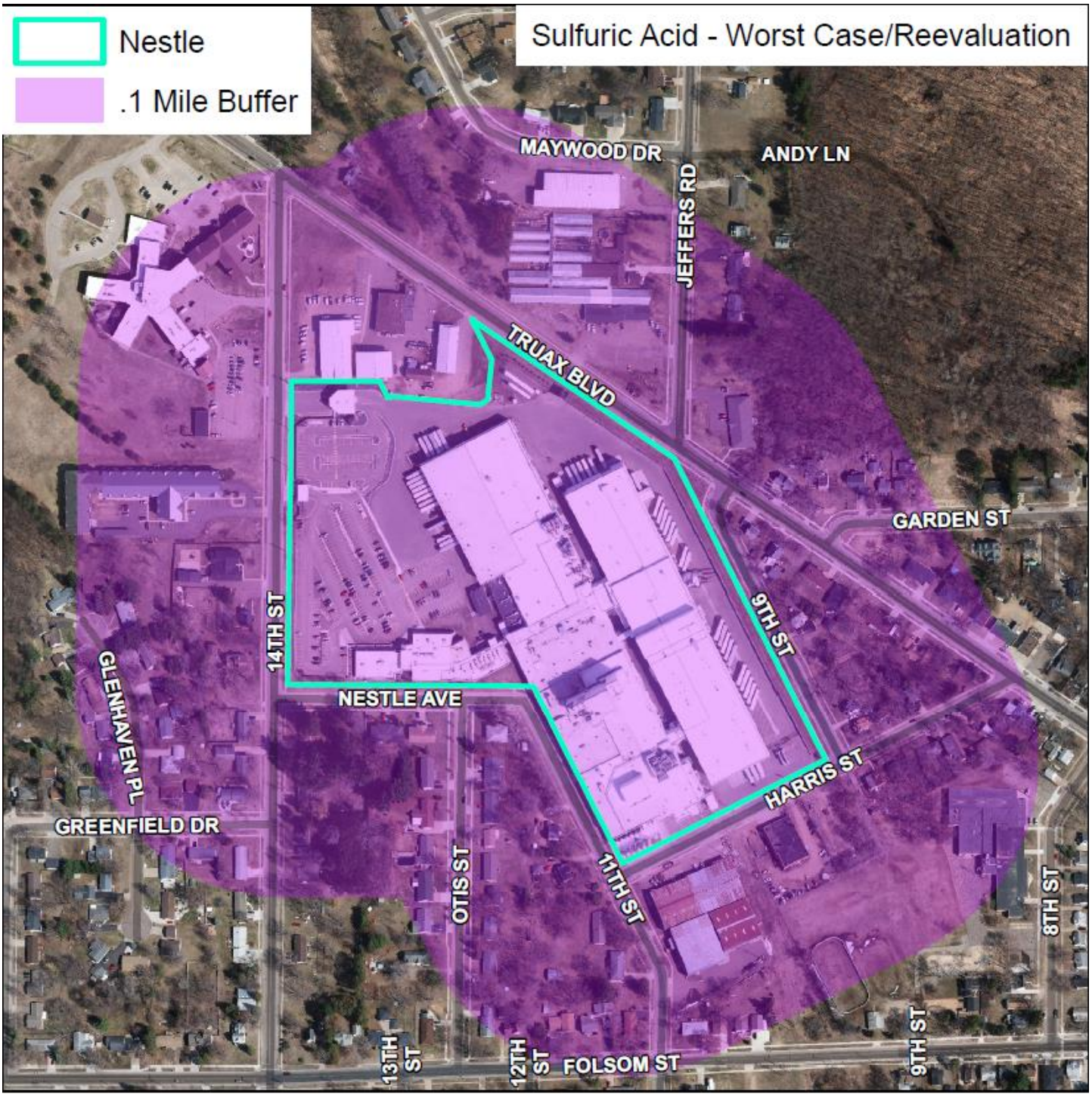
1 Mile Buffer
Ammonia - Reevaluation
STEPHI RD
JEFFERS RD
REECE WAY
E PRAIRIE LN
PRAIRIE LN
VAN ES PKWY
W NORTH CROSSING
GESSNER RD
GLENN PL
GRISSOM DR
KNIGHT ST
HIGH VIEW DR
HEWITT ST
OLD WELLS RD
MAYWOOD DR
TRUAX BLVD
COUNTY FARM RD
CLAIREMONT AVE
PRESTON RD
ALPINE RD
14TH ST
GARDEN ST
HARRIS ST
SELMA ST
SIMON CT
ADDISON AVE
OTIS ST
8TH ST
9TH ST
ORCHARD RD
OLD WHITE OAK LN
EPIPHANY LN
ARNSTAD PL
FOLSOM ST
W MEAD ST
ROBERT RD
13TH ST
11TH ST
7TH ST
6TH ST
5TH ST
4TH ST
3RD ST
SHERIDAN RD
FOREST ST
PERSHING ST
N EDDY ST
PRESTIGE CT
MERCANTILE DR
JODI DR
DORRET RD
HOVEM LN
HILLSDALE RD
BOLLES ST
MOHOLT DR
FRANK ST
MARSHALL ST
16TH ST
15TH ST
ORCHARD PL
CEDAR ST
WALNUT ST
MAPLE ST
VINE ST
PLATT ST
VINE CT
W VINE ST
DARMEL ST
CLAIREMONT AVE
WESTGATE RD
NECESSITY ST
BELL ST
RAEDEL RD
JAMES ST
CAMERON TRL
CAMERON ST
MAXON ST
W MADISON ST
1ST ST
2ND ST
OXFORD AVE
N RIVER ST
ELM ST
HOBART ST
N BARSTOW ST
EDDY ST
SARA ST


Nestle
1.9 Mile Buffer
Nitric Acid - Worst Case
T
12
T
312
TT
12
E
94


Nestle
.5 Mile Buffer
Nitric Acid - Reevaluation
312
W NORTH CROSSING
GLENN PL
GRISSOM DR
HAGMAN ST
JEFFERS RD
KNIGHT ST
HEWITT ST
LINDEN PL
HIGH VIEW DR
MAYWOOD DR
COUNTY FARM RD
TRUAX BLVD
ANDY LN
LANTERN LN
TRUAX CT
SUN VISTA CT
WHITE OAK LN
WEST RIDGE DR
OLD ORCHARD RD
COUNTY FARM CIR
GLENHAVEN PL
NESTLE AVE
9TH ST
HARRIS ST
GARDEN ST
WELLS RD
SELMA ST
LONG ST
6TH ST
8TH ST
OTIS ST
ARNSTAD PL
WEST RIDGE CT
FOLSOM ST
9TH ST
7TH ST
6TH ST
5TH ST
4TH ST
3RD ST
1ST ST
MEAD ST
LINDA LN
CRESTWOOD RD
ROBERT RD
W MEAD ST
CALUMET RD
14TH ST
12TH ST
11TH ST
13TH ST
BOLLES ST
HILLSDALE RD
MONT CLAIRE RD
PETERS DR
GILBERT ST
6TH ST
4TH ST
5TH ST
FRANK ST
MOHOLT DR
MARSHALL ST
9TH ST
16TH ST
15TH ST
FOUNTAIN ST
2ND ST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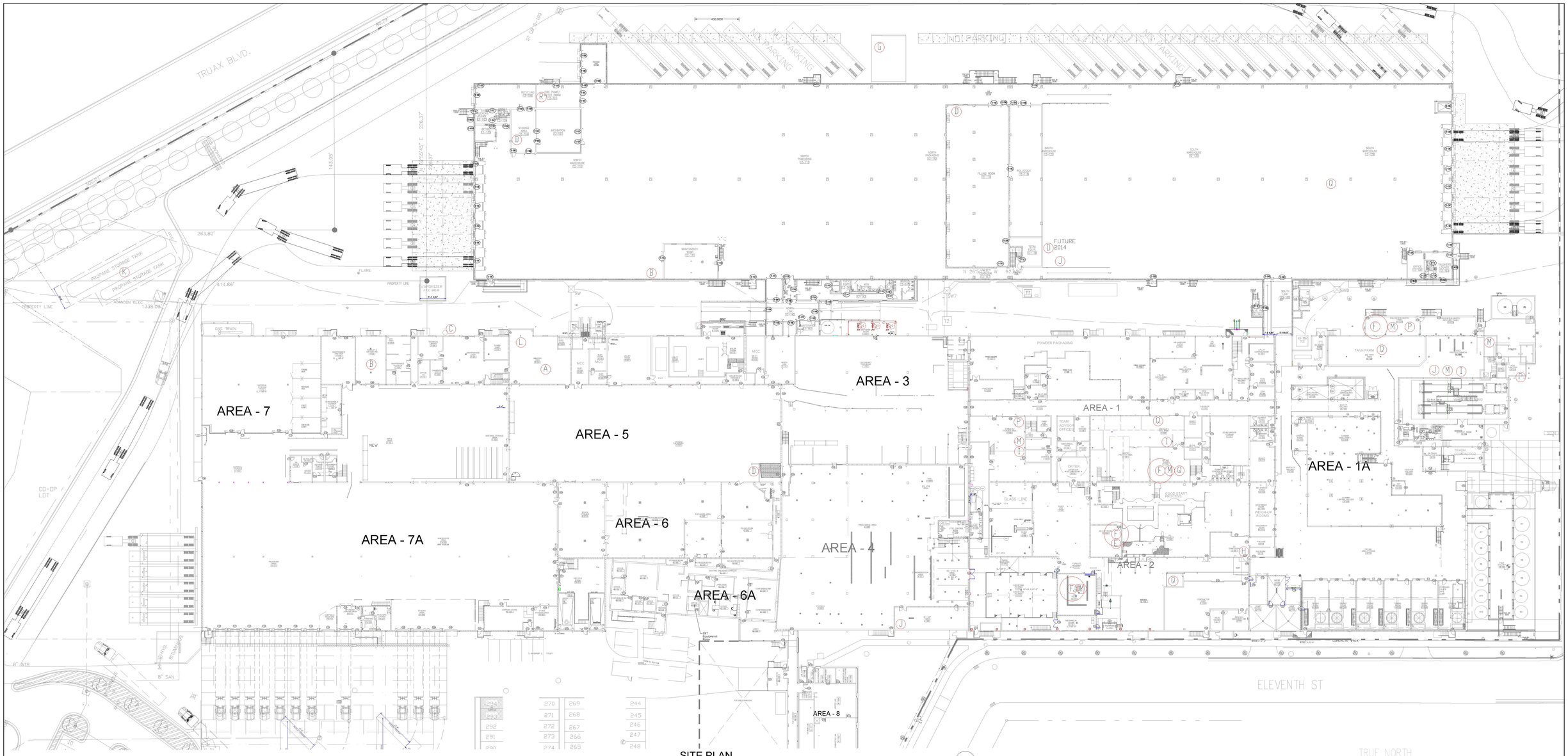
.1 Mile Buffer
Sulfuric Acid - Worst Case/Reevaluation
MAYWOOD DR
ANDY LN
JEFFERS RD
TRUAX BLVD
GARDEN ST
14TH ST
9TH ST
GLENHAVEN PL
NESTLE AVE
HARRIS ST
GREENFIELD DR
OTIS ST
11TH ST
8TH ST
13TH ST
12TH ST
FOLSOM ST
9TH ST



SITE PLAN
SCALE : 1/32" = 1'-0"

TRUE NORTH
PLAN NORTH

CHEMICAL/OIL STORAGE LOCATIONS

ITEM LOC.	CAS #	CHEMICAL NAME
A	007664-14-7	AMMONIA
B	-	ANTIMONY LEAD BATTERY, WET ACID "C-LINE"
C	N/A	USED OIL STORAGE FROM MAINTENANCE
D	000772-84-1	HYDROGEN PEROXICDE (35%)
E	N/A	HYDROGEN PEROXICDE (50%)
F	007697-37-2	NITRIC ACID (30%, 3%, 1%)
G	007727-37-9	NITROGEN (CRYOGENIC LIQUID)
H	000079-21-0	PEROXYACETIC ACID 4%
I	007664-38-2	PHOSPHRIC ACID (41%, 46%, 75%, 85%)
J	001310-58-3	POTASSIUM HYDROXIDE (90%)
K	000074-98-6	PROPANE
L	000059-55-6	PROPYLENE GLYCOL (HEAT TRANSFER FLUID)
M	001310-73-2	SODIUM HYDROXIDE (4, 10, 12, 47)
N	007681-52-9	SODIUM HYPOCHLORITE (3%, 12%)
P	007664-93-9	SULFURIC ACID (40%)
Q	N/A	INGREDIENT OIL, BULK TANK STORAGE
3 R	N/A	DIESEL FUEL

NO.	DATE	DRAWN	CHK'D	APPD / APPD	REMARKS
2	02-06-14	RMM			ADDED SECOND AND TOWER FLOORS
1	04-11-12	RMM			2012 TIER II UPDATES
A	07-25-11	RMM			OIL AND CHEMICAL ADDITIONS

REVISIONS

CAD DRAWING MANUAL CHANGES TO THIS DRAWING ARE PROHIBITED

EAU CLAIRE, WISCONSIN
NUTRITION DIVISION
CHEMICAL/OIL STORAGE SITE PLAN
PLAN VIEW
SITE PLAN

Nestlé USA
GLENDALE , CALIFORNIA

DRAWN:	DATE:	CHECKED:	DATE:	APPD: / APPD:	DATE:	JOB NO:
	11-07-01					

SCALE:	LATEST REVISION NUMBER	DATE ISSUED:	FILE NO:
1/32"=1'			721ATIERII

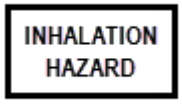
SHEET NO:	DWG NO:
1 of 2	05-721-211-TIERII

ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

CAMEO Chemicals

Chemical Datasheet

AMMONIA, ANHYDROUS



Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	CHRIS Code
7664-41-7	1005	Non-Flammable Gas (domestic) Inhalation Hazard (Special Provision 13) (domestic) Poison Gas (international) Corrosive (international)	AMA

NFPA 704

Diamond	Hazard	Value	Description
1 3 0	Health	3	Can cause serious or permanent injury.
	Flammability	1	Must be preheated before ignition can occur.
	Instability	0	Normally stable, even under fire conditions.
	Special		

Note: The Refrigeration System Classification section of the International Mechanical Code requires a value of 3 for the red quadrant (flammability hazard) for indoor ammonia refrigeration equipment.

(NFPA, 2010)

General Description

A clear colorless gas with a strong odor. Shipped as a liquid under its own vapor pressure. Density (liquid) 6 lb / gal. Contact with the unconfined liquid can cause frostbite. Gas generally regarded as nonflammable but does burn within certain vapor concentration limits and with strong ignition. Fire hazard increases in the presence of oil or other combustible materials. Although gas is lighter than air, vapors from a leak initially hug the ground. Prolonged exposure of containers to fire or heat may cause violent rupturing and rocketing. Long-term inhalation of low concentrations of the vapors or short-term inhalation of high concentrations has adverse health effects. Used as a fertilizer, as a refrigerant, and in the manufacture of other chemicals.

Rate of onset: Immediate

Persistence: Minutes

Odor threshold: 17 ppm

Source/use/other hazard: Explosives manufacture; pesticides; detergents industry.

Hazards

Reactivity Alerts


Water-Reactive

Air & Water Reactions

Soluble in water with evolution of heat. The amount of heat generated may be large.

Fire Hazard

Mixing of ammonia with several chemicals can cause severe fire hazards and/or explosions. Ammonia in container may explode in heat of fire. Incompatible with many materials including silver and gold salts, halogens, alkali metals, nitrogen trichloride, potassium chlorate, chromyl chloride, oxygen halides, acid vapors, azides, ethylene oxide, picric acid and many other chemicals. Mixing with other chemicals and water. Hazardous polymerization may not occur. (EPA, 1998)

Health Hazard

Vapors cause irritation of eyes and respiratory tract. Liquid will burn skin and eyes. Poisonous; may be fatal if inhaled. Contact may cause burns to skin and eyes. Contact with liquid may cause frostbite. (EPA, 1998)

Reactivity Profile

AMMONIA is a base. Reacts exothermically with all acids. Violent reactions are possible. Readily combines with silver oxide or mercury to form compounds that explode on contact with halogens. When in contact with chlorates it forms explosive ammonium chlorate [Kirk-Othmer, 3rd ed., Vol. 2, 1978, p. 470]. Reacts violently or produces explosive products with fluorine, chlorine, bromine and iodine and some of the interhalogen compounds (bromine pentafluoride, chlorine trifluoride). Mixing of bleaching powder (hypochlorite solution) with ammonia solutions produces toxic/explosive ammonia trichloride vapors. Undergoes potentially violent or explosive reactions on contact with 1,2-dichloroethane (with liquid ammonia), boron halides, ethylene oxide (polymerization), perchlorates or strong oxidants (chromyl chloride, chromium trioxide, chromic acid, nitric acid, hydrogen peroxide, chlorates, fluorine, nitrogen oxide, liquid oxygen). Reacts with silver chloride, silver oxide, silver nitrate or silver azide to form the explosive silver nitride. May react with some heavy metal compounds (mercury, gold(III) chloride) to produce materials that may explode when dry. [Bretherick, 5th ed., 1995, p. 1553].

Belongs to the Following Reactive Group(s)

- Bases, Weak

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from GUIDE 125 [Gases - Corrosive]:

As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all

directions.

SPILL: See ERG Tables 1 and 3 - Initial Isolation and Protective Action Distances on the UN/NA 1005 datasheet.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions. (ERG, 2016)

Firefighting

Wear positive pressure breathing apparatus and full protective clothing.

Small fires: dry chemical or carbon dioxide. Large fires: water spray, fog or foam. Apply water gently to the surface. Do not get water inside container. Move container from fire area if you can do it without risk. Stay away from ends of tanks. Cool containers that are exposed to flames with water from the side until well after fire is out. Isolate area until gas has dispersed. (EPA, 1998)

Non-Fire Response

Excerpt from GUIDE 125 [Gases - Corrosive]:

Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire. Do not touch or walk through spilled material. Stop leak if you can do it without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Prevent entry into waterways, sewers, basements or confined areas. Do not direct water at spill or source of leak. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. Isolate area until gas has dispersed. (ERG, 2016)

Protective Clothing

For emergency situations, wear a positive pressure, pressure-demand, full facepiece self-contained breathing apparatus (SCBA) or pressure- demand supplied air respirator with escape SCBA and a fully-encapsulating, chemical resistant suit. (EPA, 1998)

DuPont Tychem® Suit Fabrics

Normalized Breakthrough Times (in Minutes)

Chemical	CAS Number	State	QC	SL	TF	TP	C3	BR	LV	RC	TK	RF
Ammonia (gas)	7664-41-7	Vapor	imm.	26	20	90	imm.	133	133	133	>480	>480
Ammonia (liquid, < -35°C)	7664-41-7	Liquid				>480	>480				>480	>480
Anhydrous ammonia (gas)	7664-41-7	Vapor	imm.	26	20	90	imm.	133	133	133	>480	>480
Anhydrous ammonia (liquid, < -35°C)	7664-41-7	Liquid				>480	>480				>480	>480

> indicates greater than.
"imm." indicates immediate; having a normalized breakthrough time of 10 minutes or less.
A blank cell indicates the fabric has not been tested. The fabric may or may not offer barrier.

Special Warnings from DuPont

1. Serged and bound seams are degraded by some hazardous liquid chemicals, such as strong acids, and should not be worn when these chemicals are present.

2. CAUTION: This information is based upon technical data that DuPont believes to be reliable. It is subject to revision as additional knowledge and experience are gained. DuPont makes no guarantee of

results and assumes no obligation or liability...
(DuPont, 2016)

First Aid

Warning: Ammonia is extremely corrosive to the skin, eyes, and mucous membranes. Contact with the liquified gas may cause frostbite. Caution is advised.

Signs and Symptoms of Acute Ammonia Exposure: Inhalation of ammonia may cause irritation and burns of the respiratory tract, laryngitis, dyspnea (shortness of breath), stridor (high-pitched respirations), and chest pain. Pulmonary edema and pneumonia may also result from inhalation. A pink frothy sputum, convulsions, and coma are often seen following exposure to high concentrations. When ammonia is ingested, nausea and vomiting may result; oral, esophageal, and stomach burns are common. If ammonia has contacted the eyes, irritation, pain, conjunctivitis (red, inflamed eyes), lacrimation (tearing), and corneal erosion may occur. Loss of vision is possible. Dermal exposure may result in severe burns and pain.

Emergency Life-Support Procedures: Acute exposure to ammonia may require decontamination and life support for the victims. Emergency personnel should wear protective clothing appropriate to the type and degree of contamination. Air-purifying or supplied-air respiratory equipment should also be worn, as necessary.

Inhalation Exposure:
1. Move victims to fresh air. Emergency personnel should avoid self-exposure to ammonia.
2. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.
3. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.
4. Transport to a health care facility.

Dermal/Eye Exposure:
1. Remove victims from exposure. Emergency personnel should avoid self- exposure to ammonia.
2. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.Warning: Do not attempt to neutralize with an acid wash; excessive liberation of heat may result.
3. If eye exposure has occurred, eyes must IMMEDIATELY be flushed with lukewarm water for at least 15 minutes.
4. Remove contaminated clothing as soon as possible.
5. Wash exposed skin areas THOROUGHLY with soap and water.
6. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.
7. Transport to a health care facility.

Ingestion Exposure:
1. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.
2. DO NOT induce vomiting or attempt to neutralize!
3. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.
4. Activated charcoal does not strongly bind ammonia, and therefore is of little or no value.
5. Give the victims water or milk: children up to 1 year old, 125 mL (4 oz or 1/2 cup); children 1 to 12 years old, 200 mL (6 oz or 3/4 cup); adults, 250 mL (8 oz or 1 cup). Water or milk should be given only if victims are conscious and alert.
6. Transport to a health care facility. (EPA, 1998)

Physical Properties

Chemical Formula: H3N

Flash Point: data unavailable

Lower Explosive Limit (LEL): 16 % (EPA, 1998)

Upper Explosive Limit (UEL): 25 % (EPA, 1998)

Autoignition Temperature: 1204 ° F (USCG, 1999)

Melting Point: -107.9 ° F (EPA, 1998)

Vapor Pressure: 400 mm Hg at -49.72 ° F (EPA, 1998)

Vapor Density (Relative to Air): 0.6 (EPA, 1998)

Specific Gravity: 0.6818 at -28.03 ° F (EPA, 1998)

Boiling Point: -28.03 ° F at 760.0 mm Hg (EPA, 1998)

Molecular Weight: 17.03 (EPA, 1998)

Water Solubility: data unavailable

IDLH: 300 ppm (NIOSH, 2003)

AEGLs (Acute Exposure Guideline Levels)

Final AEGLs for Ammonia (7664-41-7)

Exposure Period	AEGL-1	AEGL-2	AEGL-3
10 minutes	30 ppm	220 ppm	2700 ppm
30 minutes	30 ppm	220 ppm	1600 ppm
60 minutes	30 ppm	160 ppm	1100 ppm
4 hours	30 ppm	110 ppm	550 ppm
8 hours	30 ppm	110 ppm	390 ppm

(NAC/NRC, 2016)

ERPGs (Emergency Response Planning Guidelines)

Chemical	ERPG-1	ERPG-2	ERPG-3
Ammonia (7664-41-7)	25 ppm ✪	150 ppm	1500 ppm

✪ indicates that odor should be detectable near ERPG-1.
(AIHA, 2015)

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3	
Ammonia (7664-41-7)	30 ppm	160 ppm	1100 ppm	LEL = 150000 ppm

(SCAPA, 2016)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Ammonia	7664-41-7	500 pounds	100 pounds	100 pounds			
Ammonia (anhydrous)	7664-41-7	500 pounds	100 pounds	100 pounds	X		10000 pounds
Ammonia (conc 20% or greater)	7664-41-7			see ammonium hydroxide	X		20000 pounds
Ammonia (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10 percent of total aqueous ammonia is reportable under this listing)	7664-41-7				313		

"X" indicates that this is a second name for an EPCRA section 313 chemical already included on this consolidated list. May also indicate that the same chemical with the same CAS number appears on another list with a different chemical name.

(EPA List of Lists, 2015)

DHS Chemical Facility Anti-Terrorism Standards (CFATS)

		RELEASE			THEFT			SABOTAGE		
Chemical of Interest	**CAS Number**	**Min Conc**	**STQ**	**Security Issue**	**Min Conc**	**STQ**	**Security Issue**	**Min Conc**	**STQ**	**Security Issue**
Ammonia (anhydrous)	7664-41-7	1.00 %	10000 pounds	toxic						
Ammonia (conc. 20% or greater)	7664-41-7	20.00 %	20000 pounds	toxic						

(DHS, 2007)

Alternate Chemical Names

- AM-FOL
- AMMONIA
- AMMONIA (ANHYDROUS)
- AMMONIA (ANHYDROUS) (LIQUEFIED)
- AMMONIA GAS
- AMMONIA SOLUTION, WITH MORE THAN 50% AMMONIA
- AMMONIA, ANHYDROUS
- AMMONIA, ANHYDROUS, LIQUEFIED
- AMMONIA, [ANHYDROUS]

- AMMONIA-14N
- ANHYDROUS AMMONIA
- ANHYDROUS AMMONIA, LIQUEFIED
- AQUA AMMONIA
- AQUEOUS AMMONIA
- LIQUID AMMONIA
- NITRO-SIL
- R 717
- REFRIGERENT R717
- SPIRIT OF HARTSHORN

SAFETY DATA SHEET

Ammonia

Section 1. Identification

GHS product identifier : Ammonia

Chemical name : ammonia, anhydrous

Other means of identification : ammonia; anhydrous ammonia; Aqueous ammonia; Aqua ammonia

Product use : Synthetic/Analytical chemistry.

Synonym : ammonia; anhydrous ammonia; Aqueous ammonia; Aqua ammonia

SDS # : 001003

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE GASES - Category 2
GASES UNDER PRESSURE - Liquefied gas
ACUTE TOXICITY (inhalation) - Category 4
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Flammable gas.
Contains gas under pressure; may explode if heated.
May cause frostbite.
May form explosive mixtures in Air.
Harmful if inhaled.
Causes severe skin burns and eye damage.
Very toxic to aquatic life.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Approach suspected leak area with caution.

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing gas. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Collect spillage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.

Storage : Store locked up. Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : Liquid can cause burns similar to frostbite.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : ammonia, anhydrous

Other means of identification : ammonia; anhydrous ammonia; Aqueous ammonia; Aqua ammonia

CAS number/other identifiers

CAS number : 7664-41-7

Product code : 001003

Ingredient name	%	CAS number
ammonia, anhydrous	100	7664-41-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Continue to rinse for at least 10 minutes. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Do not rub affected area. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Chemical burns must be treated promptly by a physician. Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. As this product rapidly becomes a gas when released, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage. Liquid can cause burns similar to frostbite.

Inhalation : Harmful if inhaled.

Skin contact : Causes severe burns. Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : Ingestion of liquid can cause burns similar to frostbite.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:, pain, watering, redness, frostbite

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, pain or irritation, redness, blistering may occur, frostbite

Ingestion : Adverse symptoms may include the following:, frostbite, stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. This material is very toxic to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
nitrogen oxides

Section 5. Fire-fighting measures

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Do not breathe gas. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
ammonia, anhydrous	**ACGIH TLV (United States, 3/2015).** STEL: 24 mg/m³ 15 minutes. STEL: 35 ppm 15 minutes. TWA: 17 mg/m³ 8 hours. TWA: 25 ppm 8 hours. **NIOSH REL (United States, 10/2013).** STEL: 27 mg/m³ 15 minutes. STEL: 35 ppm 15 minutes. TWA: 18 mg/m³ 10 hours. TWA: 25 ppm 10 hours. **OSHA PEL (United States, 2/2013).** TWA: 35 mg/m³ 8 hours. TWA: 50 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 27 mg/m³ 15 minutes. STEL: 35 ppm 15 minutes.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Section 8. Exposure controls/personal protection

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas. [Liquefied gas]

Color : Colorless.

Molecular weight : 17.03 g/mole

Molecular formula : H3-N

Boiling/condensation point : -33°C (-27.4°F)

Melting/freezing point : -77.7°C (-107.9°F)

Critical temperature : 132.85°C (271.1°F)

Odor : Pungent.

Odor threshold : Not available.

pH : Not available.

Flash point : Not available.

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Extremely flammable in the presence of the following materials or conditions: oxidizing materials.

Lower and upper explosive (flammable) limits : Lower: 15%
Upper: 28%

Vapor pressure : 114.1 (psig)

Vapor density : 0.59 (Air = 1)

Specific Volume (ft^3/lb) : 22.7273

Gas Density (lb/ft^3) : 0.044

Relative density : Not applicable.

Solubility : Not available

Solubility in water : 540 g/l

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : 651°C (1203.8°F)

Decomposition temperature : Not available.

SADT : Not available.

Viscosity : Not applicable.

Physical/chemical properties comments : SPECIFIC GRAVITY (AIR=1): @ 70°F (21.1°C) = 0.59
PH: Approx. 11.6 for 1 N Sol'n. in water

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Oxidizers

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
ammonia, anhydrous	LC50 Inhalation Gas.	Rat	7338 ppm	1 hours

IDLH : 300 ppm

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Section 11. Toxicological information

Eye contact : Causes serious eye damage. Liquid can cause burns similar to frostbite.

Inhalation : Harmful if inhaled.

Skin contact : Causes severe burns. Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

Ingestion : Ingestion of liquid can cause burns similar to frostbite.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:, pain, watering, redness, frostbite

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, pain or irritation, redness, blistering may occur, frostbite

Ingestion : Adverse symptoms may include the following:, frostbite, stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Other information : IDLH : 300 ppm

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
ammonia, anhydrous	Acute EC50 29.2 mg/l Marine water Acute LC50 2080 µg/l Fresh water Acute LC50 0.53 ppm Fresh water Acute LC50 300 µg/l Fresh water Chronic NOEC 0.204 mg/l Marine water	Algae - Ulva fasciata - Zoea Crustaceans - Gammarus pulex Daphnia - Daphnia magna Fish - Hypophthalmichthys nobilis Fish - Dicentrarchus labrax	96 hours 48 hours 48 hours 96 hours 62 days

Persistence and degradability

Not available.

Section 12. Ecological information

Bioaccumulative potential

Not available.

Mobility in soil

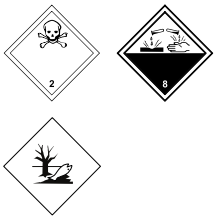
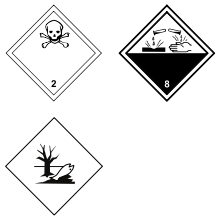
Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1005	UN1005	UN1005	UN1005	UN1005
UN proper shipping name	AMMONIA, ANHYDROUS	AMMONIA, ANHYDROUS; OR ANHYDROUS AMMONIA	AMMONIA, ANHYDROUS	AMMONIA, ANHYDROUS	AMMONIA, ANHYDROUS
Transport hazard class(es)	2.2 	2.3 (8) 	2.3 (8) 	2.3 (8) 	2.3 (8) 
Packing group	-	-	-	-	-
Environment	No.	No.	No.	Yes.	No.
Additional information	Inhalation hazard This product is not regulated as a marine pollutant when transported on inland waterways in sizes of ≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes, provided the packagings meet the general provisions of §§ 173.24 and 173.24a. **Reportable quantity** 100 lbs / 45.4 kg Package sizes shipped in quantities less than the product reportable quantity are not subject	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.40-2.42 (Class 8), 2.7 (Marine pollutant mark). The marine pollutant mark is not required when transported by road or rail. **Explosive Limit and Limited Quantity Index** 0 **ERAP Index** 3000	Toxic Inhalation Hazard Zone D	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.	The environmentally hazardous substance mark may appear if required by other transportation regulations. **Passenger and Cargo Aircraft**Quantity limitation: 0 Forbidden **Cargo Aircraft Only** Quantity limitation: Forbidden

Section 14. Transport information

	to the RQ (reportable quantity) transportation requirements. **Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: Forbidden. **Cargo aircraft** Quantity limitation: Forbidden. **Special provisions** 13,T50	**Passenger Carrying Ship Index** Forbidden **Passenger Carrying Road or Rail Index** Forbidden **Special provisions**			

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): This material is listed or exempted.

Clean Water Act (CWA) 311: ammonia, anhydrous

Clean Air Act (CAA) 112 regulated toxic substances: ammonia, anhydrous

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ (lbs)	SARA 302 TPQ (gallons)	SARA 304 RQ (lbs)	SARA 304 RQ (gallons)
ammonia, anhydrous	100	Yes.	500	-	100	-

SARA 304 RQ : 100 lbs / 45.4 kg

SARA 311/312

Classification : Fire hazard
Sudden release of pressure
Immediate (acute) health hazard

Section 15. Regulatory information

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
ammonia, anhydrous	100	Yes.	Yes.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	ammonia, anhydrous	7664-41-7	100
Supplier notification	ammonia, anhydrous	7664-41-7	100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : This material is listed.
New York : This material is listed.
New Jersey : This material is listed.
Pennsylvania : This material is listed.

International regulations

International lists

National inventory

Australia : This material is listed or exempted.
Canada : This material is listed or exempted.
China : This material is listed or exempted.
Europe : This material is listed or exempted.
Japan : This material is listed or exempted.
Malaysia : This material is listed or exempted.
New Zealand : This material is listed or exempted.
Philippines : This material is listed or exempted.
Republic of Korea : This material is listed or exempted.
Taiwan : This material is listed or exempted.

Canada

WHMIS (Canada) : Class A: Compressed gas.
Class B-1: Flammable gas.
Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class E: Corrosive material

CEPA Toxic substances: This material is listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

Canada Label requirements : Class A: Compressed gas.
Class B-1: Flammable gas.
Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class E: Corrosive material

Hazardous Material Information System (U.S.A.)

Section 16. Other information

Health	3
Flammability	1
Physical hazards	2

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
Flam. Gas 2, H221	Expert judgment
Press. Gas Liq. Gas, H280	Expert judgment
Acute Tox. 4, H332	Expert judgment
Skin Corr. 1, H314	Expert judgment
Eye Dam. 1, H318	Expert judgment
Aquatic Acute 1, H400	Expert judgment

History

Date of printing : 5/24/2016

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Version : 0.06

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

CAMEO Chemicals

Chemical Datasheet

NITRIC ACID, OTHER THAN RED FUMING

Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	USCG CHRIS Code
7697-37-2	2031	Corrosive Oxidizer	none

NFPA 704

Diamond	Hazard	Value	Description
0 4 0 OX	Health	4	Can be lethal.
	Flammability	0	Will not burn under typical fire conditions.
	Instability	0	Normally stable, even under fire conditions.
	Special	OX	Possesses oxidizing properties.

(NFPA, 2010)

NIOSH Pocket Guide	International Chem Safety Card
Nitric acid	NITRIC ACID

General Description

A pale yellow to reddish brown liquid with reddish brown vapors and a suffocating odor. Very toxic by inhalation. Corrosive to metals or tissue. Accelerates the burning of combustible material and may cause ignition of combustible materials upon contact. Prolonged exposure to low concentrations or short term exposure to high concentrations may result in adverse health effects. Density 12 lb / gal.

Hazards

Reactivity Alerts

- Strong Oxidizing Agent
- Known Catalytic Activity
- Water-Reactive

Air & Water Reactions

Fumes in air. Fully soluble in water with the release of heat. Reacts violently with water with the production of heat, fumes, and spattering.

Fire Hazard

Excerpt from ERG Guide 157 [Substances - Toxic and/or Corrosive (Non-Combustible / Water-Sensitive)]:

Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. For UN1796, UN1826, UN2031 at high concentrations and for UN2032, these may act as oxidizers, also consult ERG Guide 140. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.). Substance may react with water (some violently), releasing corrosive and/or toxic gases and runoff. Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated or if contaminated with water. (ERG, 2016)

Health Hazard

Excerpt from ERG Guide 157 [Substances - Toxic and/or Corrosive (Non-Combustible / Water-Sensitive)]:

TOXIC; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death. Reaction with water or moist air may release toxic, corrosive or flammable gases. Reaction with water may generate much heat that will increase the concentration of fumes in the air. Fire will produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. (ERG, 2016)

Reactivity Profile

NITRIC ACID ignites upon contact with alcohols, amines, ammonia, beryllium alkyls, boranes, dicyanogen, hydrazines, hydrocarbons, hydrogen, nitroalkanes, powdered metals, silanes, or thiols [Bretherick 1979. p.174]. The reaction of finely divided antimony and nitric acid can be violent [Pascal 10:504. 1931-34]. Bromine pentafluoride reacts violently with strong nitric acid and strong sulfuric acid [Mellor 2, Supp. 1:172. 1956]. Fuming nitric acid reacts with hydrogen selenide with incandescence [Berichte 3:658]. Fuming nitric acid reacts with hydrogen sulfide with incandescence [Berichte 3:658]. A mixture of finely divided magnesium and nitric acid is explosive [Pieters 1957. p. 28]. Nitric acid oxidizes magnesium phosphide with incandescence [Mellor 8:842. 1946-47]. Experiments show that mixtures of over 50% nitric acid by weight in acetic anhydride may act as detonating explosives [BCISC 42:2. 1971]. An etching agent of equal portions of acetone, nitric acid, and 75% acetic acid exploded four hours after it was prepared and placed in a closed bottle. This is similar to a formulation for the preparation of tetranitromethane a sensitive explosive [Chem. Eng. News 38: 56. 1960]. Phosphine is violently decomposed by concentrated nitric acid, and flame is produced. Warm fuming nitric acid, dropped in a container of phosphine gas produces an explosion [Edin. Roy. Soc. 13:88. 1835]. An explosion occurs when nitric acid is brought into contact with phosphorus trichloride [Comp. Rend. 28:86]. The exothermic nitration of phthalic acid or phthalic anhydride by fuming nitric acid-sulfuric acid may give mixtures of the potentially explosive phthaloyl nitrates or nitrites or their nitro derivatives [Chem. & Ind. 20:790. 1972]. The reaction of sodium azide and strong nitric acid is energetic [Mellor 8, Supp 2:315. 1967]. Nitric acid can react with uranium with explosive violence [Katz and Rabinowitch 1951]. Reacts violently with water with the production of heat, fumes, and spattering.

Belongs to the Following Reactive Group(s)

- Acids, Strong Oxidizing

Potentially Incompatible Absorbents

Use caution: Liquids with this reactive group classification have been known to react with the absorbents listed below.

- Cellulose-Based Absorbents
- Expanded Polymeric Absorbents

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 157 [Substances - Toxic and/or Corrosive (Non-Combustible / Water-Sensitive)]:

As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

SPILL: Increase, in the downwind direction, as necessary, the isolation distance shown above.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2016)

Firefighting

Excerpt from ERG Guide 157 [Substances - Toxic and/or Corrosive (Non-Combustible / Water-Sensitive)]:

Note: Some foams will react with the material and release corrosive/toxic gases.

SMALL FIRE: CO2 (except for Cyanides), dry chemical, dry sand, alcohol-resistant foam.

LARGE FIRE: Water spray, fog or alcohol-resistant foam. Move containers from fire area if you can do it without risk. Use water spray or fog; do not use straight streams. Dike fire-control water for later disposal; do not scatter the material.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. (ERG, 2016)

Non-Fire Response

Excerpt from ERG Guide 157 [Substances - Toxic and/or Corrosive (Non-Combustible / Water-Sensitive)]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if you can do it without risk. A vapor-suppressing foam may be used to reduce vapors. DO NOT GET WATER INSIDE CONTAINERS. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. Prevent entry into waterways, sewers, basements or confined areas.

SMALL SPILL: Cover with DRY earth, DRY sand or other non-combustible material followed with plastic

sheet to minimize spreading or contact with rain. Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal. (ERG, 2016)

Protective Clothing

Skin: Wear appropriate personal protective clothing to prevent skin contact.

Eyes: Wear appropriate eye protection to prevent eye contact.

Wash skin: The worker should immediately wash the skin when it becomes contaminated.

Remove: Work clothing that becomes wet or significantly contaminated should be removed and replaced.

Change: No recommendation is made specifying the need for the worker to change clothing after the work shift.

Provide: Eyewash fountains should be provided (when concentration is pH<2.5) in areas where there is any possibility that workers could be exposed to the substance; this is irrespective of the recommendation involving the wearing of eye protection. Facilities for quickly drenching the body should be provided (when concentration is pH<2.5) within the immediate work area for emergency use where there is a possibility of exposure. [Note: It is intended that these facilities provide a sufficient quantity or flow of water to quickly remove the substance from any body areas likely to be exposed. The actual determination of what constitutes an adequate quick drench facility depends on the specific circumstances. In certain instances, a deluge shower should be readily available, whereas in others, the availability of water from a sink or hose could be considered adequate.] (NIOSH, 2016)

DuPont Tychem® Suit Fabrics

Normalized Breakthrough Times (in Minutes)

Chemical	CAS Number	State	QC	SL	TF	TP	C3	BR	RC	TK	RF
Nitric acid (50%)	7697-37-2	Liquid				>480					
Nitric acid (70%)	7697-37-2	Liquid	>480	>480	>480	140		>480	>480	>480	>480
Nitric acid (90%)	7697-37-2	Liquid					>480	>480	>480	>480	>480

> indicates greater than.
A blank cell indicates the fabric has not been tested. The fabric may or may not offer barrier.

Special Warnings from DuPont

1. Serged and bound seams are degraded by some hazardous liquid chemicals, such as strong acids, and should not be worn when these chemicals are present.

2. CAUTION: This information is based upon technical data that DuPont believes to be reliable. It is subject to revision as additional knowledge and experience are gained. DuPont makes no guarantee of results and assumes no obligation or liability...

(DuPont, 2016)

First Aid

Eye: If this chemical contacts the eyes, immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately. Contact lenses should not be worn when working with this chemical.

Skin: If this chemical contacts the skin, immediately flush the contaminated skin with water. If this chemical

penetrates the clothing, immediately remove the clothing and flush the skin with water. Get medical attention promptly.

Breathing: If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform mouth-to-mouth resuscitation. Keep the affected person warm and at rest. Get medical attention as soon as possible.

Swallow: If this chemical has been swallowed, get medical attention immediately. (NIOSH, 2016)

Physical Properties

Chemical Formula: HNO3

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: -44 ° F (NIOSH, 2016)

Vapor Pressure: 48 mm Hg (NIOSH, 2016)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 1.5 at 77 ° F (NIOSH, 2016)

Boiling Point: 181 ° F at 760 mm Hg (NIOSH, 2016)

Molecular Weight: 63 (NIOSH, 2016)

Water Solubility: Miscible (NIOSH, 2016)

Ionization Potential: 11.95 eV (NIOSH, 2016)

IDLH: 25 ppm (NIOSH, 2016)

AEGLs (Acute Exposure Guideline Levels)

Final AEGLs for Nitric Acid (7697-37-2)

Exposure Period	AEGL-1	AEGL-2	AEGL-3
10 minutes	0.16 ppm	43 ppm	170 ppm
30 minutes	0.16 ppm	30 ppm	120 ppm
60 minutes	0.16 ppm	24 ppm	92 ppm
4 hours	0.16 ppm	6 ppm	23 ppm
8 hours	0.16 ppm	3 ppm	11 ppm

(NAC/NRC, 2016)

ERPGs (Emergency Response Planning Guidelines)

Chemical	ERPG-1	ERPG-2	ERPG-3
Nitric Acid WFNA (7697-37-2)	1 ppm ✪	10 ppm	78 ppm

✪ indicates that odor should be detectable near ERPG-1.

(AIHA, 2016)

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Nitric acid (7697-37-2)	0.16 ppm	24 ppm	92 ppm

(DOE, 2016)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112 (r) RMP TQ
Nitric acid	7697-37-2	1000 pounds	1000 pounds	1000 pounds	313		
Nitric acid (conc 80% or greater)	7697-37-2	1000 pounds	1000 pounds	1000 pounds	X		15000 pounds

"X" indicates that this is a second name for an EPCRA section 313 chemical already included on this consolidated list. May also indicate that the same chemical with the same CAS number appears on another list with a different chemical name.

(EPA List of Lists, 2015)

DHS Chemical Facility Anti-Terrorism Standards (CFATS)

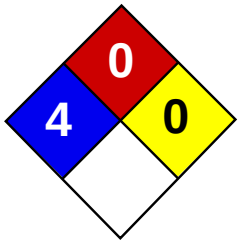
		RELEASE			THEFT			SABOTAGE		
Chemical of Interest	CAS Number	Min Conc	STQ	Security Issue	Min Conc	STQ	Security Issue	Min Conc	STQ	Security Issue
Nitric acid	7697-37-2	80.00 %	15000 pounds	toxic	68.00 %	400 pounds	EXP/IEDP			

EXP/IEDP = explosives/improvised explosive device precursors.

(DHS, 2007)

Alternate Chemical Names

- NITRIC ACID, OTHER THAN RED FUMING



Material Safety Data Sheet
Nitric acid, 65% MSDS

Section 1: Chemical Product and Company Identification

Product Name: Nitric acid, 65%

Catalog Codes: SLN2161

CAS#: Mixture.

RTECS: Not applicable.

TSCA: TSCA 8(b) inventory: Water; Nitric acid, fuming

CI#: Not applicable.

Synonym: Nitric Acid, 65%

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Water	7732-18-5	35
Nitric acid, fuming	7697-37-2	65

Toxicological Data on Ingredients: Nitric acid, fuming: VAPOR (LC50): Acute: 244 ppm 0.5 hours [Rat]. 344 ppm 0.5 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, . Slightly hazardous in case of inhalation (lung sensitizer). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to lungs, mucous membranes, upper respiratory

tract, skin, eyes, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: of combustible materials

Explosion Hazards in Presence of Various Substances:
Explosive in presence of reducing materials, of organic materials, of metals, of alkalis. Non-explosive in presence of open flames and sparks, of shocks.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
Flammable in presence of cellulose or other combustible materials. Phosphine, hydrogen sulfide, selenide all ignite when fuming nitric acid is dripped into gas. (Nitric Acid, fuming)

Special Remarks on Explosion Hazards:
Reacts exlposively with metallic powders, carbides, cyanides, sulfides, alkalies and turpentine. Can react explosively with many reducing agents. Arsine, phosphine, tetraborane all oxidized explosively in presence of nitric acid. Cesium and rubidium

acetylides explode in contact with nitric acid. Explosive reaction with Nitric Acid + Nitrobenzene + water. Detonation with Nitric Acid + 4-Methylcyclohexane. (Nitric acid, fuming)

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:
Corrosive liquid. Oxidizing material. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Keep away from heat. Keep away from sources of ignition. Keep away from combustible material.. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

Storage:
Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalies, reducing agents and combustibles. See NFPA 43A, Code for the Storage of Liquid and Solid Oxidizers. Do not store above 23°C (73.4°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 2 STEL: 4 (ppm) from ACGIH (TLV) [United States] TWA: 2 STEL: 4 from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Acrid. Disagreeable and choking. (Strong.)

Taste: Not available.

Molecular Weight: Not applicable.

Color: Colorless to light yellow.

pH (1% soln/water): Acidic.

Boiling Point: 121°C (249.8°F)

Melting Point: -41.6°C (-42.9°F)

Critical Temperature: Not available.

Specific Gravity: 1.408 (Water = 1)

Vapor Pressure: 6 kPa (@ 20°C)

Vapor Density: 2.5 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.29 ppm

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:
Easily soluble in cold water, hot water. Soluble in diethyl ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances:
Highly reactive with alkalis. Reactive with reducing agents, combustible materials, organic materials, metals, acids.

Corrosivity:
Extremely corrosive in presence of aluminum, of copper. Non-corrosive in presence of glass, of stainless steel(304), of stainless steel(316), of brass.

Special Remarks on Reactivity:
A strong oxidizer. Reacts violently with alcohol, organic material, turpene, charcoal. Violent reaction with Nitric acid + Acetone and Sulfuric acid. Nitric Acid will react with water or steam to produce heat and toxic, corrosive and flammable vapors. (Nitric acid, fuming)

Special Remarks on Corrosivity:
In presence of traces of oxides, it attacks all base metals except aluminum and special chromium steels. It will attack some forms of plastics, rubber, and coatings. No corrosive effect on bronze. No corrosivity data for zinc, and steel

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:

Contains material which may cause damage to the following organs: lungs, mucous membranes, upper respiratory tract, skin, eyes, teeth.

Other Toxic Effects on Humans:
Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (corrosive), of ingestion, .

Special Remarks on Toxicity to Animals: LDL - Lowest Published Lethal Dose [Human] - Route: Oral; Dose: 430 mg/kg (Nitric acid, fuming)

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects (effects on newborn and fetotoxicity) based on animal data. (Nitric acid, fuming)

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Severely irritates skin. Causes skin burns and may cause deep and penetrating ulcers of the skin with a characteristic yellow to brownish discoloration. May be fatal if absorbed through skin. Eyes: Severely irritates eyes. Causes eye burns. May cause irreversible eye injury. Ingestion: May be fatal if swallowed. Causes serious gastrointestinal tract irritation or burns with nausea, vomiting, severe abdominal pain, and possible "coffee grounds" appearance of the vomitus . May cause perforation of the digestive tract. Inhalation: May be fatal if inhaled. Vapor is extremely hazardous. Vapor may cause nitrous gas poisoning. Effects may be delayed. May cause irritation of the mucous membranes and respiratory tract with burning pain in the nose and throat, coughing, sneezing, wheezing, shortness of breath and pulmonary edema. Other symptoms may include nausea, and vomiting. Chronic Potential Health Effects: Repeated inhalation may produce changes in pulmonary function and/or chronic bronchitis. It may also affect behavior (headache, dizziness, drowsiness, muscle contaction or spasticity, weakness, loss of coordinaton, mental confusion), and urinary system (kidney faillure, decreased urinary output after several hours of

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Nitric acid UNNA: 2031 PG: II

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
New York release reporting list: Nitric acid, fuming Rhode Island RTK hazardous substances: Nitric acid, fuming Pennsylvania RTK: Nitric acid, fuming Florida: Nitric acid, fuming Minnesota: Nitric acid, fuming Massachusetts RTK: Nitric acid, fuming

New Jersey: Nitric acid, fuming TSCA 8(b) inventory: Water; Nitric acid, fuming SARA 302/304/311/312 extremely hazardous substances: Nitric acid, fuming SARA 313 toxic chemical notification and release reporting: Nitric acid, fuming 65% CERCLA: Hazardous substances.: Nitric acid, fuming: 1000 lbs. (453.6 kg);

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R8- Contact with combustible material may cause fire. R35- Causes severe burns. S23- Do not breathe gas/fumes/vapour/spray [***] S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36- Wear suitable protective clothing. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 0

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 4

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 10:59 AM

Last Updated: 05/21/2013 12:00 PM

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CAMEO Chemicals

Chemical Datasheet

SULFURIC ACID

Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	CHRIS Code
7664-93-9	1830	Corrosive	SFA

NFPA 704

Diamond	Hazard	Value	Description
0 3 2 W	Health	3	Can cause serious or permanent injury.
	Flammability	0	Will not burn under typical fire conditions.
	Instability	2	Readily undergoes violent chemical changes at elevated temperatures and pressures.
	Special	W	Reacts violently or explosively with water.

(NFPA, 2010)

General Description

Sulfuric acid is a colorless oily liquid. It is soluble in water with release of heat. It is corrosive to metals and tissue. It will char wood and most other organic matter on contact, but is unlikely to cause a fire. Density 15 lb / gal. Long term exposure to low concentrations or short term exposure to high concentrations can result in adverse health effects from inhalation. It is used to make fertilizers and other chemicals, in petroleum refining, in iron and steel production, and for many other uses.

Rate of onset: Immediate

Persistence: Hours, days

Odor threshold:

Source/use/other hazard: Battery/dyes/paper/glue/metals industries; volcanic gas; toxic fumes when heated.

Hazards

Reactivity Alerts

⚠ Strong Oxidizing Agent
⚠ Known Catalytic Activity
⚠ Water-Reactive

Air & Water Reactions

Reaction with water is negligible unless acid strength is above 80-90% then heat from hydrolysis is extreme, may cause severe burns [Merck, 11th ed. 1989]. During sulfonation of mononitrobenzene by fuming sulfuric acid, a leak from an internal cooling coil permitted water to enter the reaction tank. A violent eruption occurred due to the heat of solution [MCA Case History 944 1963].

Fire Hazard

It is highly reactive and capable of igniting finely-divided combustible materials on contact. When heated, it emits highly toxic fumes. Avoid heat; water and organic materials. Sulfuric acid is explosive or incompatible with an enormous array of substances. Can undergo violent chemical change at elevated temperatures and pressure. May react violently with water. When heated, it emits highly toxic fumes. Hazardous polymerization may not occur. (EPA, 1998)

Health Hazard

Corrosive to all body tissues. Inhalation of vapor may cause serious lung damage. Contact with eyes may result in total loss of vision. Skin contact may produce severe necrosis. Fatal amount for adult: between 1 teaspoonful and one-half ounce of the concentrated chemical. Even a few drops may be fatal if the acid gains access to the trachea. Chronic exposure may cause tracheobronchitis, stomatitis, conjunctivitis, and gastritis. Gastric perforation and peritonitis may occur and may be followed by circulatory collapse. Circulatory shock is often the immediate cause of death. Those with chronic respiratory, gastrointestinal, or nervous diseases and any eye and skin diseases are at greater risk. (EPA, 1998)

Reactivity Profile

SULFURIC ACID is strongly acidic. Reacts violently with bromine pentafluoride [Mellor 2 Supp. 1:172 1956]. Exploded with para-nitrotoluene at 80°C [Chem. Eng. News 27:2504]. An explosion occurred when concentrated sulfuric acid was mixed with crystalline potassium permanganate in a vessel containing moisture. Manganese heptoxide was formed, which explodes at 70°C [Delhez 1967]. A mixture of acrylonitrile with concentrated sulfuric acid must be kept well chilled, otherwise a vigorous exothermic reaction occurs [Chem. Safety Data Sheet SD-31:8. 1949]. Mixing sulfuric acid (96%) in equal portions with any of the following substances in a closed container caused the temperature and pressure to increase: acetonitrile, acrolein, 2-aminoethanol, ammonium hydroxide (28%), aniline, n-butyraldehyde, chlorosulfonic acid, ethylene diamine, ethyleneimine, epichlorohydrin, ethylene cyanohydrin, hydrochloric acid (36%), hydrofluoric acid (48.7%), propiolactone, propylene oxide, sodium hydroxide, styrene monomer [NFPA 1991]. Sulfuric acid (concentrated) is extremely hazardous in contact with carbides, bromates, chlorates, fulminates, picrates, and powdered metals [Haz. Chem. Data 1966]. Allyl chloride may polymerize violently under conditions involving an acid catalyst, such as sulfuric acid [Ventrone 1971]. React exothermically with sodium hypochlorite to produce chlorine gas. Mixing chlorosulfuric acid and 98% sulfuric acid may evolve HCl [Subref: Anon, Loss Prev. Bull. 1977, (013), 2-3]. Zinc iodide reacts violently with H_2SO_4. (Pascal, 1962, Vol. 5, 168).

Belongs to the Following Reactive Group(s)

- Acids, Strong Oxidizing

Potentially Incompatible Absorbents

Use caution: Liquids with this reactive group classification have been known to react with the absorbents listed below.

- Cellulose-Based Absorbents
- Expanded Polymeric Absorbents

Response Recommendations

Isolation and Evacuation

Excerpt from GUIDE 137 [Substances - Water-Reactive - Corrosive]:

As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

SPILL: Increase, in the downwind direction, as necessary, the isolation distance shown above.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2016)

Firefighting

Fight fire from safe distance or from protected location. Use care as water applied directly to this acid results in evolution of heat and causes spattering. Cool containers that are exposed to flames with streams of water until fire is out. Wear positive pressure breathing apparatus and special protective clothing.

Not flammable. For small fires use dry chemical or carbon dioxide. Use water on combustibles burning in vicinity of this material. For large fires flood fire area with water from a distance. Do not get solid streams of water on material. Move container from area if you can do so without risk. (EPA, 1998)

Non-Fire Response

Excerpt from GUIDE 137 [Substances - Water-Reactive - Corrosive]:

Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if you can do it without risk. Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

SMALL SPILL: Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal. Prevent entry into waterways, sewers, basements or confined areas. (ERG, 2016)

Protective Clothing

Skin: Wear appropriate personal protective clothing to prevent skin contact.

Eyes: Wear appropriate eye protection to prevent eye contact.

Wash skin: The worker should immediately wash the skin when it becomes contaminated.

Remove: Work clothing that becomes wet or significantly contaminated should be removed and replaced.

Change: No recommendation is made specifying the need for the worker to change clothing after the work shift.

Provide: Eyewash fountains should be provided (when concentration is >1%) in areas where there is any possibility that workers could be exposed to the substance; this is irrespective of the recommendation involving

the wearing of eye protection. Facilities for quickly drenching the body should be provided (when concentration is >1%) within the immediate work area for emergency use where there is a possibility of exposure. [Note: It is intended that these facilities provide a sufficient quantity or flow of water to quickly remove the substance from any body areas likely to be exposed. The actual determination of what constitutes an adequate quick drench facility depends on the specific circumstances. In certain instances, a deluge shower should be readily available, whereas in others, the availability of water from a sink or hose could be considered adequate.] (NIOSH, 2003)

DuPont Tychem® Suit Fabrics

Normalized Breakthrough Times (in Minutes)

Chemical	CAS Number	State	QC	SL	TF	TP	C3	BR	LV	RC	TK	RF
Sulfuric acid	7664-93-9	Liquid	>480	>480	>480	50	>480	>480	>480	>480	>480	>480
Sulfuric acid (18%)	7664-93-9	Liquid										
Sulfuric acid (30%)	7664-93-9	Liquid				>480						
Sulfuric acid (50%)	7664-93-9	Liquid				>480						

> indicates greater than.
A blank cell indicates the fabric has not been tested. The fabric may or may not offer barrier.

Special Warnings from DuPont

1. Serged and bound seams are degraded by some hazardous liquid chemicals, such as strong acids, and should not be worn when these chemicals are present.

2. CAUTION: This information is based upon technical data that DuPont believes to be reliable. It is subject to revision as additional knowledge and experience are gained. DuPont makes no guarantee of results and assumes no obligation or liability...

(DuPont, 2016)

First Aid

Caution: Sulfuric acid is extremely corrosive. Caution is advised.

Signs and Symptoms of Acute Sulfuric Acid Exposure: Signs and symptoms of acute ingestion of sulfuric acid may be severe and include salivation, intense thirst, difficulty in swallowing, pain, and shock. Oral, esophageal, and stomach burns are common. Vomitus generally has a coffee-ground appearance. The potential for circulatory collapse is high following ingestion of sulfuric acid. Acute inhalation exposure may result in sneezing, hoarseness, choking, laryngitis, dyspnea (shortness of breath), respiratory tract irritation, and chest pain. Bleeding of nose and gums, ulceration of the nasal and oral mucosa, pulmonary edema, chronic bronchitis, and pneumonia may also occur. If the eyes have come in contact with sulfuric acid, irritation, pain, swelling, corneal erosion, and blindness may result. Dermal exposure may result in severe burns, pain, and dermatitis (red, inflamed skin).

Emergency Life-Support Procedures: Acute exposure to sulfuric acid may require decontamination and life support for the victims. Emergency personnel should wear protective clothing appropriate to the type and degree of contamination. Air-purifying or supplied-air respiratory equipment should also be worn, as necessary. Rescue vehicles should carry supplies such as plastic sheeting and disposable plastic bags to assist in preventing spread of contamination.

Inhalation Exposure:
1. Move victims to fresh air. Emergency personnel should avoid self-exposure to sulfuric acid.

2. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.
3. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.
4. RUSH to a health care facility.

Dermal/Eye Exposure:
1. Remove victims from exposure. Emergency personnel should avoid self- exposure to sulfuric acid.
2. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.
3. Remove contaminated clothing as soon as possible.
4. If eye exposure has occurred, eyes must be flushed with lukewarm water for at least 15 minutes.
5. Wash exposed skin areas THOROUGHLY with soap and water.
6. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.
7. RUSH to a health care facility.

Ingestion Exposure:
1. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.
2. Rinse mouth with large amounts of water. Instruct victims not to swallow the water.
3. DO NOT induce vomiting or attempt to neutralize!
4. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.
5. Activated charcoal is of no value.
6. Give the victims water or milk: children up to 1 year old, 125 mL (4 oz or 1/2 cup); children 1 to 12 years old, 200 mL (6 oz or 3/4 cup); adults, 250 mL (8 oz or 1 cup). Water or milk should be given only if victims are conscious and alert.
7. RUSH to a health care facility. (EPA, 1998)

Physical Properties

Chemical Formula: H2SO4

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: Not flammable (USCG, 1999)

Melting Point: 50.65 ° F (EPA, 1998)

Vapor Pressure: 1 mm Hg at 294.8 ° F (EPA, 1998)

Vapor Density (Relative to Air): 3.4 (EPA, 1998)

Specific Gravity: 1.841 (EPA, 1998)

Boiling Point: 554 ° F at 760.0 mm Hg (EPA, 1998)

Molecular Weight: 98.08 (EPA, 1998)

Water Solubility: Miscible (NIOSH, 2003)

IDLH: 15 mg/m3 (NIOSH, 2003)

AEGLs (Acute Exposure Guideline Levels)

Interim AEGLs for Sulfuric acid (7664-93-9)

Exposure Period	AEGL-1	AEGL-2	AEGL-3
10 minutes	0.2 mg/m3	8.7 mg/m3	270 mg/m3
30 minutes	0.2 mg/m3	8.7 mg/m3	200 mg/m3
60 minutes	0.2 mg/m3	8.7 mg/m3	160 mg/m3
4 hours	0.2 mg/m3	8.7 mg/m3	110 mg/m3
8 hours	0.2 mg/m3	8.7 mg/m3	93 mg/m3

(NAC/NRC, 2016)

ERPGs (Emergency Response Planning Guidelines)

Chemical	ERPG-1	ERPG-2	ERPG-3
Sulfuric Acid (Oleum [8014-95-7], Sulfur Trioxide [7446-11-9], and Sulfuric Acid [7664-93-9])	2 mg/m3 ✪	10 mg/m3	120 mg/m3

✪ indicates that odor should be detectable near ERPG-1.

(AIHA, 2015)

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Sulfuric acid (7664-93-9)	0.2 mg/m3	8.7 mg/m3	160 mg/m3

(SCAPA, 2016)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Sulfuric acid	7664-93-9	1000 pounds	1000 pounds	1000 pounds			
Sulfuric acid (aerosol forms only)	7664-93-9	1000 pounds	1000 pounds	1000 pounds	313		

(EPA List of Lists, 2015)

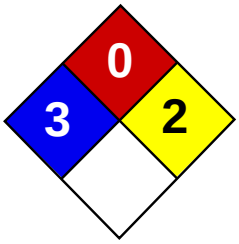
DHS Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

Alternate Chemical Names

- BATTERY ACID
- BOV

- CHAMBER ACID
- CONTACT ACID
- DIHYDROGEN SULFATE
- DIPPING ACID
- FERTILIZER ACID
- HYDROGEN SULFATE
- MATTING ACID
- NORDHAUSEN ACID
- OIL OF VITRIOL
- SPENT SULFURIC ACID
- SPIRIT OF SULFUR
- SULFURIC ACID
- SULFURIC ACID (AEROSOL FORMS ONLY)
- SULFURIC ACID (AQUEOUS)
- SULFURIC ACID, WITH MORE THAN 51% ACID
- SULPHURIC ACID
- SULPHURIC ACID, WITH MORE THAN 51% ACID
- VITRIOL BROWN OIL



Material Safety Data Sheet
Sulfuric acid MSDS

Section 1: Chemical Product and Company Identification

Product Name: Sulfuric acid

Catalog Codes: SLS2539, SLS1741, SLS3166, SLS2371, SLS3793

CAS#: 7664-93-9

RTECS: WS5600000

TSCA: TSCA 8(b) inventory: Sulfuric acid

CI#: Not applicable.

Synonym: Oil of Vitriol; Sulfuric Acid

Chemical Name: Hydrogen sulfate

Chemical Formula: H2-SO4

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sulfuric acid	7664-93-9	95 - 98

Toxicological Data on Ingredients: Sulfuric acid: ORAL (LD50): Acute: 2140 mg/kg [Rat.]. VAPOR (LC50): Acute: 510 mg/m 2 hours [Rat]. 320 mg/m 2 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, of inhalation. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA. Classified A2 (Suspected for human.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged

contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion:
Products of combustion are not available since material is non-flammable. However, products of decompostion include fumes of oxides of sulfur. Will react with water or steam to produce toxic and corrosive fumes. Reacts with carbonates to generate carbon dioxide gas. Reacts with cyanides and sulfides to form poisonous hydrogen cyanide and hydrogen sulfide respectively.

Fire Hazards in Presence of Various Substances: Combustible materials

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of oxidizing materials.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
Metal acetylides (Monocesium and Monorubidium), and carbides ignite with concentrated sulfuric acid. White Phosphorous + boiling Sulfuric acid or its vapor ignites on contact. May ignite other combustible materials. May cause fire when sulfuric acid is mixed with Cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phorphorous (III) oxide, and oxidizing agents such as chlorates, halogens, permanganates.

Special Remarks on Explosion Hazards:
Mixturesofsulfuricacidandanyofthefollowingcanexplode:p-nitrotoluene,pentasilver trihydroxydiaminophosphate, perchlorates, alcohols with strong hydrogen peroxide, ammonium tetraperoxychromate, mercuric nitrite, potassium chlorate, potassium permanganate with potassium chloride, carbides, nitro compounds, nitrates, carbides, phosphorous, iodides, picratres, fulminats, dienes, alcohols (when heated) Nitramide decomposes explosively on contact with concentrated sulfuric acid. 1,3,5-Trinitrosohexahydro-1,3,5-triazine + sulfuric acid causes explosive decompositon.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

Storage:
Hygroscopic. Reacts. violently with water. Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 23°C (73.4°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 1 STEL: 3 (mg/m3) [Australia] Inhalation TWA: 1 (mg/m3) from OSHA (PEL) [United States] Inhalation TWA: 1 STEL: 3 (mg/m3) from ACGIH (TLV) [United States] [1999] Inhalation TWA: 1 (mg/m3) from NIOSH [United States] Inhalation TWA: 1 (mg/m3) [United Kingdom (UK)]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Thick oily liquid.)

Odor: Odorless, but has a choking odor when hot.

Taste: Marked acid taste. (Strong.)

Molecular Weight: 98.08 g/mole

Color: Colorless.

pH (1% soln/water): Acidic.

Boiling Point:
270°C (518°F) - 340 deg. C Decomposes at 340 deg. C

Melting Point: -35°C (-31°F) to 10.36 deg. C (93% to 100% purity)

Critical Temperature: Not available.

Specific Gravity: 1.84 (Water = 1)

Vapor Pressure: Not available.

Vapor Density: 3.4 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility:
Easily soluble in cold water. Sulfuric is soluble in water with liberation of much heat. Soluble in ethyl alcohol.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability:
Conditions to Avoid: Incompatible materials, excess heat, combustible material materials, organic materials, exposure to moist air or water, oxidizers, amines, bases. Always add the acid to water, never the reverse.

Incompatibility with various substances:
Reactive with oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture.

Corrosivity:
Extremely corrosive in presence of aluminum, of copper, of stainless steel(316). Highly corrosive in presence of stainless steel(304). Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Hygroscopic. Strong oxidizer. Reacts violently with water and alcohol especially when water is added to the product. Incompatible (can react explosively or dangerously) with the following: ACETIC ACID, ACRYLIC ACID, AMMONIUM HYDROXIDE, CRESOL, CUMENE, DICHLOROETHYL ETHER, ETHYLENE CYANOHYDRIN, ETHYLENEIMINE, NITRIC ACID, 2-NITROPROPANE, PROPYLENE OXIDE, SULFOLANE, VINYLIDENE CHLORIDE, DIETHYLENE GLYCOL MONOMETHYL ETHER, ETHYL ACETATE, ETHYLENE CYANOHYDRIN, ETHYLENE GLYCOL MONOETHYL ETHER ACETATE, GLYOXAL, METHYL ETHYL KETONE, dehydrating agents, organic materials, moisture (water), Acetic anhydride, Acetone, cyanohydrin, Acetone+nitric acid, Acetone + potassium dichromate, Acetonitrile, Acrolein, Acrylonitrile, Acrylonitrile +water, Alcohols + hydrogen peroxide, ally compounds such as Allyl alcohol, and Allyl Chloride, 2-Aminoethanol, Ammonium hydroxide, Ammonium triperchromate, Aniline, Bromate + metals, Bromine pentafluoride, n-Butyraldehyde, Carbides, Cesium acetylene carbide, Chlorates, Cyclopentanone oxime, chlorinates, Chlorates + metals, Chlorine trifluoride, Chlorosulfonic acid, 2-cyano-4-nitrobenzenediazonium hydrogen sulfate, Cuprous nitride, p-chloronitrobenzene, 1,5-Dinitronaphthlene +

sulfur, Diisobutylene, p-dimethylaminobenzaldehyde, 1,3-Diazidobenzene, Dimethylbenzylcarbinol + hydrogen peroxide, Epichlorohydrin, Ethyl alcohol + hydrogen peroxide, Ethylene diamine, Ethylene glycol and other glycols, , Ethylenimine, Fulminates, hydrogen peroxide, Hydrochloric acid, Hydrofluoric acid, Iodine heptafluoride, Indane + nitric acid, Iron, Isoprene, Lithium silicide, Mercuric nitride, Mesityl oxide, Mercury nitride, Metals (powdered), Nitromethane, Nitric acid + glycerides, p-Nitrotoluene, Pentasilver trihydroxydiaminophosphate, Perchlorates, Perchloric acid, Permanganates + benzene, 1-Phenyl-2-methylpropyl alcohol + hydrogen peroxide, Phosphorus, Phosphorus isocyanate, Picrates, Potassium tert-butoxide, Potassium chlorate, Potassium Permanganate and other permanganates, halogens, amines, Potassium Permanganate + Potassium chloride, Potassium Permanganate + water, Propiolactone (beta)-, Pyridine, Rubidium aceteylene carbide, Silver permanganate, Sodium, Sodium carbonate, sodium hydroxide, Steel, styrene monomer, toluene + nitric acid, Vinyl acetate, Thalium (I) azidodithiocarbonate, Zinc chlorate, Zinc Iodide, azides, carbonates, cyanides, sulfides, sulfites, alkali hydrides, carboxylic acid anhydrides, nitriles, olefinic organics, aqueous acids, cyclopentadiene, cyano-alcohols, metal acetylides, Hydrogen gas is generated by the action of the acid on most metals (i.e. lead, copper, tin, zinc, aluminum, etc.). Concentrated sulfuric acid oxidizes, dehydrates, or sulfonates most organic compounds.

Special Remarks on Corrosivity:
Non-corrosive to lead and mild steel, but dillute acid attacks most metals. Attacks many metals releasing hydrogen. Minor corrosive effect on bronze. No corrosion data on brass or zinc.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2140 mg/kg [Rat.]. Acute toxicity of the vapor (LC50): 320 mg/m3 2 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA. Classified A2 (Suspected for human.) by ACGIH. May cause damage to the following organs: kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes, teeth.

Other Toxic Effects on Humans:
Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (corrosive), of ingestion, .

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
Mutagenicity: Cytogenetic Analysis: Hamster, ovary = 4mmol/L Reproductive effects: May cause adverse reproductive effects based on animal data. Developmental abnormalities (musculoskeletal) in rabbits at a dose of 20 mg/m3 for 7 hrs.(RTECS) Teratogenecity: neither embryotoxic, fetoxic, nor teratogenetic in mice or rabbits at inhaled doses producing some maternal toxicity

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes severe skin irritation and burns. Continued contact can cause tissue necrosis. Eye: Causes severe eye irritation and burns. May cause irreversible eye injury. Ingestion: Harmful if swallowed. May cause permanent damage to the digestive tract. Causes gastrointestial tract burns. May cause perforation of the stomach, GI bleeding, edema of the glottis, necrosis and scarring, and sudden circulatory collapse(similar to acute inhalation). It may also cause systemic toxicity with acidosis. Inhalation: May cause severe irritation of the respiratory tract and mucous membranes with sore throat, coughing, shortness of breath, and delayed lung edema. Causes chemical burns to the repiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Cause corrosive action on mucous membranes. May affect cardiovascular system (hypotension, depressed cardiac output, bradycardia). Circulatory collapse with clammy skin, weak and rapid pulse, shallow respiration, and scanty urine may follow. Circulatory shock is often the immediate cause of death. May also affect teeth(changes in teeth and supporting structures - erosion, discoloration). Chronic Potential Health Effects: Inhalation: Prolonged or repeated inhalation may affect behavior (muscle contraction or spasticity), urinary system (kidney damage), and cardiovascular system, heart (ischemic heart leisons), and respiratory system/lungs(pulmonary edema, lung damage), teeth (dental discoloration, erosion). Skin: Prolonged or repeated skin contact may cause dermatitis, an allergic skin reaction.

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 49 mg/l 48 hours [bluegill/sunfish].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Sulfuric acid may be placed in sealed container or absorbed in vermiculite, dry sand, earth, or a similar material. It may also be diluted and neutralized. Be sure to consult with local or regional authorities (waste regulators) prior to any disposal. Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Sulfuric acid UNNA: 1830 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Illinois toxic substances disclosure to employee act: Sulfuric acid New York release reporting list: Sulfuric acid Rhode Island RTK hazardous substances: Sulfuric acid Pennsylvania RTK: Sulfuric acid Minnesota: Sulfuric acid Massachusetts RTK: Sulfuric acid New Jersey: Sulfuric acid California Director's List of Hazardous Substances (8 CCR 339): Sulfuric acid Tennessee RTK: Sulfuric acid TSCA 8(b) inventory: Sulfuric acid SARA 302/304/311/312 extremely hazardous substances: Sulfuric acid SARA 313 toxic chemical notification and release reporting: Sulfuric acid CERCLA: Hazardous substances.: Sulfuric acid: 1000 lbs. (453.6 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R35- Causes severe burns. S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S30- Never add water to this product. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 2

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 2

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References:
-Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.

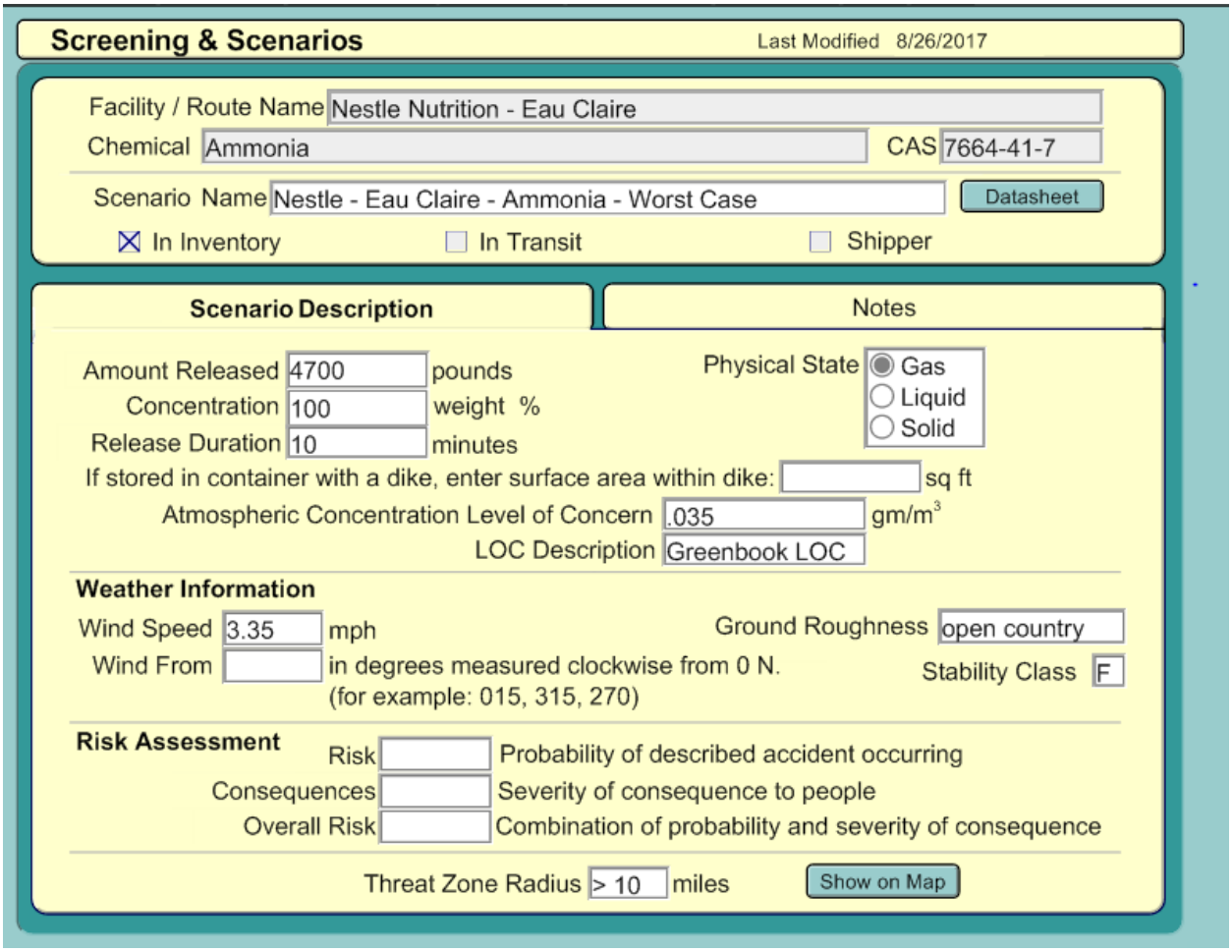
Other Special Considerations: Not available.

Created: 10/09/2005 11:58 PM

Last Updated: 05/21/2013 12:00 PM

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.

APPENDIX 3 - CAMEO CALCULATIONS



Screening & Scenarios Last Modified 8/26/2017

Facility / Route Name: Nestle Nutrition - Eau Claire

Chemical: Ammonia CAS: 7664-41-7

Scenario Name: Nestle - Eau Claire - Ammonia - Worst Case [Datasheet]

☒ In Inventory ☐ In Transit ☐ Shipper

Scenario Description | Notes

Amount Released: 4700 pounds

Concentration: 100 weight %

Release Duration: 10 minutes

Physical State: ◉ Gas ○ Liquid ○ Solid

If stored in container with a dike, enter surface area within dike: sq ft

Atmospheric Concentration Level of Concern: .035 gm/m^3

LOC Description: Greenbook LOC

Weather Information

Wind Speed: 3.35 mph

Wind From: in degrees measured clockwise from 0 N. (for example: 015, 315, 270)

Ground Roughness: open country

Stability Class: F

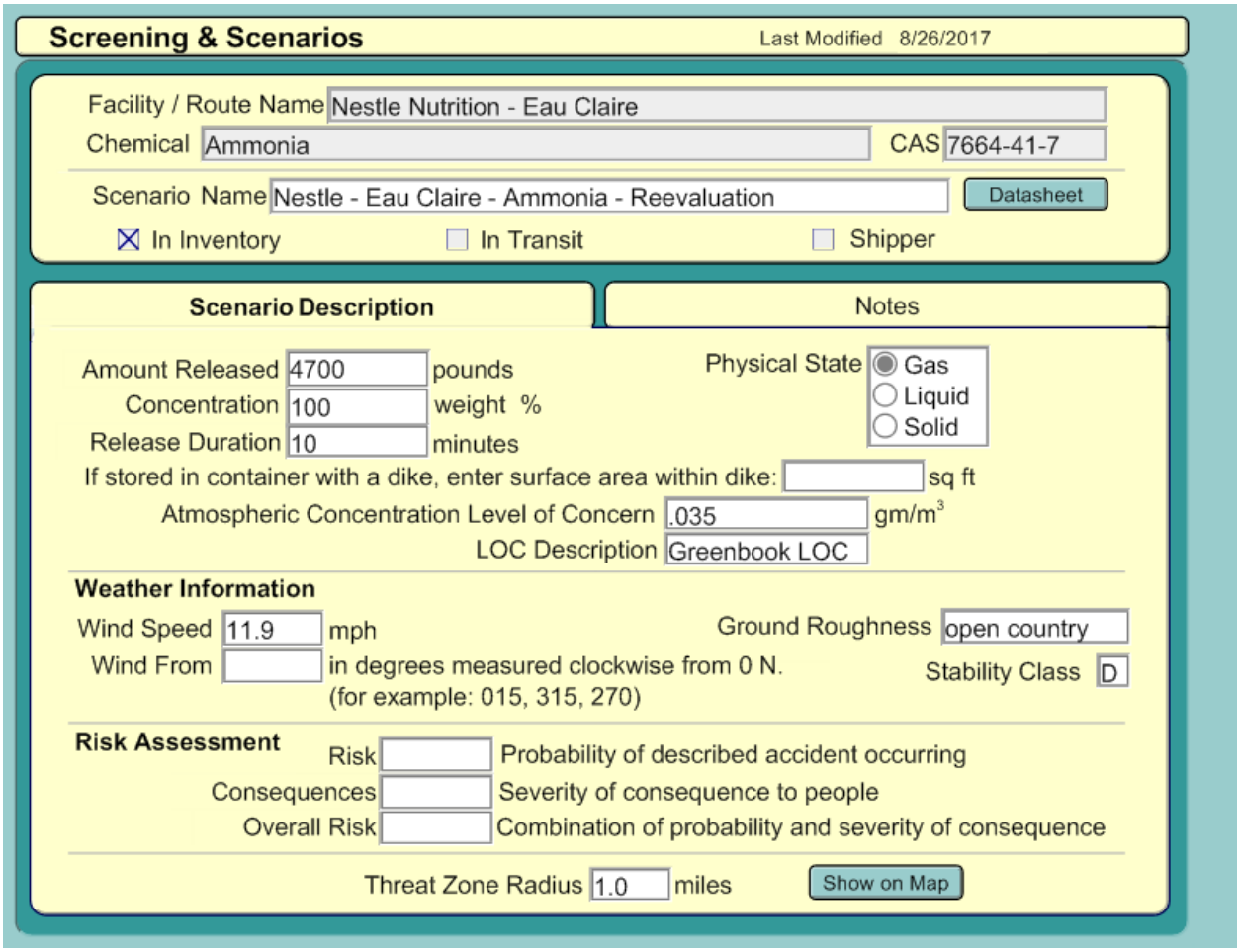
Risk Assessment

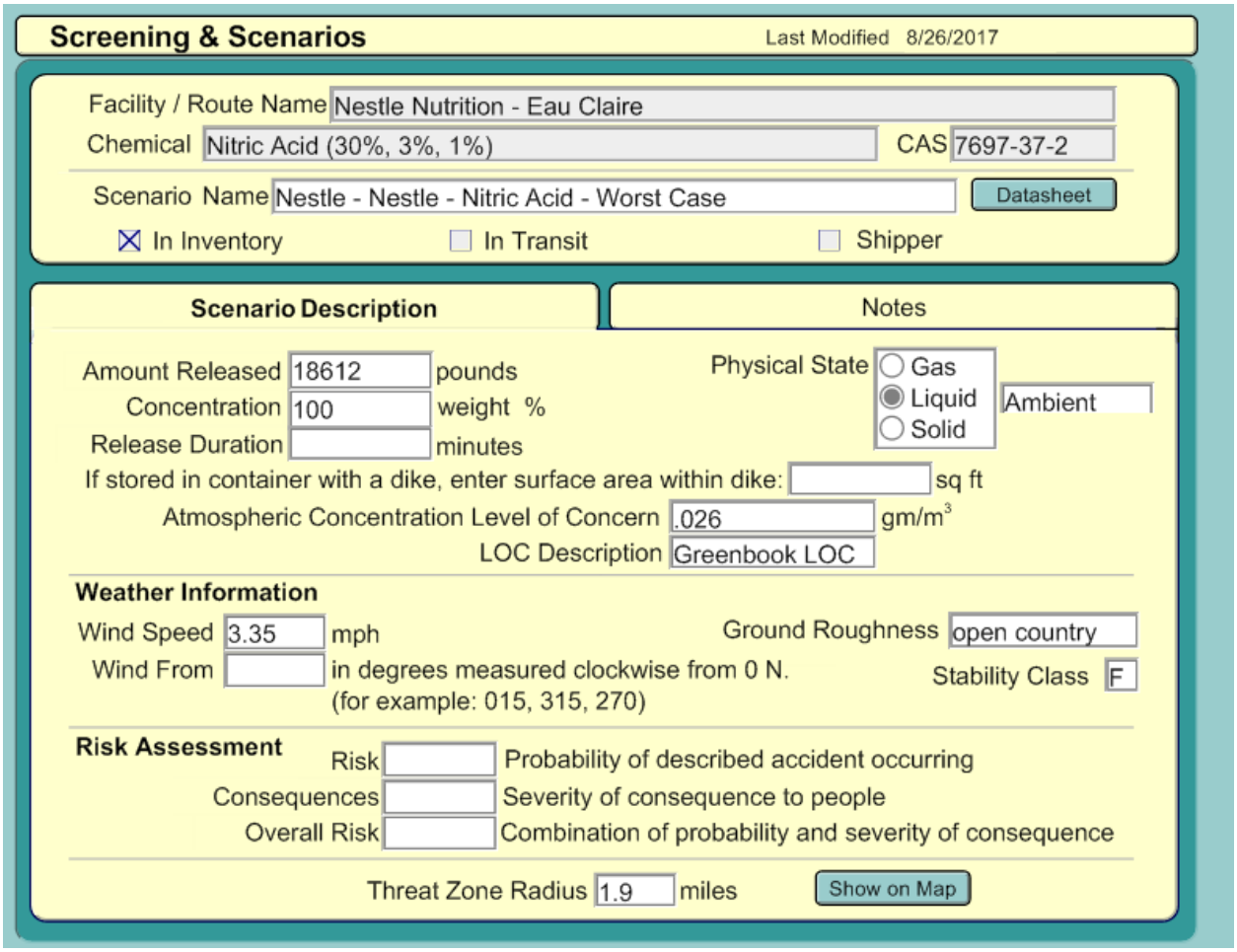
Risk: Probability of described accident occurring

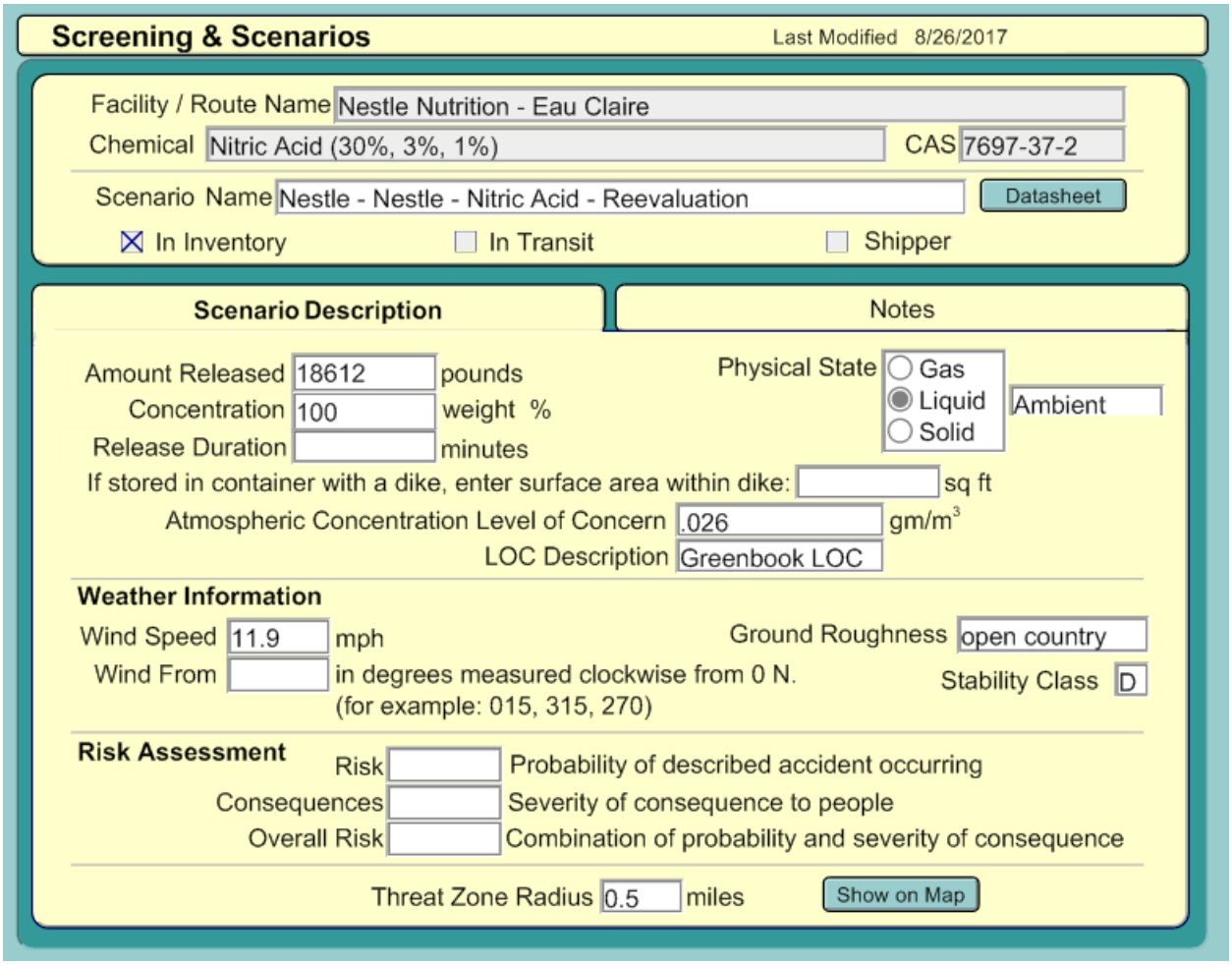
Consequences: Severity of consequence to people

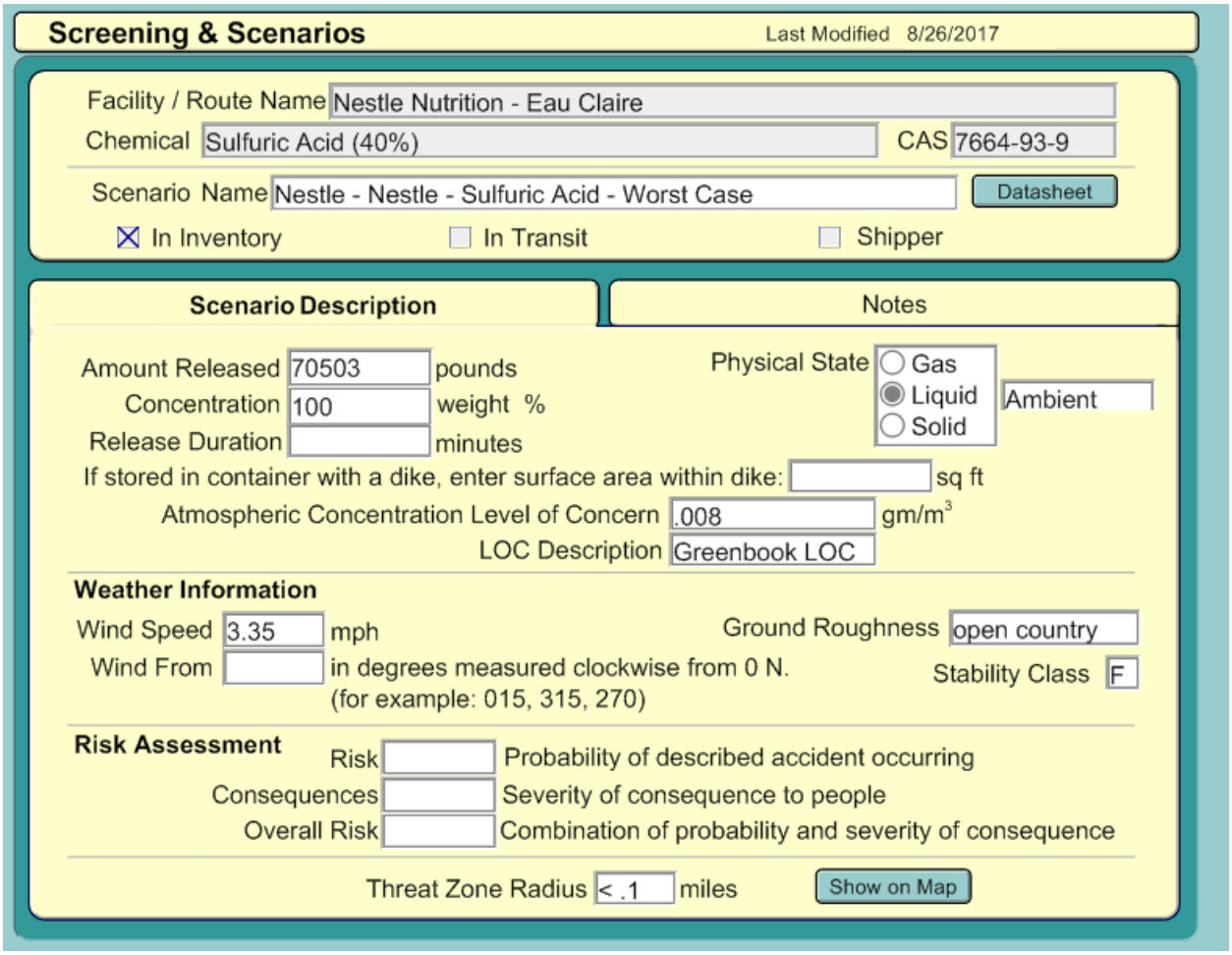
Overall Risk: Combination of probability and severity of consequence

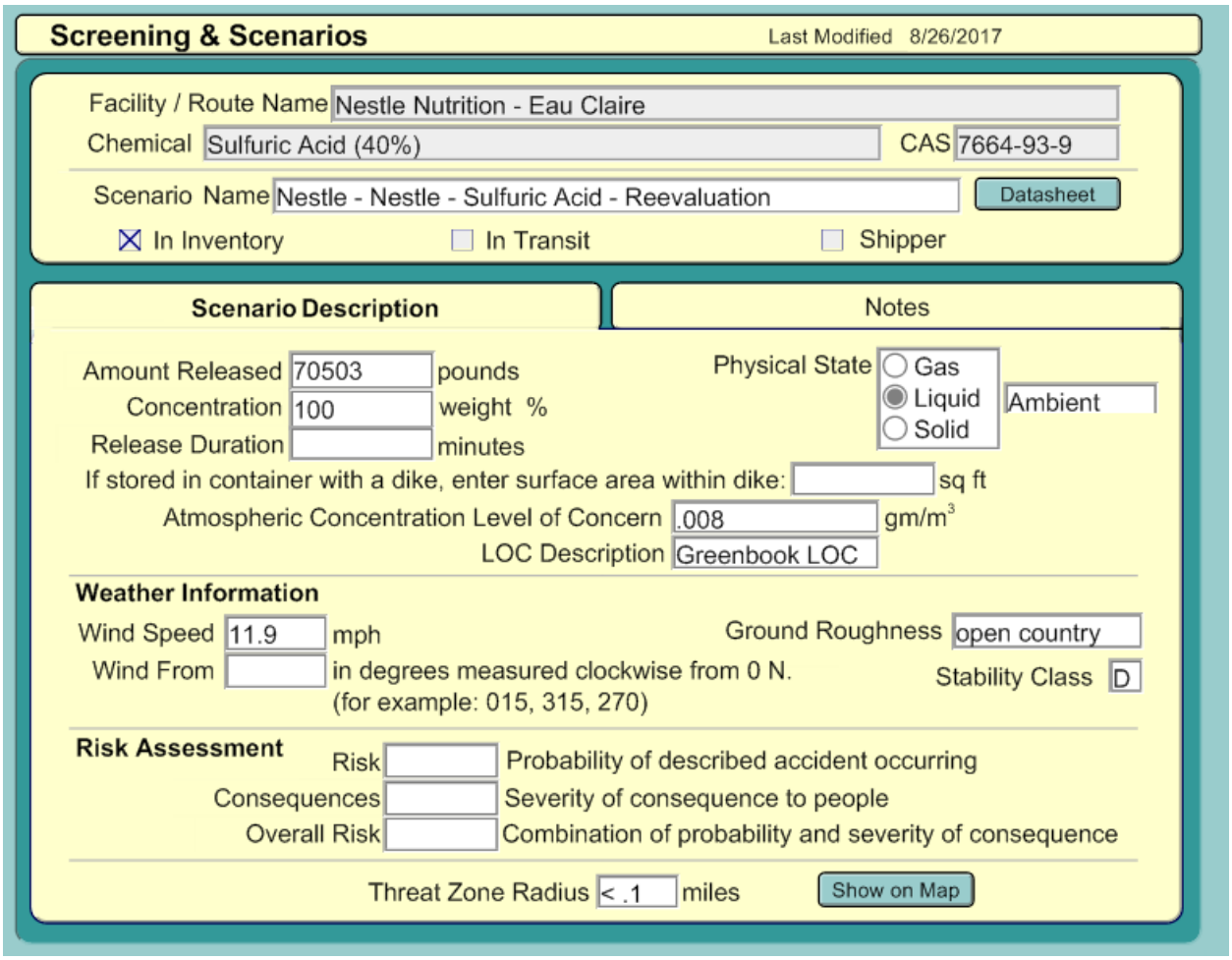
Threat Zone Radius: > 10 miles [Show on Map]


Screening & Scenarios
Last Modified 8/26/2017
Facility / Route Name Nestle Nutrition - Eau Claire
Chemical Ammonia
CAS 7664-41-7
Scenario Name Nestle - Eau Claire - Ammonia - Reevaluation
Datasheet
In Inventory
In Transit
Shipper
Scenario Description
Notes
Amount Released 4700 pounds
Concentration 100 weight %
Release Duration 10 minutes
Physical State Gas Liquid Solid
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .035 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 11.9 mph
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Ground Roughness open country
Stability Class D
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius 1.0 miles
Show on Map


Screening & Scenarios
Last Modified 8/26/2017
Facility / Route Name Nestle Nutrition - Eau Claire
Chemical Nitric Acid (30%, 3%, 1%)
CAS 7697-37-2
Scenario Name Nestle - Nestle - Nitric Acid - Worst Case
Datasheet
In Inventory
In Transit
Shipper
Scenario Description
Notes
Amount Released 18612 pounds
Concentration 100 weight %
Release Duration minutes
Physical State Gas Liquid Solid
Ambient
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .026 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 3.35 mph
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Ground Roughness open country
Stability Class F
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius 1.9 miles
Show on Map


Screening & Scenarios
Last Modified 8/26/2017
Facility / Route Name Nestle Nutrition - Eau Claire
Chemical Nitric Acid (30%, 3%, 1%)
CAS 7697-37-2
Scenario Name Nestle - Nestle - Nitric Acid - Reevaluation
Datasheet
In Inventory
In Transit
Shipper
Scenario Description
Notes
Amount Released 18612 pounds
Concentration 100 weight %
Release Duration minutes
Physical State Gas Liquid Solid
Ambient
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .026 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 11.9 mph
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Ground Roughness open country
Stability Class D
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius 0.5 miles
Show on Map


Screening & Scenarios
Last Modified 8/26/2017
Facility / Route Name Nestle Nutrition - Eau Claire
Chemical Sulfuric Acid (40%)
CAS 7664-93-9
Scenario Name Nestle - Nestle - Sulfuric Acid - Worst Case
Datasheet
In Inventory
In Transit
Shipper
Scenario Description
Notes
Amount Released 70503 pounds
Concentration 100 weight %
Release Duration minutes
Physical State Gas Liquid Solid
Ambient
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .008 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 3.35 mph
Ground Roughness open country
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Stability Class F
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius < .1 miles
Show on Map


Screening & Scenarios
Last Modified 8/26/2017
Facility / Route Name Nestle Nutrition - Eau Claire
Chemical Sulfuric Acid (40%)
CAS 7664-93-9
Scenario Name Nestle - Nestle - Sulfuric Acid - Reevaluation
Datasheet
In Inventory
In Transit
Shipper
Scenario Description
Notes
Amount Released 70503 pounds
Concentration 100 weight %
Release Duration minutes
Physical State Gas Liquid Solid
Ambient
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .008 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 11.9 mph
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Ground Roughness open country
Stability Class D
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius < .1 miles
Show on Map

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN

TRANSMITTAL FORM AND REVIEW GUIDE

COUNTY: Eau Claire

NEW ☐ UPDATE ☑ FINAL UPDATE ☐

Facility ID No. : 194413

Facility Name: Nestle Nutrition-Gateway

Facility Address: 5023 Venture Drive, Eau Claire, Wisconsin 54703

STATEMENT OF PLANNING PROCESS

This plan has been prepared in accordance with state and local requirements and is ready to be made a part of the County Emergency Operations Plan (EOP) / Emergency Response Plan (ERP) upon Wisconsin Emergency Management (WEM) / State Emergency Response Commission (SERC) acceptance. This plan meets the facility off-site planning guidance as established by WEM / SERC. Acceptance of this plan is for planning purposes and does not verify facility compliance with the requirements of EPCRA.

FACILITY SIGNATURES:

I have reviewed the attached plan and to the best of my knowledge, all facility information is true, accurate, and complete. The plan is consistent with facility emergency plans and procedures.

Adam Bourget — Facility Coordinator

4-8-20 — Date

COUNTY SIGNATURES

I have reviewed the attached plan and to the best of my knowledge, all information is true, accurate, and complete.

_____ — County Local Emergency Planning Committee Chair

_____ — Date

_____ — County Emergency Management Director

_____ — Date

WEM / SERC ACCEPTANCE:

This plan has been reviewed and meets the off-site planning guidance as established by WEM / SERC.

_____ — WEM Regional Director

_____ — Date

NOTE: Facility Off-Site Plan Review Guide attached: Yes ☑ No ☐

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN
TRANSMITTAL FORM AND REVIEW GUIDE

COUNTY: Eau Claire
NEW ☐ UPDATE ☑ FINAL UPDATE ☐
Facility ID No. : 194413
Facility Name: Nestle Nutrition-Gateway
Facility Address: 5023 Venture Drive, Eau Claire, Wisconsin 54703

FACILITY OFF-SITE PLAN REVIEW GUIDE

EPCRA Facility Off-Site Plan Elements		Page Number Reference
1)	The facility identification with address.	4
2)	Facility Coordinator / Alternate Coordinator	4
3)	Extremely Hazardous Substances (EHS) chemicals Identified with CAS numbers and maximum amount	4 - 5
4)	Primary emergency responders identified	7
5)	Support and resources available from facility	6
6)	General Information / Assumptions (Disclaimer)	8
7)	Hazard analysis summary	6 - 7
8)	Special facilities affected	8 -10
9)	Population protection	7 - 8
10)	Special considerations	8
11)	Site Plan / Facility Layout	16 (Appendix 1)

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN

TRANSMITTAL FORM AND REVIEW GUIDE

COUNTY: Eau Claire

NEW ☐ UPDATE ☑ FINAL UPDATE ☐

Facility ID No. : 194413

Facility Name: Nestle Nutrition-Gateway

Facility Address: 5023 Venture Drive, Eau Claire, Wisconsin 54703

12) Distribution list:

Facility

Fire Department of jurisdiction

Wisconsin Emergency Management- Region Office

Designated Hazmat team

County Emergency Management Office

Adjacent County Emergency Management Office when impacted by vulnerability zone

13) Required Attachments

A.	Vulnerability Zone map highlighting special facilities	11 -15
B.	Safety Data Sheet (SDS) for each EHS	17 - 53 (Appendix 2)
C.	Vulnerability Zone Calculations	54 - 59 (Appendix 3)
D.	Transportation route(s) map	None

Nestle Nutrition-Gateway
Facility Off-Site
Emergency Response Plan

Facility #194413
Nestle Nutrition - Gateway
5023 Venture Drive
Eau Claire, Wisconsin 54703

Eau Claire County Office of Emergency Management
721 Oxford Avenue
Suite 3344
Eau Claire, Wisconsin 54703

TABLE OF CONTENTS

RECORD OF CHANGES

Change	Date Changed	Change Made By
Created	June 2017	TE
Update	July 2017	JA
Update	February 2020	SS

SECTION 1: FACILITY INFORMATION

A. Address

Nestle Nutrition-Gateway
5023 Venture Drive
Eau Claire, WI 54703

B. Facility ID

194413

C. Map

D. Emergency Contacts

Primary:
Adam Bourget
Phone: (715) 839-9440
24 Hr. Phone: (715) 456-9394
adam.bourget@us.nestle.com

Secondary:
Rodney Maukstad
Phone: (715) 839-4990
24 Hr. Phone: (715) 556-3724
rodney.maukstad@us.nestle.com

E. Extremely Hazardous Substances

Ammonia Chemical ID: 106187 CAS: 7664417 **ERG: Guide 125**	**Inventory:** Max Daily Amount (lbs): 1854 Ave. Daily Amount (lbs): 1750 Number of days on site: 365	**Storage:** Container: Tank inside building, Other Location: Storage in Engine Room, Ubiquitous piped in engine room
Nitric Acid Chemical ID: 106194 CAS: 7697372 **ERG: Guide 157**	**Inventory:** Max Daily Amount (lbs): 15878 Ave. Daily Amount (lbs): 14000 Number of days on site: 365	**Storage:** Container: Tank inside building Location: Bulk tank, CIP Rooms

Sulfuric Acid Chemical ID: 106186 CAS: 7664939 **ERG: Guide 137**	**Inventory:** Max Daily Amount (lbs): 11243 Ave. Daily Amount (lbs): 9875 Number of days on site: 365	**Storage:** Container: Tank Inside Building/Batteries Location: Bulk Tank Wastewater Bldg, Battery Storage, Forklift Batteries

F. Hazardous Substances

Carbon Dioxide Chemical ID: 111071 CAS: 124389 **ERG: Guide 120**	**Inventory:** Max Daily Amount (lbs): 82740 Ave. Daily Amount (lbs): 40000 Number of days on site: 365	**Storage:** Container: Above Ground tank Location: Outside, East side of Building
Nitrogen (Cryogenic) Chemical ID: 106193 CAS: 7727379 **ERG: Guide 121**	**Inventory:** Max Daily Amount (lbs): 40470 Ave. Daily Amount (lbs): 30000 Number of days on site: 365	**Storage:** Container: Above Ground Tank Location: Outside, East side of building
Phosphoric Acid Chemical ID: 446940 CAS: 7664382 **ERG: Guide 154**	**Inventory:** Max Daily Amount (lbs): 32567 Ave. Daily Amount (lbs): 17000 Number of days on site: 365	**Storage:** Container: Above Ground Tank Location: Hydro CIP Room
Potassium Hydroxide Chemical ID: 446939 CAS: 1310583 **ERG: Guide 154**	**Inventory:** Max Daily Amount (lbs): 40239 Ave. Daily Amount (lbs): 23000 Number of days on site: 365	**Storage:** Container: Tank inside building Location: Hydro CIP Room, Chemical Room
Propane Chemical ID: 116157 CAS: 74986 **ERG: Guide 115**	**Inventory:** Max Daily Amount (lbs): 325125 Ave. Daily Amount (lbs): 253598 Number of days on site: 365	**Storage:** Container: Above Ground Tank Location: NW Edge of Property
Propylene Glycol Chemical ID: 106188 CAS: 57556 **ERG: Guide 115**	**Inventory:** Max Daily Amount (lbs): 135113 Ave. Daily Amount (lbs): 135113 Number of days on site: 365	**Storage:** Container: Other, Ubiquitous Location: Ubiquitous in plant
Sodium Hydroxide Chemical ID: 106192 CAS: 1310732 **ERG: Guide 154**	**Inventory:** Max Daily Amount (lbs): 61248 Ave. Daily Amount (lbs): 49148 Number of days on site: 365	**Storage:** Container: Tank inside building (2) Location: Bulk tank, CIP Room, Wastewater building

G. Resources/Support Available

The Plant has an in-house Emergency Plan and an Emergency Response Team. Members of the Team are trained and equipped to the Hazardous Material Technician Level, IC Procedure, Confined Space Rescue, First Aid, CPR, Ammonia Handling, as well as the Plant's propane and sprinkler systems.

The facility also utilizes the following:

Chemical Emergency Monitoring Equipment

- pH meters (fixed or portable)
- NH3 detectors
- Combustible gas indicator
- Oxygen concentration meter

Personal Protective Equipment

- Self-contained breathing apparatus (SCBA) 4
- Level B Quantity 12
- Fully protective turnout gear 4
- Shock absorbing lanyard 4
- Body harness 3

H. Hazard Analysis

Nestle Nutrition-Gateway is a food production facility, primarily for hospital use and infant formula. There are an average of twenty-five to sixty-five (25-65) employees on-site depending on time of day, with staff on-site 24/7. The size of the building is 240,021 square feet. The EHS products are used for a variety of purposes including ingredients, pH adjustment, cleaning, cooling, and an alternate fuel source.

The hazard analysis determined Ammonia, Nitric Acid, and Sulfuric Acid to be the extremely hazardous substances. All of the products are stored in tanks which are contained.

The worst case scenario criteria are:
Neutral Air Stability (Class F)
Night Time
Open Country
3.35 mph wind
1/10 IDLH (Immediately Dangerous to Life and Health) concentration
Rapid release of maximum quantity of chemical in a single vessel (10 min.)

The evacuation radius, as calculated by CAMEO software, for a 1,183 pound Anhydrous Ammonia release was determined to be 3.2 miles. It is estimated that 19,935 people (8,927 housing units) may be affected by the release.

The evacuation radius, as calculated by CAMEO software for a 21,174 pound Nitric Acid release was determined to be 2 miles. It is estimated that 6,299 people (2,911 housing units) may be affected by the release.

The evacuation radius, as calculated by CAMEO software for a 9,875 pound Sulfuric Acid release was determined to be less than .1 miles. It is estimated that 0 people (0 housing units) may be affected by the release.

The reevaluation scenario criteria are:
Neutral Air Stability (Class D)
Open Country
11.9 mph wind
1/10 IDLH (Immediately Dangerous to Life and Health) concentration

10 minute release of maximum quantity of chemical in a single vessel

Reevaluation of a 1,183 pound release of Anhydrous Ammonia using more realistic variables in the CAMEO model yields an evacuation radius of .4 miles. The population in this area is estimated to be 2 people (2 housing units).

Reevaluation of a 21,174 pound release of Nitric Acid using more realistic variables in the CAMEO model yields an evacuation radius of .5 miles. The population in this area is estimated to be 11 people (4 housing units).

Reevaluation of a 9,875 pound release of Sulfuric Acid using more realistic variables in the CAMEO model yields an evacuation radius of less than .1 miles. The population in this area is estimated to be 0 people (0 housing units)

I. Access to Facility

Staff are on site 24/7.

SECTION 2: OUTSIDE RESOURCES

A. Primary Response Agencies

Fire:	**EMS:**	**Law:**	**Emergency Management:**
Eau Claire Fire Dept. Station 9 3611 Campus Road Eau Claire, WI 54701 Phone: 715-834-6868	Eau Claire Fire Dept. Station 9 3611 Campus Rd Eau Claire, WI 54701 Phone: 715-834-6868	Eau Claire Police Department 721 Oxford Avenue Suite 1400 Eau Claire, WI 54703 Phone: 715-839-4701	Eau Claire Office of Emergency Management 721 Oxford Avenue Suite 3344 Eau Claire, WI 54703 Phone: 715-839-4736

B. Hazardous Materials Response Teams

Eau Claire County has a Level B hazardous materials response team. For Level B response, the local Fire Chief notifies the Level B team of a response needed through the Eau Claire County Emergency Communications Center. For Level A responses by the Type 1 Regional Hazardous Materials Response Team, requests shall be made through the WEM Duty officer by the county Emergency Management Director.

C. Other Outside Assistance

See the County-Wide Hazardous Materials Strategic Plan for a listing of resources.

SECTION 3: POPULATION/ENVIRONMENTAL PROTECTION

A. **Shelter-In-Place**

The lead time for a hazardous materials incident may be very short. As a result, there may not be time enough for safe evacuation, especially when extremely toxic chemical fumes are involved. An evacuation under these considerations may expose the population to dangerous toxic chemicals and the decision may be made to shelter-in-place. Preferred areas for protective sheltering would be interior hallways, rooms without windows or exterior doors, enclosed stairways and rooms on the side of the building away from where the hazard is approaching. Doors, windows, and other potential air leaks should be sealed up to prevent toxic fumes from entering.

B. **Evacuation**

Experience indicated that shelter space would need to be provided for only 30% of the population within the

initial isolation and evacuation zones and the remaining 70% would seek shelter with family and friends outside the risk zone. All public schools listed are eligible evacuation shelters.

C. **Nearby Shelters**
None.

SECTION 4: VULNERABILITY ZONES

A. General Information and Assumptions

The vulnerability zones set forth in the Plan are based on the EPA Technical Guidance for Hazards Analysis. The zones are based on a credible worst-case scenario and identify the potential area for impact should an air-borne release of a single EHS chemical occur.

The vulnerability zones are NOT intended to be used as a guide for population protection in fire-related incidents. Fire incidents were considered in the development of this plan and the plan provides basic information about the facility for first responders to employ. However, in an actual fire situation at this facility, the Incident commander is strongly recommended to reference the fire department own individual agency pre-emergency plans and standard operating procedures as well as the county's Emergency Operations Plan – Annex K: Fire and Rescue, as they may relate to this facility when making decisions at an incident involving fire.

Further, fire departments that would respond to an incident at this facility are strongly encouraged to meet with facility representatives to determine ways to minimize an event at the facility and to determine what additional information and factors should be taken into consideration in the event of a fire, should one occur.

The field incident commander shall determine the actual response to an incident and the affected area may vary from the planning vulnerability zone identified in this Plan. Depending on wind speed and direction, the amount of material released and other pertinent factors, the ACTUAL vulnerability zone may be smaller, and in some instances larger, than the credible worst-case vulnerability zone identified herein. The vulnerability zones determined in the Plan are for general PLANNING PURPOSES.

B. Special Facilities Affected

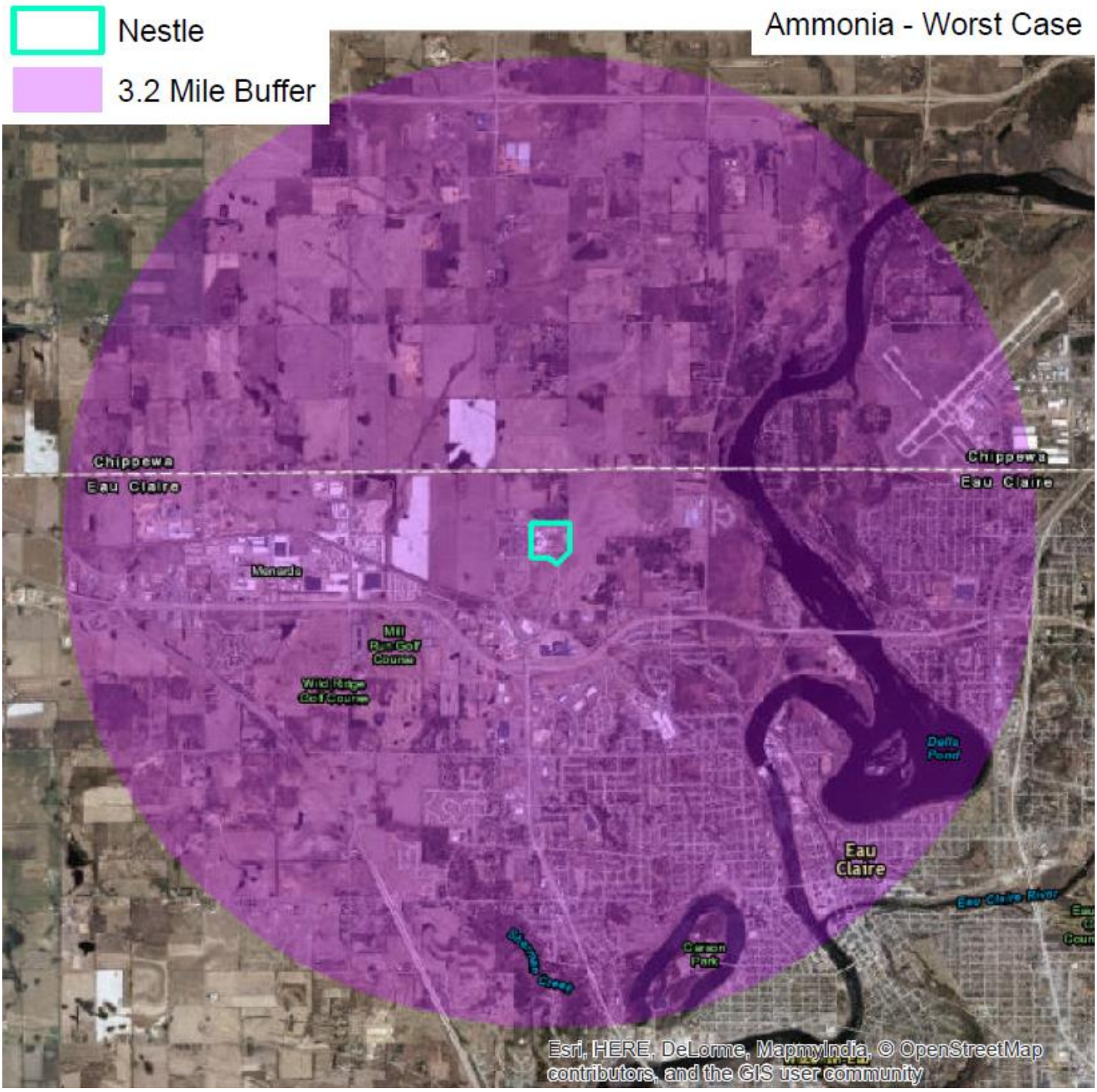
AmericInn Hotel & Suites Eau Claire 6200 Texaco Dr Eau Claire, WI 54703 715-874-4900	**Big Brothers Big Sisters** 424 Galloway St Eau Claire, WI 54703 715-835-0161	**Brighter Beginning Early Learning** 1612 Truax Blvd Eau Claire, WI 54703 715-831-9944
Calvary Baptist Church 3036 Epiphany Ln Eau Claire, WI 54703 715-832-6363	**Care Partners Assisted Living** 2320 Frank St Eau Claire, WI 54703 715-835-6656	**Catholic Charities** 448 N Dewey St Eau Claire, WI 54703 715-832-6644
Children's Secret Garden North 2857 Western Ave Eau Claire, WI 54703 715-835-7021	**Chippewa Valley Montessori Charter School** 400 Cameron St Eau Claire, WI 54703 715-852-6950	**Chippewa Valley Museum** 1204 Half Moon Dr Eau Claire, WI 54703 715-834-7871
Chippewa Valley Technical College-Energy Education Center 4000 Campus Rd Eau Claire, WI 54703 715-855-7502	**Chippewa Valley Technical College-Manufacturing Education Center** 2320 Alpine Rd Eau Claire, WI 54703 715-874-4600	**Chippewa Valley Technical College-Emergency Service Education Center** 3623 Campus Rd Eau Claire, WI 54703 715-855-7500

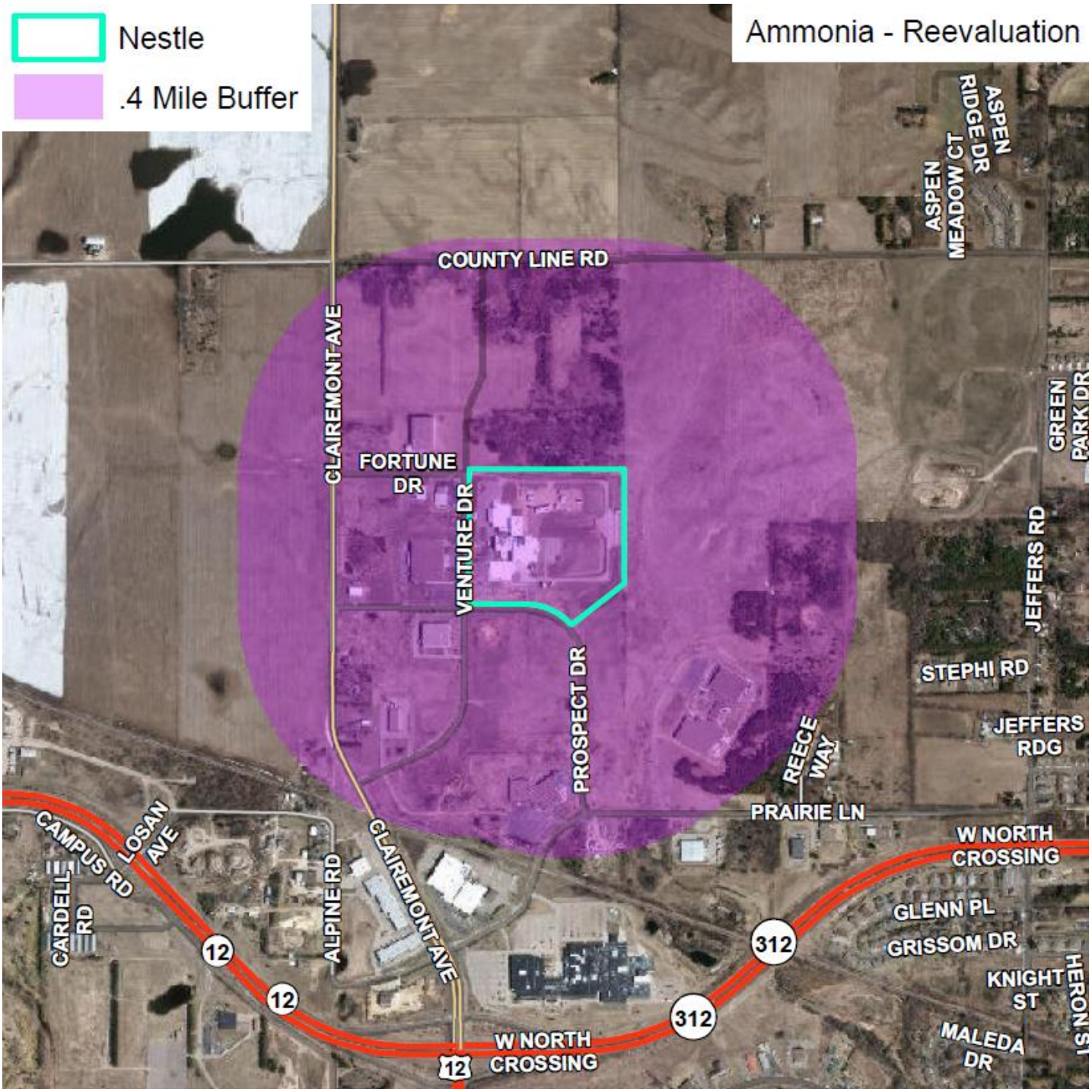
Color My World Child Care 1903 Western Ave Eau Claire, WI 54703 715-835-2060	**Days Inn West-Eau Claire** 6319 Truax Ln Eau Claire, WI 54703 715-874-5550	**Delong Middle School** 2000 Vine St Eau Claire, WI 54703 715-852-4900
Dove Healthcare- Orchard Hills Assisted Living 1403 Truax Blvd Eau Claire, WI 54703 715-552-1030	**Eau Claire Express Stadium** 702 Carson Park Dr Eau Claire, WI 54701 715-839-7788	**Eau Claire Gospel Center** 1505 Cameron St Eau Claire, WI 54703 715-839-8628
Eau Claire North High School 1801 Piedmont Rd Eau Claire, WI 54703 715-852-6600	**Eau Claire Truax Head Start Center** 623 Truax Boulevard Eau Claire, WI 54703 715-834-4498	**First Church of the Nazarene** 1921 7th St Eau Claire, WI 54703 715-835-9750
Genesis Child Development Center 418 N Dewey St Eau Claire, WI 54703 715-830-2275	**Good Shepherd Senior Apartments** 3304 14th St Eau Claire, WI 54703 715-834-3587	**Hmong Christian Church** 2749 70th St Eau Claire, WI 54703 715-874-6644
Hope Lutheran Church 2226 Eddy Ln Eau Claire, WI 54703 715-832-1414	**Knights Inn Eau Claire** 6260 Texaco Dr Eau Claire, WI 54703 715-874-6868	**Lakeshore Elementary School** 711 Lake St Eau Claire, WI 54703 715-852-3400
LE Phillips Senior Center 1616 Bellinger St Eau Claire, WI 54703 715-839-4909	**Learning Center** 1721 Westgate Rd Eau Claire, WI 54703 715-598-1819	**Luther Midelfort Hospital** 1221 Whipple St Eau Claire, WI 54703 715-838-3311
Lutheran Church-Good Shepherd 1120 Cedar St Eau Claire, WI 54703 715-834-2959	**Mayo Clinic Health System** 1707 Westgate Rd Eau Claire, WI 54703 715-838-5856	**Paul Bunyan Logging Camp Museum** 1110 E Half Moon Dr Eau Claire, WI 54703 715-835-6200
Plymouth United Church of Christ 2010 Moholt Dr Eau Claire, WI 54703 715-835-5475	**Rachel's Place Early Learning Center** 2226 Eddy Lane Eau Claire, WI 54703 715-832-1414 ext. 2200	**REACH** 2205 Heimstead Rd Eau Claire, WI 54703 715-552-2763
Reach Inc 2205 Heimstead Rd Eau Claire, WI 54703 715-833-7755	**Roosevelt Elementary School** 3010 8th St Eau Claire, WI 54703 715-852-4700	**Sacred Heart St. Patrick Parish** 322 Fulton Street Eau Claire, WI 54703 715-832-0925
Sam Davey Elementary School 3000 Starr Ave Eau Claire, WI 54703 715-852-3200	**Sherman Elementary School** 3110 W Vine St Eau Claire, WI 54703 715-852-4800	**Sleep Inn & Suites Conference Center** 5872 33rd Ave Eau Claire, WI 54703 715-874-2900
St Francis Food Pantry 1221 Truax Blvd Eau Claire, WI 54703 715-839-7706	**St James The Greater Catholic Church** 2502 11th St Eau Claire, WI 54703 715-835-5887	**St. Olaf Catholic Church** 3220 Monroe Street Eau Claire, WI 54703 715-832-2504
Trinity Baptist Church 3431 Fear St Eau Claire, WI 54703	**Truax Congregational United** 1008 S 50th St Eau Claire, WI 54703 715-874-5422	**Unity Christ Center** 1808 Folsom St Eau Claire, WI 54703 715-836-0010

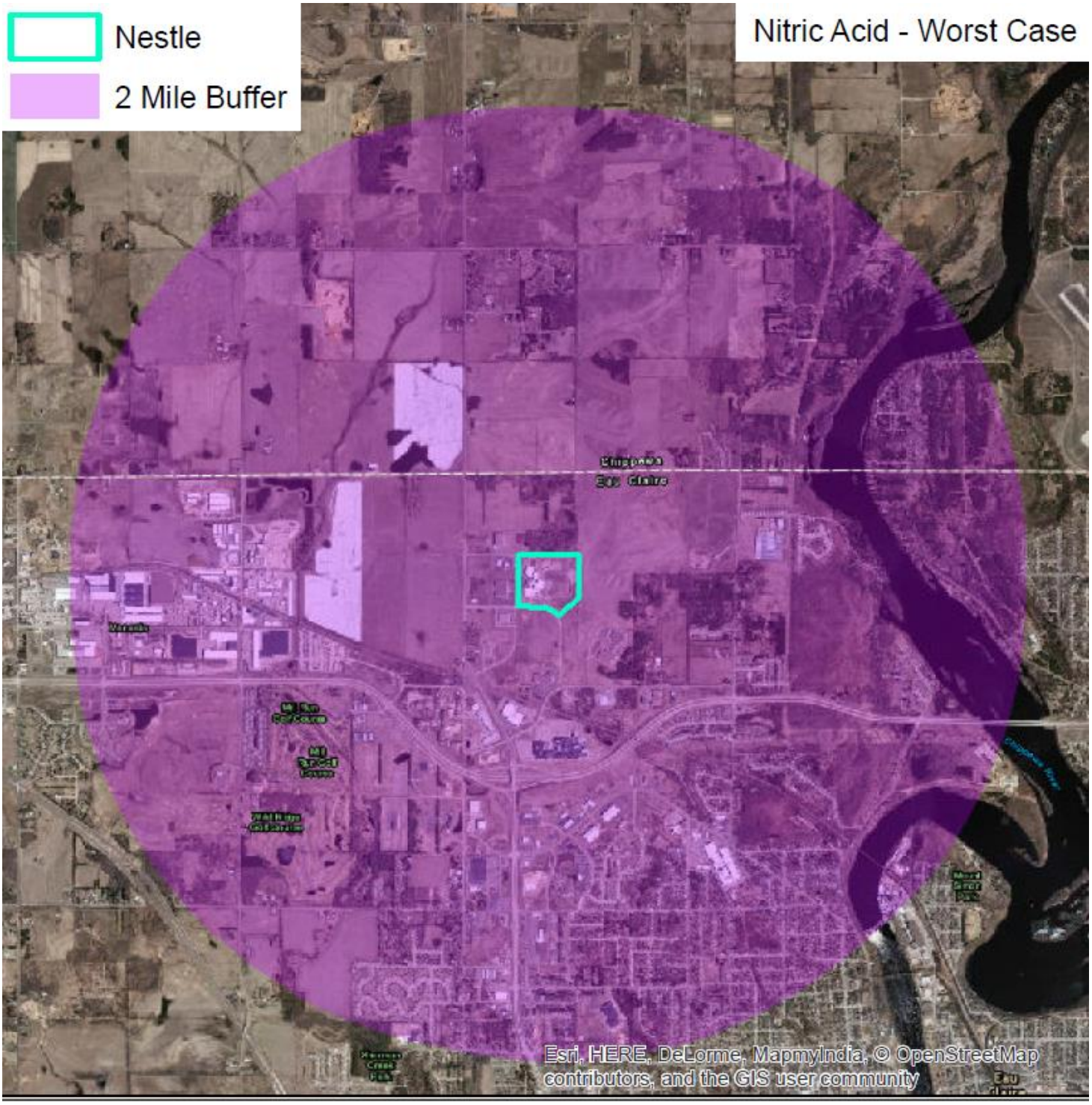
West Ridge Church 3906 Kane Rd Eau Claire, WI 54703 715-834-1930	**Westgate Motel** 1439 Fairmont Ave Eau Claire, WI 54703 715-834-3580	

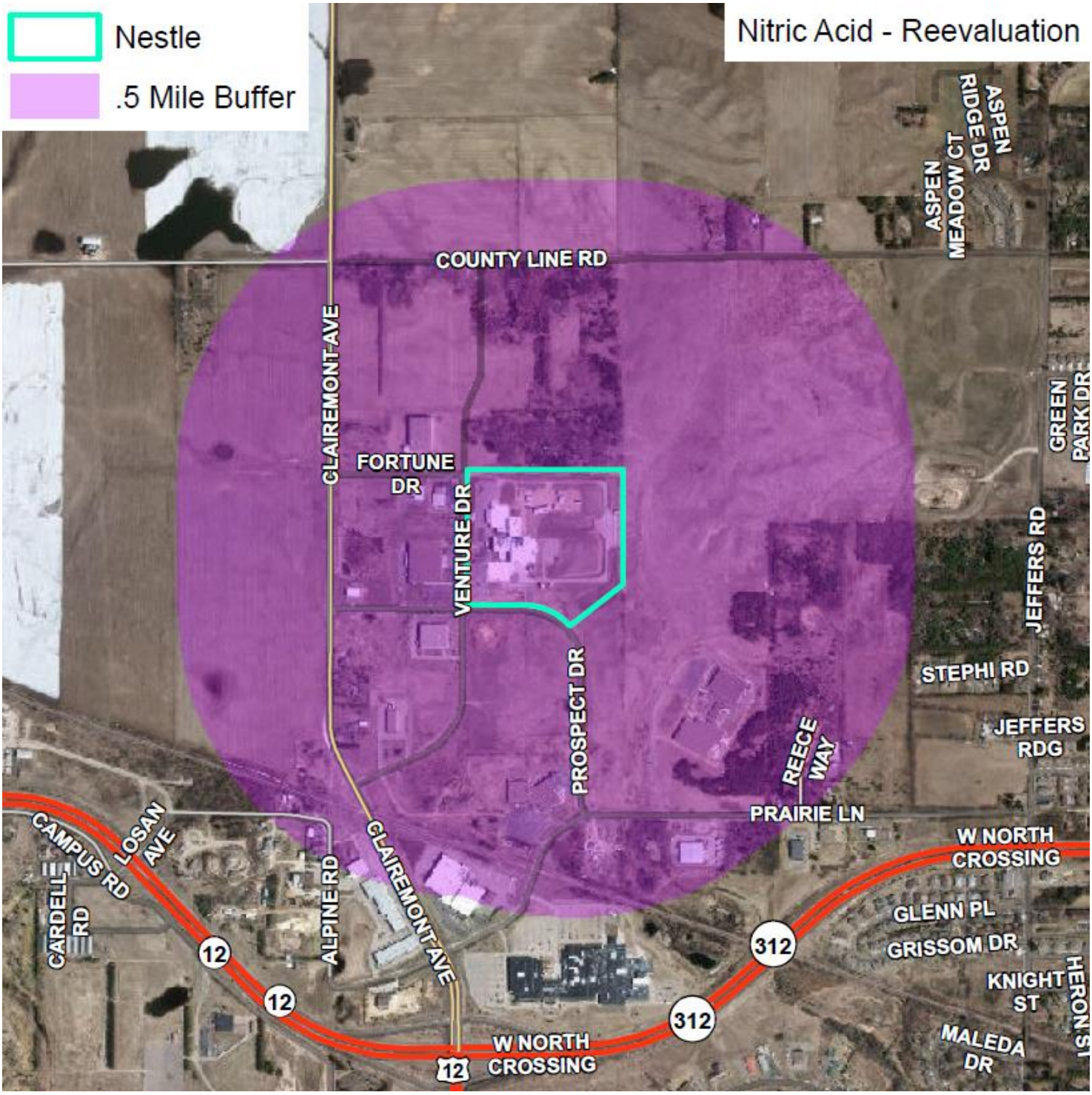
C. Vulnerability Zone Maps

See attached maps


Nestle
3.2 Mile Buffer
Ammonia - Worst Case
Chippewa
Eau Claire
Chippewa
Eau Claire
Menards
Mill
Run Golf
Course
Wild Ridge
Golf Course
Delta
Pond
Eau
Claire
Eau Claire River
Carson
Park
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap
contributors, and the GIS user community


Nestle
.4 Mile Buffer
Ammonia - Reevaluation
COUNTY LINE RD
CLAIREMONT AVE
FORTUNE DR
VENTURE DR
PROSPECT DR
ASPEN MEADOW CT
ASPEN RIDGE DR
GREEN PARK DR
JEFFERS RD
STEPHI RD
JEFFERS RDG
REECE WAY
PRAIRIE LN
W NORTH CROSSING
GLENN PL
GRISSOM DR
KNIGHT ST
HERON ST
MALEDA DR
CAMPUS RD
LOSAN AVE
CARDELL RD
ALPINE RD
12
312


Nestle
2 Mile Buffer
Nitric Acid - Worst Case
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community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STEPHI RD
JEFFERS RD
JEFFERS RDG
GREEN PARK DR
ASPEN RIDGE DR
ASPEN MEADOW CT
W NORTH CROSSING
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CARDELL RD
ALPINE RD
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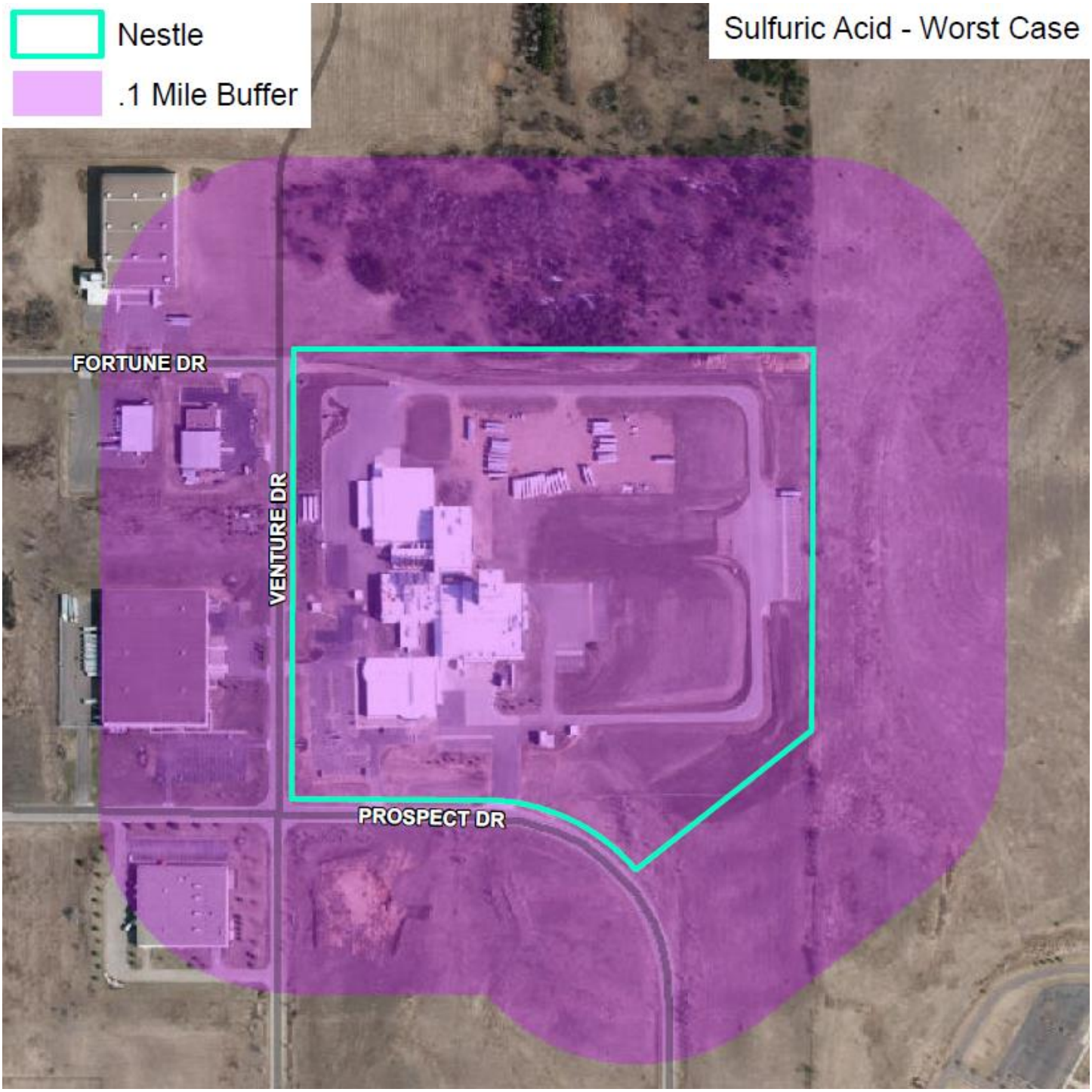
312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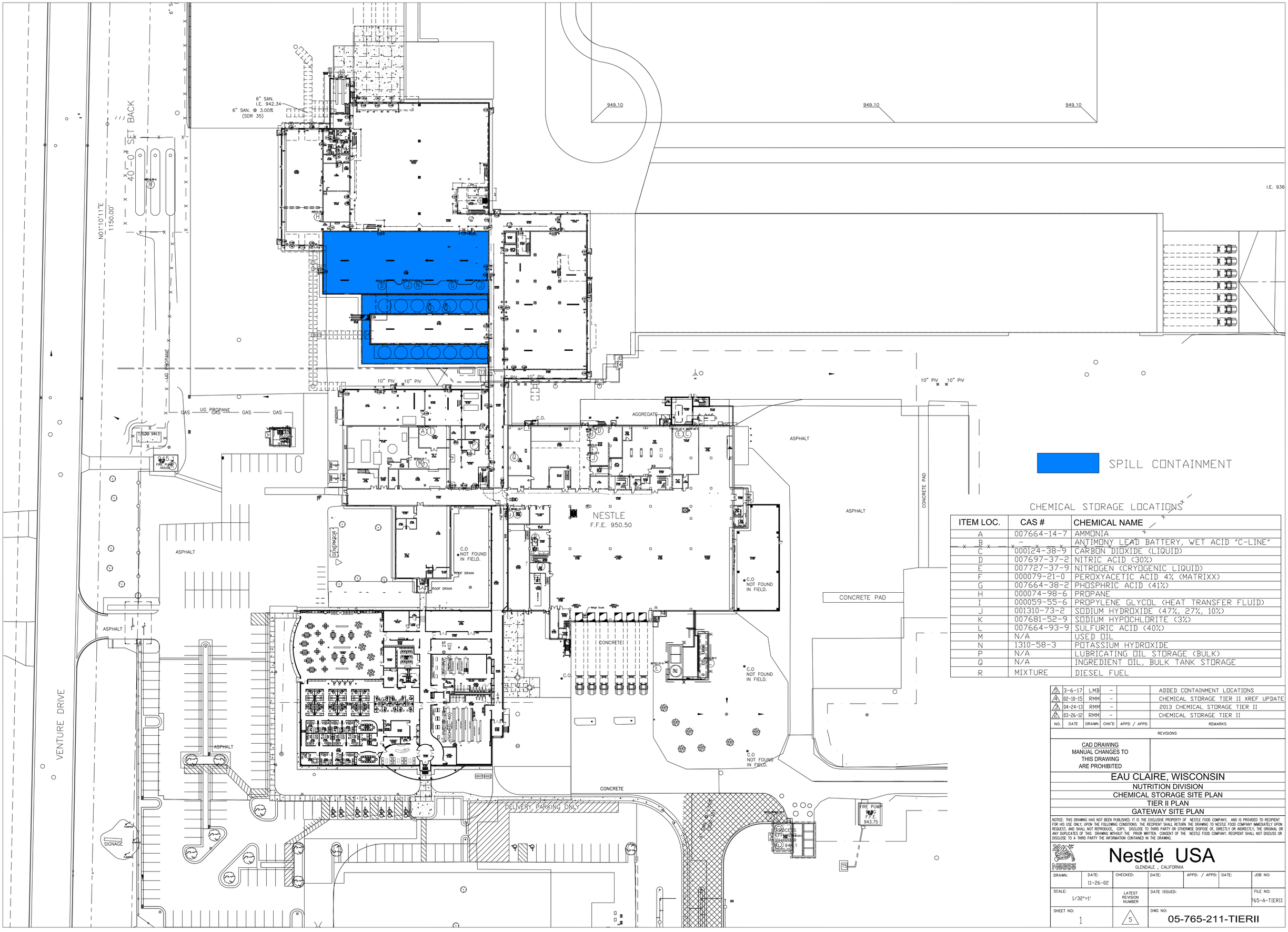
FORTUNE DR
VENTURE DR
PROSPECT DR



CHEMICAL STORAGE LOCATIONS

ITEM LOC.	CAS #	CHEMICAL NAME
A	007664-14-7	AMMONIA
B	–	ANTIMONY LEAD BATTERY, WET ACID "C-LINE"
C	000124-38-9	CARBON DIOXIDE (LIQUID)
D	007697-37-2	NITRIC ACID (30%)
E	007727-37-9	NITROGEN (CRYOGENIC LIQUID)
F	000079-21-0	PEROXYACETIC ACID 4% (MATRIXX)
G	007664-38-2	PHOSPHRIC ACID (41%)
H	000074-98-6	PROPANE
I	000059-55-6	PROPYLENE GLYCOL (HEAT TRANSFER FLUID)
J	001310-73-2	SODIUM HYDROXIDE (47%, 27%, 10%)
K	007681-52-9	SODIUM HYPOCHLORITE (3%)
L	007664-93-9	SULFURIC ACID (40%)
M	N/A	USED OIL
N	1310-58-3	POTASSIUM HYDROXIDE
P	N/A	LUBRICATING OIL STORAGE (BULK)
Q	N/A	INGREDIENT OIL, BULK TANK STORAGE
R	MIXTURE	DIESEL FUEL

NO.	DATE	DRAWN	CHK'D	APPD / APPD	REMARKS
5	3-6-17	LMB	–		ADDED CONTAINMENT LOCATIONS
4	02-10-15	RMM	–		CHEMICAL STORAGE TIER II XREF UPDATE
3	04-24-13	RMM	–		2013 CHEMICAL STORAGE TIER II
2	03-26-12	RMM	–		CHEMICAL STORAGE TIER II

REVISIONS

CAD DRAWING
MANUAL CHANGES TO
THIS DRAWING
ARE PROHIBITED

EAU CLAIRE, WISCONSIN

NUTRITION DIVISION

CHEMICAL STORAGE SITE PLAN

TIER II PLAN

GATEWAY SITE PLAN

Nestlé USA

GLENDALE , CALIFORNIA

DRAWN:	DATE:	CHECKED:	DATE:	APPD: / APPD:	DATE:	JOB NO:
	11-26-02					

SCALE:	LATEST REVISION NUMBER	DATE ISSUED:	FILE NO:
1/32"=1'			765-A-TIERII

SHEET NO:	DWG NO:
1	05-765-211-TIERII

SAFETY DATA SHEET

Ammonia

Airgas
an Air Liquide company

Section 1. Identification

GHS product identifier : Ammonia

Chemical name : ammonia

Other means of identification : ammonia; anhydrous ammonia

Product type : Gas.

Product use : Synthetic/Analytical chemistry.

Synonym : ammonia; anhydrous ammonia

SDS # : 001003

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE GASES - Category 2
GASES UNDER PRESSURE - Liquefied gas
ACUTE TOXICITY (inhalation) - Category 4
SKIN CORROSION - Category 1
SERIOUS EYE DAMAGE - Category 1
AQUATIC HAZARD (ACUTE) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Flammable gas.
May form explosive mixtures with air.
Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.
Harmful if inhaled.
Causes severe skin burns and eye damage.
Very toxic to aquatic life.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Approach suspected leak area with caution.

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing gas. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Collect spillage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.

Storage : Store locked up. Protect from sunlight. Store in a well-ventilated place.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : ammonia

Other means of identification : ammonia; anhydrous ammonia

Product code : 001003

CAS number/other identifiers

CAS number : 7664-41-7

Ingredient name	%	CAS number
ammonia	100	7664-41-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention immediately. Call medical doctor or poison control center immediately.Chemical burns must be treated promptly by a physician.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately. Call medical doctor or poison control center immediately. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Continue to rinse for at least 10 minutes. Get medical attention immediately. Call medical doctor or poison control center immediately. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Section 4. First aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Harmful if inhaled.

Skin contact : Causes severe burns.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:, pain, watering, redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, pain or irritation, redness, blistering may occur

Ingestion : Adverse symptoms may include the following:, stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. This material is very toxic to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Do not breathe gas. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).
Refer to ANSI/CGA G-2.1, Section 5.13 for electrical classification of anhydrous ammonia storage and handling areas. Where anhydrous ammonia is stored indoors, use electrical (ventilating, lighting and material handling) equipment with the appropriate electrical classification rating and use only non-sparking tools.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
ammonia	**California PEL for Chemical Contaminants (*Table AC-1*) (United States).** PEL: 25 ppm 8 hours. STEL: 35 ppm 15 minutes. **ACGIH TLV (United States, 3/2017).** TWA: 25 ppm 8 hours. TWA: 17 mg/m³ 8 hours. STEL: 35 ppm 15 minutes. STEL: 24 mg/m³ 15 minutes. **OSHA PEL 1989 (United States, 3/1989).** STEL: 35 ppm 15 minutes. STEL: 27 mg/m³ 15 minutes. **NIOSH REL (United States, 10/2016).** TWA: 25 ppm 10 hours. TWA: 18 mg/m³ 10 hours. STEL: 35 ppm 15 minutes. STEL: 27 mg/m³ 15 minutes. **OSHA PEL (United States, 6/2016).** TWA: 50 ppm 8 hours. TWA: 35 mg/m³ 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Section 8. Exposure controls/personal protection

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas. [Compressed gas.]

Color : Colorless.

Odor : Pungent.

Odor threshold : Not available.

pH : Approx. 11.6

Melting point : -77.7°C (-107.9°F)

Boiling point : -33°C (-27.4°F)

Critical temperature : 132.85°C (271.1°F)

Flash point : Not available.

Evaporation rate : Not available.

Flammability (solid, gas) : Extremely flammable in the presence of the following materials or conditions: oxidizing materials.

Lower and upper explosive (flammable) limits : Lower: 16%
Upper: 25%

Vapor pressure : 114.1 (psig)

Vapor density : 0.59 (Air = 1)

Specific Volume (ft^3/lb) : 20.79

Gas Density (lb/ft^3) : 0.0481 (32°C / 89.6 to °F)

Relative density : SPECIFIC GRAVITY (AIR=1): @ 70°F (21.1°C) = 0.59

Solubility : Soluble in water. Soluble in alcohol and ether.

Solubility in water : 540 g/l

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : 651°C (1203.8°F)

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Molecular weight : 17.03 g/mole

Aerosol product

Heat of combustion : -18589392 J/kg

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Section 10. Stability and reactivity

Incompatible materials : Oxidizers and Yellow Metals (brass & copper)

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
ammonia	LC50 Inhalation Gas.	Rat	7338 ppm	1 hours

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Harmful if inhaled.

Skin contact : Causes severe burns.

Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:, pain, watering, redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, pain or irritation, redness, blistering may occur

Section 11. Toxicological information

Ingestion : Adverse symptoms may include the following:, stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Other information : IDLH : 300 ppm

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
ammonia	Acute EC50 29.2 mg/l Marine water Acute LC50 2080 µg/l Fresh water Acute LC50 0.53 ppm Fresh water Acute LC50 300 µg/l Fresh water Chronic NOEC 0.204 mg/l Marine water	Algae - Ulva fasciata - Zoea Crustaceans - Gammarus pulex Daphnia - Daphnia magna Fish - Hypophthalmichthys nobilis Fish - Dicentrarchus labrax	96 hours 48 hours 48 hours 96 hours 62 days

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

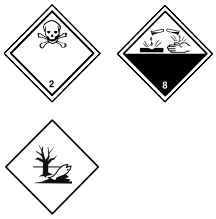
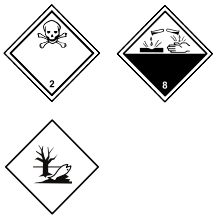
Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1005	UN1005	UN1005	UN1005	UN1005
UN proper shipping name	AMMONIA, ANHYDROUS	AMMONIA, ANHYDROUS; OR ANHYDROUS AMMONIA	AMMONIA, ANHYDROUS	AMMONIA, ANHYDROUS	AMMONIA, ANHYDROUS
Transport hazard class(es)	2.2 	2.3 (8) 	2.3 (8) 	2.3 (8) 	2.3 (8) 
Packing group	-	-	-	-	-
Environmental hazards	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.	Yes.	Yes. The environmentally hazardous substance mark is not required.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification : Inhalation hazard
This product is not regulated as a marine pollutant when transported on inland waterways in sizes of ≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes, provided the packagings meet the general provisions of §§ 173.24 and 173.24a.
Reportable quantity 100 lbs / 45.4 kg. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
Limited quantity Yes.
Quantity limitation Passenger aircraft/rail: Forbidden. Cargo aircraft: Forbidden.
Special provisions 13,T50

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.40-2.42 (Class 8), 2.7 (Marine pollutant mark).
The marine pollutant mark is not required when transported by road or rail.
Explosive Limit and Limited Quantity Index 0
ERAP Index 3000
Passenger Carrying Ship Index Forbidden
Passenger Carrying Road or Rail Index Forbidden

Section 14. Transport information

Special provisions

Mexico Classification : Toxic Inhalation Hazard Zone D

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.

IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.
Quantity limitation Passenger and Cargo Aircraft: Forbidden. Cargo Aircraft Only: Forbidden. Limited Quantities - Passenger Aircraft: Forbidden.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

Clean Water Act (CWA) 311: ammonia

Clean Air Act (CAA) 112 regulated toxic substances: ammonia

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ (lbs)	SARA 302 TPQ (gallons)	SARA 304 RQ (lbs)	SARA 304 RQ (gallons)
ammonia	100	Yes.	500	-	100	-

SARA 304 RQ : 100 lbs / 45.4 kg

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	ammonia	7664-41-7	100
Supplier notification	ammonia	7664-41-7	100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : This material is listed.

Section 15. Regulatory information

New York : This material is listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : **Japan inventory (ENCS)**: This material is listed or exempted.
Japan inventory (ISHL): This material is listed or exempted.

Malaysia : This material is listed or exempted.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Republic of Korea : This material is listed or exempted.

Taiwan : This material is listed or exempted.

Thailand : Not determined.

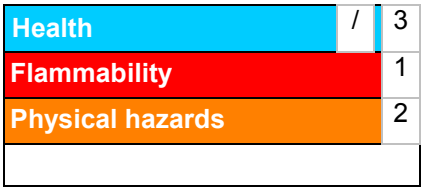
Turkey : This material is listed or exempted.

United States : This material is listed or exempted.

Viet Nam : Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Section 16. Other information

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE GASES - Category 2	Expert judgment
GASES UNDER PRESSURE - Liquefied gas	Expert judgment
ACUTE TOXICITY (inhalation) - Category 4	Expert judgment
SKIN CORROSION - Category 1	Expert judgment
SERIOUS EYE DAMAGE - Category 1	Expert judgment
AQUATIC HAZARD (ACUTE) - Category 1	Expert judgment

History

Date of printing : 1/10/2019

Date of issue/Date of revision : 1/10/2019

Date of previous issue : 10/9/2018

Version : 1.09

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

ENVIROCID

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	ENVIROCID
Other means of identification	:	Not applicable.
Recommended use	:	Cleaning product
Restrictions on use	:	Reserved for industrial and professional use.
Product dilution information	:	0.0 % - 1.6 %
Company	:	Ecolab Co. 5105 Tomken Road Mississauga, Ontario Canada L4W 2X5 1-800-352-5326
Emergency health information	:	1-800-328-0026 (US/Canada), 1-651-222-5352 (outside US)
Issuing date	:	01/31/2019

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Product AS SOLD

Skin corrosion	:	Category 1A
Serious eye damage	:	Category 1

Product AT USE DILUTION

Skin corrosion	:	Category 1A
Serious eye damage	:	Category 1

GHS Label element

Product AS SOLD

Hazard pictograms :

Signal Word	:	Danger
Hazard Statements	:	Causes severe skin burns and eye damage.
Precautionary Statements	:	**Prevention:** Wash skin thoroughly after handling. Wear protective gloves/ protective clothing/ eye protection/ face protection. **Response:** IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician. Wash contaminated clothing before reuse.

Storage:
Store locked up.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Product AT USE DILUTION

Hazard pictograms	:	
Signal Word	:	Danger
Hazard Statements	:	Causes severe skin burns and eye damage.
Precautionary Statements	:	**Prevention:** Wash skin thoroughly after handling. Wear protective gloves/ protective clothing/ eye protection/ face protection. **Response:** IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician. Wash contaminated clothing before reuse. **Storage:** Store locked up. **Disposal:** Dispose of contents/ container to an approved waste disposal plant.

Product AS SOLD

Other hazards	:	Do not mix with bleach or other chlorinated products – will cause chlorine gas.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Product AS SOLD

Pure substance/mixture	:	Mixture

Chemical Name	CAS-No.	Concentration: (%)
Nitric acid	7697-37-2	30 - 60

Product AT USE DILUTION

No hazardous ingredients

Section: 4. FIRST AID MEASURES

Product AS SOLD

In case of eye contact	:	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
In case of skin contact	:	Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed	:	Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.
If inhaled	:	Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.
Protection of first-aiders	:	If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to physician	:	Treat symptomatically.
Most important symptoms and effects, both acute and delayed	:	See Section 11 for more detailed information on health effects and symptoms.

Product AT USE DILUTION

In case of eye contact	:	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
In case of skin contact	:	Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
If swallowed	:	Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.
If inhaled	:	Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Section: 5. FIREFIGHTING MEASURES

Product AS SOLD

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	None known.
Specific hazards during firefighting	:	Not flammable or combustible.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx)
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.
Risk of explosion.	:	Not available.

Section: 6. ACCIDENTAL RELEASE MEASURES

Product AS SOLD

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Product AT USE DILUTION

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Product AS SOLD

Advice on safe handling	:	Do not ingest. Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapours/spray. Use only with adequate ventilation. Wash hands thoroughly after handling. Do not mix with bleach or other chlorinated products – will cause chlorine gas.
Conditions for safe storage	:	Keep away from strong bases. Keep out of reach of children. Store in suitable labeled containers.
Storage temperature	:	-15 °C to 50 °C

Product AT USE DILUTION

Advice on safe handling	:	Do not ingest. Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapours/spray. Use only with adequate ventilation. Wash hands thoroughly after handling.
Conditions for safe storage	:	Keep away from strong bases. Keep out of reach of children. Store in suitable labeled containers.

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Product AS SOLD
Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Nitric acid	7697-37-2	TWA	2 ppm 5.2 mg/m3	CAD AB OEL
		STEL	4 ppm 10 mg/m3	CAD AB OEL
		TWA	2 ppm	CAD BC OEL
		STEL	4 ppm	CAD BC OEL
		VME	2 ppm 5.2 mg/m3	OEL (QUE)
		STEV	4 ppm 10 mg/m3	OEL (QUE)
Nitric acid	7697-37-2	TWA	2 ppm	ACGIH
		STEL	4 ppm	ACGIH
		STEL	4 ppm 10 mg/m3	NIOSH REL
		TWA	2 ppm 5 mg/m3	NIOSH REL
		TWA	2 ppm 5 mg/m3	OSHA Z1

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Wear eye protection/face protection.

Hand protection : Wear the following personal protective equipment:
Standard glove type.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Product AT USE DILUTION
Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Wear eye protection/face protection.

Hand protection : Wear the following personal protective equipment:
Standard glove type.

		Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

		Product AS SOLD	Product AT USE DILUTION
Appearance	:	liquid	liquid
Colour	:	red	light pink
Odour	:	pungent	slight
pH	:	1.2, (100 %)	1.0 - 1.5
Flash point	:	Not applicable.	
Odour Threshold	:	no data available	
Melting point/freezing point	:	no data available	
Initial boiling point and boiling range	:	> 100 °C	
Evaporation rate	:	no data available	
Flammability (solid, gas)	:	no data available	
Upper explosion limit	:	no data available	
Lower explosion limit	:	no data available	
Vapour pressure	:	no data available	
Relative vapour density	:	no data available	
Relative density	:	1.249	
Water solubility	:	no data available	
Solubility in other solvents	:	no data available	
Partition coefficient: n-octanol/water	:	no data available	
Auto-ignition temperature	:	no data available	
Thermal decomposition	:	no data available	
Viscosity, kinematic	:	no data available	
Explosive properties	:	no data available	
Oxidizing properties	:	no data available	
Molecular weight	:	no data available	
VOC	:	no data available	

Section: 10. STABILITY AND REACTIVITY

Product AS SOLD

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous	:	Do not mix with bleach or other chlorinated products – will cause

reactions		chlorine gas.
Conditions to avoid	:	None known.
Incompatible materials	:	Metals Organic materials Bases
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx)

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Product AS SOLD

Eyes	:	Causes serious eye damage.
Skin	:	Causes severe skin burns.
Ingestion	:	Causes digestive tract burns.
Inhalation	:	May cause nose, throat, and lung irritation.
Chronic Exposure	:	Health injuries are not known or expected under normal use.

Product AT USE DILUTION

Eyes	:	Causes serious eye damage.
Skin	:	Causes severe skin burns.
Ingestion	:	Causes digestive tract burns.
Inhalation	:	May cause nose, throat, and lung irritation.
Chronic Exposure	:	Health injuries are not known or expected under normal use.

Experience with human exposure

Product AS SOLD

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Corrosion
Ingestion	:	Corrosion, Abdominal pain
Inhalation	:	Respiratory irritation, Cough

Product AT USE DILUTION

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Corrosion
Ingestion	:	Corrosion, Abdominal pain

Inhalation	:	Respiratory irritation, Cough

Toxicity

Product AS SOLD
Product

Acute oral toxicity	:	no data available
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	no data available
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	no data available
Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Section: 12. ECOLOGICAL INFORMATION

Product AS SOLD
Ecotoxicity

Environmental Effects	:	Harmful to aquatic life.

Product

Toxicity to fish	:	no data available
Toxicity to daphnia and other aquatic invertebrates	:	no data available
Toxicity to algae	:	no data available

Components

Toxicity to fish	:	Nitric acid 96 h LC50: 72 mg/l

Persistence and degradability

Product AS SOLD
Not applicable - inorganic

Product AT USE DILUTION
Not applicable - inorganic

Bioaccumulative potential

no data available

Mobility in soil

no data available

Other adverse effects

no data available

Section: 13. DISPOSAL CONSIDERATIONS

Product AS SOLD

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers. Dispose of in accordance with local, state, and federal regulations.

Product AT USE DILUTION

Disposal methods	:	Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers. Dispose of in accordance with local, state, and federal regulations.

Section: 14. TRANSPORT INFORMATION

Product AS SOLD

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (TDG)

UN number	:	2031
Description of the goods	:	NITRIC ACID
Class	:	8
Packing group	:	II
Environmentally hazardous	:	No

Sea transport (IMDG/IMO)

UN number	:	2031
Description of the goods	:	NITRIC ACID
Class	:	8
Packing group	:	II
Marine pollutant	:	No

Section: 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the HPR and the SDS contains all of the information required by the HPR.

The components of this product are reported in the following inventories:

United States TSCA Inventory :
On TSCA Inventory

Canadian Domestic Substances List (DSL) :
All components of this product are on the Canadian DSL.

Australia. Industrial Chemical (Notification and Assessment) Act :
On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand :
On the inventory, or in compliance with the inventory

Japan. ENCS - Existing and New Chemical Substances Inventory :
On the inventory, or in compliance with the inventory

Japan. ISHL - Inventory of Chemical Substances (METI) :
not determined

Korea. Korean Existing Chemicals Inventory (KECI) :
On the inventory, or in compliance with the inventory

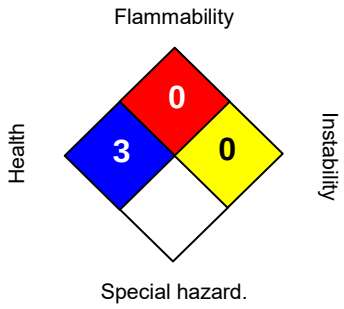
Philippines Inventory of Chemicals and Chemical Substances (PICCS) :
On the inventory, or in compliance with the inventory

China Inventory of Existing Chemical Substances :
On the inventory, or in compliance with the inventory

Section: 16. OTHER INFORMATION

Product AS SOLD

NFPA:



HMIS III:

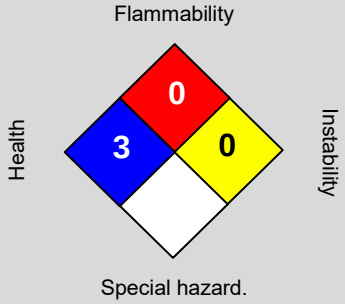
HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Product AT USE DILUTION

ENVIROCID

NFPA:



HMIS III:

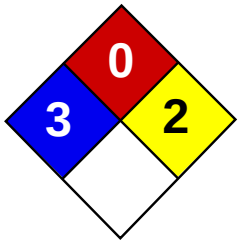
HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Issuing date	:	01/31/2019
Version	:	1.1
Prepared by	:	Regulatory Affairs 1-800-352-5326

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.



Material Safety Data Sheet
Sulfuric acid MSDS

Section 1: Chemical Product and Company Identification

Product Name: Sulfuric acid

Catalog Codes: SLS2539, SLS1741, SLS3166, SLS2371, SLS3793

CAS#: 7664-93-9

RTECS: WS5600000

TSCA: TSCA 8(b) inventory: Sulfuric acid

CI#: Not applicable.

Synonym: Oil of Vitriol; Sulfuric Acid

Chemical Name: Hydrogen sulfate

Chemical Formula: H2-SO4

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sulfuric acid	7664-93-9	95 - 98

Toxicological Data on Ingredients: Sulfuric acid: ORAL (LD50): Acute: 2140 mg/kg [Rat.]. VAPOR (LC50): Acute: 510 mg/m 2 hours [Rat]. 320 mg/m 2 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, of inhalation. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA. Classified A2 (Suspected for human.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged

contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion:
Products of combustion are not available since material is non-flammable. However, products of decompostion include fumes of oxides of sulfur. Will react with water or steam to produce toxic and corrosive fumes. Reacts with carbonates to generate carbon dioxide gas. Reacts with cyanides and sulfides to form poisonous hydrogen cyanide and hydrogen sulfide respectively.

Fire Hazards in Presence of Various Substances: Combustible materials

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of oxidizing materials.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
Metal acetylides (Monocesium and Monorubidium), and carbides ignite with concentrated sulfuric acid. White Phosphorous + boiling Sulfuric acid or its vapor ignites on contact. May ignite other combustible materials. May cause fire when sulfuric acid is mixed with Cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phorphorous (III) oxide, and oxidizing agents such as chlorates, halogens, permanganates.

Special Remarks on Explosion Hazards:
Mixturesofsulfuricacidandanyofthefollowingcanexplode:p-nitrotoluene,pentasilver trihydroxydiaminophosphate, perchlorates, alcohols with strong hydrogen peroxide, ammonium tetraperoxychromate, mercuric nitrite, potassium chlorate, potassium permanganate with potassium chloride, carbides, nitro compounds, nitrates, carbides, phosphorous, iodides, picratres, fulminats, dienes, alcohols (when heated) Nitramide decomposes explosively on contact with concentrated sulfuric acid. 1,3,5-Trinitrosohexahydro-1,3,5-triazine + sulfuric acid causes explosive decompositon.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

Storage:
Hygroscopic. Reacts. violently with water. Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 23°C (73.4°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 1 STEL: 3 (mg/m3) [Australia] Inhalation TWA: 1 (mg/m3) from OSHA (PEL) [United States] Inhalation TWA: 1 STEL: 3 (mg/m3) from ACGIH (TLV) [United States] [1999] Inhalation TWA: 1 (mg/m3) from NIOSH [United States] Inhalation TWA: 1 (mg/m3) [United Kingdom (UK)]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Thick oily liquid.)

Odor: Odorless, but has a choking odor when hot.

Taste: Marked acid taste. (Strong.)

Molecular Weight: 98.08 g/mole

Color: Colorless.

pH (1% soln/water): Acidic.

Boiling Point:
270°C (518°F) - 340 deg. C Decomposes at 340 deg. C

Melting Point: -35°C (-31°F) to 10.36 deg. C (93% to 100% purity)

Critical Temperature: Not available.

Specific Gravity: 1.84 (Water = 1)

Vapor Pressure: Not available.

Vapor Density: 3.4 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility:
Easily soluble in cold water. Sulfuric is soluble in water with liberation of much heat. Soluble in ethyl alcohol.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability:
Conditions to Avoid: Incompatible materials, excess heat, combustible material materials, organic materials, exposure to moist air or water, oxidizers, amines, bases. Always add the acid to water, never the reverse.

Incompatibility with various substances:
Reactive with oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture.

Corrosivity:
Extremely corrosive in presence of aluminum, of copper, of stainless steel(316). Highly corrosive in presence of stainless steel(304). Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Hygroscopic. Strong oxidizer. Reacts violently with water and alcohol especially when water is added to the product. Incompatible (can react explosively or dangerously) with the following: ACETIC ACID, ACRYLIC ACID, AMMONIUM HYDROXIDE, CRESOL, CUMENE, DICHLOROETHYL ETHER, ETHYLENE CYANOHYDRIN, ETHYLENEIMINE, NITRIC ACID, 2-NITROPROPANE, PROPYLENE OXIDE, SULFOLANE, VINYLIDENE CHLORIDE, DIETHYLENE GLYCOL MONOMETHYL ETHER, ETHYL ACETATE, ETHYLENE CYANOHYDRIN, ETHYLENE GLYCOL MONOETHYL ETHER ACETATE, GLYOXAL, METHYL ETHYL KETONE, dehydrating agents, organic materials, moisture (water), Acetic anhydride, Acetone, cyanohydrin, Acetone+nitric acid, Acetone + potassium dichromate, Acetonitrile, Acrolein, Acrylonitrile, Acrylonitrile +water, Alcohols + hydrogen peroxide, ally compounds such as Allyl alcohol, and Allyl Chloride, 2-Aminoethanol, Ammonium hydroxide, Ammonium triperchromate, Aniline, Bromate + metals, Bromine pentafluoride, n-Butyraldehyde, Carbides, Cesium acetylene carbide, Chlorates, Cyclopentanone oxime, chlorinates, Chlorates + metals, Chlorine trifluoride, Chlorosulfonic acid, 2-cyano-4-nitrobenzenediazonium hydrogen sulfate, Cuprous nitride, p-chloronitrobenzene, 1,5-Dinitronaphthlene +

sulfur, Diisobutylene, p-dimethylaminobenzaldehyde, 1,3-Diazidobenzene, Dimethylbenzylcarbinol + hydrogen peroxide, Epichlorohydrin, Ethyl alcohol + hydrogen peroxide, Ethylene diamine, Ethylene glycol and other glycols, , Ethylenimine, Fulminates, hydrogen peroxide, Hydrochloric acid, Hydrofluoric acid, Iodine heptafluoride, Indane + nitric acid, Iron, Isoprene, Lithium silicide, Mercuric nitride, Mesityl oxide, Mercury nitride, Metals (powdered), Nitromethane, Nitric acid + glycerides, p-Nitrotoluene, Pentasilver trihydroxydiaminophosphate, Perchlorates, Perchloric acid, Permanganates + benzene, 1-Phenyl-2-methylpropyl alcohol + hydrogen peroxide, Phosphorus, Phosphorus isocyanate, Picrates, Potassium tert-butoxide, Potassium chlorate, Potassium Permanganate and other permanganates, halogens, amines, Potassium Permanganate + Potassium chloride, Potassium Permanganate + water, Propiolactone (beta)-, Pyridine, Rubidium aceteylene carbide, Silver permanganate, Sodium, Sodium carbonate, sodium hydroxide, Steel, styrene monomer, toluene + nitric acid, Vinyl acetate, Thalium (I) azidodithiocarbonate, Zinc chlorate, Zinc Iodide, azides, carbonates, cyanides, sulfides, sulfites, alkali hydrides, carboxylic acid anhydrides, nitriles, olefinic organics, aqueous acids, cyclopentadiene, cyano-alcohols, metal acetylides, Hydrogen gas is generated by the action of the acid on most metals (i.e. lead, copper, tin, zinc, aluminum, etc.). Concentrated sulfuric acid oxidizes, dehydrates, or sulfonates most organic compounds.

Special Remarks on Corrosivity:
Non-corrosive to lead and mild steel, but dillute acid attacks most metals. Attacks many metals releasing hydrogen. Minor corrosive effect on bronze. No corrosion data on brass or zinc.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2140 mg/kg [Rat.]. Acute toxicity of the vapor (LC50): 320 mg/m3 2 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA. Classified A2 (Suspected for human.) by ACGIH. May cause damage to the following organs: kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes, teeth.

Other Toxic Effects on Humans:
Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (corrosive), of ingestion, .

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
Mutagenicity: Cytogenetic Analysis: Hamster, ovary = 4mmol/L Reproductive effects: May cause adverse reproductive effects based on animal data. Developmental abnormalities (musculoskeletal) in rabbits at a dose of 20 mg/m3 for 7 hrs.(RTECS) Teratogenecity: neither embryotoxic, fetoxic, nor teratogenetic in mice or rabbits at inhaled doses producing some maternal toxicity

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes severe skin irritation and burns. Continued contact can cause tissue necrosis. Eye: Causes severe eye irritation and burns. May cause irreversible eye injury. Ingestion: Harmful if swallowed. May cause permanent damage to the digestive tract. Causes gastrointestial tract burns. May cause perforation of the stomach, GI bleeding, edema of the glottis, necrosis and scarring, and sudden circulatory collapse(similar to acute inhalation). It may also cause systemic toxicity with acidosis. Inhalation: May cause severe irritation of the respiratory tract and mucous membranes with sore throat, coughing, shortness of breath, and delayed lung edema. Causes chemical burns to the repiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Cause corrosive action on mucous membranes. May affect cardiovascular system (hypotension, depressed cardiac output, bradycardia). Circulatory collapse with clammy skin, weak and rapid pulse, shallow respiration, and scanty urine may follow. Circulatory shock is often the immediate cause of death. May also affect teeth(changes in teeth and supporting structures - erosion, discoloration). Chronic Potential Health Effects: Inhalation: Prolonged or repeated inhalation may affect behavior (muscle contraction or spasticity), urinary system (kidney damage), and cardiovascular system, heart (ischemic heart leisons), and respiratory system/lungs(pulmonary edema, lung damage), teeth (dental discoloration, erosion). Skin: Prolonged or repeated skin contact may cause dermatitis, an allergic skin reaction.

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 49 mg/l 48 hours [bluegill/sunfish].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Sulfuric acid may be placed in sealed container or absorbed in vermiculite, dry sand, earth, or a similar material. It may also be diluted and neutralized. Be sure to consult with local or regional authorities (waste regulators) prior to any disposal. Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Sulfuric acid UNNA: 1830 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Illinois toxic substances disclosure to employee act: Sulfuric acid New York release reporting list: Sulfuric acid Rhode Island RTK hazardous substances: Sulfuric acid Pennsylvania RTK: Sulfuric acid Minnesota: Sulfuric acid Massachusetts RTK: Sulfuric acid New Jersey: Sulfuric acid California Director's List of Hazardous Substances (8 CCR 339): Sulfuric acid Tennessee RTK: Sulfuric acid TSCA 8(b) inventory: Sulfuric acid SARA 302/304/311/312 extremely hazardous substances: Sulfuric acid SARA 313 toxic chemical notification and release reporting: Sulfuric acid CERCLA: Hazardous substances.: Sulfuric acid: 1000 lbs. (453.6 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R35- Causes severe burns. S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S30- Never add water to this product. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 2

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 2

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References:
-Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.

Other Special Considerations: Not available.

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CAMEO Chemicals

Chemical Datasheet

SULFURIC ACID

Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	CHRIS Code
7664-93-9	1830	Corrosive	SFA

NFPA 704

Diamond	Hazard	Value	Description
0 3 2 W	Health	3	Can cause serious or permanent injury.
	Flammability	0	Will not burn under typical fire conditions.
	Instability	2	Readily undergoes violent chemical changes at elevated temperatures and pressures.
	Special	W	Reacts violently or explosively with water.

(NFPA, 2010)

General Description

Sulfuric acid is a colorless oily liquid. It is soluble in water with release of heat. It is corrosive to metals and tissue. It will char wood and most other organic matter on contact, but is unlikely to cause a fire. Density 15 lb / gal. Long term exposure to low concentrations or short term exposure to high concentrations can result in adverse health effects from inhalation. It is used to make fertilizers and other chemicals, in petroleum refining, in iron and steel production, and for many other uses.

Rate of onset: Immediate

Persistence: Hours, days

Odor threshold:

Source/use/other hazard: Battery/dyes/paper/glue/metals industries; volcanic gas; toxic fumes when heated.

Hazards

Reactivity Alerts

⚠ Strong Oxidizing Agent
⚠ Known Catalytic Activity
⚠ Water-Reactive

Air & Water Reactions

Reaction with water is negligible unless acid strength is above 80-90% then heat from hydrolysis is extreme, may cause severe burns [Merck, 11th ed. 1989]. During sulfonation of mononitrobenzene by fuming sulfuric acid, a leak from an internal cooling coil permitted water to enter the reaction tank. A violent eruption occurred due to the heat of solution [MCA Case History 944 1963].

Fire Hazard

It is highly reactive and capable of igniting finely-divided combustible materials on contact. When heated, it emits highly toxic fumes. Avoid heat; water and organic materials. Sulfuric acid is explosive or incompatible with an enormous array of substances. Can undergo violent chemical change at elevated temperatures and pressure. May react violently with water. When heated, it emits highly toxic fumes. Hazardous polymerization may not occur. (EPA, 1998)

Health Hazard

Corrosive to all body tissues. Inhalation of vapor may cause serious lung damage. Contact with eyes may result in total loss of vision. Skin contact may produce severe necrosis. Fatal amount for adult: between 1 teaspoonful and one-half ounce of the concentrated chemical. Even a few drops may be fatal if the acid gains access to the trachea. Chronic exposure may cause tracheobronchitis, stomatitis, conjunctivitis, and gastritis. Gastric perforation and peritonitis may occur and may be followed by circulatory collapse. Circulatory shock is often the immediate cause of death. Those with chronic respiratory, gastrointestinal, or nervous diseases and any eye and skin diseases are at greater risk. (EPA, 1998)

Reactivity Profile

SULFURIC ACID is strongly acidic. Reacts violently with bromine pentafluoride [Mellor 2 Supp. 1:172 1956]. Exploded with para-nitrotoluene at 80°C [Chem. Eng. News 27:2504]. An explosion occurred when concentrated sulfuric acid was mixed with crystalline potassium permanganate in a vessel containing moisture. Manganese heptoxide was formed, which explodes at 70°C [Delhez 1967]. A mixture of acrylonitrile with concentrated sulfuric acid must be kept well chilled, otherwise a vigorous exothermic reaction occurs [Chem. Safety Data Sheet SD-31:8. 1949]. Mixing sulfuric acid (96%) in equal portions with any of the following substances in a closed container caused the temperature and pressure to increase: acetonitrile, acrolein, 2-aminoethanol, ammonium hydroxide (28%), aniline, n-butyraldehyde, chlorosulfonic acid, ethylene diamine, ethyleneimine, epichlorohydrin, ethylene cyanohydrin, hydrochloric acid (36%), hydrofluoric acid (48.7%), propiolactone, propylene oxide, sodium hydroxide, styrene monomer [NFPA 1991]. Sulfuric acid (concentrated) is extremely hazardous in contact with carbides, bromates, chlorates, fulminates, picrates, and powdered metals [Haz. Chem. Data 1966]. Allyl chloride may polymerize violently under conditions involving an acid catalyst, such as sulfuric acid [Ventrone 1971]. React exothermically with sodium hypochlorite to produce chlorine gas. Mixing chlorosulfuric acid and 98% sulfuric acid may evolve HCl [Subref: Anon, Loss Prev. Bull. 1977, (013), 2-3]. Zinc iodide reacts violently with H_2SO_4. (Pascal, 1962, Vol. 5, 168).

Belongs to the Following Reactive Group(s)

- Acids, Strong Oxidizing

Potentially Incompatible Absorbents

Use caution: Liquids with this reactive group classification have been known to react with the absorbents listed below.

- Cellulose-Based Absorbents
- Expanded Polymeric Absorbents

Response Recommendations

Isolation and Evacuation

Excerpt from GUIDE 137 [Substances - Water-Reactive - Corrosive]:

As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

SPILL: Increase, in the downwind direction, as necessary, the isolation distance shown above.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2016)

Firefighting

Fight fire from safe distance or from protected location. Use care as water applied directly to this acid results in evolution of heat and causes spattering. Cool containers that are exposed to flames with streams of water until fire is out. Wear positive pressure breathing apparatus and special protective clothing.

Not flammable. For small fires use dry chemical or carbon dioxide. Use water on combustibles burning in vicinity of this material. For large fires flood fire area with water from a distance. Do not get solid streams of water on material. Move container from area if you can do so without risk. (EPA, 1998)

Non-Fire Response

Excerpt from GUIDE 137 [Substances - Water-Reactive - Corrosive]:

Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if you can do it without risk. Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

SMALL SPILL: Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal. Prevent entry into waterways, sewers, basements or confined areas. (ERG, 2016)

Protective Clothing

Skin: Wear appropriate personal protective clothing to prevent skin contact.

Eyes: Wear appropriate eye protection to prevent eye contact.

Wash skin: The worker should immediately wash the skin when it becomes contaminated.

Remove: Work clothing that becomes wet or significantly contaminated should be removed and replaced.

Change: No recommendation is made specifying the need for the worker to change clothing after the work shift.

Provide: Eyewash fountains should be provided (when concentration is >1%) in areas where there is any possibility that workers could be exposed to the substance; this is irrespective of the recommendation involving

the wearing of eye protection. Facilities for quickly drenching the body should be provided (when concentration is >1%) within the immediate work area for emergency use where there is a possibility of exposure. [Note: It is intended that these facilities provide a sufficient quantity or flow of water to quickly remove the substance from any body areas likely to be exposed. The actual determination of what constitutes an adequate quick drench facility depends on the specific circumstances. In certain instances, a deluge shower should be readily available, whereas in others, the availability of water from a sink or hose could be considered adequate.] (NIOSH, 2003)

DuPont Tychem® Suit Fabrics

Normalized Breakthrough Times (in Minutes)

Chemical	CAS Number	State	QC	SL	TF	TP	C3	BR	LV	RC	TK	RF
Sulfuric acid	7664-93-9	Liquid	>480	>480	>480	50	>480	>480	>480	>480	>480	>480
Sulfuric acid (18%)	7664-93-9	Liquid										
Sulfuric acid (30%)	7664-93-9	Liquid				>480						
Sulfuric acid (50%)	7664-93-9	Liquid				>480						

> indicates greater than.
A blank cell indicates the fabric has not been tested. The fabric may or may not offer barrier.

Special Warnings from DuPont

1. Serged and bound seams are degraded by some hazardous liquid chemicals, such as strong acids, and should not be worn when these chemicals are present.

2. CAUTION: This information is based upon technical data that DuPont believes to be reliable. It is subject to revision as additional knowledge and experience are gained. DuPont makes no guarantee of results and assumes no obligation or liability...

(DuPont, 2016)

First Aid

Caution: Sulfuric acid is extremely corrosive. Caution is advised.

Signs and Symptoms of Acute Sulfuric Acid Exposure: Signs and symptoms of acute ingestion of sulfuric acid may be severe and include salivation, intense thirst, difficulty in swallowing, pain, and shock. Oral, esophageal, and stomach burns are common. Vomitus generally has a coffee-ground appearance. The potential for circulatory collapse is high following ingestion of sulfuric acid. Acute inhalation exposure may result in sneezing, hoarseness, choking, laryngitis, dyspnea (shortness of breath), respiratory tract irritation, and chest pain. Bleeding of nose and gums, ulceration of the nasal and oral mucosa, pulmonary edema, chronic bronchitis, and pneumonia may also occur. If the eyes have come in contact with sulfuric acid, irritation, pain, swelling, corneal erosion, and blindness may result. Dermal exposure may result in severe burns, pain, and dermatitis (red, inflamed skin).

Emergency Life-Support Procedures: Acute exposure to sulfuric acid may require decontamination and life support for the victims. Emergency personnel should wear protective clothing appropriate to the type and degree of contamination. Air-purifying or supplied-air respiratory equipment should also be worn, as necessary. Rescue vehicles should carry supplies such as plastic sheeting and disposable plastic bags to assist in preventing spread of contamination.

Inhalation Exposure:
1. Move victims to fresh air. Emergency personnel should avoid self-exposure to sulfuric acid.

2. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.
3. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.
4. RUSH to a health care facility.

Dermal/Eye Exposure:
1. Remove victims from exposure. Emergency personnel should avoid self- exposure to sulfuric acid.
2. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.
3. Remove contaminated clothing as soon as possible.
4. If eye exposure has occurred, eyes must be flushed with lukewarm water for at least 15 minutes.
5. Wash exposed skin areas THOROUGHLY with soap and water.
6. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.
7. RUSH to a health care facility.

Ingestion Exposure:
1. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.
2. Rinse mouth with large amounts of water. Instruct victims not to swallow the water.
3. DO NOT induce vomiting or attempt to neutralize!
4. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.
5. Activated charcoal is of no value.
6. Give the victims water or milk: children up to 1 year old, 125 mL (4 oz or 1/2 cup); children 1 to 12 years old, 200 mL (6 oz or 3/4 cup); adults, 250 mL (8 oz or 1 cup). Water or milk should be given only if victims are conscious and alert.
7. RUSH to a health care facility. (EPA, 1998)

Physical Properties

Chemical Formula: H2SO4

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: Not flammable (USCG, 1999)

Melting Point: 50.65 ° F (EPA, 1998)

Vapor Pressure: 1 mm Hg at 294.8 ° F (EPA, 1998)

Vapor Density (Relative to Air): 3.4 (EPA, 1998)

Specific Gravity: 1.841 (EPA, 1998)

Boiling Point: 554 ° F at 760.0 mm Hg (EPA, 1998)

Molecular Weight: 98.08 (EPA, 1998)

Water Solubility: Miscible (NIOSH, 2003)

IDLH: 15 mg/m3 (NIOSH, 2003)

AEGLs (Acute Exposure Guideline Levels)

Interim AEGLs for Sulfuric acid (7664-93-9)

Exposure Period	AEGL-1	AEGL-2	AEGL-3
10 minutes	0.2 mg/m3	8.7 mg/m3	270 mg/m3
30 minutes	0.2 mg/m3	8.7 mg/m3	200 mg/m3
60 minutes	0.2 mg/m3	8.7 mg/m3	160 mg/m3
4 hours	0.2 mg/m3	8.7 mg/m3	110 mg/m3
8 hours	0.2 mg/m3	8.7 mg/m3	93 mg/m3

(NAC/NRC, 2016)

ERPGs (Emergency Response Planning Guidelines)

Chemical	ERPG-1	ERPG-2	ERPG-3
Sulfuric Acid (Oleum [8014-95-7], Sulfur Trioxide [7446-11-9], and Sulfuric Acid [7664-93-9])	2 mg/m3 ✪	10 mg/m3	120 mg/m3

✪ indicates that odor should be detectable near ERPG-1.

(AIHA, 2015)

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Sulfuric acid (7664-93-9)	0.2 mg/m3	8.7 mg/m3	160 mg/m3

(SCAPA, 2016)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Sulfuric acid	7664-93-9	1000 pounds	1000 pounds	1000 pounds			
Sulfuric acid (aerosol forms only)	7664-93-9	1000 pounds	1000 pounds	1000 pounds	313		

(EPA List of Lists, 2015)

DHS Chemical Facility Anti-Terrorism Standards (CFATS)

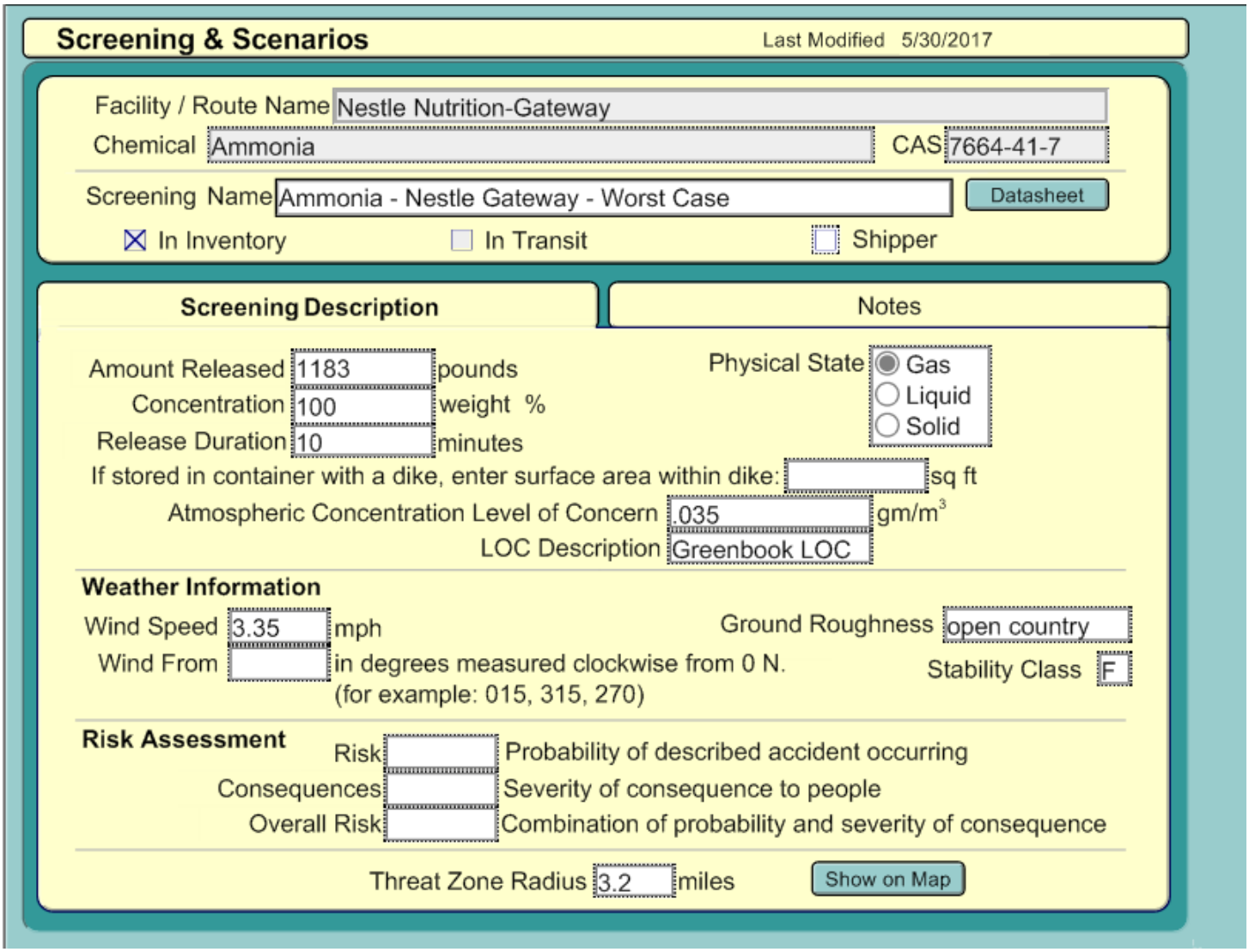
No regulatory information available.

Alternate Chemical Names

- BATTERY ACID
- BOV

- CHAMBER ACID
- CONTACT ACID
- DIHYDROGEN SULFATE
- DIPPING ACID
- FERTILIZER ACID
- HYDROGEN SULFATE
- MATTING ACID
- NORDHAUSEN ACID
- OIL OF VITRIOL
- SPENT SULFURIC ACID
- SPIRIT OF SULFUR
- SULFURIC ACID
- SULFURIC ACID (AEROSOL FORMS ONLY)
- SULFURIC ACID (AQUEOUS)
- SULFURIC ACID, WITH MORE THAN 51% ACID
- SULPHURIC ACID
- SULPHURIC ACID, WITH MORE THAN 51% ACID
- VITRIOL BROWN OIL

APPENDIX 3 - CAMEO CALCULATIONS



Screening & Scenarios Last Modified 5/30/2017

Facility / Route Name: Nestle Nutrition-Gateway

Chemical: Ammonia CAS: 7664-41-7

Screening Name: Ammonia - Nestle Gateway - Worst Case [Datasheet]

☒ In Inventory ☐ In Transit ☐ Shipper

Screening Description | Notes

Amount Released: 1183 pounds

Concentration: 100 weight %

Release Duration: 10 minutes

Physical State: (•) Gas ( ) Liquid ( ) Solid

If stored in container with a dike, enter surface area within dike: sq ft

Atmospheric Concentration Level of Concern: .035 gm/m^3

LOC Description: Greenbook LOC

Weather Information

Wind Speed: 3.35 mph

Wind From: in degrees measured clockwise from 0 N. (for example: 015, 315, 270)

Ground Roughness: open country

Stability Class: F

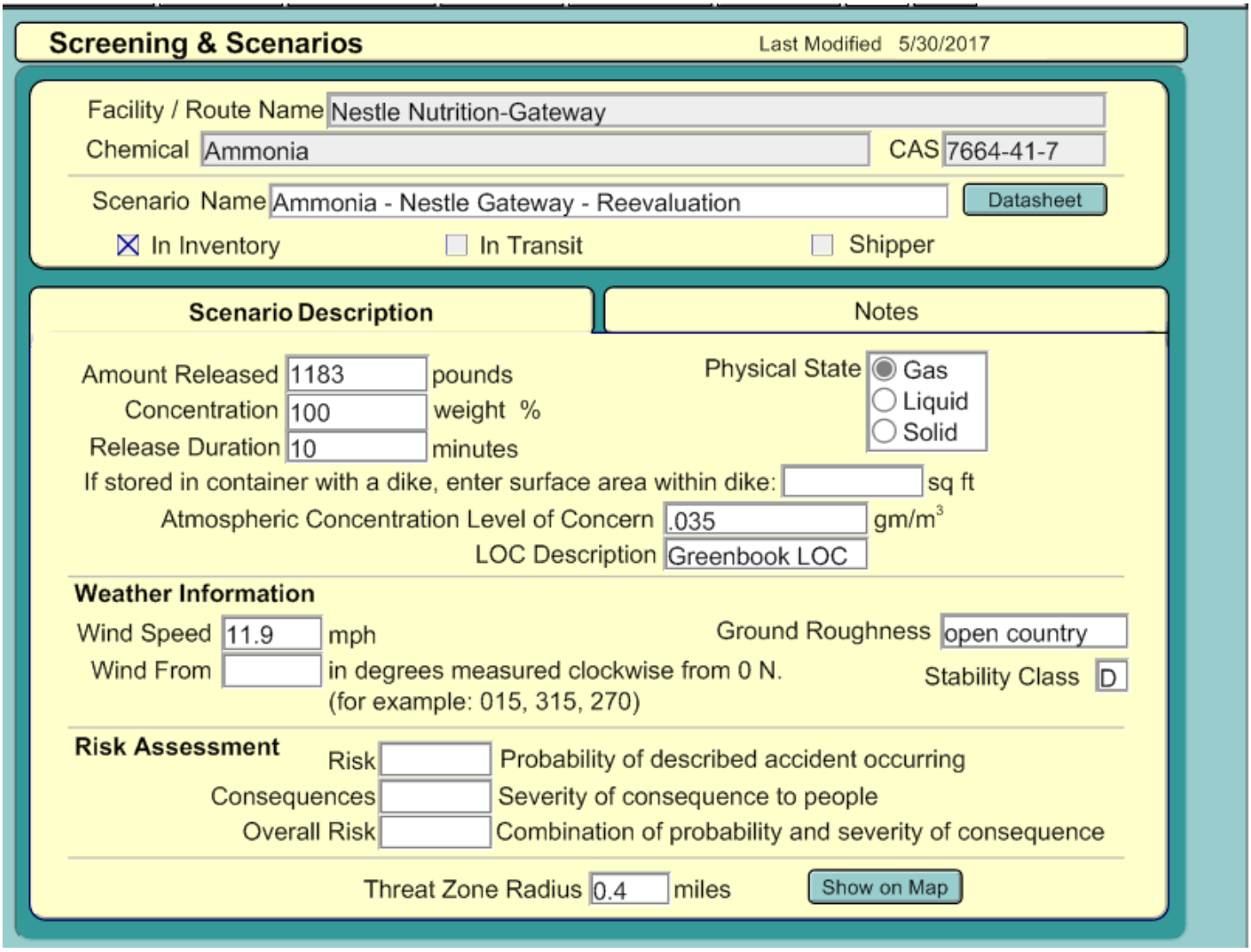
Risk Assessment

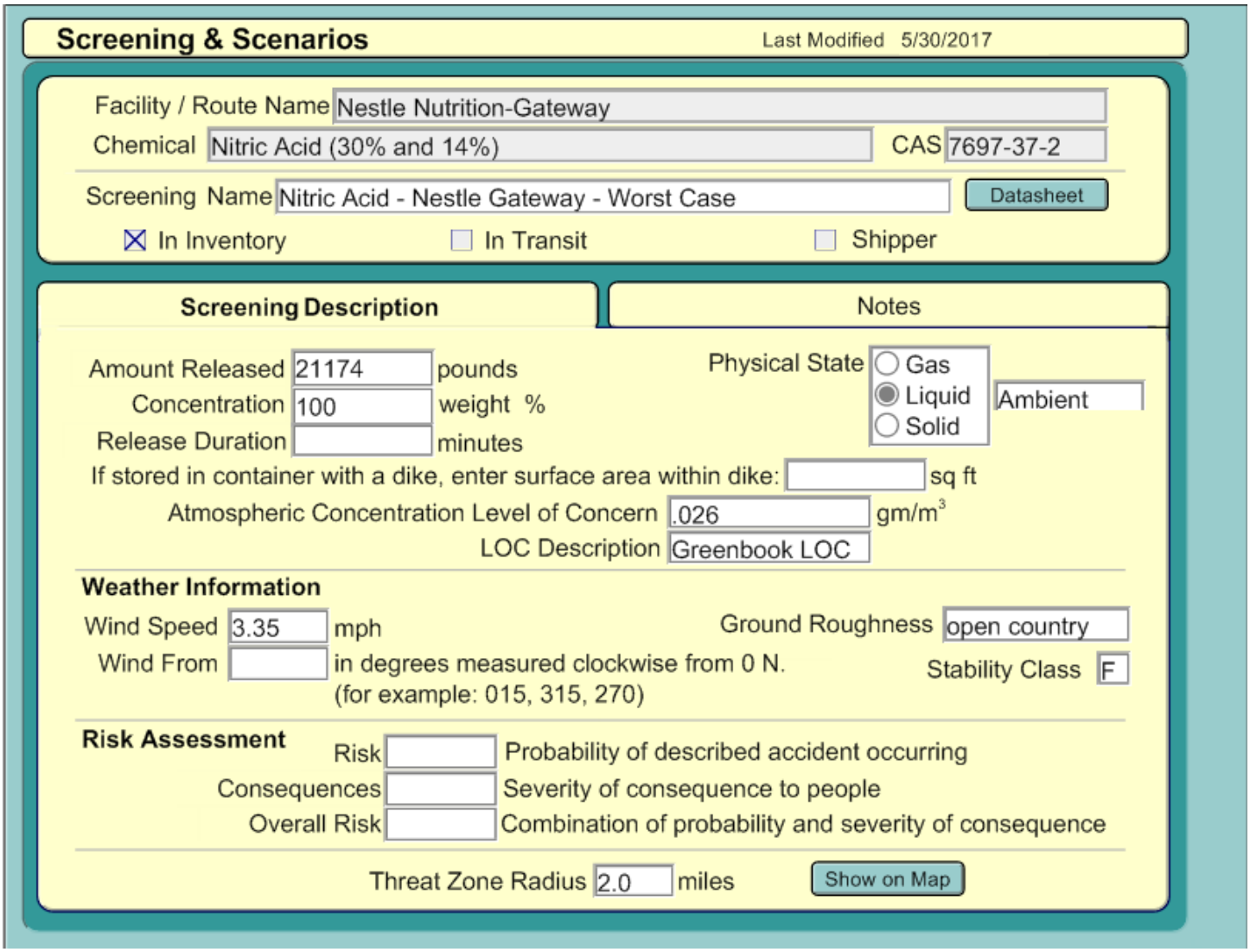
Risk: Probability of described accident occurring

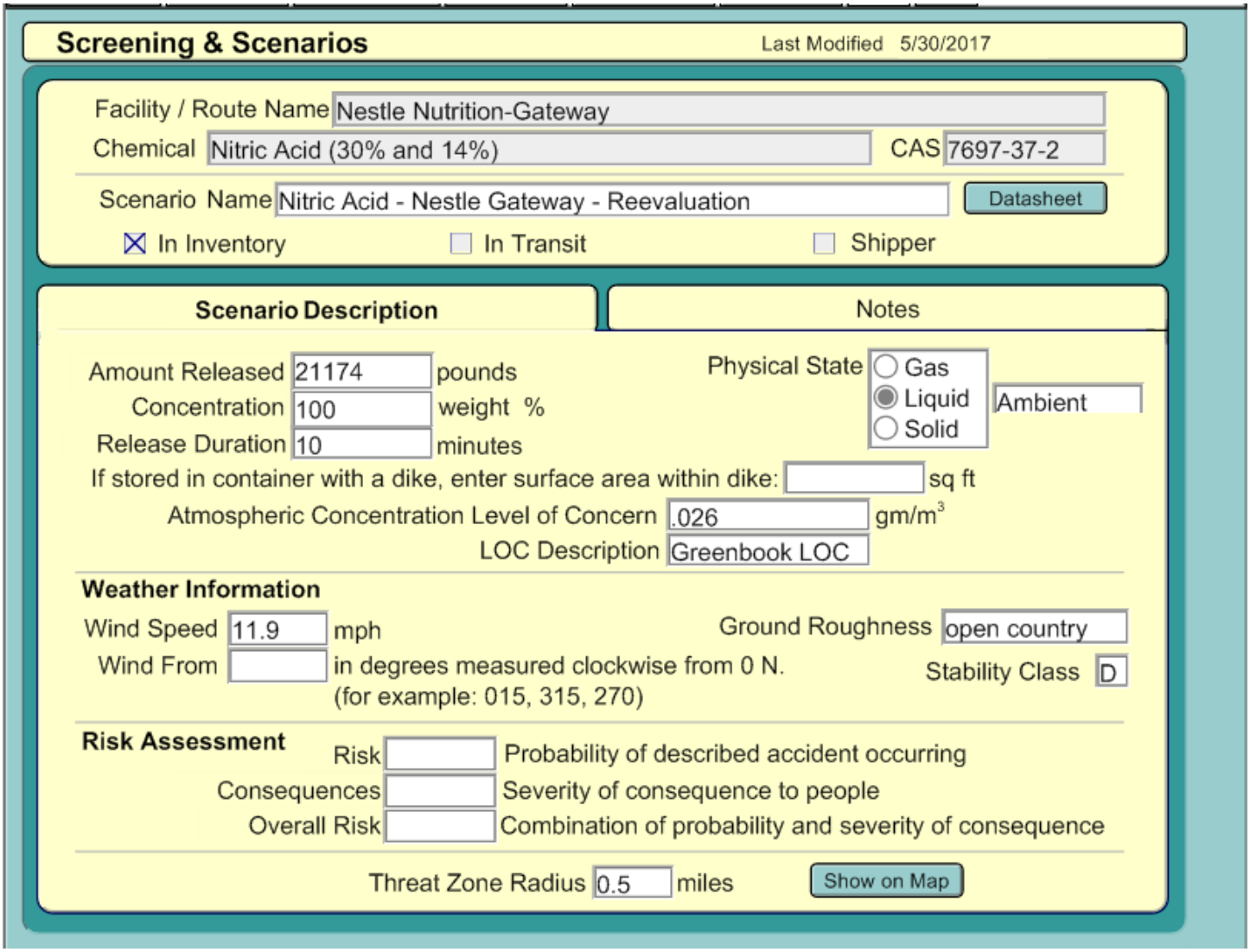
Consequences: Severity of consequence to people

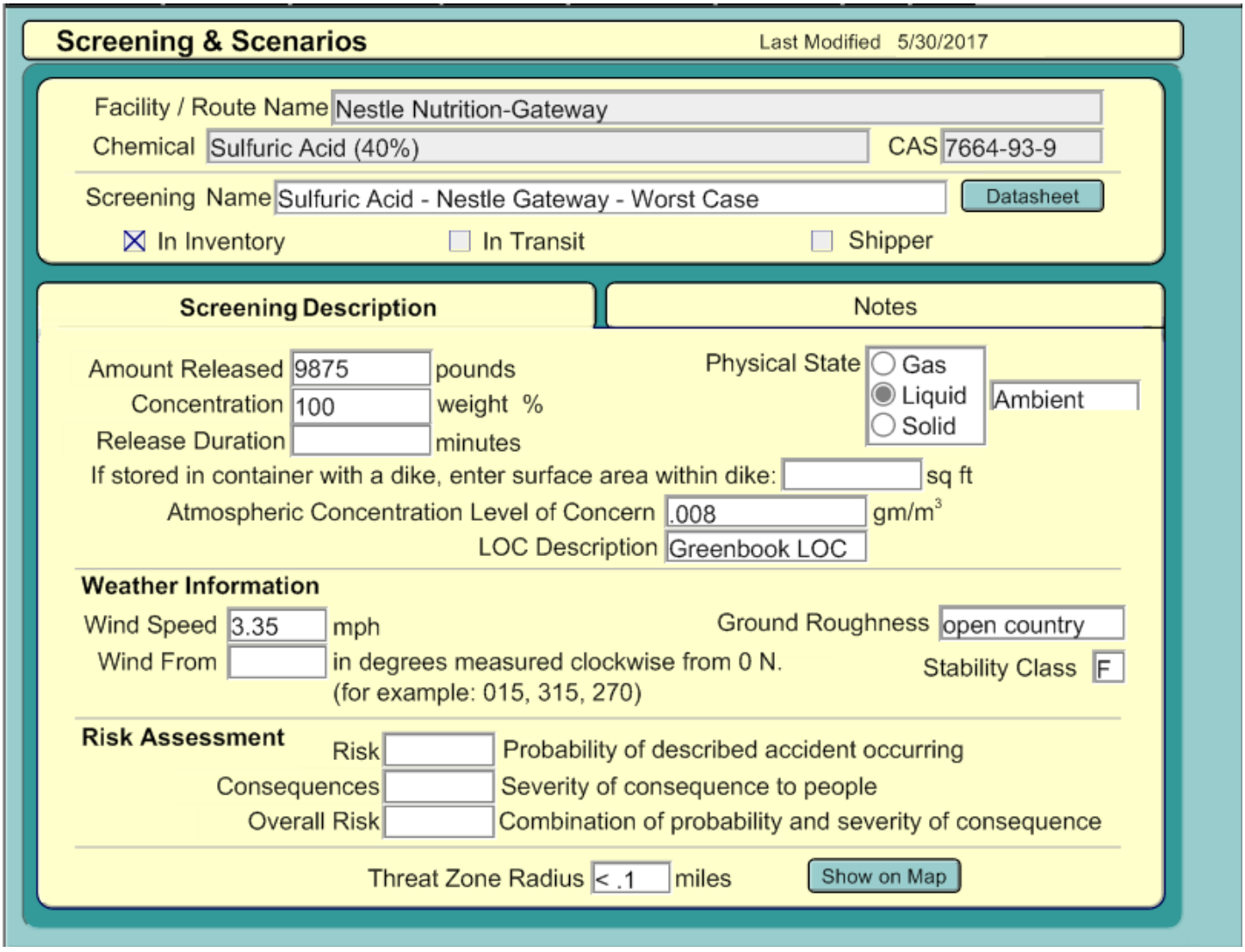
Overall Risk: Combination of probability and severity of consequence

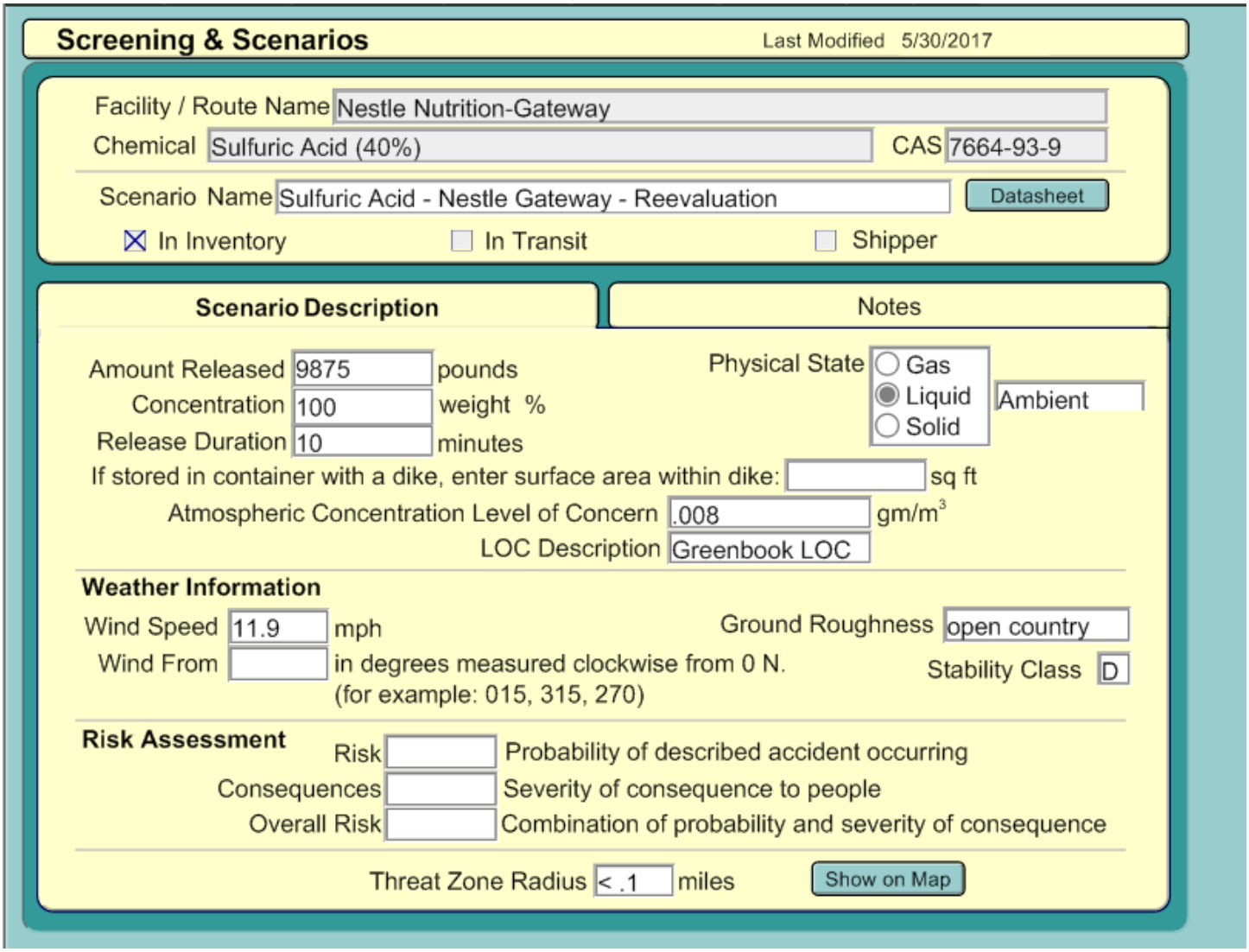
Threat Zone Radius: 3.2 miles [Show on Map]


Screening & Scenarios
Last Modified 5/30/2017
Facility / Route Name Nestle Nutrition-Gateway
Chemical Ammonia
CAS 7664-41-7
Scenario Name Ammonia - Nestle Gateway - Reevaluation
Datasheet
In Inventory
In Transit
Shipper
Scenario Description
Notes
Amount Released 1183 pounds
Concentration 100 weight %
Release Duration 10 minutes
Physical State Gas Liquid Solid
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .035 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 11.9 mph
Ground Roughness open country
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Stability Class D
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius 0.4 miles
Show on Map


Screening & Scenarios
Last Modified 5/30/2017
Facility / Route Name Nestle Nutrition-Gateway
Chemical Nitric Acid (30% and 14%)
CAS 7697-37-2
Screening Name Nitric Acid - Nestle Gateway - Worst Case
Datasheet
In Inventory
In Transit
Shipper
Screening Description
Notes
Amount Released 21174 pounds
Concentration 100 weight %
Release Duration minutes
Physical State Gas Liquid Solid
Ambient
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .026 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 3.35 mph
Ground Roughness open country
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Stability Class F
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius 2.0 miles
Show on Map


Screening & Scenarios
Last Modified 5/30/2017
Facility / Route Name Nestle Nutrition-Gateway
Chemical Nitric Acid (30% and 14%)
CAS 7697-37-2
Scenario Name Nitric Acid - Nestle Gateway - Reevaluation
Datasheet
In Inventory
In Transit
Shipper
Scenario Description
Notes
Amount Released 21174 pounds
Concentration 100 weight %
Release Duration 10 minutes
Physical State Gas Liquid Solid
Ambient
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .026 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 11.9 mph
Ground Roughness open country
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Stability Class D
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius 0.5 miles
Show on Map


Screening & Scenarios
Last Modified 5/30/2017
Facility / Route Name Nestle Nutrition-Gateway
Chemical Sulfuric Acid (40%)
CAS 7664-93-9
Screening Name Sulfuric Acid - Nestle Gateway - Worst Case
Datasheet
In Inventory
In Transit
Shipper
Screening Description
Notes
Amount Released 9875 pounds
Concentration 100 weight %
Release Duration minutes
Physical State Gas Liquid Solid
Ambient
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .008 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 3.35 mph
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Ground Roughness open country
Stability Class F
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius < .1 miles
Show on Map


Screening & Scenarios
Last Modified 5/30/2017
Facility / Route Name Nestle Nutrition-Gateway
Chemical Sulfuric Acid (40%)
CAS 7664-93-9
Scenario Name Sulfuric Acid - Nestle Gateway - Reevaluation
Datasheet
In Inventory
In Transit
Shipper
Scenario Description
Notes
Amount Released 9875 pounds
Concentration 100 weight %
Release Duration 10 minutes
Physical State Gas Liquid Solid
Ambient
If stored in container with a dike, enter surface area within dike:
sq ft
Atmospheric Concentration Level of Concern .008 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 11.9 mph
Ground Roughness open country
Wind From
in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Stability Class D
Risk Assessment
Risk
Probability of described accident occurring
Consequences
Severity of consequence to people
Overall Risk
Combination of probability and severity of consequence
Threat Zone Radius < .1 miles
Show on Map

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN

TRANSMITTAL FORM AND REVIEW GUIDE

COUNTY: Eau Claire

NEW ☐ UPDATE ☑ FINAL UPDATE ☐

Facility ID No. : 161165

Facility Name: Sam's Club #8185

Facility Address: 4001 Gateway Dr, Eau Claire, Wisconsin 54701

STATEMENT OF PLANNING PROCESS

This plan has been prepared in accordance with state and local requirements and is ready to be made a part of the County Emergency Operations Plan (EOP) / Emergency Response Plan (ERP) upon Wisconsin Emergency Management (WEM) / State Emergency Response Commission (SERC) acceptance. This plan meets the facility off-site planning guidance as established by WEM / SERC. Acceptance of this plan is for planning purposes and does not verify facility compliance with the requirements of EPCRA.

FACILITY SIGNATURES:

I have reviewed the attached plan and to the best of my knowledge, all facility information is true, accurate, and complete. The plan is consistent with facility emergency plans and procedures**.**

_____ 3/19/2020

Facility Coordinator Date

COUNTY SIGNATURES

I have reviewed the attached plan and to the best of my knowledge, all information is true, accurate, and complete.

_____ _____

County Local Emergency Planning Committee Chair Date

_____ _____

County Emergency Management Director Date

WEM / SERC ACCEPTANCE:

This plan has been reviewed and meets the off-site planning guidance as established by WEM / SERC.

_____ _____

WEM Regional Director Date

NOTE: Facility Off-Site Plan Review Guide attached: Yes ☑ No ☐

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN

TRANSMITTAL FORM AND REVIEW GUIDE

COUNTY: Eau Claire

NEW ☐ UPDATE ☑ FINAL UPDATE ☐

Facility ID No. : 161165

Facility Name: Sam's Club #8185

Facility Address: 4001 Gateway Dr, Eau Claire, Wisconsin 54701

FACILITY OFF-SITE PLAN REVIEW GUIDE

EPCRA Facility Off-Site Plan Elements		Page Number Reference
1)	The facility identification with address.	4
2)	Facility Coordinator / Alternate Coordinator	4
3)	Extremely Hazardous Substances (EHS) chemicals Identified with CAS numbers and maximum amount	4
4)	Primary emergency responders identified	6
5)	Support and resources available from facility	4
6)	General Information / Assumptions (Disclaimer)	6 - 7
7)	Hazard analysis summary	5
8)	Special facilities affected	7
9)	Population protection	7
10)	Special considerations	6
11)	Site Plan / Facility Layout	9 (Appendix 1)

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN

TRANSMITTAL FORM AND REVIEW GUIDE

COUNTY: Eau Claire

NEW ☐ UPDATE ☑ FINAL UPDATE ☐

Facility lD No. : 161165

Facility Name: Sam's Club #8185

Facility Address: 4001 Gateway Dr, Eau Claire, Wisconsin 54701

12) Distribution list:

Facility

Fire Department of jurisdiction

Wisconsin Emergency Management- Region Office

Designated Hazmat team

County Emergency Management Office

Adjacent County Emergency Management Office when impacted by vulnerability zone

13) Required Attachments

A.	Vulnerability Zone map highlighting special facilities	8
B.	Safety Data Sheet (SDS) for each EHS	10 - 13 (Appendix 2)
C.	Vulnerability Zone Calculations	14 - 15 (Appendix 3)
D.	Transportation route(s) map	None

Sam's Club
Facility Off-Site
Emergency Response Plan

Facility #161165
Sam's Club #8185
4001 Gateway Dr
Eau Claire, Wisconsin 54701

Eau Claire County Office of Emergency Management
721 Oxford Avenue
Suite 3344
Eau Claire, Wisconsin 54703

TABLE OF CONTENTS

RECORD OF CHANGES

Change	Date Changed	Change Made By
First Revision	2/5/18	T. Esh
Revised	3/16	J. Allen
Review and update	3/20	S. Simmons

SECTION 1: FACILITY INFORMATION

A. Address

Sam's Club #8185
4001 Gateway Dr
Eau Claire, Wisconsin 54701

B. Facility ID

161165

C. Map

D. Emergency Contacts

<u>Primary:</u>
Sarah Hinton
Phone: 715-836-9585
24 Hour: 479-204-3911
cassie.clark@walmart.com

<u>Secondary:</u>
Walmart Alarm Central
Phone: 971-678-8111
24 Hour: 479-204-3911
samsclubt2@endeavourehs.com

E. Extremely Hazardous Substances

Sulfuric Acid Chemical ID: 140415 CAS: 7664939 **ERG: Guide 137**	**Inventory:** Max Daily Amount (lbs): 2095 Ave. Daily Amount (lbs): 2095 Number of days on site: 365	**Storage:** Battery Location: Electrical Room, Battery Charging Station, Inside building

F. Hazardous Substances

Not applicable

G. Resources/Support Available

Spill containment kits are on-scene with personnel trained in their use. These kits include acid absorbent and neutralization material.

H. Hazard Analysis

Sam's Club is a membership-only warehouse chain that sells bulk groceries, electronics, and home goods. There are an average of fifty (50) employees on site at all times with the maximum number of occupants being 2,900. The size of the building is over 100,000 square feet. Sulfuric Acid is used in lead-acid batteries. The total quantity of lead-acid batteries is 26,191 lbs. With the mix of 8% sulfuric acid, this leaves a max daily amount of 2,095 lbs of Sulfuric Acid. In the screening scenario the evacuation radius for sulfuric acid is less than 0.1 mile.

The hazard analysis determined this sulfuric acid to be the major chemical hazard present at the facility. It is used in the lead-acid batteries which are used for mix purposes facility-wide. A leak of sulfuric acid in the store would be detected by on-site store staff. If a leak were to be detected, staff would alert company personnel so they could take appropriate action. On site, strobes and siren annunciate the detected release of a chemical. Approximately 2,095 pounds of sulfuric acid are reported on site. The modeled evacuation area is based on worst case scenario for sulfuric acid (2,095 lbs.) ten minutes after a catastrophic failure of the batteries. This is the amount of material used in the worst-case scenario.

The greatest potential for release would be the failure of batteries which contain the greatest volume of material.

The worst case scenario criteria are:
Neutral Air Stability (Class F)
Night Time
Open Country
3.35 mph wind
1/10 IDLH (Immediately Dangerous to Life and Health) concentration
Rapid release of maximum quantity of chemical in a single vessel (10 min.)

The evacuation radius, as calculated by CAMEO software for a 2,095-pound sulfuric acid release, was determined to be less than 0.1 miles. It is estimated that 288 people (162 housing units) may be affected by the release.

Reevaluation of a 2,095-pound release of sulfuric acid using more realistic variables in the CAMEO model yields an evacuation radius of less than 0.1 miles. The population in this area is estimated to be the same as above.

The reevaluation scenario criteria are:
Neutral Air Stability (Class D)
Open Country
11.9 mph wind
1/10 IDLH (Immediately Dangerous to Life and Health) concentration
10 minute release of maximum quantity of chemical in a single vessel

I. Access to Facility

The facility is open and staffed Monday – Friday 10:00 a.m. – 8:30 p.m.; Saturday 9:00 a.m. – 8:30 p.m.; and Sunday 10:00 a.m. – 6:00 p.m.

SECTION 2: OUTSIDE RESOURCES

A. Primary Response Agencies

Fire:	**EMS:**	**Law:**	**Emergency Management:**
Eau Claire Fire Dept. 216 S. Dewey St Eau Claire, WI 54701 Phone: 715-839-5012	Eau Claire Fire Department 216 S. Dewey St Eau Claire, WI 54701 Phone: 715-839-5012	Eau Claire Police Department 721 Oxford Avenue Suite 1400 Eau Claire, WI 54703 Phone: 715-839-4972	Eau Claire Office of Emergency Management 721 Oxford Avenue Suite 3344 Eau Claire, WI 54703 Phone: 715-839-4736

B. Hazardous Materials Response Teams

Eau Claire County has a Level B hazardous materials response team. For Level B response, the local Fire Chief notifies the Level B team of a response needed through the Eau Claire County Emergency Communications Center. For Type 1 responses by the Type 1 Regional Hazardous Materials Response Team, requests shall be made through the WEM Duty officer by the county Emergency Management Director.

C. Other Outside Assistance

See the County-Wide Hazardous Materials Strategic Plan for a listing of resources.

SECTION 3: POPULATION/ENVIRONMENTAL PROTECTION

A. Shelter-In-Place

The lead time for a hazardous materials incident may be very short. As a result, there may not be time enough for safe evacuation, especially when extremely toxic chemical fumes are involved. An evacuation under these considerations may expose the population to dangerous toxic chemicals and the decision may be made to shelter-in-place. Preferred areas for protective sheltering would be interior hallways, rooms without windows or exterior doors, enclosed stairways and rooms on the side of the building away from where the hazard is approaching. Doors, windows, and other potential air leaks should be sealed up to prevent toxic fumes from entering.

B. Evacuation

Experience indicated that shelter space would need to be provided for only 30% of the population within the initial isolation and evacuation zones and the remaining 70% would seek shelter with family and friends outside the risk zone. All public schools listed are eligible evacuation shelters.

C. Nearby Shelters

Not applicable

SECTION 4: VULNERABILITY ZONES

A. General Information and Assumptions

The vulnerability zones set forth in the Plan are based on the EPA Technical Guidance for Hazards Analysis. The zones are based on a credible worst-case scenario and identify the potential area for impact should an air-borne release of a single EHS chemical occur.

The vulnerability zones are NOT intended to be used as a guide for population protection in fire-related incidents. Fire incidents were considered in the development of this plan and the plan provides basic information about the facility for first responders to employ. However, in an actual fire situation at this facility,

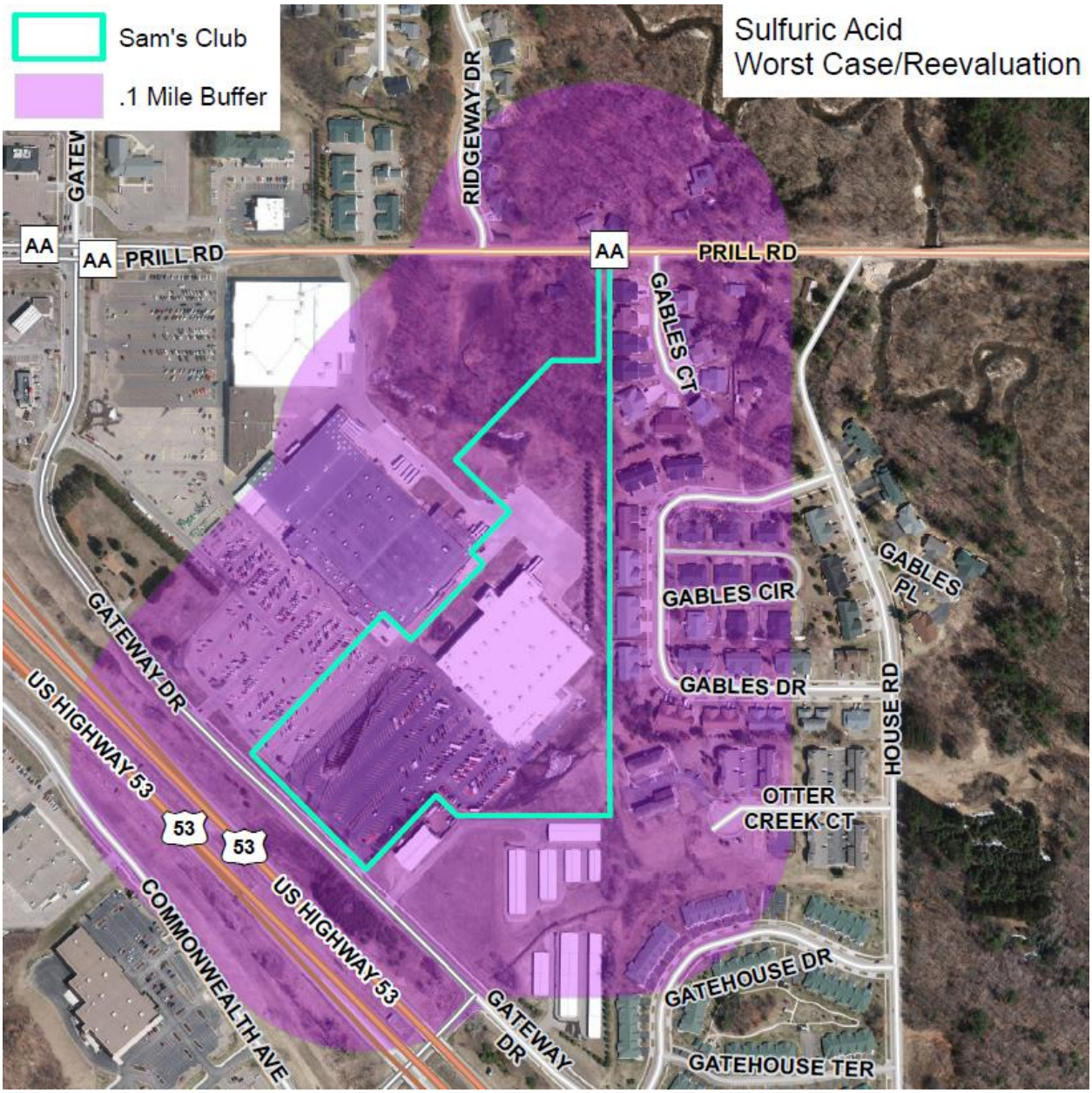
the Incident commander is strongly recommended to reference the fire department own individual agency pre-emergency plans and standard operating procedures as well as the county's Emergency Operations Plan – Annex K: Fire and Rescue, as they may relate to this facility when making decisions at an incident involving fire.

Further, fire departments that would respond to an incident at this facility are strongly encouraged to meet with facility representatives to determine ways to minimize an event at the facility and to determine what additional information and factors should be taken into consideration in the event of a fire, should one occur.

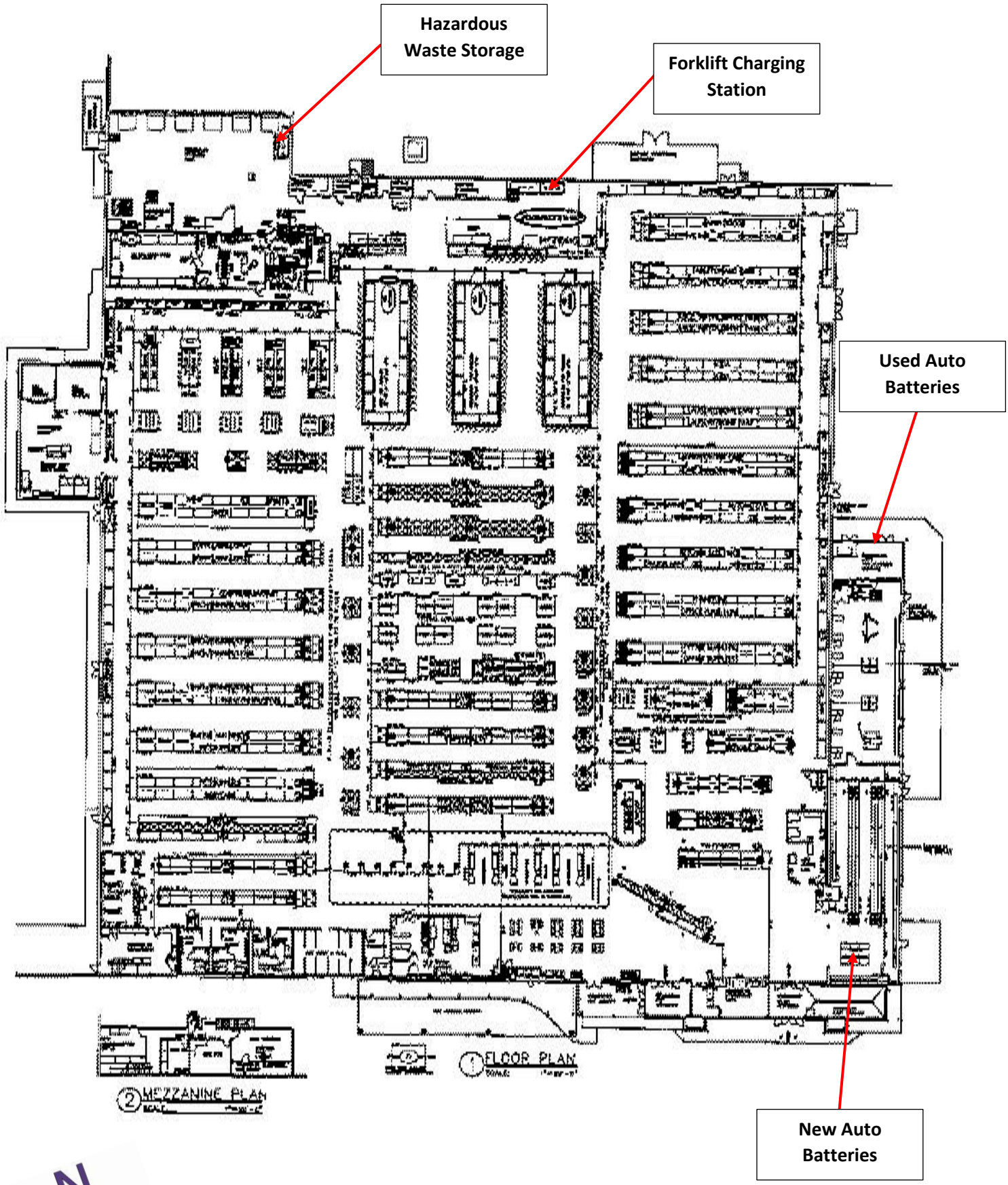
The field incident commander shall determine the actual response to an incident and the affected area may vary from the planning vulnerability zone identified in this Plan. Depending on wind speed and direction, the amount of material released and other pertinent factors, the ACTUAL vulnerability zone may be smaller, and in some instances larger, than the credible worst-case vulnerability zone identified herein. The vulnerability zones determined in the Plan are for general PLANNING PURPOSES.

B. Special Facilities Affected
Not applicable

C. Vulnerability Zone Map
See map


Sam's Club
.1 Mile Buffer
Sulfuric Acid
Worst Case/Reevaluation
RIDGEWAY DR
AA
AA
PRILL RD
AA
PRILL RD
GABLES CT
GABLES CIR
GABLES PL
GABLES DR
HOUSE RD
GATEWAY DR
US HIGHWAY 53
53
53
US HIGHWAY 53
OTTER CREEK CT
COMMONWEALTH AVE
GATEWAY DR
GATEHOUSE DR
GATEHOUSE TER

APPENDIX 1 - FACILITY LAYOUT



Sam's Club #8185 – 4001 Gateway Dr, Eau Claire, WI

Safety Data Sheet

Sulfuric Acid, Concentrated 18 M

Section 1 Product Description

Product Name:	Sulfuric Acid, Concentrated 18 M
Recommended Use:	Science education applications
Synonyms:	Oil of Vitriol; , Hydrogen Sulfate
Distributor:	Carolina Biological Supply Company 2700 York Road, Burlington, NC 27215 1-800-227-1150
Chemical Information:	800-227-1150 (8am-5pm (ET) M-F)
Chemtrec:	800-424-9300 (Transportation Spill Response 24 hours)

Section 2 Hazard Identification

Classification of the chemical in accordance with paragraph (d) of §1910.1200;

DANGER

Causes severe skin burns and eye damage. Causes serious eye damage. Toxic if inhaled. May cause cancer. Harmful to aquatic life.

GHS Classification:
Skin Corrosion/Irritation Category 1A, Serious Eye Damage/Eye Irritation Category 1, Carcinogenicity Category 1A, Acute Toxicity - Inhalation Dust / Mist Category 3, Hazardous to the aquatic environment - Acute Category 3

Other Safety Precautions:	IF exposed or concerned: Get medical advice/attention.
Acute Toxicity Dermal Contains	100 % of the mixture consists of ingredient(s) of unknown toxicity

Section 3 Composition / Information on Ingredients

Chemical Name	CAS #	%
Sulfuric Acid, Concentrated 18M	7664-93-9	100

Section 4 First Aid Measures

Emergency and First Aid Procedures

Inhalation:	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Eyes:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Skin Contact:	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.
Ingestion:	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

Section 5 Firefighting Procedures

Extinguishing Media:	Use dry chemical, CO2 or appropriate foam.
Fire Fighting Methods and Protection:	Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.
Fire and/or Explosion Hazards:	Non-combustible but contact with water or moisture may generate sufficient heat to ignite combustible materials Contact with water produces sulfuric acid.
Hazardous Combustion Products:	Sulfur Oxides

Section 6 Spill or Leak Procedures

Steps to Take in Case Material Is Released or Spilled: Exposure to the spilled material may be irritating or harmful. Follow personal protective equipment recommendations found in Section 8 of this SDS. Additional precautions may be necessary based on special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred. Also consider the expertise of employees in the area responding to the spill.
Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Do not allow the spilled product to enter public drainage system or open waterways.

Section 7 Handling and Storage

Handling: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. Never add water to this product.

Storage: Store in a well-ventilated place. Keep container tightly closed. Store locked up. Keep container tightly closed in a cool, well-ventilated place.

Storage Code: White - Corrosive. Separate acids from bases; separate oxidizer acids from organic acids.

Section 8 Protection Information

	ACGIH		OSHA PEL	
Chemical Name	**(TWA)**	**(STEL)**	**(TWA)**	**(STEL)**
Sulfuric Acid, Concentrated 18M	0.2 mg/m3 TWA (thoracic fraction)	N/A	1 mg/m3 TWA	N/A

Control Parameters

Engineering Measures: Local exhaust ventilation, process enclosures, or other engineering controls are necessary when handling or using this product to avoid overexposure.

Personal Protective Equipment (PPE): Lab coat, apron, eye wash, safety shower.

Respiratory Protection: Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to eliminate symptoms.

Respirator Type(s): NIOSH approved air purifying respirator with acid gas cartridge and dust/mist filter

Eye Protection: Wear chemical splash goggles when handling this product. Additionally, wear a face shield when the possibility of splashing of liquid exists. Have an eye wash station available.

Skin Protection: Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.

Gloves: Nitrile - Extra Thick (8 mm)

Section 9 Physical Data

Formula: H2SO4
Molecular Weight: 98.08
Appearance: Colorless, Oily Liquid
Odor: Strong Pungent
Odor Threshold: No data available
pH: -1.26
Melting Point: 10 C
Boiling Point: 280 C
Flash Point: No data available
Flammable Limits in Air: No data available

Vapor Pressure: 0.7 hPa at 25°C
Evaporation Rate (BuAc=1): No data available
Vapor Density (Air=1): No data available
Specific Gravity: 1.834-1.836 at 20°C
Solubility in Water: Soluble
Log Pow (calculated): No data available
Autoignition Temperature: No data available
Decomposition Temperature: No data available
Viscosity: 0.24
Percent Volatile by Volume: No data available

Section 10 Reactivity Data

Reactivity: Moderately reactive - See below
Chemical Stability: Stable under normal conditions.

Conditions to Avoid: Contact with water
Incompatible Materials: Water, Organic Compounds, Strong reducing agents, Acetaldehydes, Amines
Hazardous Decomposition Products: Sulfur Oxides
Hazardous Polymerization: Will not occur

Section 11 Toxicity Data

Routes of Entry Inhalation.
Symptoms (Acute): Respiratory disorders
Delayed Effects: Dental Erosion

Acute Toxicity:

Chemical Name	CAS Number	Oral LD50	Dermal LD50	Inhalation LC50
Sulfuric Acid, Concentrated 18M	7664-93-9	Oral LD50 Rat 2140 mg/kg	Not determined	INHALATION LC50 GUINEA PIG 18 MG/M3 INHALATION LC50 Rat 510 MG/M3 INHALATION LC50 Mouse 320 MG/M3

Carcinogenicity:

Chemical Name	CAS Number	IARC	NTP	OSHA
Sulfuric Acid, Concentrated 18M	7664-93-9	Not listed	Not listed	Listed

Chronic Effects:
Mutagenicity: No evidence of a mutagenic effect.
Teratogenicity: No evidence of a teratogenic effect (birth defect).
Sensitization: No evidence of a sensitization effect.
Reproductive: No evidence of negative reproductive effects.
Target Organ Effects:
Acute: No information available
Chronic: Respiratory system

Section 12 Ecological Data

Overview: Slight ecological hazard. In high concentrations, this product may be dangerous to plants and/or wildlife.
Mobility: This material is expected to have high mobility in soil. It absorbs weakly to most soil types.
Persistence: Biodegradation, adsorption to sediment, and bioconcentration to aquatic organisms should not be significant.
Bioaccumulation: Bioconcentration is not expected to occur.
Degradability: No data
Other Adverse Effects: No data

Chemical Name	CAS Number	Eco Toxicity
Sulfuric Acid, Concentrated 18M	7664-93-9	96 HR LC50 BRACHYDANIO RERIO > 500 MG/L [STATIC] 24 HR EC50 DAPHNIA MAGNA 29 MG/L

Section 13 Disposal Information

Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations. Always contact a permitted waste disposer (TSD) to assure compliance.
Waste Disposal Code(s): If discarded, this product is considered a RCRA corrosive waste, D002.

Section 14 Transport Information

Ground - DOT Proper Shipping Name:

Sulfuric Acid, Concentrated 18 M

Air - IATA Proper Shipping Name:

UN1830
Sulfuric Acid
Class 8
P.G. II

UN1830
Sulfuric Acid
Class 8
P.G. II

Section 15 Regulatory Information

TSCA Status: All components in this product are on the TSCA Inventory.

Chemical Name	CAS Number	§ 313 Name	§ 304 RQ	CERCLA RQ	§ 302 TPQ	CAA 112(2) TQ
Sulfuric Acid, Concentrated 18M	7664-93-9	Sulfuric acid	1000 lb RQ	1000 lb final RQ; 454 kg final RQ	1000 lb TPQ	No

California Prop 65: WARNING: This product contains a chemical known to the state of California to cause cancer.

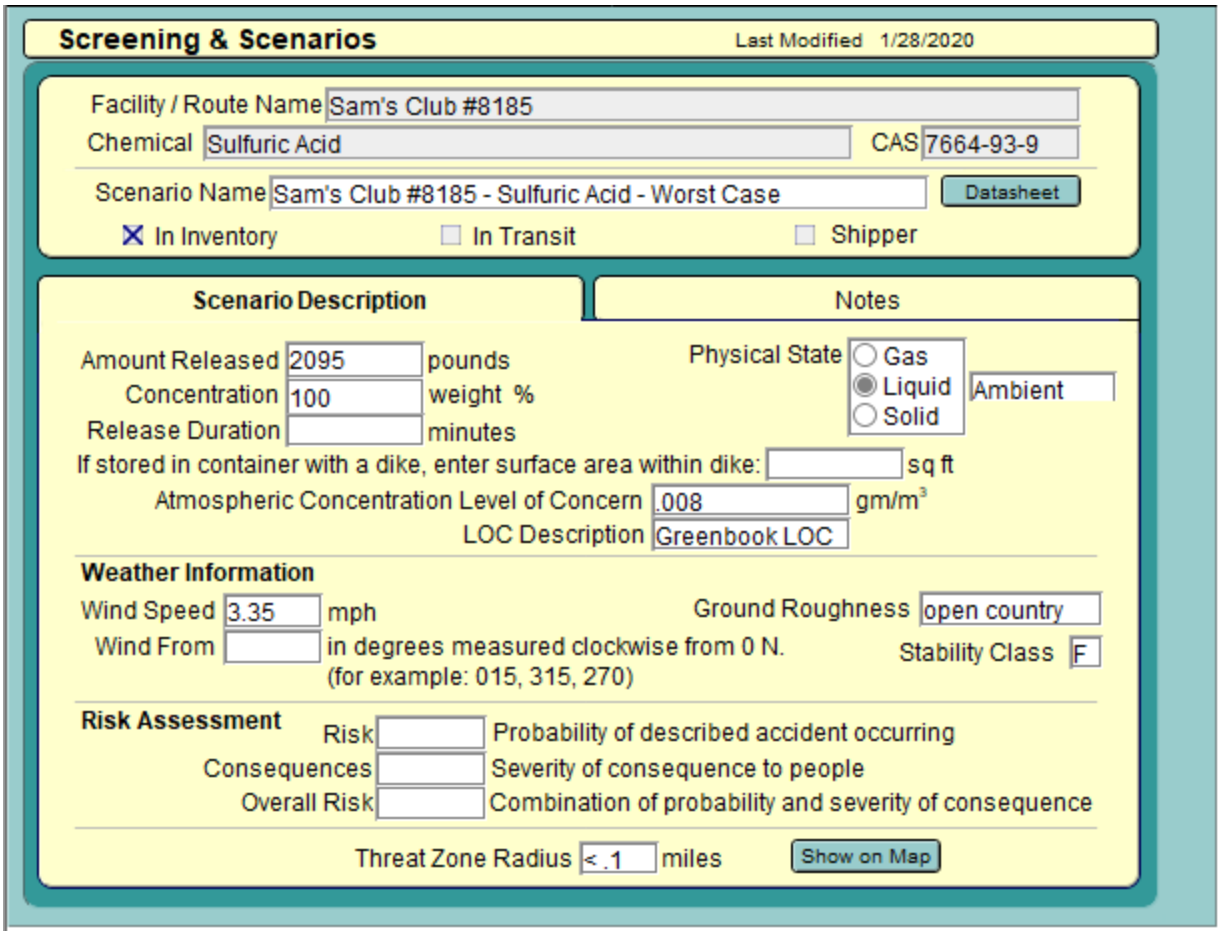
Section 16 Additional Information

Revised: 09/09/2015 **Replaces: 09/03/2014** **Printed: 10-29-2015**

The information provided in this (Material) Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the (Material) Safety Data Sheet.

Glossary

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstract Service Number
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOT	U.S. Department of Transportation
IARC	International Agency for Research on Cancer
N/A	Not Available
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
IDLH	Immediately dangerous to life and health



Screening & Scenarios Last Modified 1/28/2020

Facility / Route Name: Sam's Club #8185

Chemical: Sulfuric Acid CAS: 7664-93-9

Scenario Name: Sam's Club #8185 - Sulfuric Acid - Worst Case [Datasheet]

☒ In Inventory ☐ In Transit ☐ Shipper

Scenario Description | Notes

Amount Released: 2095 pounds

Concentration: 100 weight %

Release Duration: minutes

Physical State: ○ Gas ◉ Liquid ○ Solid — Ambient

If stored in container with a dike, enter surface area within dike: sq ft

Atmospheric Concentration Level of Concern: .008 gm/m^3

LOC Description: Greenbook LOC

Weather Information

Wind Speed: 3.35 mph

Wind From: in degrees measured clockwise from 0 N. (for example: 015, 315, 270)

Ground Roughness: open country

Stability Class: F

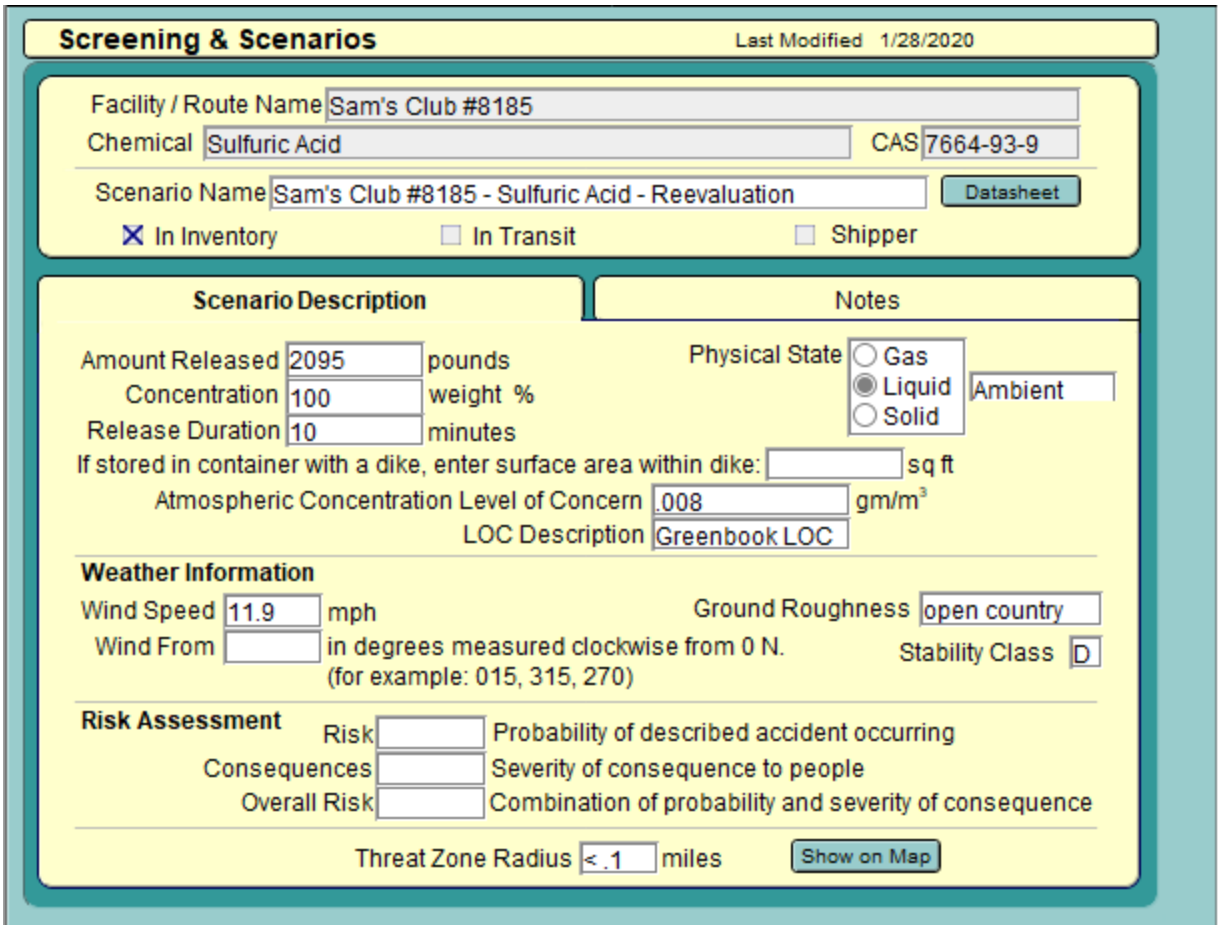
Risk Assessment

Risk: Probability of described accident occurring

Consequences: Severity of consequence to people

Overall Risk: Combination of probability and severity of consequence

Threat Zone Radius: < .1 miles [Show on Map]


Screening & Scenarios
Last Modified 1/28/2020
Facility / Route Name Sam's Club #8185
Chemical Sulfuric Acid
CAS 7664-93-9
Scenario Name Sam's Club #8185 - Sulfuric Acid - Reevaluation
Datasheet
In Inventory
In Transit
Shipper
Scenario Description
Notes
Amount Released 2095 pounds
Concentration 100 weight %
Release Duration 10 minutes
Physical State Gas Liquid Solid
Ambient
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .008 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 11.9 mph
Ground Roughness open country
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Stability Class D
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius < .1 miles
Show on Map

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN

TRANSMITTAL FORM AND REVIEW GUIDE

COUNTY: Eau Claire

NEW ☐ UPDATE ☑ FINAL UPDATE ☐

Facility ID No. : 161165

Facility Name: Sam's Club #8185

Facility Address: 4001 Gateway Dr, Eau Claire, Wisconsin 54701

STATEMENT OF PLANNING PROCESS

This plan has been prepared in accordance with state and local requirements and is ready to be made a part of the County Emergency Operations Plan (EOP) / Emergency Response Plan (ERP) upon Wisconsin Emergency Management (WEM) / State Emergency Response Commission (SERC) acceptance. This plan meets the facility off-site planning guidance as established by WEM / SERC. Acceptance of this plan is for planning purposes and does not verify facility compliance with the requirements of EPCRA.

FACILITY SIGNATURES:

I have reviewed the attached plan and to the best of my knowledge, all facility information is true, accurate, and complete. The plan is consistent with facility emergency plans and procedures**.**

_____ 3/19/2020

Facility Coordinator Date

COUNTY SIGNATURES

I have reviewed the attached plan and to the best of my knowledge, all information is true, accurate, and complete.

_____ _____

County Local Emergency Planning Committee Chair Date

_____ _____

County Emergency Management Director Date

WEM / SERC ACCEPTANCE:

This plan has been reviewed and meets the off-site planning guidance as established by WEM / SERC.

_____ _____

WEM Regional Director Date

NOTE: Facility Off-Site Plan Review Guide attached: Yes ☑ No ☐

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN

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FACILITY OFF-SITE PLAN REVIEW GUIDE

EPCRA Facility Off-Site Plan Elements		Page Number Reference
1)	The facility identification with address.	4
2)	Facility Coordinator / Alternate Coordinator	4
3)	Extremely Hazardous Substances (EHS) chemicals Identified with CAS numbers and maximum amount	4
4)	Primary emergency responders identified	6
5)	Support and resources available from facility	4
6)	General Information / Assumptions (Disclaimer)	6 - 7
7)	Hazard analysis summary	5
8)	Special facilities affected	7
9)	Population protection	7
10)	Special considerations	6
11)	Site Plan / Facility Layout	9 (Appendix 1)

EPCRA HAZARDOUS MATERIALS FACILITY OFF-SITE PLAN

TRANSMITTAL FORM AND REVIEW GUIDE

COUNTY: Eau Claire

NEW ☐ UPDATE ☑ FINAL UPDATE ☐

Facility lD No. : 161165

Facility Name: Sam's Club #8185

Facility Address: 4001 Gateway Dr, Eau Claire, Wisconsin 54701

12) Distribution list:

Facility

Fire Department of jurisdiction

Wisconsin Emergency Management- Region Office

Designated Hazmat team

County Emergency Management Office

Adjacent County Emergency Management Office when impacted by vulnerability zone

13) Required Attachments

A.	Vulnerability Zone map highlighting special facilities	8
B.	Safety Data Sheet (SDS) for each EHS	10 - 13 (Appendix 2)
C.	Vulnerability Zone Calculations	14 - 15 (Appendix 3)
D.	Transportation route(s) map	None

Wal-Mart #1669
Facility Off-Site
Emergency Response Plan

Facility #161672
Wal-Mart #1669
3915 Gateway Dr
Eau Claire, WI 54701

Eau Claire County Office of Emergency Management
721 Oxford Avenue
Suite 3344
Eau Claire, Wisconsin 54703

TABLE OF CONTENTS

RECORD OF CHANGES

Change	Date Changed	Change Made By
Created	August 2017	TE
Updated	March 2020	SS

SECTION 1: FACILITY INFORMATION

A. Address

Walmart #1669
3915 Gateway Dr
Eau Claire, WI 54701

B. Facility ID

161672

C. Map

D. Emergency Contacts

Primary:
Josh Falls
Phone: 715-834-0733
24 Hour: 479-204-3911
Email: wmtier2@endeavourehs.com

Secondary:
Walmart Alarm Central
470-204-3911
cassie.clark@walmart.com

E. Extremely Hazardous Substances

Sulfuric Acid	**Inventory:**	**Storage:**
Chemical ID: 140415 CAS: 7664939 **ERG: Guide 137**	Max Daily Amount (lbs): 3619 Ave. Daily Amount (lbs): 1,343 Number of days on site: 365	Container: Batteries Location: Forklift batteries in forklifts, for sale in store and in new battery cage (North part of building) and Used battery cage (NE part of building).

F. Hazardous Substances

Not applicable.

G. Resources/Support Available

Spill Containment Kits are on-scene with personnel trained in using them. These kits include acid absorbent and neutralization.

H. Hazard Analysis

Walmart Supercenter is a large 24 hour low-price discount retailer. There are employees and customers on site at all times. The size of the building is greater than 100,000 square feet. The extremely hazardous substance on hand is sulfuric acid which is used in batteries. The total quantity of sulfuric acid is 3,619 lbs. (1,979 pounds in the Battery Service Area and 1,640 pounds in the Battery Cage). The evacuation radius for sulfuric acid is less than 0.1 mile.

The hazard analysis determined this sulfuric acid to be the major chemical hazard present at the facility. It is used in batteries which are sold to the public for use in automobiles and day-to-day powered equipment use, as well as placed in a battery cage. The most common areas for batteries are in the automotive section as well as throughout the store. A leak of sulfuric acid would be detected by personnel that are on-site. If a leak were to be detected Walmart has staff, primarily maintenance, which is trained to take appropriate action. There is spill control kits located to the east of the used battery cage. An average of 1,343.24 pounds of sulfuric acid is reported on-site. There is an average of 1,188 pounds of recycled battery acid weight. The sulfuric acid at this facility is not aerosolized and will not present a threat to the community. We are including the evacuation zones below due to requirements of the Off-Site Response Plan. We do not expect any spills to become an external hazard and there is no reason to believe the public will be harmed by a spill. The modeled evacuation area is based on worst case scenario for sulfuric acid 90 lbs. ten minutes after a catastrophic failure of batteries. This is the amount of material used in the worst case scenario.

The greatest potential for release would be the failure of batteries which contain the greatest volume of material.

The worst case scenario criteria are:
Neutral Air Stability (Class F)
Night Time
Open Country
3.35 mph wind
1/10 IDLH (Immediately Dangerous to Life and Health) concentration
Rapid release of maximum quantity of chemical in a single vessel (10 min.)

The evacuation radius, as calculated by CAMEO software for a 90 lb Sulfuric Acid release, was determined to be less than .1 miles. It is estimated that 73 people (49 housing units) may be affected by the release.

Reevaluation of a 90 pound release of Sulfuric Acid using more realistic variables in the CAMEO model yields an evacuation radius of .1 miles. The population in this area is estimated to be approximately 73 people (49 housing units).

The reevaluation scenario criteria are:
Neutral Air Stability (Class D)
Open Country
11.9 mph wind
1/10 IDLH (Immediately Dangerous to Life and Health) concentration
10 minute release of maximum quantity of chemical in a single vessel

I. Access to Facility

The facility is open 24 hours to the public, with staff on site at all times.

SECTION 2: OUTSIDE RESOURCES

A. Primary Response Agencies

Fire:	EMS:	Law:	Emergency Management:
Eau Claire Fire Dept. Station 6 3020 Golf Road Eau Claire, WI 54701 Phone: 715-834-6868	Eau Claire Fire Department 3020 Golf Rd Eau Claire, WI 54701 Phone: 715-834-6868	Eau Claire Police Department 721 Oxford Avenue Suite 1400 Eau Claire, WI 54703 Phone: 715-839-4701	Eau Claire Office of Emergency Management 721 Oxford Avenue Suite 3344 Eau Claire, WI 54703 Phone: 715-839-4736

B. Hazardous Materials Response Teams

Eau Claire County has a Level B hazardous materials response team. For Level B response, the local Fire Chief notifies the Level B team of a response needed through the Eau Claire County Emergency Communications Center. For Level A responses by the Type 1 Regional Hazardous Materials Response Team, requests shall be made through the WEM Duty officer by the county Emergency Management Coordinator.

C. Other Outside Assistance

See the County-Wide Hazardous Materials Strategic Plan for a listing of resources.

SECTION 3: POPULATION/ENVIRONMENTAL PROTECTION

A. Shelter-In-Place

The lead time for a hazardous materials incident may be very short. As a result, there may not be time enough for safe evacuation, especially when extremely toxic chemical fumes are involved. An evacuation under these considerations may expose the population to dangerous toxic chemicals and the decision may be made to shelter-in-place. Preferred areas for protective sheltering would be interior hallways, rooms without windows or exterior doors, enclosed stairways and rooms on the side of the building away from where the hazard is approaching. Doors, windows, and other potential air leaks should be sealed up to prevent toxic fumes from entering.

B. Evacuation

Experience indicated that shelter space would need to be provided for only 30% of the population within the initial isolation and evacuation zones and the remaining 70% would seek shelter with family and friends outside the risk zone. All public schools listed are eligible evacuation shelters.

C. Nearby Shelters

Not applicable.

SECTION 4: VULNERABILITY ZONES

A. General Information and Assumptions

The vulnerability zones set forth in the Plan are based on the EPA Technical Guidance for Hazards Analysis. The zones are based on a credible worst-case scenario and identify the potential area for impact should an air-borne release of a single EHS chemical occur.

The vulnerability zones are NOT intended to be used as a guide for population protection in fire-related incidents. Fire incidents were considered in the development of this plan and the plan provides basic information about the facility for first responders to employ. However, in an actual fire situation at this facility,

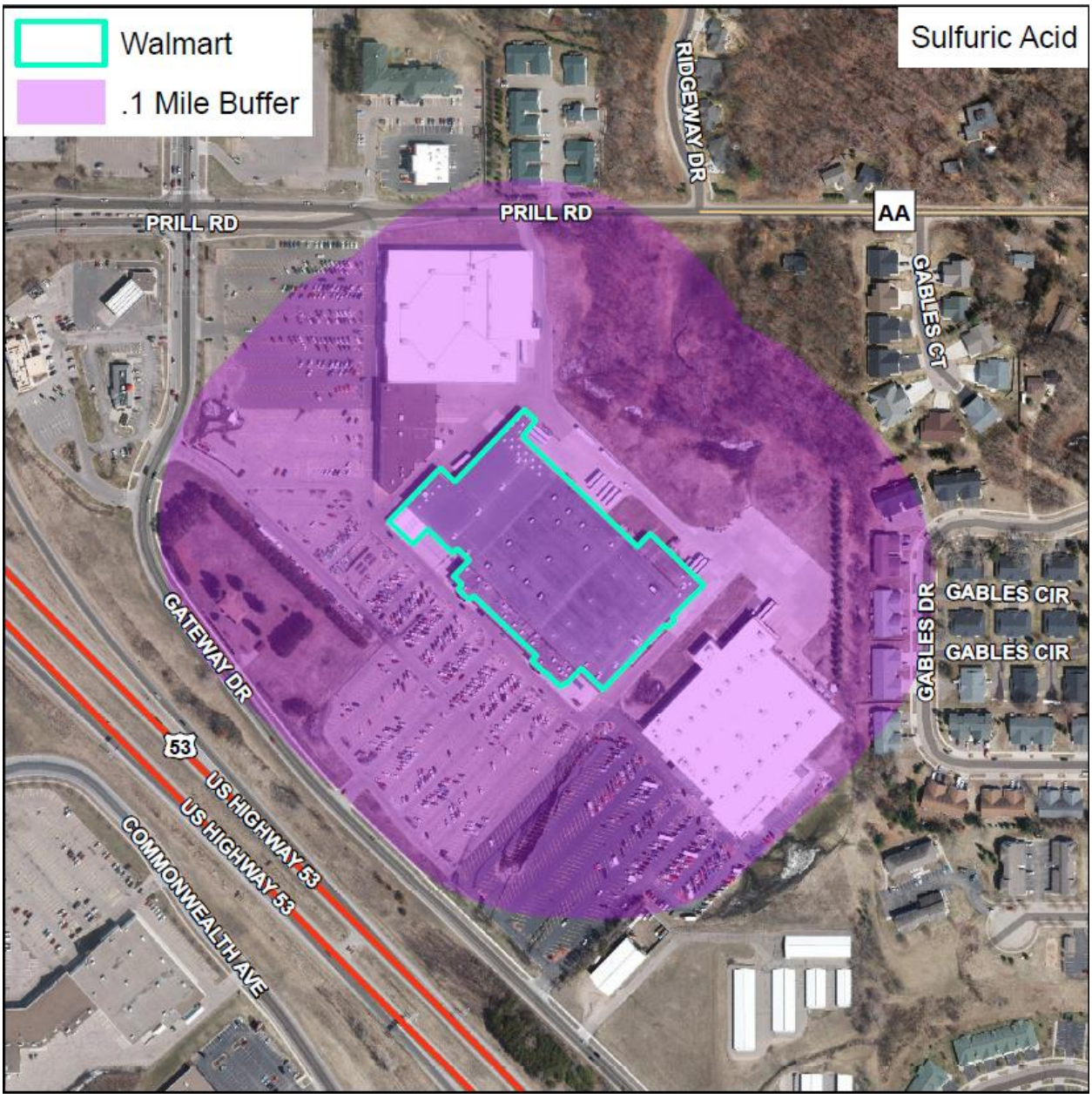
the Incident commander is strongly recommended to reference the fire department own individual agency pre-emergency plans and standard operating procedures as well as the county's Emergency Operations Plan – Annex K: Fire and Rescue, as they may relate to this facility when making decisions at an incident involving fire.

Further, fire departments that would respond to an incident at this facility are strongly encouraged to meet with facility representatives to determine ways to minimize an event at the facility and to determine what additional information and factors should be taken into consideration in the event of a fire, should one occur.

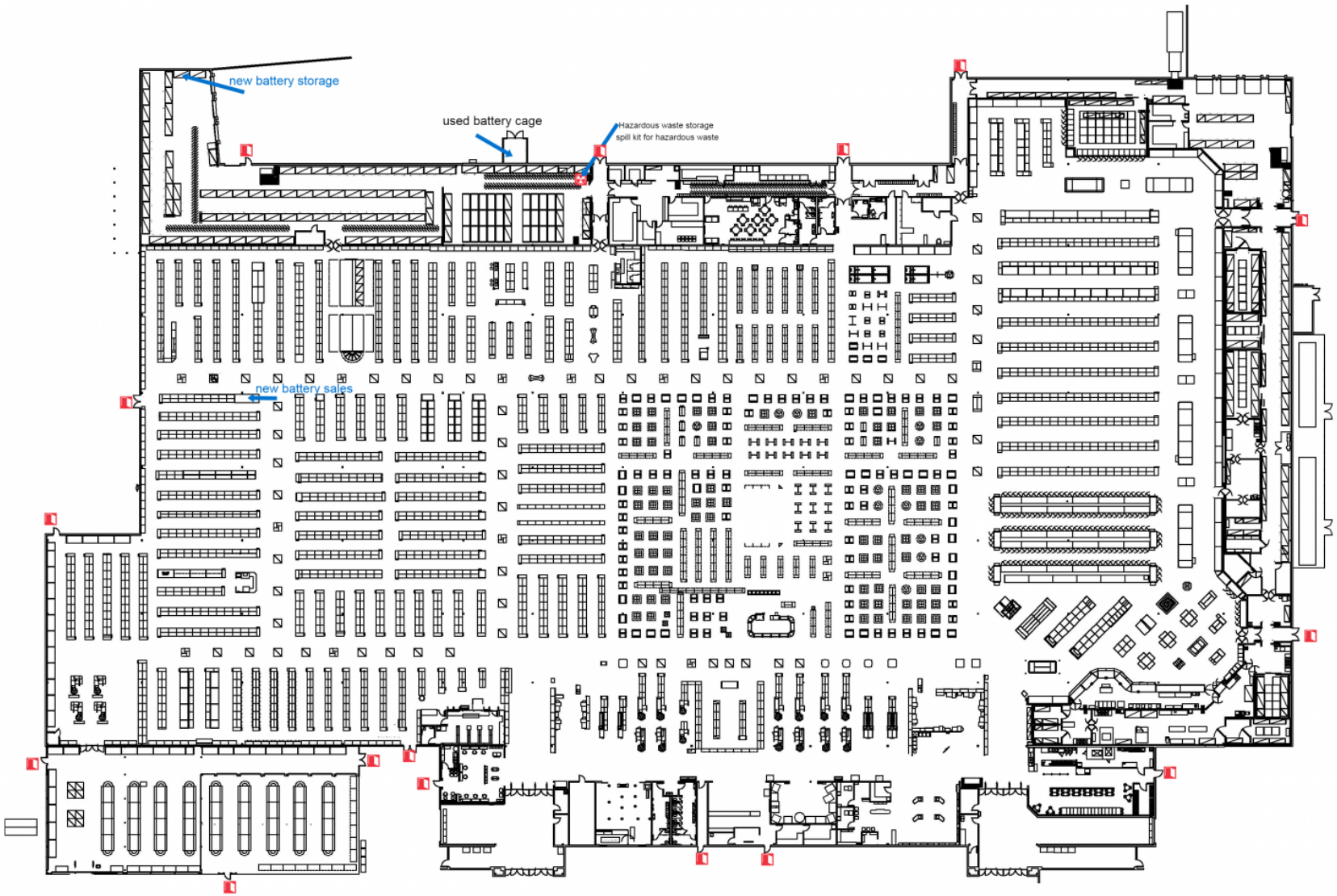
The field incident commander shall determine the actual response to an incident and the affected area may vary from the planning vulnerability zone identified in this Plan. Depending on wind speed and direction, the amount of material released and other pertinent factors, the ACTUAL vulnerability zone may be smaller, and in some instances larger, than the credible worst-case vulnerability zone identified herein. The vulnerability zones determined in the Plan are for general PLANNING PURPOSES.

B. Special Facilities Affected
Not applicable.

C. Vulnerability Zone Map
See the attached map.


Walmart
.1 Mile Buffer
Sulfuric Acid
PRILL RD
PRILL RD
RIDGEWAY DR
AA
GABLES CT
GABLES CIR
GABLES CIR
GABLES DR
GATEWAY DR
53
US HIGHWAY 53
US HIGHWAY 53
COMMONWEALTH AVE

APPENDIX 1 - FACILITY LAYOUT



[redacted]

SAFETY DATA SHEET

Issuing Date No data available **Revision Date** 23-Feb-2015 **Revision Number** 1

Product identifier

Product Name **Everstart Wet Lead Acid Battery**

Other means of identification

UN-No. UN2794

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use Lead acid battery

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Name East Penn Mfg.
Supplier Address Deka Rd
Lyon Station
PA
19536
US
Supplier Phone Number Phone:610-682-6361
Fax:610-682-1650
Contact Phone:610-682-6361

Emergency telephone number CHEMTREC 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is an article which is a sealed battery and as such does not require an MSDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Gases)	Category 4
Acute toxicity - Inhalation (Vapors)	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 3

Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1
Carcinogenicity	Category 1A
Reproductive toxicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 2

GHS Label elements, including precautionary statements

Emergency Overview

Signal word **Danger**

Hazard Statements
Harmful if swallowed
Toxic if inhaled
Causes severe skin burns and eye damage
May cause cancer
May damage fertility or the unborn child
May cause damage to organs through prolonged or repeated exposure

This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold. Intended use of the product should not result in exposure to the chemical substance. This is a battery. In case of rupture: the above hazards exist.

Appearance Colorless **Physical State** Solid **Odor** Odorless

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray

Precautionary Statements - Response
Specific treatment (see .? on this label)
Immediately call a POISON CENTER or doctor/physician
Specific treatment (see supplemental first aid instructions on this label)

Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician

Skin
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse

Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Immediately call a POISON CENTER or doctor/physician

Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Do NOT induce vomiting

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Unknown Toxicity
0% of the mixture consists of ingredient(s) of unknown toxicity

Other information

Very toxic to aquatic life with long lasting effects

Interactions with Other Chemicals
Use of alcoholic beverages may enhance toxic effects.

3. COMPOSITION/INFORMATION ON INGREDIENTS

.

Chemical Name	CAS No	Weight-%	Trade Secret
Lead	7439-92-1	40 - 70	*
Sulfuric acid	7664-93-9	10 - 30	*
Arsenic	7440-38-2	< 0.1	*

*The exact percentage (concentration) of composition has been withheld as a trade secret

4. FIRST AID MEASURES

First aid measures

General Advice Call 911 or emergency medical service. Remove and isolate contaminated clothing and shoes.

Eye Contact In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

Skin Contact For minor skin contact, avoid spreading material on unaffected skin.

Inhalation Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.

Ingestion Do NOT induce vomiting. Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Self-protection of the first aider Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects Burning sensation. Coughing and/ or wheezing. Difficulty in breathing. Lead poisoning is characterized by a metallic taste in the mouth, loss of appetite indigestion, nausea, vomiting, constipation, sleep disturbances and overall weakness. Severe exposures can lead to shock, circulatory collapse, and death.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Keep victim warm and quiet. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Dry chemical, CO2 or water spray. Dry chemical, CO2, alcohol-resistant foam or water spray. Move containers from fire area if you can do it without risk. Dike fire control water for later disposal; do not scatter the material.

Unsuitable extinguishing media
CAUTION: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising from the Chemical
Some are oxidizers and may ignite combustibles (wood, paper, oil, clothing, etc.).

Uniform Fire Code Corrosive: Acid-Liquid
Toxic: Solid

Hazardous Combustion Products
Carbon oxides.

Explosion Data
Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge No.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if you can do it without risk.

Other Information DO NOT GET WATER INSIDE CONTAINERS.

Environmental Precautions

Environmental Precautions Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for Containment Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

Methods for cleaning up Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Do not puncture or incinerate cans. In case of rupture. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection equipment. Ensure adequate ventilation.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

Incompatible Products Acids. Bases. Oxidizing agent.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Lead 7439-92-1	TWA: 0.05 mg/m^3	TWA: 50 µg/m^3 TWA: 50 µg/m^3 Pb Action Level: 30 µg/m^3 Poison, See 29 CFR 1910.1025 Action Level: 30 µg/m^3 Pb Poison, See 29 CFR 1910.1025	IDLH: 100 mg/m^3 TWA: 0.050 mg/m^3

Sulfuric acid 7664-93-9	TWA: 0.2 mg/m^3 thoracic fraction	TWA: 1 mg/m^3 (vacated) TWA: 1 mg/m^3	IDLH: 15 mg/m^3 TWA: 1 mg/m^3
Arsenic 7440-38-2	TWA: 0.01 mg/m^3 TWA: 0.01 mg/m^3 As	TWA: 10 µg/m^3 As Action Level: 5 µg/m^3 As (vacated) TWA: 0.5 mg/m^3	IDLH: 5 mg/m^3 Ceiling: 0.002 mg/m^3 15 min

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits Immediately Dangerous to Life or Health

Other Exposure Guidelines Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992) See section 15 for national exposure control parameters

Appropriate engineering controls

Engineering Measures Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection Face protection shield.

Skin and Body Protection Wear protective gloves and protective clothing. Long sleeved clothing. Chemical resistant apron. Impervious gloves.

Respiratory Protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. For environmental protection, remove and wash all contaminated protective equipment before re-use. Do not breathe dust.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical State	Solid		
Appearance	Colorless	**Odor**	Odorless
Color	No information available	**Odor Threshold**	No information available

Property	**Values**	**Remarks Method**
pH	<1	None known
Melting / freezing point	No data available	None known
Boiling point / boiling range	113-116°C(as sulfuric acid)	None known
Flash Point	Below Room Temperature(as hydrogen gas)	None known
Evaporation Rate	<1	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		
Upper flammability limit	No data available	
Lower flammability limit	No data available	
Vapor pressure	10mmHg	None known
Vapor density	>1	None known
Specific Gravity	No data available	None known

Water Solubility	100%(as sulfuric acid)	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive properties	No data available	
Oxidizing Properties	No data available	

Other Information

Softening Point	No data available
VOC Content (%)	No data available
Particle Size	No data available
Particle Size Distribution	

10. STABILITY AND REACTIVITY

Reactivity

No data available.

Chemical stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization
Hazardous polymerization does not occur.

Conditions to avoid
Exposure to air or moisture over prolonged periods. Excessive heat.

Incompatible materials
Acids. Bases. Oxidizing agent.

Hazardous Decomposition Products
Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information Product does not present an acute toxicity hazard based on known or supplied information. In case of rupture:. .

Inhalation Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract. Toxic by inhalation.

Eye Contact

Specific test data for the substance or mixture is not available. Causes burns. (based on components). Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.

Skin Contact

Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns.

Ingestion

Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May be harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Sulfuric acid 7664-93-9	= 2140 mg/kg (Rat)	-	= 510 mg/m^3 (Rat) 2 h

Information on toxicological effects

Symptoms

Erythema (skin redness). Burning. May cause blindness. Coughing and/ or wheezing. Difficulty in breathing.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization

No information available.

Mutagenic Effects

No information available.

Carcinogenicity

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Lead 7439-92-1	A3	Group 2A	Reasonably Anticipated	X
Sulfuric acid 7664-93-9	A2	Group 1	Known	X
Arsenic 7440-38-2	A1	Group 1	Known	X

ACGIH (American Conference of Governmental Industrial Hygienists)
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
NTP (National Toxicology Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Reproductive Toxicity

Product is or contains a chemical which is a known or suspected reproductive hazard. Contains a known or suspected reproductive toxin.

Developmental Toxicity	Contains ingredients that have suspected developmental hazards.
STOT - single exposure	No information available.
STOT - repeated exposure	Causes damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE).
Chronic Toxicity	No known effect based on information supplied. Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. Effects from this product caused by acute exposure may cause permanent damage to target organs and/or may cause chronic conditions. Contains a known or suspected carcinogen. Contains a known or suspected reproductive toxin. Possible risk of irreversible effects. Avoid repeated exposure. Prolonged exposure may cause chronic effects. May cause adverse effects on the bone marrow and blood-forming system. Lead compounds may be absorbed by ingestion, by inhalation and through the skin. Lead may damage kidney function, the blood forming system and the reproductive system.
Target Organ Effects	Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Systemic Toxicity. Reproductive System. Blood. Central Nervous System (CNS). Gingival Tissue. Kidney. Teeth. Cardiovascular system. Hematopoietic system. Immune system. May damage the unborn child.
Aspiration Hazard	No information available.

Numerical measures of toxicity Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)
662.00 mg/kg
ATEmix (inhalation-gas)
6,481.00 ppm (4 hr)
ATEmix (inhalation-dust/mist)
0.68 mg/l
ATEmix (inhalation-vapor)
16.00 ATEmix

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Lead 7439-92-1		96h LC50: = 0.44 mg/L (Cyprinus carpio) 96h LC50: = 1.17 mg/L (Oncorhynchus mykiss) 96h LC50: = 1.32 mg/L (Oncorhynchus mykiss)		48h EC50: = 600 µg/L
Sulfuric acid 7664-93-9		96h LC50: > 500 mg/L (Brachydanio rerio)		24h EC50: = 29 mg/L

Persistence and Degradability

No information available.

Bioaccumulation

No information available

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal methods This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). Should not be released into the environment.

Contaminated Packaging Do not reuse empty containers.

US EPA Waste Number D002 D008

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Lead 7439-92-1	(hazardous constituent - no waste number)	Included in waste streams: F035, F037, F038, F039, K002, K003, K005, K046, K048, K049, K051, K052, K061, K062, K064, K065, K066, K069, K086, K100, K176	= 5.0 mg/L regulatory level	
Arsenic 7440-38-2		Included in waste streams: F032, F034, F035, F039, K031, K060, K084, K101, K102, K161, K171, K172, K176	5.0 mg/L regulatory level	

California Hazardous Waste Codes 792

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste
Lead 7439-92-1	Toxic
Sulfuric acid 7664-93-9	Toxic Corrosive

14. TRANSPORT INFORMATION

DOT

UN-No. UN2794
Proper Shipping Name BATTERIES, WET, FILLED WITH ACID
Hazard Class 8
Packing Group III
Description UN2794, BATTERIES, WET, FILLED WITH ACID, 8, PG III
Emergency Response Guide Number 154

TDG

UN-No. UN2794
Proper Shipping Name BATTERIES, WET, FILLED WITH ACID
Hazard Class 8
Packing Group III
Marine Pollutant This product contains a chemical which is listed as a marine pollutant according to TDG.
Description UN2794,BATTERIES, WET, FILLED WITH ACID,8,PG III

MEX

UN-No.	UN2794
Proper Shipping Name	BATTERIES, WET, FILLED WITH ACID
Hazard Class	8
Description	UN2794 BATTERIES, WET, FILLED WITH ACID,8

ICAO

UN-No.	UN2794
Proper Shipping Name	BATTERIES, WET, FILLED WITH ACID
Hazard Class	8
Description	UN2794,BATTERIES, WET, FILLED WITH ACID,8

IATA

UN-No.	UN2794
Proper Shipping Name	BATTERIES, WET, FILLED WITH ACID
Hazard Class	8
Packing Group	III
Description	UN2794,BATTERIES, WET, FILLED WITH ACID,8

IMDG/IMO

UN-No.	UN2794
Proper Shipping Name	BATTERIES, WET, FILLED WITH ACID
Hazard Class	8
EmS-No.	F-A, S-B
Marine Pollutant	This product contains a chemical which is listed as a marine pollutant according to IMDG/IMO
Description	UN2794, BATTERIES, WET, FILLED WITH ACID,8

RID

UN-No.	UN2794
Proper Shipping Name	BATTERIES, WET, FILLED WITH ACID
Hazard Class	8
Classification code	C11
Description	UN2794 BATTERIES, WET, FILLED WITH ACID,8

ADR

UN-No.	UN2794
Proper Shipping Name	BATTERIES, WET, FILLED WITH ACID
Hazard Class	8
Classification code	C11
Tunnel restriction code	(E)
Description	UN2794 BATTERIES, WET, FILLED WITH ACID,8,

ADN

UN-No.	UN2794
Proper Shipping Name	BATTERIES, WET, FILLED WITH ACID
Hazard Class	8
Classification code	C11
Special Provisions	295, 598
Description	UN2794 BATTERIES, WET, FILLED WITH ACID,8
Hazard Labels	8
Limited Quantity	LQ0

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL	All components are listed either on the DSL or NDSL.
IECSC	-

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Lead - 7439-92-1	7439-92-1	40 - 70	0.1
Sulfuric acid - 7664-93-9	7664-93-9	10 - 30	1.0
Arsenic - 7440-38-2	7440-38-2	< 0.1	0.1

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Lead 7439-92-1		X	X	
Sulfuric acid 7664-93-9	1000 lb			X
Arsenic 7440-38-2		X	X	

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Lead 7439-92-1	10 lb		RQ 10 lb final RQ RQ 4.54 kg final RQ
Sulfuric acid 7664-93-9	1000 lb	1000 lb	RQ 1000 lb final RQ RQ 454 kg final RQ
Arsenic 7440-38-2	1 lb		RQ 1 lb final RQ RQ 0.454 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Lead - 7439-92-1	Carcinogen Developmental Female Reproductive Male Reproductive

Sulfuric acid - 7664-93-9	Carcinogen
Arsenic - 7440-38-2	Carcinogen

U.S. State Right-to-Know Regulations

.

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Lead 7439-92-1	X	X	X	X	X
Sulfuric acid 7664-93-9	X	X	X	X	X
Antimony 7440-36-0	X	X	X	X	X
Arsenic 7440-38-2	X	X	X	X	X

International Regulations

Mexico
National occupational exposure limits

Component	Carcinogen Status	Exposure Limits
Lead 7439-92-1 (40 - 70)	A3	Mexico: TWA= 0.15 mg/m^3
Sulfuric acid 7664-93-9 (10 - 30)	A2	Mexico: TWA 1 mg/m^3
Arsenic 7440-38-2 (< 0.1)	A1	Mexico: TWA 0.01 mg/m^3

Mexico - Occupational Exposure Limits - Carcinogens
A2 - Suspected Human Carcinogen
A3 - Confirmed Animal Carcinogen

Canada
WHMIS Hazard Class
D2A - Very toxic materials
E - Corrosive material

16. OTHER INFORMATION

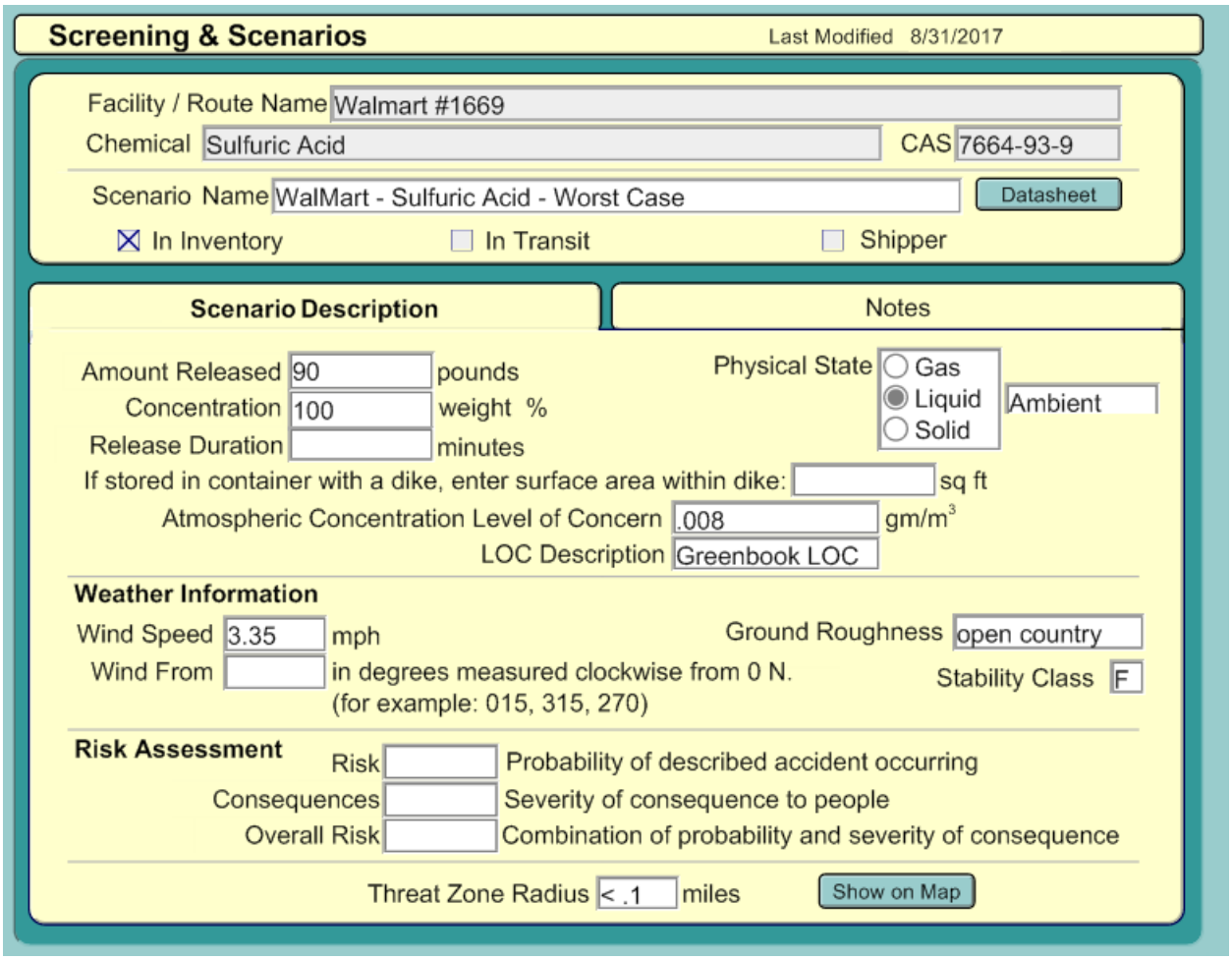
NFPA	**Health Hazards**	3	**Flammability**	0	**Instability**	0	**Physical and Chemical Hazards** -
HMIS	**Health Hazards**	0	**Flammability**	0	**Physical Hazard**	0	**Personal Protection** X

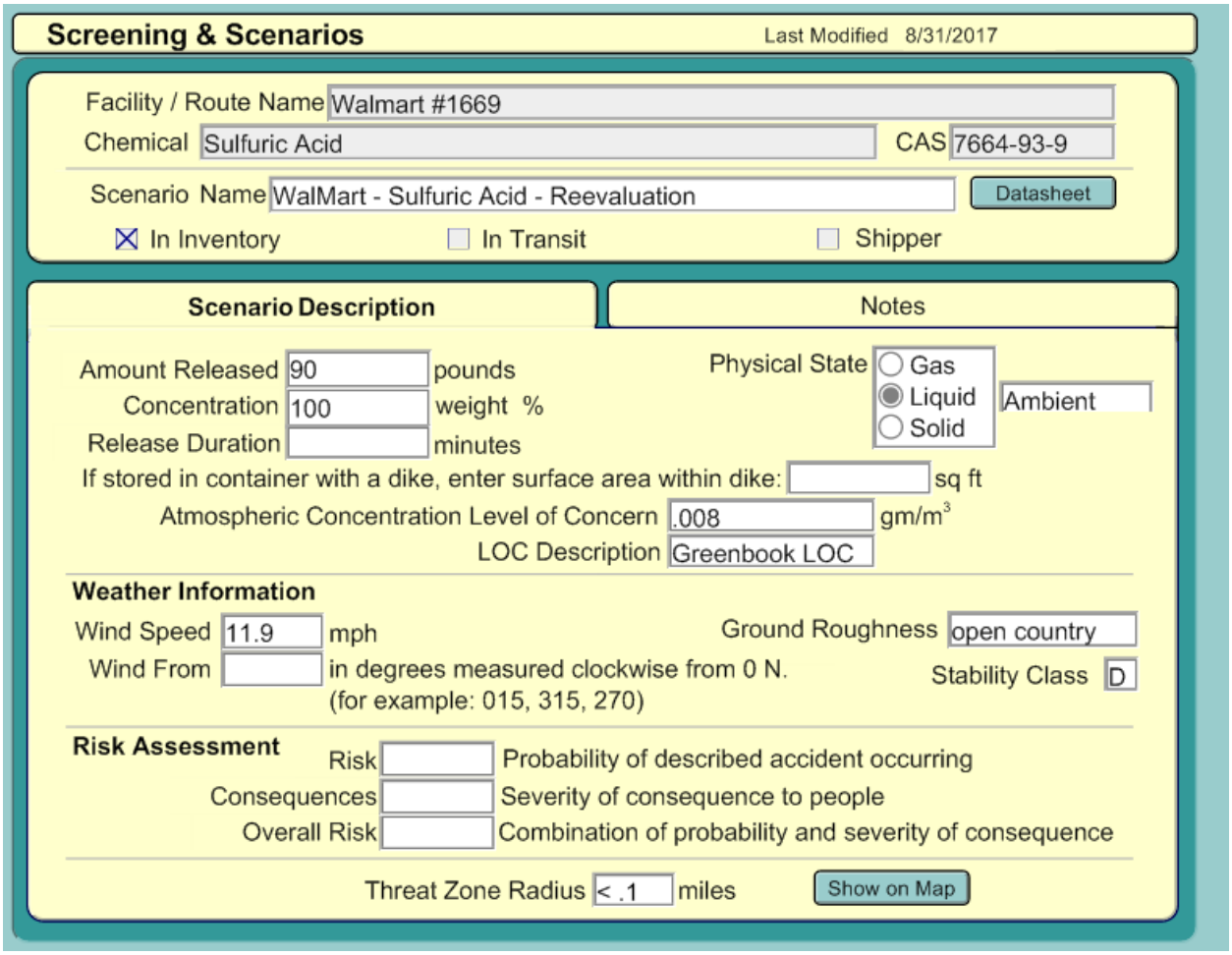
Prepared By
Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Revision Date 23-Feb-2015
Revision Note No information available

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet


Screening & Scenarios
Last Modified 8/31/2017
Facility / Route Name Walmart #1669
Chemical Sulfuric Acid
CAS 7664-93-9
Scenario Name WalMart - Sulfuric Acid - Worst Case
Datasheet
In Inventory
In Transit
Shipper
Scenario Description
Notes
Amount Released 90 pounds
Concentration 100 weight %
Release Duration minutes
Physical State Gas Liquid Solid
Ambient
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .008 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 3.35 mph
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Ground Roughness open country
Stability Class F
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius < .1 miles
Show on Map


Screening & Scenarios
Last Modified 8/31/2017
Facility / Route Name Walmart #1669
Chemical Sulfuric Acid
CAS 7664-93-9
Scenario Name WalMart - Sulfuric Acid - Reevaluation
Datasheet
In Inventory
In Transit
Shipper
Scenario Description
Notes
Amount Released 90 pounds
Concentration 100 weight %
Release Duration minutes
Physical State Gas Liquid Solid
Ambient
If stored in container with a dike, enter surface area within dike: sq ft
Atmospheric Concentration Level of Concern .008 gm/m3
LOC Description Greenbook LOC
Weather Information
Wind Speed 11.9 mph
Wind From in degrees measured clockwise from 0 N.
(for example: 015, 315, 270)
Ground Roughness open country
Stability Class D
Risk Assessment
Risk Probability of described accident occurring
Consequences Severity of consequence to people
Overall Risk Combination of probability and severity of consequence
Threat Zone Radius < .1 miles
Show on Map