



WILBUR-ELLIS COMPANY, LLC

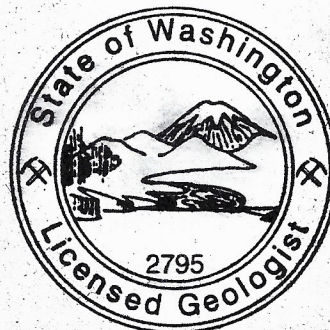
OTHELLO FACILITY SITE ASSESSMENT REPORT

Facility:

Othello
910 N. Broadway
Othello, Washington 99344

Facility Owner:

Wilbur-Ellis Company, LLC
16300 Christensen Rd, Suite 135
Seattle, Washington 98188



Jonathan Reeve

Jonathan Reeve 5/12/2023

Prepared by EA Engineering, Science, and Technology, Inc., PBC

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ABBREVIATIONS AND ACRONYMS

APPL	Agriculture & Priority Pollutant Laboratories, Inc.
EA Ecology	EA Engineering, Science, and Technology, Inc., PBC Washington State Department of Ecology
Facility	Wilbur-Ellis Othello Facility
MTCA	Model Toxics Control Act
USGS	U.S. Geological Survey
VOC	Volatile organic compound
Wilbur-Ellis	Wilbur-Ellis Company, LLC



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1. INTRODUCTION

This Site Assessment Report was prepared by EA Engineering, Science, and Technology, Inc., PBC (EA) for Wilbur-Ellis Company, LLC (Wilbur-Ellis) to summarize the results of the site characterization field activities conducted at Wilbur-Ellis's Othello facility (Facility) in Othello, Washington (Figure 1). This site characterization was conducted to evaluate the need for a voluntary cleanup under Washington State Department of Ecology (Ecology) oversight.

The Facility is located approximately 1/2 mile north of Othello at 910 N. Broadway Avenue, (Figure 1). In December 2022, a release of approximately 3,000 gallons to the ground surface from a fertilizer rinsate tank was reported to Ecology. Based on communications with Wilbur-Ellis, potential impacts to surface and subsurface soil from this incident need to be characterized to evaluate the need for a voluntary cleanup action.

Following a site visit with Wilbur-Ellis and Ecology staff on January 4, 2023 to collect information on the site and identify potential sampling locations, a Site Characterization Work Plan was developed to collect soil data to evaluate potential impacts to the environment of volatile organic compounds (VOCs), metam sodium, ammonia, and nitrate from fertilizer and fumigant stored at the facility due to a release of rinsate water at the Facility. The final version of the Work Plan was provided to Wilbur-Ellis on February 27, 2023 (EA 2023).



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2. SITE DESCRIPTION AND ENVIRONMENTAL SETTING

2.1 SITE DESCRIPTION

2.1.1 Facility Description

In general, this Facility consists of employee parking, an office, a warehouse utilized for storage of fertilizer materials, a liquid storage tank area for fumigants and other liquids located on a secondary containment pad, receiving areas, product loading areas, and equipment storage areas.

Activities conducted at the Facility include truck unloading operations, liquid storage in above-ground storage tanks, product storage in warehouses, and material handling for storage. This Facility operates year-round with seasonal variations in the movement and distribution of materials and products.

The Facility stores fertilizer substances and fumigants. Manufacturer-specific safety data sheets are included in Appendix A. Bulk ingredients found at the Facility include:

- Ammonium sulfate
- Ammonium polyphosphate
- Ammonium thiosulphate
- Magnesium sulfate
- Manganese sulfate
- Metam sodium
- Calcium ammonium nitrate
- 1,3-Dichloropropene
- Coated Urea
- Potassium chloride
- Potassium hydroxide
- Phosphoric acid
- Zinc sulfate

The Facility is 3.49 acres, including a mix of buildings, concrete loading zones, asphalt and gravel-surface vehicle travel and parking areas. The shallow drainage ditch potentially affected by the incident is located on the eastern side of the property (Figure 1). The area immediately west of the drainage ditch is gravel and includes equipment storage and loading structures. A currently unused portion of an agricultural field is located to the east of the drainage ditch. The ditch area conveys stormwater from the site to a detention pond located immediately south of the site. Soils at the site are unconsolidated alluvium overlain by crushed gravel.

2.1.2 December Event

In December 2022, a previous release of approximately 3,000 gallons of rinsate water was discovered by Wilbur-Ellis staff and reported to Ecology. The rinsate water was produced by rinsing used storage containers of fertilizer and collecting that rinsate in a storage tank. The rinsate water was then sent from a holding tank via drainage hose to a shallow drainage ditch at the eastern end of the Facility. Materials specifically of concern is ammonium polyphosphate, UAN-32-0-0 (urea ammonium nitrate), and Simplot CAN-17 (Calcium Ammonium Nitrate). It is not known if this occurred as a single event or if it reoccurred annually when the rinsate tank was full.

A second potential release of rinsate water from direct rinsing of empty totes with residual



fumigant to the same drainage ditch is suspected by Wilbur-Ellis staff to have occurred, approximately 50 feet south of the fertilizer rinsate ditch area. Fumigants of concern include Strike 80C[®] Fumigant (chloropicrin and 1,3-dichloropropene) and Sectagon 42[®] (Metam sodium).

2.2 ENVIRONMENTAL AND HYDROGEOLOGIC SETTING

2.2.1 Environmental Setting

The surface elevation of the area is approximately 1,090 feet above sea level and the land surface around the Facility is relatively flat and slopes slightly to the west. Land use in the area is a mix of agriculture, food preparation factories and associated industry, and a residential area located 1,000 ft south. The average annual rainfall for the area is 8.4 inches per year and the vegetation in the area consists of cultivated crops, sagebrush, and grasslands.

2.2.2 Hydrogeologic Setting

The Facility is located in the Palouse Slope of the Columbia Plateau in central Washington. The Columbia Plateau is an intermontane basin between the Rocky Mountains and the Cascade Range that is filled with mostly Cenozoic basalt and alluvial sediments. The Columbia Plateau is underlain by basalt flows and sedimentary interbeds, overlain by unconsolidated to semi-consolidated sedimentary deposits ranging from Miocene to Holocene (U.S. Geological Survey [USGS] 2012). The Palouse Slope occupies the northeast area of the Columbia Plateau and is much less structurally deformed than the Yakima Fold to the west and the Blue Mountains to the south. Othello is located near the easternmost terminus of the Yakima Fold Belt, locally expressed as the Saddle Mountains, which structurally block Crab Creek from its otherwise southern course, diverting the creek westward to the Columbia River.

Nearby well driller records indicate groundwater in the area occurs at approximately 16 feet below ground surface. Water supply wells located in Othello typically rely on the lower Wanapum Basalt (Varela and Associates, Inc. 2016). USGS analysis of water levels in the Wanapum Basalt underlying Othello and much of the central Columbia Basin indicate that groundwater in the deeper basalt aquifer flows to the south in the vicinity of Othello (USGS 2012). This basalt is overlain by alluvium that varies considerably in thickness across Othello, with a nearby well (Ecology Well ID AAS230) drilled in the property immediately north of the site indicating unconsolidated soils to a depth of 246 feet. Given that the relatively flat plateau of Othello abruptly drops 130 feet in elevation to the expansive channeled scablands of the Drumheller Channels approximately 1,500 feet west of the site, it is possible that shallow groundwater in unconsolidated deposits flows to the west.



3. SAMPLING APPROACH

3.1 SOIL SAMPLING APPROACH

An initial site visit was conducted on January 4, 2023. Wilbur-Ellis staff were interviewed, and a visual observation of the ditch areas was performed. The potential fertilizer and fumigant rinsate areas that were investigated are in a drainage ditch on the east side of the site.

Site characterization soil samples were collected longitudinally along the eastern portion of the drainage ditch (Figure 2). The 11 sample locations were located approximately 25 feet apart, from the northern edge of the drainage ditch to the south, approximately 50 feet beyond the rinsate tank release point. Samples were collected from two different depths: (1) surface and (2) two to three feet below ground surface. This depth interval distribution was specified to provide characterization of potential impacts to shallow soils. Soil was planned to be sampled at one location at the identified hose drain location (HA02) at four to five feet below ground surface and nine to ten feet below ground surface; however, sampling efforts with the hand auger were rejected at approximately three feet below ground surface so the deeper soil samples were not collected. (Figure 2). Two samples were collected in the unused portion of the agricultural field immediately east of the ditch to determine if soil on the adjacent property was impacted by the release.

Samples were collected with a dedicated plastic scoop for surface samples and a hand auger for collecting subsurface samples. Soil samples were submitted to Agriculture & Priority Pollutant Laboratories, Inc. (APPL) in Clovis, California. The hand auger was decontaminated per the procedure detailed in the Work Plan (EA 2023) between sampling locations. The soil borings were backfilled with removed material upon completion.

Soil samples were collected and analyzed for the chemicals of concern listed in Table 3-1. These chemicals of concern were selected based on the site-specific safety data sheets provided by the Facility.

Table 3-1 Soil Sampling Summary

Analysis	Method	Locations	Primary Samples
Ammonia	EPA Method 350.1	11	24
Nitrate/Nitrite	EPA Method 353.2	11	24
VOCs (1,3-Dichloropropene)	EPA Method 8260D	5	10
SVOCs (Metam Sodium)	EPA Method 131	5	10
SVOCs (Chloropicrin)	EPA Method 8081	5	10

Note: EPA = U.S. Environmental Protection Agency
SVOC = semivolatile organic compound
VOC = volatile organic compound



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4. FIELD INVESTIGATION AND ANALYTICAL RESULTS

4.1 FIELD INVESTIGATION

The field investigation was conducted on March 8, 2023. EA staff followed facility-specific safety procedures in addition to following EA's Site-Specific Health and Safety Plan (EA 2023). After conducting a private utility locate to clear the sampling locations, soil samples were collected.

A hand auger or disposable scoop was used to collect surface and subsurface soil samples to the depths proposed in the work plan, with the exception of boring location HA02, where refusal was repeatedly encountered at three feet below ground surface (rather than the planned eight to ten feet below ground surface); and locations HA09 and HA10 where refusal was encountered at 1.67 ft and 1.5 ft, respectively. No major deviations from the Work Plan (EA 2023) occurred during the field investigation, and the samples were submitted to AAPL on March 8, 2023, with a five-day turnaround time specified.

Soil borings advanced at the site typically encountered a silty sand with organics at the surface to silty sand with gravel a depth of two or three feet below ground surface depending on location. Groundwater was not encountered in any of the borings. Field sampling information is included in Appendix B.

4.2 SOIL RESULTS

The APPL laboratory analytical report is provided in Appendix D, and soil results are summarized in Table 2. The soil samples were compared to soil cleanup levels from Ecology's Cleanup Levels and Risk Calculations database to determine if the rinsate water impacted soil in the drainage swale east of the site above the Model Toxics Control Act (MTCA) Method B cleanup levels at any location or depth.



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5. SUMMARY AND CONCLUSIONS

A release of approximately 3,000 gallons from a fertilizer rinsate tank to surface soils in a drainage ditch east of the facility was reported to the Ecology in December 2022. EA collected soil samples to evaluate potential impacts to the environment of VOCs, metam sodium, ammonia, and nitrate from fertilizer and fumigant stored at the facility. fertilizer and fumigant constituents were not detected above the MTCA Method B Cleanup Levels in soil samples collected from the drainage ditch. However, all soil samples analyzed for 1,3-dichloropropene (a fumigant) had results that were non-detectable at values (i.e., laboratory detection limits) that exceeded the MTCA Method B Cleanup Level for soil. The laboratory followed the standard EPA SW-846 Hazardous Waste Test Methods 8260D for 1,3-dichloropropene with the laboratory detection limits at substantially low values and pursuant to Washington Administrative Code 173-340-707, the cleanup levels shall be considered to have been attained.



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6. REFERENCES

- EA Engineering, Science, and Technology, Inc., PBC (EA). 2023. *Site Specific Health and Safety Plan for Hazardous Waste and Environmental Services*. November. EA. 2023. *Othello Facility Site Assessment Work Plan*. Prepared for Wilbur-Ellis Company, LLC. February.
- U.S. Geological Survey (USGS). 2012. *Groundwater Status and Trends for the Columbia Plateau Regional Aquifer System, Washington, Oregon, and Idaho*, USGS Groundwater Resources Program, Scientific Investigations Report 2012-5261.
- Varela & Associates, Inc. 2016. *City of Othello Water Supply Plan*. September.



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FIGURES



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Site Location Map



EA Engineering, Science, and
Technology, Inc., PBC
2200 Sixth Avenue, Suite 707

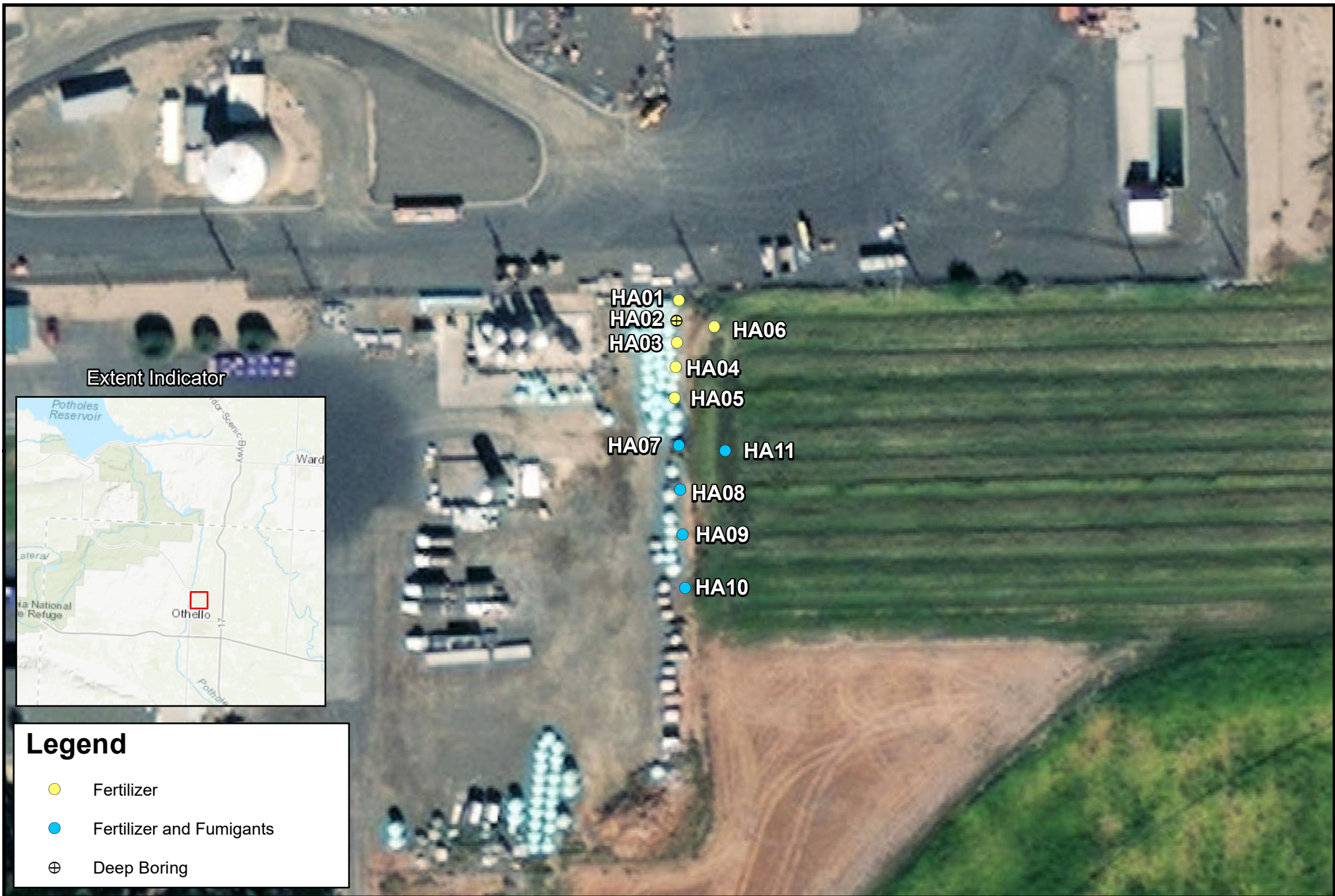
0 0.2 0.4 0.8 Miles



WILBUR ELLIS OTHELLO
OTHELLO, WASHINGTON

EA Project No. 1621509

FIGURE 1
WILBUR ELLIS OTHELLO
LOCATION & SITE OVERVIEW



EA Engineering, Science, and
Technology, Inc., PBC
2200 Sixth Avenue, Suite 707

0 40 80 Feet



WILBUR ELLIS OTHELLO
OTHELLO, WASHINGTON

EA Project No. 1621509

FIGURE 2
WILBUR ELLIS OTHELLO
SITE OVERVIEW



TABLES



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Table 1 Soil Sampling Analytical Results

Hand Auger Location	Sampled Interval (ft bgs)	Ammonia ^{1/} EPA 350.1 (mg/kg)	Nitrate/Nitrite EPA 353.2 (mg/kg)	1,3-Dichloropropene by EPA Method 8260D (mg/kg)	MITC (Metam sodium breakdown product) ^{2/} by EPA Method 131 (mg/kg)	Chloropicrin by EPA Method 8081 (mg/kg)
MTCA Method B Cleanup Level		8,000	16,000	0.00014	NA	NA
HA-01	0-0.5	430	1.6	---	---	---
	2-3	450	46	---	---	---
HA-02	0-0.5	3,200	55	---	---	---
	2-3	1,600	1,300	---	---	---
HA-03	0-0.5	1,800	41	---	---	---
	0-0.5 (DUP)	1,500	56	---	---	---
	2-3	2,400	990	---	---	---
	2-3 (DUP)	2,400	1,400	---	---	---
HA-04	0-0.5	2,500	140	---	---	---
	2-3	2,000	3,500	---	---	---
HA-05	0-0.5	2,600	31	---	---	---
	2-3	1,700	710	---	---	---
HA-06	0-0.5	2.1 U	31	---	---	---
	2-3	7.6	3.1	---	---	---
HA-07	0-0.5	2,000	24	<i>0.0015</i> U	0.0087 U	0.025 U
	2-3	1,900	420	<i>0.0018</i> U	0.0082 U	0.023 U
HA-08	0-0.5	2,100	190	<i>0.0032</i> U	0.0094 U	0.026 U
	2-3	1,800	420	<i>0.0020</i> U	0.0082 U	0.023 U
HA-09	0-0.5	1,400	56	<i>0.0024</i> U	0.0094 U	0.026 U
	2-3	1,400	130	<i>0.0018</i> U	0.0081 U	0.023 U
HA-10	0-0.5	1,100	7.9	<i>0.0030</i> U	0.010 U	0.028 U
	2-3	1,600	240	<i>0.0015</i> U	0.0084 U	0.023 U
HA-11	0-0.5	6.2	6.8	<i>0.0019</i> U	0.0078 U	0.022 U
	2-3	2.0 U	0.69 U	<i>0.0032</i> U	0.0075 U	0.021 U

Notes:

^{1/} Ammonia does not have a soil cleanup level under MTCA. However, through the nitrification process ammonia can oxidize to nitrite. A conservative approach is to screen ammonia in soil against the 8,000 mg/kg Nitrite in soil MTCA Method B cleanup level.

^{2/} Metam breaks down to MITC (methyl isothiocyanate). Exceedances of MTCA Method B cleanup level are in **bold**.

Analytes shown in italics have non-detectable values (i.e., laboratory detection limits) that exceed the MTCA Method B Cleanup Level.
(DUP) = Field duplicate

U = Not detected at the associated numerical value (reporting limit or method detection limit).

--- = Not tested

ft bgs = feet below ground surface

Appendix A
Site-Specific Safety Data Sheets

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0-0-13-0 Liquid Potassium Chloride

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations
Revision Date: 01/31/2017 Date of Issue: 01/31/2017

Version: 1.0

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: 0-0-13-0 Liquid Potassium Chloride

1.2. Intended Use of the Product

Use of the Substance/Mixture: Fertilizer

1.3. Name, Address, and Telephone of the Responsible Party

Company

The McGregor Company
PO Box 740; 401 Colfax Airport Rd.
Colfax, WA 99111
T 509-397-4355

1.4. Emergency Telephone Number

Emergency Number : 1-800-424-9300 CHEMTREC – TOLL FREE 24 HOUR EMERGENCY TELEPHONE NUMBER

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

GHS-US Classification

Not classified

2.2. Label Elements

GHS-US Labeling

No labeling applicable

2.3. Other Hazards

Exposure may aggravate pre-existing eye, skin, or respiratory conditions.

2.4. Unknown Acute Toxicity (GHS-US)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Not applicable

3.2. Mixture

Name	Product Identifier	%	GHS-US classification
Water	(CAS No) 7732-18-5	75.8 - 79	Not classified
Potassium chloride	(CAS No) 7447-40-7	19.95 - 23.716	Not classified
Sodium chloride	(CAS No) 7647-14-5	0.21 - 0.968	Not classified

SECTION 4: FIRST AID MEASURES

4.1. Description of First-aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid Measures After Inhalation: When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

First-aid Measures After Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation develops or persists.

First-aid Measures After Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

First-aid Measures After Ingestion: Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

Symptoms/Injuries: Not expected to present a significant hazard under anticipated conditions of normal use.

Symptoms/Injuries After Inhalation: Prolonged exposure may cause irritation.

Symptoms/Injuries After Skin Contact: Prolonged exposure may cause skin irritation.

Symptoms/Injuries After Eye Contact: May cause slight irritation to eyes.

Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects.

Chronic Symptoms: None known.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

0-0-13-0 Liquid Potassium Chloride

Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Product is not flammable.

Explosion Hazard: Product is not explosive.

Reactivity: Hazardous reactions will not occur under normal conditions.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

Firefighting Instructions: Use water spray or fog for cooling exposed containers.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Hydrogen chloride. Potassium oxides. Sodium oxides.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid prolonged contact with eyes, skin and clothing. Avoid breathing (vapor, mist, spray).

6.1.1. For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protective equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

6.2. Environmental Precautions

Prevent entry to sewers and public waters.

6.3. Methods and Materials for Containment and Cleaning Up

For Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

6.4. Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Precautions for Safe Handling: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Avoid prolonged contact with eyes, skin and clothing. Avoid breathing vapors, mist, spray.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations.

Storage Conditions: Keep container closed when not in use. Store in a dry, cool place. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials.

Incompatible Products: Strong acids, strong bases, strong oxidizers.

7.3. Specific End Use(s) Fertilizer.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), or OSHA (PEL).

8.2. Exposure Controls

Appropriate Engineering Controls

: Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal Protective Equipment

: Gloves. Protective clothing. Protective goggles.



Materials for Protective Clothing

: Chemically resistant materials and fabrics.

0-0-13-0 Liquid Potassium Chloride

Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Hand Protection	: Wear protective gloves.
Eye Protection	: Chemical safety goggles.
Skin and Body Protection	: Wear suitable protective clothing.
Respiratory Protection	: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.
Other Information	: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	: Liquid
Appearance	: No data available
Odor	: No data available
Odor Threshold	: No data available
pH	: 7.2 - 7.8
Evaporation Rate	: No data available
Melting Point	: No data available
Freezing Point	: No data available
Boiling Point	: No data available
Flash Point	: No data available
Auto-ignition Temperature	: No data available
Decomposition Temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor Pressure	: No data available
Relative Vapor Density at 20°C	: No data available
Relative Density	: No data available
Solubility	: No data available
Partition Coefficient: N-Octanol/Water	: No data available
Viscosity	: No data available

9.2. Other Information No additional information available

SECTION 10: STABILITY AND REACTIVITY

- 10.1. **Reactivity:** Hazardous reactions will not occur under normal conditions.
- 10.2. **Chemical Stability:** Stable under recommended handling and storage conditions (see section 7).
- 10.3. **Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- 10.4. **Conditions to Avoid:** Direct sunlight, extremely high or low temperatures, and incompatible materials.
- 10.5. **Incompatible Materials:** Strong acids, strong bases, strong oxidizers.
- 10.6. **Hazardous Decomposition Products:** None known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects

Acute Toxicity: Not classified

Potassium chloride (7447-40-7)	
LD50 Oral Rat	2600 mg/kg
Sodium chloride (7647-14-5)	
LD50 Oral Rat	3 g/kg
LC50 Inhalation Rat	> 42 g/m ³ (Exposure time: 1 h)

Skin Corrosion/Irritation: Not classified (pH: 7.2 - 7.8)

Serious Eye Damage/Irritation: Not classified (pH: 7.2 - 7.8)

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Prolonged exposure may cause irritation.

Symptoms/Injuries After Skin Contact: Prolonged exposure may cause skin irritation.

0-0-13-0 Liquid Potassium Chloride

Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Symptoms/Injuries After Eye Contact: May cause slight irritation to eyes.

Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects.

Chronic Symptoms: None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - General : Not classified.

Potassium chloride (7447-40-7)	
LC50 Fish 1	1060 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
EC50 Daphnia 1	825 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 Fish 2	750 (750 - 1020) mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Daphnia 2	880 mg/l (Exposure time: 24 h - Species: Daphnia magna)
Sodium chloride (7647-14-5)	
LC50 Fish 1	5560 (5560 - 6080) mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
EC50 Daphnia 1	1000 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 Fish 2	12946 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
EC50 Daphnia 2	340.7 (340.7 - 469.2) mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

12.2. Persistence and Degradability

0-0-13-0 Liquid Potassium Chloride	
Persistence and Degradability	Not established.

12.3. Bioaccumulative Potential

0-0-13-0 Liquid Potassium Chloride	
Bioaccumulative Potential	Not established.
Sodium chloride (7647-14-5)	
BCF Fish 1	(no bioaccumulation)

12.4. Mobility in Soil No additional information available

12.5. Other Adverse Effects

Other Information : Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste Treatment Methods

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

Ecology - Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

14.1. In Accordance with DOT Not regulated for transport

14.2. In Accordance with IMDG Not regulated for transport

14.3. In Accordance with IATA Not regulated for transport

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

Potassium chloride (7447-40-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Sodium chloride (7647-14-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Water (7732-18-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

15.2. US State Regulations Neither this product nor its chemical components appear on any US state lists.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 01/31/2017

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

SDS US (GHS HazCom)

Simplot 3-18-18 Liquid Fertilizer

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : Simplot 3-18-18 Liquid Fertilizer
Product code : M15400

1.2. Recommended use and restrictions on use

No additional information available

1.3. Supplier

JR Simplot Company
P.O. Box 70013
Boise, ID 83707
T 1-208-336-2110

1.4. Emergency telephone number

Emergency number : CHEMTREC 1-800-424-9300

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Acute toxicity (oral), Category 4 H302 Harmful if swallowed
Skin corrosion/irritation, Category 2 H315 Causes skin irritation

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labelling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) : Warning

Hazard statements (GHS-US) : H302 - Harmful if swallowed
H315 - Causes skin irritation

Precautionary statements (GHS-US) : P264 - Wash hands, forearms and face thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P301+P312 - If swallowed: Call a poison center/doctor/... if you feel unwell
P302+P352 - If on skin: Wash with plenty of water/...
P321 - Specific treatment (see supplemental first aid instruction on this label)
P330 - Rinse mouth
P332+P313 - If skin irritation occurs: Get medical attention
P362+P364 - Take off contaminated clothing and wash it before reuse
P501 - Dispose of contents/container to ...in accordance with local/regional/national regulations

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

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Name	Product identifier	%	GHS-US classification
Water	(CAS No) 7732-18-5		Not classified
phosphoric acid	(CAS No) 7664-38-2		Met. Corr. 1, H290 Skin Corr. 1B, H314
potassium hydroxide	(CAS No) 1310-58-3		Acute Tox. 4 (Oral), H302 Skin Corr. 1A, H314
urea (57-13-6)	(CAS No) 57-13-6		Eye Irrit. 2B, H320
ammonia, aqueous solutions	(CAS No) 1336-21-6		Skin Corr. 1B, H314

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Allow breathing of fresh air. Allow the victim to rest.
First-aid measures after skin contact	: Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention. Specific treatment (see supplemental first aid instruction on this label). Wash skin with plenty of water.
First-aid measures after eye contact	: Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist. Rinse eyes with water as a precaution.
First-aid measures after ingestion	: Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a POISON CENTER or doctor/physician if you feel unwell. Call a poison center or a doctor if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Potential adverse human health effects and symptoms	: Based on available data, the classification criteria are not met. Harmful if swallowed.
Symptoms/injuries after skin contact	: Causes skin irritation.
Symptoms/injuries after ingestion	: Swallowing a small quantity of this material will result in serious health hazard.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Foam. Dry powder. Carbon dioxide. Water spray. Sand.
Unsuitable extinguishing media	: Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Reactivity	: The product is non-reactive under normal conditions of use, storage and transport.
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5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures	: Ventilate spillage area. Evacuate unnecessary personnel.
----------------------	--

6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	: Ventilate area.

6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

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6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Take up liquid spill into absorbent material. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.
- Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection. For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour.
- Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands, forearms and face thoroughly after handling. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Keep container closed when not in use. Store in a well-ventilated place. Keep cool.
- Incompatible products : Strong bases. Strong acids.
- Incompatible materials : Sources of ignition. Direct sunlight.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

phosphoric acid (7664-38-2)		
ACGIH	ACGIH TWA (mg/m ³)	1 mg/m ³
ACGIH	ACGIH STEL (mg/m ³)	3 mg/m ³
potassium hydroxide (1310-58-3)		
ACGIH	ACGIH Ceiling (mg/m ³)	2 mg/m ³
ammonia, aqueous solutions (1336-21-6)		
ACGIH	ACGIH TWA (ppm)	25 ppm
ACGIH	ACGIH STEL (ppm)	25 ppm
Water (7732-18-5)		
Not applicable		
urea (57-13-6) (57-13-6)		
Not applicable		

8.2. Appropriate engineering controls

- Appropriate engineering controls : Ensure good ventilation of the work station.
- Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Avoid all unnecessary exposure.

Hand protection:

Wear protective gloves

Eye protection:

Chemical goggles or safety glasses. Safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

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Wear appropriate mask

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear, colorless liquid.
Colour	: Clear Solution
Odour	: Nearly odorless Mild ammonia odor
Odour threshold	: No data available
pH	: 7.4 - 7.8
Melting point	: Not applicable
Freezing point	: No data available
Boiling point	: 94 °C
Flash point	: Non-flammable
Relative evaporation rate (butylacetate=1)	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: No data available
Relative vapour density at 20 °C	: ≈
Relative density	: 1.42
Density	: 11.8 lbs/gal
Solubility	: Complete.
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive limits	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable. Not established.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Extremely high temperatures. Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Water-reactive materials. Strong acids. Strong bases.

10.6. Hazardous decomposition products

During high temperature in fire conditions. The product may reach melting point and decompose to release NH₃, SO_x, PO_x, or CN. fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

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Acute toxicity : Oral: Harmful if swallowed.

Simplot 3-18-18 Liquid Fertilizer	
ATE US (oral)	1556.0747663551 mg/kg bodyweight

phosphoric acid (7664-38-2)	
LD50 oral rat	(Rat)

potassium hydroxide (1310-58-3)	
LD50 oral rat	333 mg/kg (Rat)
ATE US (oral)	333 mg/kg bodyweight

urea (57-13-6) (57-13-6)	
LD50 oral rat	8471 mg/kg (Rat; OECD 401: Acute Oral Toxicity; Literature study; 14300 mg/kg bodyweight; Rat; Experimental value)
LD50 dermal rat	> 3200 mg/kg (Rat; Literature study)
LD50 dermal rabbit	> 21000 mg/kg (Rabbit; Literature study)
ATE US (oral)	8471 mg/kg bodyweight

Skin corrosion/irritation : Causes skin irritation.

pH: 7.4 - 7.8

Serious eye damage/irritation : Not classified

pH: 7.4 - 7.8

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Based on available data, the classification criteria are not met

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Based on available data, the classification criteria are not met

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Potential adverse human health effects and symptoms : Based on available data, the classification criteria are not met. Harmful if swallowed.

Symptoms/injuries after skin contact : Causes skin irritation.

Symptoms/injuries after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

phosphoric acid (7664-38-2)	
LC50 fish 1	138 mg/l (96 h; Pisces; Pure substance)
LC50 other aquatic organisms 1	240 mg/l (96 h; Protozoa; Pure substance)
LC50 fish 2	100 - 1000 mg/l (Pisces; Pure substance)
LC50 other aquatic organisms 2	100 - 1000 mg/l (Pure substance)
TLM fish 1	138 ppm (24 h; Gambusia affinis; Pure substance)
Threshold limit other aquatic organisms 1	240 mg/l (96 h; Protozoa; Pure substance)
Threshold limit other aquatic organisms 2	100 - 1000, Pure substance

potassium hydroxide (1310-58-3)	
LC50 fish 1	28.6 mg/l (24 h; Pisces; Pure substance)
LC50 other aquatic organisms 1	100 - 1000 mg/l (96 h)
LC50 fish 2	80 mg/l (96 h; Gambusia affinis; Pure substance)

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potassium hydroxide (1310-58-3)	
Threshold limit other aquatic organisms 1	100 - 1000,96 h
urea (57-13-6) (57-13-6)	
LC50 fish 1	> 6810 mg/l (96 h; Leuciscus idus; Nominal concentration)
EC50 Daphnia 1	> 10000 mg/l (48 h; Daphnia magna; Nominal concentration)
LC50 fish 2	17500 mg/l (96 h; Poecilia reticulata)
EC50 Daphnia 2	> 10000 mg/l (24 h; Daphnia magna)
TLM fish 1	17500 ppm (96 h; Poecilia reticulata)
Threshold limit other aquatic organisms 1	120000 mg/l (16 h; Bacteria; Toxicity test)
Threshold limit other aquatic organisms 2	> 10000 mg/l (Pseudomonas putida)
Threshold limit algae 1	> 10000 mg/l (168 h; Scenedesmus quadricauda; Growth rate)
Threshold limit algae 2	47 mg/l (192 h; Microcystis aeruginosa; Growth rate)

12.2. Persistence and degradability

Simplot 3-18-18 Liquid Fertilizer	
Persistence and degradability	Not established.
phosphoric acid (7664-38-2)	
Persistence and degradability	Biodegradability: not applicable. No (test)data on mobility of the components available. Not established.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable
potassium hydroxide (1310-58-3)	
Persistence and degradability	Biodegradability: not applicable. Low potential for adsorption in soil. Not established.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable
ammonia, aqueous solutions (1336-21-6)	
Persistence and degradability	Readily biodegradable in water. Ozonation in water. Biodegradable in the soil. No (test)data on mobility of the components available. Ozonation in the air. Not established.
Water (7732-18-5)	
Persistence and degradability	Not established.
urea (57-13-6) (57-13-6)	
Persistence and degradability	Inherently biodegradable. Hydrolysis in water. Not established.
ThOD	0.27 g O ₂ /g substance

12.3. Bioaccumulative potential

Simplot 3-18-18 Liquid Fertilizer	
Bioaccumulative potential	Not established.
phosphoric acid (7664-38-2)	
Log Pow	-0.77 (Estimated value)
Bioaccumulative potential	Bioaccumulation: not applicable. Not established.
potassium hydroxide (1310-58-3)	
Bioaccumulative potential	Bioaccumulation: not applicable. Not established.
ammonia, aqueous solutions (1336-21-6)	
Log Pow	-1.14
Bioaccumulative potential	Bioaccumulation: not applicable. Not established.
Water (7732-18-5)	
Bioaccumulative potential	Not established.

Simplot 3-18-18 Liquid Fertilizer

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urea (57-13-6) (57-13-6)	
BCF fish 1	1 (72 h; Brachydanio rerio; Fresh water)
BCF other aquatic organisms 1	11700 (Chlorella sp.)
Log Pow	< -1.73 (Experimental value; EU Method A.8: Partition Coefficient)
Bioaccumulative potential	Bioaccumulation: not applicable. Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known effects from this product.
GWPmix comment : No known effects from this product.

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to ...
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Other information : No supplementary information available.

TDG

Transport by sea

Air transport

SECTION 15: Regulatory information

15.1. US Federal regulations

Simplot 3-18-18 Liquid Fertilizer		
Not listed on the United States TSCA (Toxic Substances Control Act) inventory		
All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory		
Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.		
ammonia, aqueous solutions	CAS No 1336-21-6	%
phosphoric acid (7664-38-2)		
CERCLA RQ	5000 lb	
potassium hydroxide (1310-58-3)		
CERCLA RQ	1000 lb	
ammonia, aqueous solutions (1336-21-6)		
CERCLA RQ	1000 lb	

Simplot 3-18-18 Liquid Fertilizer

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15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

National regulations

No additional information available

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

phosphoric acid (7664-38-2)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

potassium hydroxide (1310-58-3)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

ammonia, aqueous solutions (1336-21-6)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Other information : None.

Full text of H-statements:

H290	May be corrosive to metals
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H320	Causes eye irritation

SDS US (GHS HazCom 2012)

Disclaimer: This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE INFORMATION HEREIN PROVIDED. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

Ammonium Polyphosphate 10-34-0

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : Ammonium Polyphosphate 10-34-0
Product code : M14090

1.2. Recommended use and restrictions on use

No additional information available

1.3. Supplier

JR Simplot Company
P.O. Box 70013
Boise, ID 83707
T 1-208-336-2110

1.4. Emergency telephone number

Emergency number : CHEMTREC 1-800-424-9300

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Skin corrosion/irritation, Category 2	H315	Causes skin irritation
Serious eye damage/eye irritation, Category 2B	H320	Causes eye irritation
Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation	H335	May cause respiratory irritation

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labelling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) : Warning

Hazard statements (GHS-US) :
H315 - Causes skin irritation
H320 - Causes eye irritation
H335 - May cause respiratory irritation

Precautionary statements (GHS-US) :
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray
P264 - Wash hands, forearms and face thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P302+P352 - If on skin: Wash with plenty of water/...
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P312 - Call a poison center/doctor/... if you feel unwell
P321 - Specific treatment (see supplemental first aid instruction on this label)
P332+P313 - If skin irritation occurs: Get medical attention
P337+P313 - If eye irritation persists: Get medical attention
P362+P364 - Take off contaminated clothing and wash it before reuse
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/container to ...

2.3. Other hazards which do not result in classification

No additional information available

Ammonium Polyphosphate 10-34-0

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2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	GHS-US classification
Ammonium Polyphosphate	(CAS No) 68333-79-9	56	Skin Irrit. 2, H315 Eye Irrit. 2B, H320 STOT SE 3, H335
Water	(CAS No) 7732-18-5	44	Not classified

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Allow breathing of fresh air. Allow the victim to rest.
First-aid measures after skin contact	: Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Wash skin with plenty of water.
First-aid measures after eye contact	: Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist. Rinse eyes with water as a precaution.
First-aid measures after ingestion	: Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a poison center or a doctor if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Potential adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.
Symptoms/injuries	: Not expected to present a significant hazard under anticipated conditions of normal use.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Foam. Dry powder. Carbon dioxide. Water spray. Sand.
Unsuitable extinguishing media	: Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Reactivity	: The product is non-reactive under normal conditions of use, storage and transport.
------------	--

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures	: Ventilate spillage area. Evacuate unnecessary personnel.
----------------------	--

6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	: Ventilate area.

Ammonium Polyphosphate 10-34-0

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6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Take up liquid spill into absorbent material. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection. For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Keep container closed when not in use. Store in a well-ventilated place. Keep cool.

Incompatible products : Strong bases. Strong acids.

Incompatible materials : Sources of ignition. Direct sunlight.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Ammonium Polyphosphate (68333-79-9)

Not applicable

Water (7732-18-5)

Not applicable

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Avoid all unnecessary exposure.

Hand protection:

Wear protective gloves

Eye protection:

Chemical goggles or safety glasses. Safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

Wear appropriate mask

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Ammonium Polyphosphate 10-34-0

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Appearance	: Dark liquid.
Colour	: Green
Odour	: characteristic
Odour threshold	: No data available
pH	: 6.5 - 7
Melting point	: Not applicable
Freezing point	: No data available
Boiling point	: No data available
Flash point	: Non-flammable
Relative evaporation rate (butylacetate=1)	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Complete.
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive limits	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable. Not established.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Zinc-clad and copper bearing alloys. Strong acids. Strong bases.

10.6. Hazardous decomposition products

Ammonia, POx and NOx. fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Ammonium Polyphosphate 10-34-0	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rat	> 5000 mg/kg
Ammonium Polyphosphate (68333-79-9)	
LD50 oral rat	5625 mg/kg (Rat)
LD50 dermal rabbit	> 3160 mg/kg (Rabbit)
ATE US (oral)	5625 mg/kg bodyweight

Ammonium Polyphosphate 10-34-0

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Skin corrosion/irritation	: Causes skin irritation. pH: 6.5 - 7
Serious eye damage/irritation	: Causes eye irritation. pH: 6.5 - 7
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified Based on available data, the classification criteria are not met
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified Based on available data, the classification criteria are not met
Specific target organ toxicity (single exposure)	: May cause respiratory irritation.
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Potential adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.
Symptoms/injuries	: Not expected to present a significant hazard under anticipated conditions of normal use.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.
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Ammonium Polyphosphate 10-34-0

LC50 fish 1	> 101 mg/l
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12.2. Persistence and degradability

Ammonium Polyphosphate 10-34-0

Persistence and degradability	Not established.
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Ammonium Polyphosphate (68333-79-9)

Persistence and degradability	Biodegradability in water: no data available. No (test)data on mobility of the components available. Not established.
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Water (7732-18-5)

Persistence and degradability	Not established.
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12.3. Bioaccumulative potential

Ammonium Polyphosphate 10-34-0

Bioaccumulative potential	Not established.
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Ammonium Polyphosphate (68333-79-9)

Bioaccumulative potential	No bioaccumulation data available. Not established.
---------------------------	---

Water (7732-18-5)

Bioaccumulative potential	Not established.
---------------------------	------------------

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming	: No known effects from this product.
GWPmix comment	: No known effects from this product.

Other information	: Avoid release to the environment.
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Ammonium Polyphosphate 10-34-0

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 13: Disposal considerations

13.1. Disposal methods

- Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
- Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.
- Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Other information : No supplementary information available.

TDG

Transport by sea

Air transport

SECTION 15: Regulatory information

15.1. US Federal regulations

Ammonium Polyphosphate 10-34-0

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

National regulations

No additional information available

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : None.

Full text of H-statements:

H315	Causes skin irritation
H320	Causes eye irritation
H335	May cause respiratory irritation

SDS US (GHS HazCom 2012)

Ammonium Polyphosphate 10-34-0

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Disclaimer: This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE INFORMATION HEREIN PROVIDED. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name : Ammonium Thiosulphate 12-0-0-26S

EC number : 231-982-0

REACH Registration number

Registration number	Substance
01-2119537325-41-XXXX	Ammonium thiosulphate

CAS number : 7783-18-8

Product code : 1724-27958; 3280-27959

Product description : Ammonium Thiosulphate Fertiliser Solution 12-0-0 (26S)

Product type : Liquid.

Other means of identification : Not available.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses	
Fertiliser. Manufacture of speciality fertilisers. Manufacture of inorganic products.	
Uses advised against	Reason
None.	Evaluation

1.3 Details of the supplier of the safety data sheet

Nutrien Europe SA
Avenue Louise 326/36
1050 Bruxelles
Belgium
Tel : +32 (0)2 646 70 00
Fax : +32 (0)2 646 68 60
commercial@nutrien.eu

e-mail address of person responsible for this SDS : productsafety@nutrien.com

1.4 Emergency telephone number

National advisory body/Poison Centre

Telephone number : Nutrien Safety Data Sheets are available in many languages at <https://agproducts.nutrien.com/products/>
Physicians, Poison Centres, or the Public may contact Nutrien's Global Emergency Response Number 24/7/365 for service in many languages at +1 303 389 1654

AUSTRIA +43 1 406 43 43
AZERBAIJAN +994 125 979 924
BELARUS +375 17 287 00 92
BELGIUM +32 70 245 245
BULGARIA +359 2 9154 378; +359 887 435 325
CROATIA +358 1 2348 342
CZECH REPUBLIC +420 22 49 192 93
DENMARK +45 82 12 12 12
ESTONIA 16662; +372 62 69 379
FINLAND +358 9 471977

Ammonium Thiosulphate 12-0-0-26S

SECTION 1: Identification of the substance/mixture and of the company/undertaking

FRANCE

Angers +33 (0)2 41 48 21 21
Bordeaux +33 (0)5 56 96 40 80
Lille 0800 59 59 59 (national callers)
Lyon +33 (0)4 72 11 69 11
Marseille +33 (0)4 91 75 25 25
Nancy +33 (0)3 83 22 50 50
Paris +33 (0)1 40 05 48 48
Rennes +33 (0)2 99 59 22 22
Strasbourg +33 (0)3 88 37 37 37
Toulouse +33 (0)5 61 77 74 47

GEORGIA +995 99 53 33 20

GERMANY

Berlin +49 30 192 40
Bonn +49 228 192 40
Erfurt +49 361 730 730
Freiburg +49 761 192 40
Goettingen +49 551 192 40
Homburg (Saar) +49 6841 192 40
Mainz +49 6131 192 40
Munich +49 89 192 40

GREECE +30 21 07 79 37 77

HUNGARY +36 80 20 11 99

ICELAND +354 543 22 22

IRELAND +353 1 837 9964 (medical professionals) +353 1 809 2166 (public)

ISRAEL +972 4 854 19 00

ITALY

Bergamo +39 800 883 300
Firenze +39 55 794 7819
Foggia +39 881 732 326
Genoa +39 10 563 62 45
Milan +39 02 6610 1029
Padova +39 49 827 50 78
Pavia +39 38 224 444
Rome +39 06 305 43 43
Turin +39 011 663 7637

KAZAKHSTAN +7 3272 925 868

LITHUANIA +370 5 236 20 52; +370 687 533 78

NETHERLANDS +31 30 274 88 88

NORWAY +47 22 59 13 00

POLAND

Gdansk +48 58 682 04 04
Krakow +48 12 411 99 99
Lodz +48 42 63 14 724
Sosnowiec +48 32 266 11 45
Warszawa +48 22 619 66 54
Wroclaw +48 71 343 30 08

PORTUGAL 808 250 143 (national callers)

ROMANIA +402 212 106 282

RUSSIAN FEDERATION

Ekaterinburg +7 343 229 98 57
Moscow +7 495 628 1687
Saint-Petersburg +7 921 757 3228

SERBIA +381 11 3608 440

SLOVAKIA +421 2 5477 4166

SLOVENIA +386 41 635 500

SPAIN +34 91 562 0420

SWEDEN 112 (national callers); +46 (0)10 456 6700

SWITZERLAND +41 44 251 51 51 (in Switzerland dial 145)

THE FORMER YUGOSLAVIA +38 923 147 635

TURKEY +90 0312 433 70 01 or 0 800 314 7900

SECTION 1: Identification of the substance/mixture and of the company/undertaking

UNITED KINGDOM
Belfast 844 892 0111
Birmingham 844 892 0111
Edinburgh 844 892 0111
Newcastle Upon Tyne +44 191 2606182; +44 191 2606180
Penarth 844 892 0111

Supplier

Telephone number : Nutrien Europe SA
EMERGENCY TELEPHONE NUMBERS:
Transportation: 00-1-303-389-1654
Medical: 00-1-303-389-1654

Hours of operation : 24/7/365

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mono-constituent substance

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

This product does not meet the criteria for classification in any hazard class according to Regulation (EC) 1272/2008 on classification, labelling and packaging of substances and mixtures.

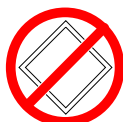
Not classified.

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :



Signal word : No signal word.

Hazard statements : Not applicable.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Supplemental label elements : Safety data sheet available on request.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

Special packaging requirements

Containers to be fitted with child-resistant fastenings : Not applicable.

Tactile warning of danger : Not applicable.

SECTION 2: Hazards identification

2.3 Other hazards

Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII : Not applicable.

Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII : Not applicable.

Other hazards which do not result in classification : Not available.

SECTION 3: Composition/information on ingredients

3.1 Substances : Mono-constituent substance

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
Ammonium thiosulphate	REACH Reg.#: 01-2119537325-41-XXXX EC No.: 231-982-0 CAS: 7783-18-8	56-60	Not classified.	[A]

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Type

[A] Constituent

[B] Impurity

[C] Stabilising additive

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

SECTION 4: First aid measures

4.1 Description of 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. Get medical attention if irritation occurs.
- Inhalation** : Remove person to fresh air and keep comfortable for breathing. Get medical attention if symptoms occur. 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. Get medical attention if symptoms occur.
- Ingestion** : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. Mouth-to-mouth resuscitation of oral exposure patients is not recommended. First-aiders with contaminated clothing should be properly decontaminated.

4.2 Most important symptoms and effects, both acute and delayed

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

SECTION 4: First aid measures

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. For professional, multilingual, medical support, in case of medical emergencies involving Nutrien products, telephone the Nutrien global 24 hour Emergency Number: 00-1-303-389-1654.
- Specific treatments** : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media** : Non-flammable. Material will not burn. Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

5.2 Special hazards arising from the substance or mixture

- Hazards from the substance or mixture** : In a fire or if heated, a pressure increase will occur and the container may burst.
- Hazardous combustion products** : Decomposition products may include the following materials:
nitrogen oxides
sulfur oxides

5.3 Advice for firefighters

- 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.
- 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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
- Additional information** : No specific fire or explosion hazard. Contain and collect the water used to fight the fire for later treatment and disposal.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. 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".

6.2 Environmental precautions

- : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused adverse impacts (sewers, waterways, soil or air).

6.3 Methods and material for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

SECTION 6: Accidental release measures

- Large spill** : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Pump spilled material to a suitable, labelled container for recycling or disposal. Dispose of via a licensed waste disposal contractor.
or
Recover the material and use it for its intended purpose.
Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
- 6.4 Reference to other sections** : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance.

7.1 Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- 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.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end use(s)

- Recommendations** : Not available.
- Industrial sector specific solutions** : Not applicable. Non-hazardous substance.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

No exposure limit value known.

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

DNELs/DMELs

SECTION 8: Exposure controls/personal protection

Product/ingredient name	Type	Exposure	Value	Population	Effects
Ammonium thiosulphate	DNEL	Long term exposure	350 mg/m ³	Workers	Systemic

PNECs

Product/ingredient name	Compartment Detail	Value	Method Detail
Ammonium thiosulphate	Fresh water	0.78 mg/l	Assessment Factors

8.2 Exposure controls

- Appropriate engineering controls** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

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. Recommended: splash goggles

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.

- 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. Recommended: neoprene rubber gloves polyvinyl chloride (PVC) 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.

- 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.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

- Physical state** : Liquid. [Clear to slightly hazy liquid.]
- Colour** : Colourless to light yellow.
- Odour** : Ammoniacal.
- Odour threshold** : Not available.
- pH** : 8,5
- Melting point/freezing point** : 5°C
- Initial boiling point and boiling range** : 105°C

SECTION 9: Physical and chemical properties

Flash point	: [Product does not sustain combustion.]
Evaporation rate	: Not available.
Flammability (solid, gas)	: Non-combustible. Decomposes on heating to high temperature.
Upper/lower flammability or explosive limits	: Not available.
Vapour pressure	: Not available.
Vapour density	: Not available.
Relative density	: 1,33
Solubility(ies)	: Easily soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/ water	: Not available.
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: Not available.
Viscosity	: Not available.
Explosive properties	: No specific fire or explosion hazard.
Oxidising properties	: No oxidising ingredients present.

9.2 Other information

Solubility in water : Soluble in water in any proportion.

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	: The product is stable.
10.3 Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: No specific data.
10.5 Incompatible materials	: Incompatible with: oxidising agents acids Incompatible with copper alloys, copper, and zinc.
10.6 Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ammonium thiosulphate	LC50 Inhalation Dusts and mists	Rat	>2260 mg/m ³	4 hours
	LD50 Oral	Mouse	2100 mg/kg	-
	LD50 Oral	Rat	2890 mg/kg	-

Conclusion/Summary : Very low toxicity to humans or animals. Effects are not sufficient for classification as hazardous.

Irritation/Corrosion

SECTION 11: Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
Ammonium thiosulphate	Skin - Non-irritating to the skin.	Rat	-	-	-

Conclusion/Summary

- Skin** : Non-irritating to the skin.
- Eyes** : No known significant effects or critical hazards.
- Respiratory** : No known significant effects or critical hazards.

Sensitisation

Conclusion/Summary

- Skin** : No known significant effects or critical hazards.
- Respiratory** : No known significant effects or critical hazards.

Mutagenicity

- Conclusion/Summary** : No known significant effects or critical hazards.

Carcinogenicity

- Conclusion/Summary** : No known significant effects or critical hazards.

Reproductive toxicity

- Conclusion/Summary** : No known significant effects or critical hazards.

Teratogenicity

- Conclusion/Summary** : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure : Skin contact

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

- Potential immediate effects** : No known significant effects or critical hazards.
- Potential delayed effects** : No known significant effects or critical hazards.

Long term exposure

- Potential immediate effects** : No known significant effects or critical hazards.

SECTION 11: Toxicological information

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

Not available.

Conclusion/Summary : No known significant effects or critical hazards.

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.

Other information : Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Ammonium thiosulphate	Acute LC50 770 mg/l	Fish - Trout	96 hours

Conclusion/Summary : Very low acute toxicity to fish. Based on available data, the classification criteria are not met.

12.2 Persistence and degradability

Conclusion/Summary : Not applicable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Ammonium thiosulphate	-	-	Readily

12.3 Bioaccumulative potential

Not available.

12.4 Mobility in soil

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

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.

vPvB : Not applicable.

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

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance.

13.1 Waste treatment methods

Product

SECTION 13: Disposal considerations

- Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. 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.
- Hazardous waste** : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 2008/98/EC.

European waste catalogue (EWC)

Waste code	Waste designation
06 06 99	wastes from the MFSU of sulphur chemicals, sulphur chemical processes and desulphurisation processes wastes not otherwise specified

Packaging

- Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
- Special precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	ICAO
14.1 UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-	-
14.3 Transport hazard class(es)	-	-	-	-
14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

- 14.6 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.

- 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** : Not available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions : Not applicable.
on the manufacture,
placing on the market and
use of certain dangerous
substances, mixtures and
articles

Other EU regulations

Europe inventory : This material is listed or exempted.

Ozone depleting substances (1005/2009/EU)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Seveso Directive

This product is not controlled under the Seveso III Directive.

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.

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.
Japan	: Japan inventory (ENCS) : Not determined. Japan inventory (ISHL) : Not determined.
Malaysia	: Not determined.
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	: Not determined.
Turkey	: Not determined.
United States	: This material is listed or exempted.

SECTION 15: Regulatory information

15.2 Chemical safety assessment : Complete.

SECTION 16: Other information

✓ Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number
vPvB = Very Persistent and Very Bioaccumulative

Key literature references and sources for data : REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 18 DECEMBER 2006, with successive adaptations, amendments, and corrigenda.
REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 16 DECEMBER 2008, with successive adaptations, amendments, and corrigenda.
ECHA, European Chemicals Agency, Classification and Labelling Database
DIRECTIVE 2012/18/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 4 JULY 2012 on the control of major-accident hazards involving dangerous substances
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), latest revision.
Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods, with successive amendments.
REGULATION (EC) No 2003/2003 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 13 OCTOBER 2003 RELATING TO FERTILISERS, with successive adaptations, amendments, and corrigenda.
American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances, latest edition.
Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers
ERG 2016 Emergency Response Guidebook
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans.
The Fertilizer Institute, Toxicity Testing Results, March 2003

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
This product does not meet the criteria for classification in any hazard class according to Regulation (EC) 1272/2008 on classification, labelling and packaging of substances and mixtures.	Weight of evidence

Full text of abbreviated H statements

Not applicable.

Full text of classifications [CLP/GHS]

Not applicable.

Date of issue/ Date of revision : 3/22/2019

Date of previous issue : 8/2/2018

Version : 3.5

Notice to reader

SECTION 16: Other information

DISCLAIMER AND LIMITATION OF LIABILITY

The information and recommendations contained in this Safety Data Sheet ("SDS") relate only to the specific material referred to herein (the "Material") and do not relate to the use of such Material in combination with any other material or process. The information and recommendations contained herein are believed to be current and correct as of the date of this SDS. HOWEVER, THE INFORMATION AND RECOMMENDATIONS ARE PRESENTED WITHOUT WARRANTY, REPRESENTATION OR LICENSE OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THEIR ACCURACY, CORRECTNESS OR COMPLETENESS, AND THE SELLER, SUPPLIER AND MANUFACTURER OF THE MATERIAL AND THEIR RESPECTIVE AFFILIATES (COLLECTIVELY, THE "SUPPLIER") DISCLAIM ALL LIABILITY FOR RELIANCE ON SUCH INFORMATION AND RECOMMENDATIONS. This SDS is not a guarantee of safety. A buyer or user of the Material (a "Recipient") is responsible for ensuring that it has all current information necessary to safely use the Material for its specific purpose.

FURTHERMORE, THE RECIPIENT ASSUMES ALL RISK IN CONNECTION WITH THE USE OF THE MATERIAL. THE RECIPIENT ASSUMES ALL RESPONSIBILITY FOR ENSURING THE MATERIAL IS USED IN A SAFE MANNER IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL, HEALTH, SAFETY AND SECURITY LAWS, POLICIES AND GUIDELINES. THE SUPPLIER DOES NOT WARRANT THE MERCHANTABILITY OF THE MATERIAL OR THE FITNESS OF THE MATERIAL FOR ANY PARTICULAR USE AND ASSUMES NO RESPONSIBILITY FOR INJURY OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY OR RELATED TO THE USE OF THE MATERIAL.

Section 1. Identification

Product identifier : UAN 32-0-0

Other means of identification : Product code: 508-12617
Historic MSDS #: 16007
Synonym: Urea Ammonium Nitrate Solution 32-0-0; UAN Solution 32-0-0; UAN Liquid Fertilizer Blend 32-0-0; UAN 32

Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	
Fertilizer solution	
Uses advised against	Reason
None.	Risk assessment.

Supplier's details : Agrium Canada Partnership (A Subsidiary of Nutrien Ltd.)
13131 Lake Fraser Drive, S.E.
Calgary, Alberta, Canada, T2J 7E8

Nutrien US LLC (A Subsidiary of Nutrien Ltd.)
5296 Harvest Lake Drive
Loveland, CO 80538

Company phone number (North America):
1-800-403-2861 (Customer Service)

Emergency telephone number (with hours of operation) :  Nutrien 24 Hr Emergency Telephone Numbers:
English:
Transportation Emergencies: 1-800-792-8311
Medical Emergencies: 1-303-389-1653

French or Spanish:
Transportation or Medical Emergencies: 1-303-389-1654

Section 2. Hazard identification

Classification of the substance or mixture : EYE IRRITATION - Category 2B

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

GHS label elements

Hazard pictograms : **Not Applicable.**
No Aplicable.
Non applicable.

Signal word : Warning

Hazard statements : Causes eye irritation.

Precautionary statements

General : Not applicable.

Prevention : Wash hands thoroughly after handling.

Section 2. Hazard identification

Response	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
Storage	: Not applicable.
Disposal	: Not applicable.
Supplemental label elements	: None known.
Other hazards which do not result in classification	: None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% (w/w)	CAS number
Ammonium nitrate	45	6484-52-2
Urea	35	57-13-6
Water	20	7732-18-5

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	: Begin eye irrigation immediately. Exposures to eye irritants may require medical evaluation following decontamination if pain or irritation persists. Immediately rinse eyes with large quantities of water or saline for a minimum of 15 minutes. If possible, remove contact lenses being careful not to cause additional eye damage. If the initial water supply is insufficient, keep the affected area wet with a moist cloth and transfer the person to the nearest place where rinsing can be continued for the recommended length of time. For additional advice call the medical emergency number on this SDS or your poison center or doctor.
Inhalation	: Remove person to fresh air. No known significant effects. Seek medical attention for any signs of wheezing and/or breathing difficulties. For additional advice call the medical emergency number on this SDS or your poison center or medical provider.
Skin contact	: No known significant effects. Rinse the affected areas with water. Remove contaminated clothing, jewelry, and shoes. Wash/clean items before reuse. Seek medical attention for persistent skin pain or irritation. For additional advice call the medical emergency number on this SDS or your poison center or doctor.
Ingestion	: Nitrate based product. May be irritating to mouth, throat and stomach. May cause methemoglobinemia (a condition that interferes with the oxygen-carrying capacity of the blood) if ingested in large quantities or over a prolonged period of time. Oral exposures: if the affected person requires CPR, avoid mouth to mouth contact. Do not induce vomiting. If vomiting occurs, attempt to keep head lower than chest so that vomit does not enter the lungs. Wash (decontaminate) face and mouth with water to remove visible material. If the exposed person is conscious and can swallow, give 1-2 sips of water. Do not give anything else by mouth. Loosen tight clothing such as collar, tie, belt or waistband to prevent any breathing restrictions. Call for emergency transportation to a hospital if the exposed person feels sick or has breathing difficulties, or a large amount is suspected ingested. For additional advice, call the medical emergency number on this SDS or your poison center or doctor.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: Causes eye irritation.
--------------------	--------------------------

Section 4. First-aid measures

- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : May be irritating to the digestive tract. May cause nausea, vomiting, diarrhea, and abdominal pain. May cause methemoglobinemia (a condition that interferes with the oxygen-carrying capacity of the blood) if ingested in large quantities or over a prolonged period of time. Persons with methemoglobinemia may have blue tinge color to lips, nails, and skin. Also they may have shortness of breath or trouble breathing. Persons more susceptible to methemoglobinemia include: very young (less than 3 months), the elderly, those with chronic obstructive pulmonary disease (COPD), anemia, coronary artery disease, recent surgery or infection, and those with a genetic deficiency of G-6-PD.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
irritation
watering
redness
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : Over-exposure by ingestion is unlikely under normal working conditions. Adverse symptoms may include the following:
nausea or vomiting
stomach pains
diarrhea
Methemoglobinemia (see Acute Health Effects)

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

- Notes to physician** : In case of inhalation of decomposition products (carbon monoxide, carbon dioxide, nitrogen oxides) in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for up to 72 hours. In cases of suspected methemoglobinemia, monitor methemoglobin blood levels. Treatment is supportive; methylene blue may be indicated based on patient severity. 24 Hr Medical Emergency telephone number for professional support: English: 1-303-389-1653; French or Spanish: 1-303-389-1654.
- Specific treatments** : Call the medical emergency number on this SDS or your poison center or doctor immediately if large quantities have been ingested. In cases of suspected methemoglobinemia, methylene blue may be indicated based on patient severity.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. Mouth-to-mouth resuscitation of oral exposure patients is not recommended. First-aiders with contaminated clothing should be properly decontaminated.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Non-flammable. Material will not burn. Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

- Specific hazards arising from the chemical** : Not an oxidizer at the manufactured concentration. It may become an oxidizing liquid if concentrated by evaporation. If evaporated to dryness, the product acts as an oxidizing agent, and supports combustion by liberating oxygen even if smothered. Cool containing vessels with flooding quantities of water until well after fire is out. A self contained breathing apparatus should be used to avoid inhalation of toxic fumes. When heated to decomposition it emits toxic fumes (NH₃, NO, NO₂...). Contaminated water can cause environmental damage. Contain and collect water used to fight fire.

Section 5. Fire-fighting measures

- Hazardous thermal decomposition products** : Decomposes on heating. Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
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.
- 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.
- Remark** : Dangerous if allowed to dry out. Residue may exhibit oxidizing properties.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. 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** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused adverse impacts (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Small spill** : Use personal protective equipment as required. Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Use personal protective equipment as required. Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Pump spilled material to a suitable, labeled container for recycling or disposal. Dispose of via a licensed waste disposal contractor. 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). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous.
- 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 original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. Incompatible with copper alloys. May form corrosive sludge on prolonged storage. Contact your sales representative or a metallurgical specialist to ensure compatibility with your equipment.

While UAN as produced is not classified as an oxidizer, it is important to prevent conditions during handling and storage which may result in concentration of the product which may encourage it to behave as an oxidizer. Ensure that UAN solution pumps are thermally protected against exceeding a temperature of 66 deg. C (150 deg. F). Also ensure that piping systems, if insulated, are not externally heated (heat traced). While this product, as produced, is not classified as an oxidizer, it is important to prevent conditions during handling and storage which may result in concentration of the product which may encourage it to behave as an oxidizer. Ensure that pumps are thermally protected against exceeding a temperature of 66 deg. C (150 deg. F). Also ensure that piping systems, if insulated, are not externally heated (heat traced). Refer to NFPA 400 Hazardous Materials Code for further information on the safe storage and handling of hazardous materials.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Canadian Regulations:	None assigned.
U.S. Federal Regulations:	None assigned.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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.

Skin protection

Hand protection : The personal protective equipment required varies, depending upon your risk assessment. 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. No special measures are typically indicated.

Body protection : The personal protective equipment required varies, depending upon your risk assessment. 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. Contact your personal protective equipment manufacturer to verify the compatibility of the equipment for the intended purpose.

Section 8. Exposure controls/personal protection

- Other skin protection** : Hazard of slipping on spilled product. 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. Contact your personal protective equipment manufacturer to verify the compatibility of the equipment for the intended purpose.
- 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. For U.S. work sites where respiratory protection is required, ensure that a respiratory protection program meeting 29 CFR 1910.134 requirements is in place.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Liquid. [Clear to slightly hazy liquid.]
- Color** : Not available.
- Odor** : Ammoniacal. [Slight]
- Odor threshold** : Not available.
- pH** : 6 to 7
- Melting point** : -2°C (28.4°F)
- Boiling point** : 121°C (249.8°F)
- Flash point** : [Product does not sustain combustion.]
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Non-combustible. Decomposes on heating. Evolves toxic fumes when heated to decomposition.
- Lower and upper explosive (flammable) limits** : Not applicable.
- Vapor pressure** : Not available.
- Vapor density** : Not available.
- Relative density** : 1.32
- Solubility** : Easily soluble in the following materials: cold water and hot water.
- Solubility in water** : Water-soluble liquid
- Partition coefficient: n-octanol/water** : Not available.
- Auto-ignition temperature** : Not applicable.
- Decomposition temperature** : Not applicable.
- Viscosity** : Not available.

Section 10. Stability and reactivity

- Reactivity** : Not an oxidizer at the manufactured concentration. It may become an oxidizing liquid if concentrated by evaporation. Keep away from incompatible materials.
- 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** : Do not allow to dry out. Avoid high temperatures in combination with high pressures.

Section 10. Stability and reactivity

Incompatible materials : Adequate, well engineered systems must be provided for the safe storage, transfer and use of this product. May be incompatible with some materials of construction. Incompatible with copper alloys, copper, and zinc. May form corrosive sludge on prolonged storage. Incompatible with halogens. Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

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

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Urea Ammonium Nitrate Solution	LD50 Dermal	Rat - Male, Female	>5000 mg/kg	-
Ammonium nitrate	LD50 Oral	Rat	2217 mg/kg	-
	LD50 Oral	Rat - Male, Female	2950 mg/kg	-
Urea	LD50 Oral	Rat	8471 mg/kg	-
Water	LD50 Oral	Rat	>90 g/kg	-

Conclusion/Summary : Very low toxicity to humans or animals.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Ammonium nitrate	Skin	Rabbit	0	-	72 hours
	Eyes - Edema of the conjunctivae	Rabbit	3	-	3 days

Conclusion/Summary

Skin : Non-irritating to the skin.

Eyes : Irritating to the eyes.

Sensitization

Product/ingredient name	Route of exposure	Species	Result
Ammonium nitrate	Skin	Mouse	Not sensitizing

Conclusion/Summary

Skin : Non-sensitizer.

Respiratory : Not available.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Ammonium nitrate	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative
	OECD 476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative

Conclusion/Summary : No mutagenic effect.

Carcinogenicity

Not available.

Conclusion/Summary : No known significant effects or critical hazards. Potential for nitrosamine formation if ingested. Do not ingest.

Reproductive toxicity

Section 11. Toxicological information

Product/ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Dose	Exposure
Ammonium nitrate	Negative	Negative	Negative	Rat - Male, Female	Oral: 1500 mg/kg	-

Conclusion/Summary : No known significant effects or critical hazards.

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Ammonium nitrate	Negative - Oral	Rat - Female	1500 mg/kg	-

Conclusion/Summary : No known significant effects or critical hazards.

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 : Routes of entry anticipated:
Oral
Eye contact

Potential acute health effects

Eye contact : Causes eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : May be irritating to the digestive tract. May cause nausea, vomiting, diarrhea, and abdominal pain. May cause methemoglobinemia (a condition that interferes with the oxygen-carrying capacity of the blood) if ingested in large quantities or over a prolonged period of time. Persons with methemoglobinemia may have blue tinge color to lips, nails, and skin. Also they may have shortness of breath or trouble breathing. Persons more susceptible to methemoglobinemia include: very young (less than 3 months), the elderly, those with chronic obstructive pulmonary disease (COPD), anemia, coronary artery disease, recent surgery or infection, and those with a genetic deficiency of G-6-PD.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
irritation
watering
redness

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : Over-exposure by ingestion is unlikely under normal working conditions. Adverse symptoms may include the following:
nausea or vomiting
stomach pains
diarrhea
Methemoglobinemia (see Acute Health Effects)

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

Short term exposure

Potential immediate effects : See above

Section 11. Toxicological information

Potential delayed effects : See above

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : Potential for nitrosamine formation if ingested. Do not ingest.

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.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Urea Ammonium Nitrate Fertilizer Solution	NOEC >1700 mg/l Marine water	Algae	10 days
Ammonium nitrate Urea	Acute EC50 490 mg/l Fresh water	Daphnia	48 hours
	Acute LC50 447 mg/l Fresh water	Fish	48 hours
	Chronic NOEC 6 to 12 mg/l Fresh water	Crustaceans - Cladocera	21 days
	Acute EC50 3910000 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 1000 mg/l Marine water	Crustaceans - Chaetogammarus marinus - Young	48 hours
	Acute LC50 5000 µg/l Fresh water Chronic NOEC 2 g/L Fresh water	Fish - Colisa fasciata - Fingerling Fish - Heteropneustes fossilis	96 hours 30 days

Conclusion/Summary : Practically non-toxic to aquatic organisms. Very low acute toxicity to fish.

Persistence and degradability

Conclusion/Summary : According to EC criteria: Readily biodegradable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Urea Ammonium Nitrate Fertilizer Solution	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Urea	<-1.73	-	low
Water	-1.38	-	low

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. 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. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification	DOT Classification	Mexico Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-	-
Transport hazard class(es)	-	-	-	-	-
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.
Additional information	-	-	-	-	-

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

Section 15. Regulatory information

Canadian lists

Canadian NPRI : The following components are listed: Ammonia (total)

CEPA Toxic substances : None of the components are listed.

Canada inventory : All components are listed or exempted.

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)

Section 15. Regulatory information

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia	: All components are listed or exempted.
China	: All components are listed or exempted.
Europe	: All components are listed or exempted.
Japan	: All components are listed or exempted.
Malaysia	: Not determined.
New Zealand	: All components are listed or exempted.
Philippines	: All components are listed or exempted.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Turkey	: Not determined.

U.S. Federal Regulations: : **TSCA 4(a) final test rules:** Biuret; Urea, reaction products with formaldehyde
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
TSCA 8(b) inventory: All components are listed or exempted.

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

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard
 Delayed (chronic) health hazard.

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard.
Ammonium nitrate	≥25 - <50	No.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Ammonium nitrate	6484-52-2	45
Supplier notification	Ammonium nitrate	6484-52-2	45

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

Section 15. Regulatory information

Massachusetts	: The following components are listed: Ammonium nitrate
New York	: None of the components are listed.
New Jersey	: The following components are listed: Ammonium nitrate; Nitric acid ammonium salt.
Pennsylvania	: The following components are listed: Nitric acid ammonium salt.
California Prop. 65	: Not listed.

Section 16. Other information

History

Date of issue/Date of revision : 6/13/2018

Date of previous issue : 1/1/2018

Version : 2.5

Indicates information that has changed from previously issued version.

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 HPR = Hazardous Products Regulations
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Procedure used to derive the classification

Classification	Justification
EYE IRRITATION - Category 2B	Weight of evidence

References	: Transportation of Dangerous Goods Act and Clear Language Regulations, current edition at time of SDS preparation, Transport Canada; Hazardous Products Act and Regulations, current revision at time of SDS preparation, Health Canada; Domestic Substances List, current revision at time of SDS preparation, Environment Canada; 29 CFR Part 1910, current revision at time of SDS preparation, U.S. Occupational Safety and Health Administration; 40 CFR Parts 1-799, current revision at time of SDS preparation, U.S. Environmental Protection Agency; 49 CFR Parts 1-199, current revision at time of SDS preparation, U.S. Department of Transport; Mexican Official Standard NOM-018-STPS-2015, Harmonised System for the Identification and Communication of Hazards and Risks by Hazardous Chemicals in the Workplace; Mexican Official Standard NOM-002-SCT / 2011, List of the most commonly transported hazardous substances and materials; Threshold Limit Values for Chemical Substances, current edition at time of SDS preparation, American Conference of Governmental Industrial Hygienists; NFPA 400, National Fire Codes, National Fire Protection Association, current edition at time of SDS preparation; NFPA 704, National Fire Codes, National Fire Protection Association, current edition at time of SDS preparation; Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers; ERG 2016, Emergency Response Guidebook, U.S. Department of Transport, Transport Canada, and the Secretariat of Transportation and Communications of Mexico Hazardous Substances Data Bank, current revision at time of SDS preparation,
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Section 16. Other information

National Library of Medicine, Bethesda, Maryland
Integrated Risk Information System, current revision at time of SDS preparation, U. S. Environmental Protection Agency, Washington, D.C.
Pocket Guide to Chemical Hazards, current revision at time of SDS preparation, National Institute for Occupational Safety and Health, Cincinnati, Ohio ;
Agency for Toxic Substances and Disease Registry Databank, current revision at time of SDS preparation, U.S. Department of Health and Human Services, Atlanta, Georgia
National Toxicology Program, Report on Carcinogens, Division of the National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina.
Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio
The Fertilizer Institute, Product Toxicology Testing Program Results, TFI, Washington , D.C., 2003

[Notice to reader](#)

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The information and recommendations contained in this Safety Data Sheet ("SDS") relate only to the specific material referred to herein (the "Material") and do not relate to the use of such Material in combination with any other material or process. The information and recommendations contained herein are believed to be current and correct as of the date of this SDS. HOWEVER, THE INFORMATION AND RECOMMENDATIONS ARE PRESENTED WITHOUT WARRANTY, REPRESENTATION OR LICENSE OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THEIR ACCURACY, CORRECTNESS OR COMPLETENESS, AND THE SELLER, SUPPLIER AND MANUFACTURER OF THE MATERIAL AND THEIR RESPECTIVE AFFILIATES (COLLECTIVELY, THE "SUPPLIER") DISCLAIM ALL LIABILITY FOR RELIANCE ON SUCH INFORMATION AND RECOMMENDATIONS. This SDS is not a guarantee of safety. A buyer or user of the Material (a "Recipient") is responsible for ensuring that it has all current information necessary to safely use the Material for its specific purpose.

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1. Identification

Product identifier	Brandt Smart Trio	
Other means of identification		
Product code	29001BRN	
Recommended use	Agricultural/ Horticultural Use- Micronutrient Fertilizer- Refer to product label.	
Recommended restrictions	Refer to product label.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	Brandt Consolidated, Inc.	
Address	2935 South Koke Mill Road Springfield, IL 62711 United States	
Telephone	Corporate Office	1-217-547-5800
Website	www.brandt.co	
E-mail	msds@brandt.co	
Contact person	EH&S / Regulatory Department	
Emergency phone number	CHEMTREC (24 hours): USA, Canada, Puerto Rico 1-800-424-9300 Virgin Islands 1-800-424-9300 International Maritime +1 (703) 527-3887	

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 1
	Reproductive toxicity	Category 2
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 3
	Hazardous to the aquatic environment, long-term hazard	Category 3
OSHA defined hazards	Not classified.	
Label elements		



Signal word	Danger	
Hazard statement	Causes skin irritation. Causes serious eye damage. Suspected of damaging fertility or the unborn child. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.	
Precautionary statement		
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.	
Response	If on skin: Wash with plenty of water. 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/doctor. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.	
Storage	Store locked up.	
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.	
Hazard(s) not otherwise classified (HNOC)	None known.	

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Manganese Sulfate, monohydrate		10034-96-5	10 - < 20*
Urea		57-13-6	5 - < 10*
Zinc Sulfate		7733-02-0	5 - < 10*
Disodium Octaborate Tetrahydrate		12008-41-2	1 - < 3*
Other components below reportable levels			70 - < 80

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Should not be released into the environment. Prevent product from entering drains. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
Environmental precautions	Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get this material in contact with eyes. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

Store in secured area away from children, feed, and other food products. Store in original container. Store in a well-ventilated area. Storage temperature: 40 F to 100 F.

8. Exposure controls/personal protection

Occupational exposure limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Manganese Sulfate, monohydrate (CAS 10034-96-5)	Ceiling	5 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Disodium Octaborate Tetrahydrate (CAS 12008-41-2)	STEL	6 mg/m3	Inhalable fraction.
	TWA	2 mg/m3	Inhalable fraction.
Manganese Sulfate, monohydrate (CAS 10034-96-5)	TWA	0.1 mg/m3	Inhalable fraction.
		0.02 mg/m3	Respirable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Manganese Sulfate, monohydrate (CAS 10034-96-5)	STEL	3 mg/m3	Fume.
	TWA	1 mg/m3	Fume.

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value	Form
Urea (CAS 57-13-6)	TWA	10 mg/m3	Total particulate.

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment

Eye/face protection

Chemical respirator with organic vapor cartridge and full facepiece.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection

Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Aqueous solution.
Physical state	Liquid.
Form	Liquid.
Color	Light pink.
Odor	Not available.
Odor threshold	Not available.
pH	1.5 - 2.5 (1% Solution)
Melting point/freezing point	Not available.
Initial boiling point and boiling range	1562 °F (850 °C) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	0.00001 hPa estimated
Vapor density	Not available.
Relative density	1.23 - 1.29 g/cm ³
Solubility(ies)	
Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	1.23 - 1.29 g/cm ³
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	63.72 % estimated
Pounds per gallon	10.5 (typical)
Shelf life	> 4 years
Specific gravity	1.23 - 1.29
VOC	4.35 % estimated

10. Stability and reactivity

Reactivity	Reacts violently with strong alkaline substances. This product may react with reducing agents.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Bases. Reducing agents.

Hazardous decomposition products

No hazardous decomposition products are known.

11. Toxicological information**Information on likely routes of exposure****Inhalation** Prolonged inhalation may be harmful.**Skin contact** Causes skin irritation.**Eye contact** Causes serious eye damage.**Ingestion** Expected to be a low ingestion hazard.**Symptoms related to the physical, chemical and toxicological characteristics** Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.**Information on toxicological effects****Acute toxicity** Not known.

Product	Species	Test Results
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Brandt Smart Trio

Acute**Dermal**

LD50 Rat 23530 mg/kg

Oral

LD50 Rat 5054 mg/kg

Components	Species	Test Results
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Disodium Octaborate Tetrahydrate (CAS 12008-41-2)

Acute**Dermal**

LD50 Rabbit > 2000 mg/kg

Oral

LD50 Rat 2550 mg/kg

Manganese Sulfate, monohydrate (CAS 10034-96-5)

Acute**Oral**

LD50 Rat 2150 mg/kg

Urea (CAS 57-13-6)

Acute**Oral**

LD50 Rat 8471 mg/kg

Zinc Sulfate (CAS 7733-02-0)

Acute**Dermal**

LD50 Rat > 2000 mg/kg

Oral

LD50 Rat 920 mg/kg

623 mg/kg

Skin corrosion/irritation Causes skin irritation.**Serious eye damage/eye irritation** Causes serious eye damage.**Respiratory or skin sensitization****Respiratory sensitization** Due to partial or complete lack of data the classification is not possible.**Skin sensitization** Due to partial or complete lack of data the classification is not possible.**Germ cell mutagenicity** Due to partial or complete lack of data the classification is not possible.**Carcinogenicity** Due to partial or complete lack of data the classification is not possible.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity	Suspected of damaging fertility or the unborn child.
Specific target organ toxicity - single exposure	Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Due to partial or complete lack of data the classification is not possible.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity	Harmful to aquatic life with long lasting effects. Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.
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Product			Species	Test Results
Brandt Smart Trio				
Aquatic				
Crustacea	EC50	Daphnia	72.8682 mg/l, 48 hours estimated	
Fish	LC50	Fish	130.6685 mg/l, 96 hours estimated	
Components			Species	Test Results
Disodium Octaborate Tetrahydrate (CAS 12008-41-2)				
Aquatic				
Acute				
Crustacea	LC50	Daphnia magna	619 mg/l	
Fish	LC50	Pimephales promelas	370 mg/l	
Manganese Sulfate, monohydrate (CAS 10034-96-5)				
Aquatic				
Crustacea	EC50	Water flea (Daphnia obtusa)	30.8 - 44.1 mg/l, 48 hours	
Fish	LC50	Fathead minnow (Pimephales promelas)	36.9 mg/l, 96 hours	
			29.7 - 52.7 mg/l, 192 hours	
Urea (CAS 57-13-6)				
Aquatic				
Crustacea	EC50	Water flea (Daphnia magna)	3910 mg/l, 48 hours	
Fish	LC50	Carp (Leuciscus idus melanotus)	> 10000 mg/l, 48 hours	
		Guppy (Poecilia reticulata)	16200 - 18300 mg/l, 96 hours	
		Harlequinfish, red rasbora (Rasbora heteromorpha)	12000 mg/l, 96 hours	
		Mozambique tilapia (Tilapia mossambica)	590 - 730 mg/l, 96 hours	
Zinc Sulfate (CAS 7733-02-0)				
Aquatic				
Algae	LC50	Green algae (Chlorella vulgaris)	5 mg/l, 24 hours	
Crustacea	EC50	Amphipod (Crangonyx pseudogracilis)	15.1 - 24.5 mg/l, 96 hours	
		Rotifer (Philodina acuticornis)	0.5 mg/l, 48 hours	
Fish	LC50	Fathead minnow (Pimephales promelas)	10.62 - 11.3 mg/l, 5 days	
			0.168 - 0.25 mg/l, 96 hours	
		Fish (Lepidocephalichthyes guntea)	76 - 118.8 mg/l, 24 hours	

Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.
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Bioaccumulative potential

Partition coefficient n-octanol / water (log K_{ow})

Urea -2.11

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code D002: Waste Corrosive material [pH ≤2 or ≥12.5, or corrosive to steel]
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number UN3082
UN proper shipping name Environmentally hazardous substances, liquid, n.o.s. (Zinc Sulfate RQ = 11765 LBS)
Transport hazard class(es)
Class 9
Subsidiary risk -
Label(s) 9
Packing group III
Environmental hazards
Marine pollutant No
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Special provisions 8, 146, 335, IB3, T4, TP1, TP29
Packaging exceptions 155
Packaging non bulk 203
Packaging bulk 241

Not DOT regulated in domestic (USA ground) transportation in package sizes less than 11,765 lbs (1,119 gallons); 5,336 kg (4,235 liters). The DOT transportation information above is for shipments with package sizes equal to or exceeding this value.

DOT Shipping Notes: 40 CFR 172.504(f)(9) For Class 9, a CLASS 9 placard is not required for domestic (USA ground) transportation, however shipments with packaging exceeding the Reportable Quantity (RQ) or bulk packaging must be marked with the appropriate identification number on a CLASS 9 placard, an orange panel, or a white square-on-point display configuration as required. Since the Class 9 placard is not required (although it may be used) the hazardous material endorsement is also not required on a Commercial Drivers License.

DOT corrosive to aluminum. Not regulated if transported by road or rail in packaging that will not react dangerously or be degraded by this material [49 CFR Sec.173.154(d)]

IATA

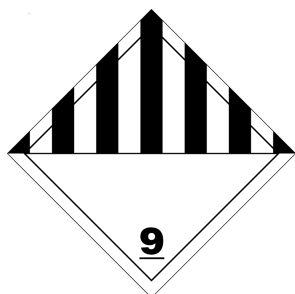
UN number UN3264
UN proper shipping name Corrosive liquid, acidic, inorganic, n.o.s. (Mineral Acid)
Transport hazard class(es)
Class 8
Subsidiary risk -
Label(s) 8
Packing group III
Environmental hazards No
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Other information:
Passenger aircraft: 5L
Cargo aircraft only: 60 L

IMDG

UN number UN3264
UN proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Mineral Acid)
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group III
Environmental hazards
Marine pollutant No
EmS F-A, S-B
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

DOT



IATA; IMDG



General information

Not DOT regulated in domestic (USA ground) transportation in package sizes less than 11,765 lbs (1,119 gallons); 5,336 kg (4,235 liters). The DOT transportation information above is for shipments with package sizes equal to or exceeding this value.

15. Regulatory information

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

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Manganese Sulfate, monohydrate (CAS 10034-96-5) Listed.

Zinc Sulfate (CAS 7733-02-0) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No (Exempt)

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Manganese Sulfate, monohydrate	10034-96-5	10 - < 20
Zinc Sulfate	7733-02-0	5 - < 10

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Manganese Sulfate, monohydrate (CAS 10034-96-5)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Not regulated.

US state regulations**California Proposition 65**

WARNING: This product can expose you to chemicals including arsenic, cadmium, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Disodium Octaborate Tetrahydrate (CAS 12008-41-2)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision**Issue date** 02-06-2014**Revision date** 04-30-2021**Version #** 29**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of Manufacturer's knowledge, information and belief at the date of its publication; however, it is provided only as a guidance for safe handling, use, processing, storage, transportation, disposal and release of the Product. No warranties of any kind, either expressed or implied, including warranties of merchantability or fitness for a particular purpose, are made with respect to the Product or the information provided herein, or that the Product or information herein may be used without infringing the intellectual property rights of others. The information provided in this Safety Data Sheet relates only to the specific Product designated and may not be valid if the Product is used in combination with other materials or in any other process, unless specified herein. The user assumes all risk and liability for loss, injury, damage or expense due to any use, handling, storage or disposal of the Product, and Manufacturer recommends that the user conducts its own tests of the Product to determine suitability of the Product for user's particular use.

Revision information

Handling and storage: Conditions for safe storage, including any incompatibilities



Simplot CAN-17 Calcium Ammonium Nitrate Solution

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 02/09/2021

Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : Simplot CAN-17 Calcium Ammonium Nitrate Solution
Product code : M11110

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Fertilizer

1.3. Supplier

JR Simplot Company
P.O. Box 70013
Boise, ID 83707
T 1-208-336-2110

1.4. Emergency telephone number

Emergency number : CHEMTREC 1-800-424-9300

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Skin corrosion/irritation, Category 2	H315	Causes skin irritation.
Serious eye damage/eye irritation, Category 2	H319	Causes serious eye irritation.

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labelling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Warning

Hazard statements (GHS US) : H315 - Causes skin irritation.
H319 - Causes serious eye irritation.

Precautionary statements (GHS US) : P264 - Wash hands, forearms and face thoroughly after handling.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 - If on skin: Wash with plenty of water/...
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321 - Specific treatment (see supplemental first aid instruction on this label)
P332+P313 - If skin irritation occurs: Get medical attention
P337+P313 - If eye irritation persists: Get medical attention
P362+P364 - Take off contaminated clothing and wash it before reuse.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

Simplot CAN-17 Calcium Ammonium Nitrate Solution

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3.2. Mixtures

Name	Product identifier	%	GHS-US classification
calcium nitrate, anhydrous	(CAS-No.) 10124-37-5	20-40	Ox. Sol. 3, H272 Skin Irrit. 2, H315 Eye Irrit. 2A, H319
ammonium nitrate	(CAS-No.) 6484-52-2	20-40	Eye Irrit. 2B, H320

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Allow affected person to breathe fresh air. Allow the victim to rest.
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Wash skin with plenty of water. Take off contaminated clothing. If skin irritation occurs: Get medical attention.
- First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persists. Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a poison center or a doctor if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

- Potential adverse human health effects and symptoms : Based on available data, the classification criteria are not met.
- Symptoms/effects : Not expected to present a significant hazard under anticipated conditions of normal use.
- Symptoms/effects after skin contact : Irritation.
- Symptoms/effects after eye contact : Causes eye irritation. Eye irritation.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

- Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : Ventilate spillage area. Evacuate unnecessary personnel. Avoid contact with skin and eyes.

6.1.2. For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".
- Emergency procedures : Ventilate area.

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6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- | | |
|-------------------------|--|
| Methods for cleaning up | : Take up liquid spill into absorbent material. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials. |
| Other information | : Dispose of materials or solid residues at an authorized site. |

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection. For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- | | |
|-------------------------------|---|
| Precautions for safe handling | : Ensure good ventilation of the work station. Wear personal protective equipment. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. Avoid contact with skin and eyes. |
| Hygiene measures | : Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Wash contaminated clothing before reuse. |

7.2. Conditions for safe storage, including any incompatibilities

- | | |
|------------------------|--|
| Storage conditions | : Keep only in the original container in a cool, well ventilated place away from : Keep container closed when not in use. Store in a well-ventilated place. Keep cool. |
| Incompatible products | : Strong bases. Strong acids. |
| Incompatible materials | : Sources of ignition. Direct sunlight. |

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Simplot CAN-17 Calcium Ammonium Nitrate Solution

No additional information available

ammonium nitrate (6484-52-2)

No additional information available

calcium nitrate,anhydrous (10124-37-5)

No additional information available

8.2. Appropriate engineering controls

- | | |
|----------------------------------|--|
| Appropriate engineering controls | : Ensure good ventilation of the work station. |
| Environmental exposure controls | : Avoid release to the environment. |

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Avoid all unnecessary exposure.

Hand protection:

Wear protective gloves.

Eye protection:

Chemical goggles or safety glasses. Safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

Wear appropriate mask

Personal protective equipment symbol(s):

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Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear solution.
Colour	: Colourless
Odour	: characteristic
Odour threshold	: No data available
pH	: No data available
pH solution	: 6 – 6.5
Melting point	: Not applicable
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Complete.
Partition coefficient n-octanol/water (Log Pow)	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive limits	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Not established.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

organic material. oxidizable matter. Strong acids. Strong bases.

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10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified

ammonium nitrate (6484-52-2)	
LD50 oral rat	4820 mg/kg (Rat)
LD50 dermal rabbit	> 3000 mg/kg (Rabbit)

Skin corrosion/irritation	: Causes skin irritation.
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified
Viscosity, kinematic	: No data available
Potential adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.
Symptoms/effects	: Not expected to present a significant hazard under anticipated conditions of normal use.
Symptoms/effects after skin contact	: Irritation.
Symptoms/effects after eye contact	: Causes eye irritation. Eye irritation.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
Ecology - water	: Harmful to aquatic life.

ammonium nitrate (6484-52-2)	
LC50 fish 1	74 mg/l (48 h; Cyprinus carpio; Lethal)
EC50 Daphnia 1	555 mg/l (Daphnia magna)
LC50 fish 2	800 mg/l (3.9 h; Pisces)
TLM fish 1	100 - 1000,96 h; Pisces
TLM other aquatic organisms 1	100 - 1000,96 h
Threshold limit algae 1	83 mg/l (Scenedesmus quadricauda; Growth rate)

calcium nitrate,anhydrous (10124-37-5)	
LC50 fish 1	10000 mg/l (96 h; Pisces)
LC50 fish 2	10000 mg/l (96 h; Lepomis macrochirus)

12.2. Persistence and degradability

Simplot CAN-17 Calcium Ammonium Nitrate Solution	
Persistence and degradability	Not established.
ammonium nitrate (6484-52-2)	
Persistence and degradability	Biodegradable in water. Biodegradable in the soil. Not established.
calcium nitrate,anhydrous (10124-37-5)	
Persistence and degradability	Biodegradable in the soil.

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calcium nitrate,anhydrous (10124-37-5)

Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

12.3. Bioaccumulative potential

Simplot CAN-17 Calcium Ammonium Nitrate Solution

Bioaccumulative potential	Not established.
---------------------------	------------------

ammonium nitrate (6484-52-2)

Partition coefficient n-octanol/water (Log Pow)	-3.1
Bioaccumulative potential	Bioaccumulation: not applicable. Not established.

calcium nitrate,anhydrous (10124-37-5)

Bioaccumulative potential	Not bioaccumulative.
---------------------------	----------------------

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid unintentional release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.
Ecology - waste materials	: Avoid unintentional release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated

Transportation of Dangerous Goods

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

Simplot CAN-17 Calcium Ammonium Nitrate Solution

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

15.2. International regulations

CANADA

Simplot CAN-17 Calcium Ammonium Nitrate Solution

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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

ammonium nitrate (6484-52-2)

Listed on the Canadian DSL (Domestic Substances List)

calcium nitrate,anhydrous (10124-37-5)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

No additional information available

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Component	State or local regulations
ammonium nitrate(6484-52-2)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List
calcium nitrate,anhydrous(10124-37-5)	U.S. - New Jersey - Right to Know Hazardous Substance List

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : None.

Full text of H-statements:

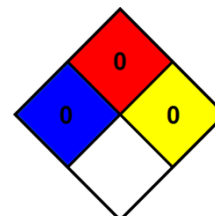
H272	May intensify fire; oxidiser.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H320	Causes eye irritation

NFPA health hazard : 0 - Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials.

NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.

NFPA specific hazard : None



SDS US (GHS HazCom 2012)

Disclaimer: This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE INFORMATION HEREIN PROVIDED. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.



Safety Data Sheet

1. IDENTIFICATION

Product Name	Magnesium Sulfate 9.8%
Recommended use	Feed and Fertilizer
Supplier	Valudor Products, LLC. 179 Calle Magdalena Suite 100 Encinitas CA 92024 (760) 635-8500
Emergency Telephone	(800) 535-5053 (Infotrac)

2. HAZARD IDENTIFICATION

Classification

This product is not considered hazardous under the U.S. OSHA 29 CFR 1910.1200 Hazard Communication Standard.

Label Elements

Not a dangerous substance or mixture

Hazards not other classified None

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance

Chemical Name	Magnesium Sulfate Heptahydrate
Synonym	Magnesium Sulfate
Formula	MgO4S · 7H2O
Molecular weight	246.48 g/mol
Cas No.	10034-99-8
Concentration	95-100%

4. FIRST-AID MEASURES

First Aid Measures

Eye Contact	Immediately rinse with plenty of water. Remove contact lenses, if present and easy to do so. Keep eye wide open while rinsing. Continue rinsing for 15 minutes. Call a doctor/physician if irritation persists
Skin Contact	Wash off immediately with plenty of water. Remove all contaminated clothes and shoes. If skin irritation persists, call a doctor/physician
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention.
Ingestion	Do not induce vomiting without medical advice. Rinse

mouth with water. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician

Most important symptoms/effects, acute and delayed

Symptoms No information available

5. FIRE-FIGHTING MEASURES

Suitable extinguishing Media Use any means suitable for extinguishing surrounding fire.

Unsuitable Extinguishing Media Use of water spray when fighting fire may be inefficient

Specific Hazards Arising from the chemical

Hazardous combustion products Thermal decomposition can lead to the release of irritation or toxic gases and vapors; including and not limited to:
Magnesium oxide
Sulfur oxides

Protective equipment and precautions for fire-fighters

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 Avoid contact with eyes, skin and clothing. Avoid breathing vapors or mists. Use personal protection recommended in Section 8. Ensure adequate ventilation.

Methods and materials for containment and cleanup

Methods for clean-up Sweep or vacuum up and place in an appropriate closed container. Keep unauthorized personnel away. Avoid generating dust.

Environmental Precautions Prevent entry into waterways or sewers

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with eyes, skin and clothing. Avoid dust generation. Use personal protection recommended in Section 8. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Do not eat, drink or smoke when using this product. Clean equipment and work area regularly.

Conditions for safe storage, including any incompatibilities

Store in a cool/low-temperature, well-ventilated, dry place. Keep containers closed and labeled when not in use.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

This product does not contain any hazardous materials with occupational exposure limits established by the regional specific regulatory bodies

Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas. Consider the potential hazards of this material, applicable exposure limits, job activities and other substances in the work place when designing controls and selecting personal protective equipment.

Personal Protective Equipment

Eye/face protection	Safety glasses are recommended in professional settings
Skin protection	Choose the appropriate protective clothing and gloves based on the tasks being performed to avoid exposure to skin. Wear protective gloves
Respiratory protection	Not required under normal circumstances. If exposure limits are exceeded or if irritation or other symptoms are experienced use a NIOSH/MSHA approved respirator
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practices. Do not eat, drink or smoke when using this product.

9. PHYSICAL and CHEMICAL PROPERTIES

Appearance	Colorless Crystal
Physical state	Solid
Odor	odorless
Odor threshold	No information available
pH	No information available
Melting point / freezing point	No information available
Boiling point / Boiling range	Not applicable
Flash point	Not applicable
Evaporation rate	Not applicable
Flammability	No information available
Flammability or explosive limits	
Upper	No information available
Lower	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific Gravity	No information available
Solubility in water	Soluble
Partition coefficient	No information available
Auto-ignition temperature	No information available
Decomposition temperature	No information available
Viscosity	No information available

10. STABILITY AND REACTIVITY

Reactivity	None known under normal conditions.
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Chemical stability	Stable under ordinary conditions of use and storage.
Possibility of hazardous reactions	None under normal processing.
Conditions to avoid	Avoid dust formation. Heat. Ignition sources.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Hazardous combustion can lead to the release of irritating gases and vapors.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Skin contact	May cause skin irritation
Eye contact	May cause eye irritation
Inhalation	May cause irritation of respiratory tract
Ingestion	May be harmful if swallowed

Symptoms related to the physical chemical and toxicological characteristics

No information available

Delayed and immediate effects and also chronic effects form short and long-term exposure

Skin damage/irritation	Not classified
Eye damage/irritation	Not classified
Sensitization	Not classified
Mutagenic effects	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
STOT – single exposure	Not classified
STOT – repeated exposure	Not classified
Aspiration hazard	Not classified

<u>Acute Toxicity</u>	No data available
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12. ECOLOGICAL INFORMATION

<u>Ecotoxicity</u>	Should not be released to environment
<u>Persistence and degradability</u>	No information available
<u>Bioaccumulative potential</u>	No information available
<u>Mobility in soil</u>	No information available
<u>Other adverse effects</u>	No information available

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

Processing, use or contamination of this product may occur during product use. Accordingly, it is the responsibility of the user to determine the proper disposal methodologies. Consult the appropriate state, regional or local regulations to ensure complete and accurate classification. Dispose of contaminated packaging in accordance with local regulations.

14. TRANSPORT INFORMATION

DOT Not regulated
IATA Not regulated
IMDG Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Listed
DSL	Listed

US Federal Regulations**TSCA section 12(b) Export Notification**

Not regulated

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA).
Not applicable

SARA 311/312 Hazard Categorization

Acute health hazard	No
Chronic Health Hazard	No
Fire hazard	No
Pressure	No
Reactivity	No

CERCLA/SARA 302 & 304

Section 302 & 304 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). Not applicable

CWA (Clean Water Act)

Not applicable

US State Regulations**California Proposition 65**

This product does not contain any proposition 65 chemicals

16. OTHER INFORMATION

NFPA Ratings	Health: 1	Flammability: 0	Reactivity: 0
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Creation Date:	2/21/2016
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Revision Date:	1/19/2020
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Revision Number:	1.0
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Revision Information	Creation
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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

MATERIAL SAFETY DATA SHEET

May be used to comply with OSHA's Hazard Communications Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

PRODUCT NAME: PolyCal
PRODUCT ID: # 490

SECTION I MANUFACTURER'S INFORMATION

Manufacturer's Name & Address

Northwest Agricultural Products
821 S. Chestnut
Pasco, Washington 99301

Emergency Telephone Number: 509-547-8234
Number for Information: 509-547-8234
Date Prepared: March 26, 2001

SECTION II HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

PRODUCT INFORMATION	
Chemical Name:	Plant Nutritional Activator / Soil Amendment
Chemical Family:	Polymers
Formula:	Proprietary
NFPA/HMIS:	Health -2, Fire-0, Reactivity-0

Hazardous Components	CAS	%	OSHA PEL	ACGIH TLV	TWA

Non-Hazardous Components-	CAS	%	ACGIH TLV	OSHA PEL
Anionic Polyacrylamide				
Calcium				

SECTION III PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point:	100 C°	Specific Gravity (H ₂ O = 1):	1.183
Vapor Pressure (mm Hg.):	Not Determined	Melting Point:	NA
Vapor Density (Air = 1):	Not Determined	Evaporation Rate (Butyl Acetate = 1):	Not Determined – slow
Solubility in Water:	Highly soluble		
Appearance and Odor:	Cloudy Blue.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used):	NA	Flammable Limits:	NA	LEL	UEL
Extinguishing Media:	NA				
Special Fire Fighting Procedures:	NA				
Unusual Fire and Explosion:	NA				
Autoignition Temperature:	NA				

SECTION V REACTIVITY DATA

Stability	Unstable		Stable	X	Conditions to avoid – None Known
Incompatibility (Materials to Avoid)			Phosphorus containing materials. Non-hazardous precipitants form.		
Hazardous decomposition or by-products			None Known		
Hazardous Polymerization		Will Occur		Will not Occur	X
Conditions to Avoid:.					
Keep out of Reach of Children, Avoid contact with eyes.					

SECTION VI HEALTH HAZARD DATA

Route(s) of Entry			
Inhalation: YES			
Skin Contact: NO			
Skin Absorption: NO			
Ingestion: YES			
Eye Contact: YES			
Health Hazards (Acute and Chronic) NONE			
Carcinogenicity	NIP No	IARC Monographs No	OSHA Regulated No
Signs and Symptoms of Exposure: NONE			
Medical Conditions Generally aggravated by Exposure: NONE			
Emergency and first aid procedures: Contact a physician immediately			
Note to Physician:			

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE

EYES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Flush with large volumes of water until no chemical is present.
GROUND	STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Wash with water. This product is water soluble, biodegradable, and non-polluting.
WASTE DISPOSAL METHOD: Safe to wash into waste systems. It is biodegradable.	

SECTION VIII CONTROL MEASURES

Respiratory Protection (Specific Type): NONE			
Ventilation:	Local Exhaust: NONE	Special: NONE	
	Mechanical(General): NONE	Other: NONE	
Protective Gloves: Rubber Gloves		Eye Protection: Safety Goggles	
Other Protective Clothing or Equipment: Protective Apron			
Work/Hygienic Practices: Use Good Housekeeping Practices.			

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONARY STATEMENTS:
OTHER HANDLING AND STORAGE REQUIREMENTS: Shake well before using.

PREPARED BY: Alan S. Wicks

ADDRESS: Northwest Agricultural Products
821 S. Chestnut
Pasco, WA 99301

DATE: April 6, 2004

All information, recommendations and suggestions appearing herein concerning our products are based upon tests and data believed to be reliable. However, it is the user's responsibility to determine the safety, toxicity and suitability for his/her own use of the product described herein. Since the actual use by others is beyond our control, we make no guarantee, expressed or implied, as to the effects of such use, the results to be obtained or the safety and toxicity of the product: nor do we assume any liability arising out of use, by others, of the product referred to herein. The information herein is not to be construed as absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.



Creating Value Through Innovative Solutions

Safety Data Sheet

Sectagon 42®

SDS Number: 657 Revision: 12/18/2013

Section 1: Identification

- 1a. Product Name:** Sectagon 42®
- 1b. Other Identification:**
- | | |
|------------------------|---|
| Chemical Family | Dithiocarbamate salt solution |
| Formula | C ₂ H ₅ NS ₂ .Na |
| EC Pre-Registration #: | No |
- 1c. Recommended Use of Chemical:** Soil fumigant (Restricted Use Pesticide)
- 1d. Manufacturer:** Tessenderlo Kerley, Inc.
2255 N. 44th Street, Suite 300
Phoenix, Arizona 85008-3279
(602) 889-8300
Information
- 1e. Emergency Contact:** NovaSource (866) 374-1975
CHEMTREC (800) 424-9300 (Domestic)
(703) 527-3887 (International)

Section 2: Hazard(s) Identification

- 2a. Hazard Classification:**
- | | |
|----------|--|
| Health | Acute toxicity, inhalation, category 3
Acute oral toxicity, Category 4
Acute dermal toxicity, Category 4
Skin corrosion Category 1B
Eye damage, Category 1
Aquatic toxicity |
| Physical | None |
- 2b. Signal Word:** DANGER
- Hazard Statement(s):** Toxic if inhaled
Causes serious eye damage
Harmful if swallowed
Causes severe skin burns and eye damage.

Symbol(s):



Precautionary Statement(s):

Avoid breathing product gases/vapors.
 Use only outdoors in well ventilated areas.
 If inhaled, remove person to fresh air and keep comfortable for breathing.
 Store in a well-ventilated area. Keep containers tightly closed.
 Store locked up.
 Wear eye protection/face protection
 If in eyes, rinse cautiously with water for several minutes
 Immediately contact medical center, Prosar, (866) 374-1975
 Wash hands and exposed skin areas thoroughly after handling
 Wear protective gloves/protective clothing
 Do not allow release/runoff into aquatic waterways

2c. **Unclassified Hazard(s):** None

2d. **Unknown Toxicity Ingredient:** None

Section 3: COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 **Chemical Ingredients:** (See Section 8 for exposure guidelines)

Chemical	Synonym Common Name	CAS No.	EINECS No.	% by Wt.
Sodium methyldithiocarbamate	Metam sodium	137-42-8	205-293-0	42.2
Inerts				Remaining %

Section 4: FIRST AID MEASURES

4.1 Symptoms/Effects:

Acute: Eye contact may cause eye irritation. Repeated or prolonged skin contact may cause skin irritation.
 Ingestion may irritate the gastrointestinal tract.

Chronic: No known chronic effects.

4.2 Eyes: Immediately flush with large quantities of water for 15 minutes. Hold eyelids apart during irrigation to insure thorough flushing of the entire area of the eye and lids. Do not attempt to neutralize with chemical agents or use oils or ointments. Obtain immediate medical attention.

4.3 Skin: Immediately flush with large quantities of water. Remove contaminated clothing under a safety shower. Do not neutralize with chemical agents. Obtain medical immediate attention.

4.4 Ingestion: DO NOT INDUCE VOMITING. Give 1 or 2 glasses of water. If vomiting does occur, repeat fluid administration. If unconscious or convulsing, do not give fluids. Obtain medical attention.

4.5 Inhalation: Remove victim from contaminated atmosphere. If breathing is labored, administer oxygen.

If breathing has ceased, clear airway and start mouth to mouth resuscitation. If heart has stopped beating, external heart massage should be applied. Obtain medical attention.

Section 5: FIRE FIGHTING MEASURES

5.1 Flammable Properties: (See Section 9, for additional flammable properties)

NFPA: Health 2 Flammability 0 Reactivity 1

5.2 Extinguishing Media: As appropriate for combustibles involved in the fire.

5.2.1 Suitable Extinguishing Media: Not flammable, use media suitable for combustibles involved in fire.

5.2.2 Unsuitable Extinguishing Media: Not applicable.

5.3 Protection of Firefighters:

5.3.1: Specific hazards arising from the chemical: Heating will cause the evolution of methyl isothiocyanate (MITC) and hydrogen sulfide, both of which are highly toxic and flammable gases. It is also conceivable that product breakdown from heating could release carbon disulfide and methylamine, which are also toxic and flammable.

Physical hazards: Heating, fire.

Chemical hazards: Contact with strong acids will release methylamine and carbon disulfide, both highly flammable hazards.

5.3.2: Protective equipment and precautions for firefighters: Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear. Keep containers/storage vessels in fire area cooled with water spray.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions:

Use personal protective equipment specified in Section 8. Isolate the release area and deny entry to unnecessary, unprotected and untrained personnel.

6.2 Environmental Precautions:

Keep out of "waters of the US" because of potential aquatic toxicity (See Section 12).

6.3 Methods of Containment:

Small release: Confine and absorb small releases with sand, earth or other inert absorbent.

Large release: Shut off release if safe to do so. Dike spill area with earth, sand or other inert absorbent to prevent runoff into surface waterways (potential aquatic toxicity).

6.4 Method for Cleanup:

- Small release:** For small areas shovel up absorbed material and place in plastic drum for disposal.
- Large release:** Recover as much of the spilled product as possible for use as originally intended. Treat remaining material as small release above.

Section 7: HANDLING and STORAGE

This is a Restricted Use Pesticide (RUP).

All personnel who handle this product in its end-use application should use this product only in accordance with its pesticide labeling and with the "Worker Protection Standard", 40 CFR 170.

- 7.1 Handling:** Avoid contact with eyes and skin. Use only in a well ventilated area. Wash thoroughly after handling. Avoid breathing of vapors.
- 7.2 Storage:** Store in cool, dry, well ventilated areas. Do not store exposed to the atmosphere as product will decompose and evolve methyl iso-cyanate and hydrogen sulfide, both very toxic gases. Do not store combustibles in the area of storage vessels. Keep away from any sources of heat or flame. Store tote and smaller containers out of direct sunlight at moderate temperatures. Do not store at temperatures below 0°F (-18°C) as the product crystallizes at low temperatures. If crystallization occurs, warm or store at higher temperatures and mix to re-dissolve crystals before use. (See Section 10.3, for materials of construction)

Section 8: EXPOSURE CONTROLS/ PERSONAL PROTECTION

8.1 Exposure Guidelines:	OSHA		ACGIH	
	<u>TWA</u>	<u>Ceiling</u>	<u>TLV</u>	<u>STEL</u>
Hydrogen sulfide:	None	20 ppm	10	15

- 8.2 Engineering Controls:** Use adequate exhaust ventilation to prevent inhalation of product vapors.

8.3. Personal Protective Equipment (PPE):

- 8.3.1 Eye/Face Protection:** Chemical goggles and a full face shield.
- 8.3.2 Skin Protection:** Neoprene rubber gloves and apron should be worn to prevent repeated or prolonged contact with the liquid. Wash contaminated clothing prior to reuse.
- 8.3.3 Respiratory Protection:** A NIOSH/MSHA approved respirator fitted with organic vapor cartridges may be required when working with this product.
- 8.3.4 General Hygiene Considerations:** Common good industrial hygiene practices should be followed, such as, washing thoroughly after handling and before eating or drinking.

Section 9: PHYSICAL and CHEMICAL PROPERTIES

- 9.1 Appearance/State/Odor:** Pale yellow through colorless to yellow/amber/liquid/strong sulfur like odor
- 9.2 Odor Threshold:** Not determined

9.3 pH:	9.5 to 11.5
9.4 Freezing Point:	Approximately 0°F (-18°C)
9.5 Boiling Point:	230°F (110°C)
9.6 Flash Point:	>200°F (93°C)
9.7 Evaporation Rate:	Not known
9.8 Flammability:	Not applicable
9.9 Flammability Limits:	Not determined
9.10 Vapor Pressure:	21 mm Hg (2.8 kPa) @77°F (25°C)
9.11 Vapor Density:	Not determined
9.12 Specific gravity:	1.209 (10.07 lbs per gallon) @ 68°F typical
9.13 Solubility:	772 gms per Liter @ 20°C
9.14 Partition Coefficient:	Data not available
9.15 Auto-ignition Temperature:	Not applicable
9.16 Decomposition Temperature:	Not determined
9.17 Viscosity:	3.0 to 5.0 cP

Section 10: STABILITY and REACTIVITY

10.1 Reactivity:	Product is reactive to elevated temperatures or dilution with water.
10.2 Chemical Stability:	This is a stable product under ambient conditions of temperature and pressure.
10.3 Possibility of hazardous reactions:	Heating or fire conditions.
10.4 Conditions to Avoid:	Prolonged exposure to air will result in decomposition to form methyl isothiocyanate (MITC) a very toxic and flammable material. Metam sodium solutions are corrosive to copper, zinc and aluminum or any of their alloys such as brass, bronze or galvanized materials. These materials of construction should not be used in handling systems or storage containers for this product.
10.5 Incompatible:	Heat, acids or acidic materials.
10.6 Hazardous Decomposition Products:	Heating this product will evolve methyl isothiocyanate (MITC) and hydrogen sulfide (H ₂ S) and potentially carbon disulfide (CS ₂) and methylamine (MMA). Heating to dryness will cause the production of oxides of nitrogen.

Section 11: TOXICOLOGICAL INFORMATION

11.1.1 Oral:	Oral Rat LD ₅₀ : 970 mg/Kg (Male) Oral Rat LD ₅₀ : 790 mg/kg (female)
11.2 Dermal:	Dermal Rabbit LD ₅₀ : 1,050 mg/kg
11.3 Inhalation:	Inhalation Rat, LC ₅₀ : 2.28 mg/l
11.4 Eye:	Data not available
11.5 Chronic/Carcinogenicity:	Metam sodium lab studies have shown some carcinogenic effects in lab animals.
11.6 Teratology:	Metam sodium lab studies have shown some developmental effects in lab animals.

- 11.7 Reproduction:** Metam sodium lab studies have shown no evidence of reproductive toxicity in lab animals.
- 11.8 Mutagenicity:** Metam sodium lab studies have shown some evidence of mutagenicity *in vitro* but no conclusive evidence *in vivo*.

Section 12: ECOLOGICAL INFORMATION

Metam sodium is toxic to aquatic species and is a listed Marine pollutant. Do not apply to waterways, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate waterways when disposing of equipment washwaters.

- 12.1 Ecotoxicity:** Zebra danio LC₅₀: 251.9 µg/L
 Ostracod, shrimp LC₅₀: 35.0 µg/L
 Water flea LC₅₀: 330 µg/L
- 12.2 Persistence & Degradability:** No data is available.
- 12.3 Bioaccumulative potential:** This product is not bioaccumulative.
- 12.4 Mobility in Soil:** No data available.
- 12.5 Other Adverse Effects:** None

Section 13: DISPOSAL CONSIDERATIONS

If this product as supplied becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Consult state and local regulations for different or more restrictive disposal regulations. Purification solids (as from filtering, evaporation, etc.) from the production of dithiocarbamic acid salts are a K161 listed waste and should be disposed of in accordance with RCRA regulations.

Section 14: TRANSPORT INFORMATION

14.1 Basic Shipping Description:

- 14.1.1 Proper Shipping Name:** Corrosive liquid, basic, inorganic, n.o.s.
14.1.2 Hazard Class(s): 8
14.1.3 Identification Number: UN3266
14.1.4 Packing Group: II
14.1.5 Hazardous Substance: No
14.1.6 Marine Pollutant: Yes

14.2 Additional Information:

- 14.2.1 Other DOT Requirements:**

14.2.1.1 Reportable Quantity:	No
14.2.1.2 Placard(s):	Corrosive
14.2.1.3 Label(s):	Corrosive
14.2.2 USCG Classification:	Not determined
14.2.3 International Transportation:	
14.2.3.1 IMO:	Corrosive liquid, basic, inorganic, n.o.s. (UN3266)
14.2.3.2 IATA:	Corrosive liquid, basic, inorganic, n.o.s. (UN3266)
14.2.3.3 TDG (Canada):	Corrosive liquid, basic, inorganic, n.o.s. (UN3266)
14.2.3.4 ADR (Europe):	Corrosive liquid, basic, inorganic, n.o.s. (UN3266)
14.2.3.5 AICS (Australia):	Corrosive liquid, basic, inorganic, n.o.s. (UN3266)
14.2.3.6 ENCS (MITI) Japan	Yes
14.2.3.7 New Zealand	Yes
14.2.4 Emergency Response Guide:	154
14.2.5 ERAP - Canada:	Not applicable
14.2.6 Special Precautions:	Not applicable

Section 15: REGULATORY INFORMATION

15.1 US Federal Regulations:

15.1.1 OSHA:	This product meets the criteria of the Federal OSHA Hazard communication Standard (29 CFR 1910.1200).		
15.1.2 TSCA:	Not applicable		
15.1.3 CERCLA:	Reportable Quantity – Not applicable		
15.1.4 SARA Title III:			
15.1.4.1 Extremely Hazardous Substance (EHS):	Not Applicable		
15.1.4.2 Section 312 (Tier II) ratings:	Immediate (acute)	Yes	
	Fire	Yes	
	Sudden release	No	
	Reactivity	Yes	
	Delayed (chronic)	No	
15.1.4.3 Section 313 (FORM R):	Yes	Metham sodium	42.2%
15.1.5 RCRA:	Not Applicable		
15.1.6 CAA:	Hazardous Air Pollutant (HAP):	Not Applicable	
15.1.7 FIFRA	EPA Reg. No, 61842-6 (Restricted Use Pesticide).		
15.1.8 Prop. 65 (CA)	This product contains metam sodium a chemical known to the state of California to cause cancer, birth defects or other reproductive harm.		

15.2 International Regulations**15.2.1 Canada**

15.2.1.1 WHMIS: Not determined

15.2.1.2 DSL/NDL: DSL, No. 3773

Section 16: OTHER INFORMATION

The entire SDS was reformatted to comply with ANSI Standard Z400.1-2004, and OSHA Hazard Communications Act (GHS), by Tessenderlo Kerley, Inc., Regulatory Affairs.

REVISIONS:

The information above is believed to be accurate and represents the best information currently available to Tessenderlo Kerley, Inc.(TKI). No warranty of merchantability, fitness for any particular purpose, or any other warranty is expressed or is to be implied regarding the accuracy or completeness of this information, the results to be obtained from the use of this information or the product, the safety of this product, or the hazards related to its use.. Users should make their own investigations to determine the suitability of the information for their particular purpose and on the condition that they assume the risk of their use thereof. TKI reserves the right to revise this Safety Data Sheet periodically as new information becomes available.

1 Identification

· Product identifier

· Trade name: Siapton®

· Article number: US80568

· CAS Number:

EPA Registration No.: N/A

Active Ingredient: Nitrogen (10.0%), CAS:9015-54-7

· Application of the substance / the mixture Agricultural fertilizer

· Details of the supplier of the safety data sheet

· Manufacturer/Supplier:

Gowan Company, LLC.

P.O. Box 5569

Yuma, Arizona 85366-5569

(928) 783-8844

· Information department: sds@gowanco.com

· Emergency telephone number:

Chemtrec® Emergency Telephone 24 - Hours: (Spills, leak or fire) Inside U.S. & Canada: (800) 424-9300

Outside the U.S. & Canada: +011 (703) 527-3887

For medical emergency (ProPharma Group®): (888) 478-0798

2 Hazard(s) identification

· Classification of the substance or mixture



GHS07

Sensitization - Skin 1B H317 May cause an allergic skin reaction.

· Label elements

· GHS label elements

The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms



GHS07

· Signal word Warning

· Hazard statements

H317 May cause an allergic skin reaction.

· Precautionary statements

P261 Avoid breathing dust/fume/gas/mist/vapors/spray

P280 Wear protective gloves.

P302+P352 If on skin: Wash with plenty of water.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

· Hazard description:

Avoid contact with formulated product. Do not take internally. Avoid contact with or inhalation of the spray mist. Do not apply this product in such a manner as to directly expose workers or other persons. If product is being mixed with pesticides and/or spray adjuvants, follow all precautionary statements on the accompanying product(s) labeling. Avoid contact with eyes and prolonged contact with skin to avoid irritation. Wear safety glasses and chemical resistant gloves. Not for human or animal consumption.

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· **Classification system:**· **NFPA ratings (scale 0 - 4)**

Health = 1

Fire = 0

Reactivity = 0

HAZARD INDEX:

4 Severe Hazard

3 Serious Hazard

2 Moderate

1 Slight Hazard

0 Minimal Hazard

· **Other hazards**· **Results of PBT and vPvB assessment**· **PBT:** Not applicable in US.· **vPvB:** Not applicable in US.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**· **Description:** Mixture of the substances listed below with nonhazardous additions.· **Dangerous components:** Void

4 First-aid measures

· **Description of first aid measures**· **General information:**

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

You may also contact 1-888-478-0798 for emergency medical treatment information.

· **After inhalation:** Supply fresh air; consult doctor in case of complaints.· **After skin contact:** Wash with water· **After eye contact:** Rinse opened eye for several minutes under running water.· **After swallowing:** Induce vomiting and call for medical help.· **Information for doctor:**· **Most important symptoms and effects, both acute and delayed** No further relevant information available.· **Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**· **Suitable extinguishing agents:**CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.· **Special hazards arising from the substance or mixture** No further relevant information available.· **Advice for firefighters**· **Protective equipment:** Wear self-contained respiratory protective device.

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6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Dilute with plenty of water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

· PAC-1:
None of the ingredients are listed.
· PAC-2:
None of the ingredients are listed.
· PAC-3:
None of the ingredients are listed.

7 Handling and storage

- **Handling:**
 - **Precautions for safe handling** Keep receptacle tightly sealed.
 - **Information about protection against explosions and fires:** Keep ignition sources away - Do not smoke.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
 - **Requirements to be met by storerooms and receptacles:** Store only in the original receptacle.
 - **Information about storage in one common storage facility:** Store away from foodstuffs.
 - **Further information about storage conditions:** None.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
 - **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
 - **Personal protective equipment:**
 - **General protective and hygienic measures:** Wash hands before breaks and at the end of work.
 - **Breathing equipment:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

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· **Protection of hands:**

Protective gloves

· **Material of gloves** Chemical-resistant gloves.· **Eye protection:**

Safety glasses

· **Body protection:** Wear safety glasses and chemical resistant gloves

9 Physical and chemical properties

· **Information on basic physical and chemical properties**· **General Information**· **Appearance:**

· Form:	Liquid
· Color:	Brown
· Odor:	Characteristic
· Odor threshold:	Not determined.

· **pH-value at 20 °C (68 °F):** 6.0 - 6.8· **Change in condition**

· Melting point/Melting range:	Undetermined.
· Boiling point/Boiling range:	Undetermined.

· **Flash point:** Not applicable.· **Flammability (solid, gaseous):** Not applicable.· **Decomposition temperature:** Not determined.· **Auto igniting:** Product is not self-igniting.· **Danger of explosion:** Product does not present an explosion hazard.· **Explosion limits:**

· Lower:	Not determined.
· Upper:	Not determined.

· **Vapor pressure:** Not determined.· **Density at 20 °C (68 °F):** 1.27 g/cm³ (10.59815 lbs/gal)

· Relative density	Not determined.
· Vapor density	Not determined.
· Evaporation rate	Not determined.

· **Solubility in / Miscibility with**· **Water:** Dispersible.· **Partition coefficient (n-octanol/water):** Not determined.· **Viscosity:**· **Dynamic:** Not determined.

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· **Kinematic:** Not determined.

· **Other information** No further relevant information available.

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability** Stable under normal conditions
 - **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- **Information on toxicological effects**
 - **Acute toxicity:**
 - **Primary irritant effect:**
 - **on the skin:** May be irritating to the skin
 - **on the eye:** No irritating effect.
 - **Sensitization:** No sensitizing effects known.
 - **Additional toxicological information:**
 - **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

None of the ingredients are listed.

· **NTP (National Toxicology Program)**

None of the ingredients are listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients are listed.

12 Ecological information

- **Toxicity**
 - **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
 - **Bioaccumulative potential** No further relevant information available.
 - **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
 - **General notes:** Not hazardous for water.
- **Results of PBT and vPvB assessment**
 - **PBT:** Not applicable.
 - **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

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13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· UN-Number	
· DOT, ADR, ADN, IMDG, IATA	Void
· UN proper shipping name	
· DOT, ADR, ADN, IMDG, IATA	Void
· Transport hazard class(es)	
· DOT, ADR, ADN, IMDG, IATA	
· Class	Void
· Packing group	
· DOT, ADR, IMDG, IATA	Void
· Environmental hazards:	
· Marine pollutant:	No
· Special precautions for user	Not applicable
· Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable
· UN "Model Regulation":	Void

15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

EPA /FIFRA Information:

This chemical is a pesticide product registered by the Environmental Protection Agency (EPA) and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals.

- **Marketing authorization number:**

· **SARA Title III**

- **Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

- **Section 313 (Specific toxic chemical listings):**

None of the ingredients are listed.

- **TSCA (Toxic Substances Control Act):**

All components have the value ACTIVE.

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· **Hazardous Air Pollutants**

None of the ingredients are listed.

· **Proposition 65**· **Chemicals known to cause cancer:**

None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

· **Carcinogenicity categories**· **EPA (Environmental Protection Agency)**

None of the ingredients are listed.

· **TLV (Threshold Limit Value)**

None of the ingredients are listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients are listed.

· **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**

Not applicable

· **Signal word**

(US EPA) CAUTION

· **Hazard statements**

H317 May cause an allergic skin reaction.

· **Precautionary statements**

Avoid contact with formulated product. Do not take internally. Avoid contact with or inhalation of the spray mist. Do not apply this product in such a manner as to directly expose workers or other persons. If product is being mixed with pesticides and/or spray adjuvants, follow all precautionary statements on the accompanying product(s) labeling. Avoid contact with eyes and prolonged contact with skin to avoid irritation. Wear safety glasses and chemical resistant gloves. Not for human or animal consumption.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray

P280 Wear protective gloves.

P302+P352 If on skin: Wash with plenty of water.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** Systems Design and Control

· **Contact:**

· **Date of preparation / last revision** 10/06/2022

· **Abbreviations and acronyms:**

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ELINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Sensitization - Skin 1B: Skin sensitisation – Category 1B

· **Sources** SIAPTON® is a registered trademark of Gowan Company L.L.C.

US



SAFETY DATA SHEET

1. Identification

Product identifier **Strike 80CP Fumigant**

Other means of identification

SDS number 180S-USA-TAP

Recommended use Soil fumigant

NOTE TO PESTICIDE HANDLERS: If the pesticide product end-use labeling contains hazard information, specific instructions, or requirements that conflict with this Safety Data Sheet (SDS), follow the hazard information, instructions, or requirements on the labeling. See Section 15 of this SDS for further information.

Recommended restrictions Use of this product requires supervision by a certified pesticide applicator.

Manufacturer/Importer/Supplier/Distributor information

Company name Trident Agricultural Products, Inc.
Address P. O. Box 1909
Woodland, WA 98674 USA
Telephone (360) 225-3588 (8:00 am to 4:00 pm PST)
E-mail sds@tridentag.com

Emergency phone number CHEMTREC (US/Canada) 1-800-424-9300 (24/7)
CHEMTREC (International) +1 703-527-3887 (collect calls accepted)

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

Acute toxicity, oral	Category 2
Acute toxicity, dermal	Category 2
Acute toxicity, inhalation	Category 1
Skin corrosion/irritation	Category 1C
Serious eye damage/eye irritation	Category 1
Sensitization, skin	Category 1
Carcinogenicity	Category 2
Specific Target Organ Toxicity, Single Exposure	Category 1 (respiratory system damage)
Specific Target Organ Toxicity, Single Exposure	Category 3 (respiratory tract irritation)
Specific Target Organ Toxicity, Repeated Exposure	Category 1

Environmental hazards

Hazardous to the aquatic environment, acute hazard	Category 1
Hazardous to the aquatic environment, long-term hazard	Category 2

OSHA defined hazards Not classified.

Label elements



Signal word DANGER

Hazard statement	Fatal if swallowed, in contact with skin or if inhaled. May cause an allergic skin reaction. Causes serious eye damage. Causes severe skin burns and eye damage. May cause respiratory irritation. Suspected of causing cancer. Causes damage to organs (respiratory system). Causes damage to organs (lung, liver, kidney, respiratory system) through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. In case of inadequate ventilation wear respiratory protection. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment.
Response	Specific treatment is urgent. If swallowed: Rinse mouth. Do not induce vomiting. If swallowed: Immediately call a poison center/doctor. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor. If on skin: Wash with plenty of soap and water. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation or rash occurs: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. Wash contaminated clothing before reuse.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	Lachrymator - Vapor extremely irritating to the eyes and respiratory tract. Closed cylinders may rupture or burst if heated by fire. Cylinders are not equipped with relief valves or fusible overpressure devices.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	Concentration by weight %
Chloropicrin	76-06-2	80.0 *
1,3-Dichloropropene	542-75-6	20.0 *

Composition comments * Product label will reflect nominal active ingredient percentages.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Provide oxygen, if available, or artificial respiration, if needed. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center for further treatment advice.
Skin contact	Remove contaminated clothing immediately and wash skin for 15-20 minutes with water, and if available, use soap. Call a physician or poison control center for treatment advice. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse. Refer to Section 4, General Information for more information on contaminated clothing.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Causes respiratory distress and irritation. Early symptoms may include throat and nose irritation, nausea or vomiting. May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	Material if aspirated into the lungs may cause rapid absorption through the lungs which may result in systemic effects. If the product is ingested, probable mucosal damage may contraindicate the use of gastric lavage. Treat the affected person appropriately. In case of ingestion, the decision of whether or not to induce vomiting should be made by the attending physician. Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected

area. Call an ambulance. Continue flushing during transport to hospital. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed. Note to Physician: If lavage is performed, endotracheal and/or esophageal control is suggested. Danger from lung toxicity must be weighed against toxicity when considering emptying the stomach.

General information

Take off immediately all contaminated clothing. Aerate contaminated clothing in a secure area downwind and away from people. IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse. Discard any shoes or clothing items that cannot be decontaminated, after aerating

5. Fire-fighting measures

Suitable extinguishing media

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed. Combustion products include: Carbon monoxide. Carbon dioxide. Chlorine. Hydrogen chloride. Phosgene. Nitrosyl chloride. Nitrogen oxides.

Per transport regulations, cylinders containing Chloropicrin are not equipped with relief valves or fusible overpressure devices.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions

In case of fire and/or explosion do not breathe smoke, gas or vapors. Move containers from fire area if you can do so without risk.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards

The product is not flammable.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Immediately evacuate personnel to safe areas. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Move leaking or damaged cylinders outdoors or to an isolated location, observing strict safety precautions. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS. For small spill, consider initial isolation for at least 60 meters (200 feet). For large spill, consider initial isolation for at least 200 meters (600 feet).

Methods and materials for containment and cleaning up

Keep combustibles (wood, paper, oil, etc.) away from spilled material. Work upwind, if possible.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304).

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Valve protection caps must remain in place unless container is secured. Close valve after each use and when container is empty. Do not drop, drag, slide or roll cylinders on their sides. Do not subject cylinders to rough handling or to abnormal mechanical shock. Use a suitable hand truck or forklift to move heavier cylinders. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. Do not heat container by any means to increase the discharge rate of product from the container. Use only dry nitrogen gas to pressurize cylinders. Polyethylene or Teflon® tubing may be used to transfer this product at low pressures. Regulator must be operated with a secondary pressure relief valve. DO NOT use high pressure hose connection between the nitrogen supplying cylinder and this product's cylinder. Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Do not breathe vapor. Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not taste or swallow. Avoid prolonged exposure. Do not get this material on clothing. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in original tightly closed container. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Store at temperatures not exceeding 55°C/131°F.

8. Exposure controls/personal protection

Occupational exposure limits

Components	Type	Value
US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)		
Chloropicrin (CAS 76-06-2)	PEL	0.1 ppm (0.7 mg/m3)
US. ACGIH Threshold Limit Values		
1,3-Dichloropropene (CAS 542-75-6)	TLV-TWA	1.0 ppm (5.0 mg/m3)
Chloropicrin (CAS 76-06-2)	TLV-TWA	0.1 ppm (0.7 mg/m3)
US. NIOSH: Pocket Guide to Chemical Hazards		
1,3-Dichloropropene (CAS 542-75-6)	REL-TWA	1.0 ppm (5.0 mg/m3)
Chloropicrin (CAS 76-06-2)	REL-TWA	0.1 ppm (0.7 mg/m3)

Biological limit values

No biological exposure limits noted for the ingredient(s).

Exposure guidelines

US - California OELs: Skin designation

1,3-Dichloropropene (CAS 542-75-6)

Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

1,3-Dichloropropene (CAS 542-75-6)

Skin designation applies.

US - Tennessee OELs: Skin designation

1,3-Dichloropropene (CAS 542-75-6)

Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

1,3-Dichloropropene (CAS 542-75-6)

Can be absorbed through the skin.

US. NIOSH: Pocket Guide to Chemical Hazards

1,3-Dichloropropene (CAS 542-75-6)

Can be absorbed through the skin.

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Water flushing facilities must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields and a face shield. Wear a full-face respirator, if needed.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Incidental contact: < 10 minutes. Nitrile, butyl rubber or neoprene gloves are recommended. More than incidental contact: Viton or Silver Shield ® gloves are recommended.
Other	Avoid contact with the skin. When performing tasks with potential for contact with liquid, wear appropriate chemical resistant clothing to prevent skin contact. To avoid prolonged or repeated contact where spills and splashes are likely, wear appropriate chemical-resistant face shield, boots, apron, whole body suits or other protective clothing. The protection suit must be able to provide reliable protection against a broad range of industrial chemicals. Examples include Tychem and Saranex.
Respiratory protection	For non-handlers and non-applicators: If working in an environment where the eyes are stinging and watery due to exposure to this product, wear a NIOSH-approved full facepiece respirator with an organic vapor cartridge. For all EPA handlers (including applicators): - Must wear a half-face air-purifying respirator equipped with an organic-vapor cartridge and a particulate pre-filter. - If sensory irritation (tearing, burning of the eyes or nose) is experienced and handlers remain in the application block or buffer zone, handlers must wear at a minimum either: a NIOSH certified full facepiece air-purifying respirator equipped with an organic vapor cartridge and a particulate pre-filter, or a gas mask with a canister approved for organic vapor. Emergency or planned entry into unknown concentrations or IDLH conditions: - Any self-contained breathing apparatus that has a full face piece and is operated in a pressure-demand or other positive-pressure mode. Escape: - Air-purifying respirator equipped with full facepiece and an organic vapor cartridge. - Any air-purifying hood style CBRN escape-certified respirator. - Air-purifying respirator with canisters (TC-14G) that include the escape gas mask (canister) respirator, the gas mask (canister) respirator, and the filter self-rescuer. - Any self-contained breathing apparatus with hood or full-facepiece mask. Respirators certified "escape only" can only be used for escape purposes and CANNOT be used for responding to emergencies.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	NOTE: Handlers and applicators must follow the end-use pesticide label instructions for each of the task situations that require personal protective equipment. When using, do not eat, drink or smoke. Do not get this material on clothing. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance	Transparent liquid.
Physical state	Liquid.
Form	Liquid.
Color	Colorless to pale yellow. Brown if prolonged contact with metal packaging.
Odor	Sweet, pungent. Irritating.
Odor threshold	700 ppb in 2-5 seconds (Chloropicrin)
pH	4.8 @ 20 °C (68 °F)
Melting point/freezing point	Not available.

Initial boiling point and boiling range	Not available.
Flash point	201.9 °F (94.4 °C) Setaflash Closed Cup
Evaporation rate	Fast.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	1.553 @ 20 °C (68 °F)
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	5.64 cP @ 17 °C
Other information	
Density	12.96 lbs/gal @ 20 °C (68 °F)

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use. Chemical reaction may occur if mixed with or allowed to contact oxidizing agent.
Conditions to avoid	Heat may cause the cylinders to rupture or burst. Avoid heat, sparks, open flames and other ignition sources. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents. Copper. Aluminum. Zinc. Cadmium. Magnesium. Acids. Bases. Amines.
Hazardous decomposition products	During combustion: Carbon monoxide. Carbon dioxide. Chlorine. Hydrogen chloride. Phosgene. Nitrosyl chloride. Nitrogen oxides.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Fatal if inhaled. May cause damage to organs by inhalation.
Skin contact	Fatal in contact with skin. Causes severe skin burns. May cause an allergic skin reaction.
Eye contact	Causes serious eye damage. Lachrymation (discharge of tears).
Ingestion	Fatal if swallowed. Causes digestive tract burns.

Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause an allergic skin reaction. Dermatitis. Rash. Early symptoms of low exposure are stinging/tearing of the eyes and irritation of the throat. Nausea or vomiting may occur.
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Information on toxicological effects

Acute toxicity	Fatal if inhaled. Fatal in contact with skin. Fatal if swallowed.
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Components	Species	Test Results
1,3-Dichloropropene (CAS 542-75-6)		
Acute	<i>Dermal</i> , LD50	Rabbit > 333 mg/kg
	<i>Inhalation</i> , LC50	Rat > 855 ppm, 4 hours
	<i>Oral</i> , LD50	Rat > 110 mg/kg
Chloropicrin (CAS 76-06-2)		
Acute	<i>Dermal</i> , LD50	Rabbit 50 mg/kg, (converted acute toxicity point estimate)
	<i>Inhalation</i> , LC50	Rat 18.9 ppm, 4 hours, (126.6 mg/m3)
	<i>Oral</i> , LD50	Rat 37.5 mg/kg
		> 2000 ppb, 10 minutes, Human response - life-threatening effects including pulmonary edema can occur.
		> 580 ppb, 8 hours, Human response - life-threatening effects including pulmonary edema can occur.
		> 300 ppb, Human response - respiratory symptoms may increase in severity and include difficulty in breathing.
		> 150 ppb, Human response - headache, nausea, and vomiting may occur. These symptoms are temporary and reversible following termination of exposure.
		73 ppb, Human sensory irritation threshold (eye irritation).
		73 - 150 ppb, Human response - mild irritant to eyes and throat.
Skin corrosion/irritation	Causes severe skin burns.	
Serious eye damage/eye irritation	Causes serious eye damage.	
Respiratory or skin sensitization		
Respiratory sensitization	Not classified.	
Skin sensitization	May cause an allergic skin reaction.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Suspected of causing cancer.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
1,3-Dichloropropene (CAS 542-75-6)	2B Possibly carcinogenic to humans.	
NTP Report on Carcinogens		
1,3-Dichloropropene (CAS 542-75-6)	Reasonably Anticipated to be a Human Carcinogen.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)		
Not listed.		
Reproductive toxicity	Not classified.	
Specific target organ toxicity - single exposure	Causes damage to organs (Respiratory system). Respiratory tract irritation.	
Specific target organ toxicity - repeated exposure	Causes damage to organs (lung, liver, kidney, respiratory system) through prolonged or repeated exposure.	
Aspiration hazard	Not classified.	
Chronic effects	Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects. Causes damage to organs through prolonged or repeated exposure.	

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

Components		Species	Test Results
1,3-Dichloropropene (CAS 542-75-6)			
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Oyster (<i>Crassostrea cucullata</i>)	0.67 mg/l, 96 hours Shell growth inhibition
Fish	LC50	Rainbow trout (<i>Oncorhynchus mykiss</i>)	2.78 - 4.63 mg/l, 96 hours
		Sheepshead minnow (<i>Cyprinodon variegatus</i>)	0.91 mg/l, 96 hours
<i>Chronic</i>			
Crustacea	LOEC	Daphnia	0.109 mg/l, 21 days
	NOEC	Daphnia	0.073 mg/l, 21 days
Fish	LOEC	Fish	0.204 mg/l, 33 days
	NOEC	Fish	0.117 mg/l, 33 days
Chloropicrin (CAS 76-06-2)			
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Daphnia	120 µg/l, 48 hours
		Oyster (<i>Crassostrea cucullata</i>)	6.4 µg/l, 96 hours
Fish	EC50	Bluegill (<i>Lepomis macrochirus</i>)	50 µg/l, 96 hours
		Fish	11 µg/l, 96 hours
		Sheepshead minnow (<i>Cyprinodon variegatus</i>)	100 µg/l, 96 hours
<i>Chronic</i>			
Other	NOEC	Lemna minor	11 µg/l, 7 days

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Partition coefficient n-octanol / water (log Kow)

1,3-Dichloropropene (CAS 542-75-6)	1.82
Chloropicrin (CAS 76-06-2)	2.38

Mobility in soil No data available.

Other adverse effects This product is toxic to mammals, birds, fish, and aquatic invertebrates.

13. Disposal considerations

Disposal instructions Follow EPA approved label for Pesticide disposal directions. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations. Do not discharge this product or its effluent into lakes, rivers, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code A toxicity characteristic leaching procedure (TCLP) will be necessary to determine if a toxicity waste code is applicable. Corrosivity (pH) will need to be determined. The waste code(s) should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Avoid discharge into water courses or onto the ground.

Contaminated packaging Since emptied containers may retain product residue, follow pesticide use label instructions to clean container before final disposal. Cleaned, empty containers should be taken to a qualified re-conditioner or to an approved waste site for recycling or disposal.

14. Transport information

DOT

UN number	UN3390
UN proper shipping name	Toxic by inhalation liquid, corrosive, n.o.s. (Chloropicrin, 1,3-Dichloropropene)
Transport hazard class(es)	
Class	6.1
Subsidiary risk	8
Label(s)	6.1, 8
Packing group	I
Environmental hazards	
Marine pollutant	Yes (Chloropicrin, 1,3-Dichloropropene)
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	2, B9, B14, B32, T20, TP2, TP13, TP27, TP38, TP45
Packaging exceptions	None
Packaging non bulk	227
Packaging bulk	244
Reportable quantity (RQ)	1,3-Dichloropropene is 100 pounds (45.4 kilograms).

IATA

UN number	Not available.
UN proper shipping name	Forbidden
Transport hazard class(es)	
Class	Not available.
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	No.
Special precautions for user	IATA: Not permitted for transport.

IMDG

UN number	UN3390
UN proper shipping name	TOXIC BY INHALATION LIQUID, CORROSIVE, N.O.S. (Chloropicrin, 1,3-Dichloropropene)
Transport hazard class(es)	
Class	6.1
Subsidiary risk	8
Packing group	I
Environmental hazards	
Marine pollutant	Yes (Chloropicrin, 1,3-Dichloropropene)
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

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

15. Regulatory information

US federal regulations

EPA FIFRA

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

DANGER, POISON, Skull and crossbones, Fatal if inhaled, swallowed or absorbed through the skin. Poisonous liquid and vapor. Corrosive. Liquid causes skin burns and irreversible eye damage. Do not get in eyes, on skin or on clothing. Do not breathe mist or vapor. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. May cause lung, liver, and kidney damage and respiratory system irritation upon prolonged contact. The use of this product may be hazardous to your health. This product contains 1,3-dichloropropene, which has been determined to cause tumors in laboratory animals. Risks can be reduced by exactly following directions for use, precautionary statements, and by wearing the personal protective equipment specified in the labeling. Chloropicrin is readily identifiable by smell. Exposures to very low concentrations of vapor will cause irritation of eyes, nose and throat. Continued exposure after irritation occurs, or exposure to higher concentration may cause painful irritation or temporary blindness.

U.S OSHA

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

U.S. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

1,3-Dichloropropene (CAS 542-75-6) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA Hazard categories (for Tier II reporting)

See Physical and Health hazards listed in Section 2 of this SDS.

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical

Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Chloropicrin	76-06-2	80.0
1,3-Dichloropropene	542-75-6	20.0

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

1,3-Dichloropropene (CAS 542-75-6)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

1,3-Dichloropropene (CAS 542-75-6)

Chloropicrin (CAS 76-06-2)

US. New Jersey Worker and Community Right-to-Know Act

1,3-Dichloropropene (CAS 542-75-6)

Chloropicrin (CAS 76-06-2)

US. Pennsylvania Worker and Community Right-to-Know Law

1,3-Dichloropropene (CAS 542-75-6)

Chloropicrin (CAS 76-06-2)

US. Rhode Island RTK

1,3-Dichloropropene (CAS 542-75-6)

Chloropicrin (CAS 76-06-2)

US. California Proposition 65



WARNING: This product can expose you to chemicals, including 1,3-Dichloropropene (CAS 542-75-6), which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov

International Inventories Chloropicrin (CAS 76-06-2)
1-3, Dichloropropene (CAS 542-75-6)

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	[CAS 76-06-2 only] Yes
Canada	Non-Domestic Substances List (NDSL)	[CAS 542-75-6 only] Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
Mexico	National Inventory of Chemical Substances (INSQ)	Yes
New Zealand	New Zealand Inventory (NZIoC)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

* A "Yes" indicates this product complies with inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Version 3 date June 24, 2022

Revision history

11-15-14	Initial version
01-12-18	Sections 3, 15: Revised composition of ingredients to reflect concentration by weight %
	Section 15: Revised SARA Hazard Categories
06-24-22	Section 1: Updated logo in header

Further information None

NFPA ratings



NFPA Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available. Seller warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. SELLER MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY. Inherent Risks of Use: It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.) abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of the seller. To the extent consistent with applicable law, all such risks shall be assumed by buyer.

SAFETY DATA SHEET

DOW AGROSCIENCES LLC

Product name: TELONE™ II Soil Fumigant

Issue Date: 00000000

Print Date: 00000000

DOW AGROSCIENCES LLC encourages you to read and understand the entire MSDS. There is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: TELONE II Soil fumigant

Recommended use of the chemical and restrictions on use

Identified uses: and use as follows

COMPANY IDENTIFICATION

DOW AGROSCIENCES LLC
5000 DOWNSHILL RD
INDIANAPOLIS IN 46268-3000
UNITED STATES

Customer Information Number:

0000000000
[in this document](#)

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 0000000000

Local Emergency Contact: 0000000000

2. HAZARDS IDENTIFICATION

Hazard classification

This material is classified under the criteria of the Federal Safety and Health Commission Standard for C&R chemicals.

It is a flammable liquid Category 2.

It is a flammable solid Category 2.

It is a flammable gas Category 1.

It is a flammable liquid Category 1.

It is a flammable solid Category 1.

It is a flammable gas Category 1.

It is a flammable liquid Category 1.

It is a flammable solid Category 1.

It is a flammable gas Category 1.

It is a flammable liquid Category 1.

Label elements

Hazard pictograms



Sinrd**DANGER!**

Hazards

[illegible]

Precautionary statements

Prevention

[illegible]

Response

I S S L L D D e d i t e I S N C N T R o d t r o d i n
 I S S L L D D e d i t e I S N C N T R o d t r o d i n R i n e o u t o
 I N S I N r r i r R e o e T o e e d i t e o n t i n e d o t i n R i n e i n i t
 o t e r o e r
 I I N L D R e o e d i t t o r e o r a n d e e t r e i n o o d i t i o n o o r t o e o r
 c r e t i n C o o I S N C N T R o d t r o d i n
 I I N S R i n e o u t i u o i t o o t e r o r e e r o i n u t e R e o e o n t o t e n e o i
 o r e n t a n d e o o t o d o C o n t i n u e r i n o
 I e o o e d o r o n e r n e d o e t o e d i o o d i e o t t e n t i o n
 D o N o T i n d u e o o i t i n o
 I o o i n i r r i t a t i o n o r o o o o u r o o e t o e d i o o d i e o t t e n t i o n
 I o e i r r i t a t i o n o e r d o o e t o e d i o o d i e o t t e n t i o n
 T o e o o o n t o n i n e d o t i n o a n d o o o e e r e r e u t e
 I n o o e o o i r e U e d r o n d d r o e i o o o r o o o o r e d i t o n t o o o r e t i n t i o n

Store _____ed up

Disse the content container to an ordered set of dimensions

ndt i e

Introduction

Component	CASRN	Concentration
Diisobutylene	106-67-8	100%
Inert	Not assigned	0%

General advice: First did respondent understand attention to reorientation and use the respondent ended practice within one immediate or one immediate orientation. I immediately ensure effort refer to Section 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98 or 99 or 100 or 101 or 102 or 103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112 or 113 or 114 or 115 or 116 or 117 or 118 or 119 or 120 or 121 or 122 or 123 or 124 or 125 or 126 or 127 or 128 or 129 or 130 or 131 or 132 or 133 or 134 or 135 or 136 or 137 or 138 or 139 or 140 or 141 or 142 or 143 or 144 or 145 or 146 or 147 or 148 or 149 or 150 or 151 or 152 or 153 or 154 or 155 or 156 or 157 or 158 or 159 or 160 or 161 or 162 or 163 or 164 or 165 or 166 or 167 or 168 or 169 or 170 or 171 or 172 or 173 or 174 or 175 or 176 or 177 or 178 or 179 or 180 or 181 or 182 or 183 or 184 or 185 or 186 or 187 or 188 or 189 or 190 or 191 or 192 or 193 or 194 or 195 or 196 or 197 or 198 or 199 or 200 or 201 or 202 or 203 or 204 or 205 or 206 or 207 or 208 or 209 or 210 or 211 or 212 or 213 or 214 or 215 or 216 or 217 or 218 or 219 or 220 or 221 or 222 or 223 or 224 or 225 or 226 or 227 or 228 or 229 or 230 or 231 or 232 or 233 or 234 or 235 or 236 or 237 or 238 or 239 or 240 or 241 or 242 or 243 or 244 or 245 or 246 or 247 or 248 or 249 or 250 or 251 or 252 or 253 or 254 or 255 or 256 or 257 or 258 or 259 or 260 or 261 or 262 or 263 or 264 or 265 or 266 or 267 or 268 or 269 or 270 or 271 or 272 or 273 or 274 or 275 or 276 or 277 or 278 or 279 or 280 or 281 or 282 or 283 or 284 or 285 or 286 or 287 or 288 or 289 or 290 or 291 or 292 or 293 or 294 or 295 or 296 or 297 or 298 or 299 or 300 or 301 or 302 or 303 or 304 or 305 or 306 or 307 or 308 or 309 or 310 or 311 or 312 or 313 or 314 or 315 or 316 or 317 or 318 or 319 or 320 or 321 or 322 or 323 or 324 or 325 or 326 or 327 or 328 or 329 or 330 or 331 or 332 or 333 or 334 or 335 or 336 or 337 or 338 or 339 or 340 or 341 or 342 or 343 or 344 or 345 or 346 or 347 or 348 or 349 or 350 or 351 or 352 or 353 or 354 or 355 or 356 or 357 or 358 or 359 or 360 or 361 or 362 or 363 or 364 or 365 or 366 or 367 or 368 or 369 or 370 or 371 or 372 or 373 or 374 or 375 or 376 or 377 or 378 or 379 or 380 or 381 or 382 or 383 or 384 or 385 or 386 or 387 or 388 or 389 or 390 or 391 or 392 or 393 or 394 or 395 or 396 or 397 or 398 or 399 or 400 or 401 or 402 or 403 or 404 or 405 or 406 or 407 or 408 or 409 or 410 or 411 or 412 or 413 or 414 or 415 or 416 or 417 or 418 or 419 or 420 or 421 or 422 or 423 or 424 or 425 or 426 or 427 or 428 or 429 or 430 or 431 or 432 or 433 or 434 or 435 or 436 or 437 or 438 or 439 or 440 or 441 or 442 or 443 or 444 or 445 or 446 or 447 or 448 or 449 or 450 or 451 or 452 or 453 or 454 or 455 or 456 or 457 or 458 or 459 or 460 or 461 or 462 or 463 or 464 or 465 or 466 or 467 or 468 or 469 or 470 or 471 or 472 or 473 or 474 or 475 or 476 or 477 or 478 or 479 or 480 or 481 or 482 or 483 or 484 or 485 or 486 or 487 or 488 or 489 or 490 or 491 or 492 or 493 or 494 or 495 or 496 or 497 or 498 or 499 or 500 or 501 or 502 or 503 or 504 or 505 or 506 or 507 or 508 or 509 or 510 or 511 or 512 or 513 or 514 or 515 or 516 or 517 or 518 or 519 or 520 or 521 or 522 or 523 or 524 or 525 or 526 or 527 or 528 or 529 or 530 or 531 or 532 or 533 or 534 or 535 or 536 or 537 or 538 or 539 or 540 or 541 or 542 or 543 or 544 or 545 or 546 or 547 or 548 or 549 or 550 or 551 or 552 or 553 or 554 or 555 or 556 or 557 or 558 or 559 or 560 or 561 or 562 or 563 or 564 or 565 or 566 or 567 or 568 or 569 or 570 or 571 or 572 or 573 or 574 or 575 or 576 or 577 or 578 or 579 or 580 or 581 or 582 or 583 or 584 or 585 or 586 or 587 or 588 or 589 or 590 or 591 or 592 or 593 or 594 or 595 or 596 or 597 or 598 or 599 or 600 or 601 or 602 or 603 or 604 or 605 or 606 or 607 or 608 or 609 or 610 or 611 or 612 or 613 or 614 or 615 or 616 or 617 or 618 or 619 or 620 or 621 or 622 or 623 or 624 or 625 or 626 or 627 or 628 or 629 or 630 or 631 or 632 or 633 or 634 or 635 or 636 or 637 or 638 or 639 or 640 or 641 or 642 or 643 or 644 or 645 or 646 or 647 or 648 or 649 or 650 or 651 or 652 or 653 or 654 or 655 or 656 or 657 or 658 or 659 or 660 or 661 or 662 or 663 or 664 or 665 or 666 or 667 or 668 or 669 or 670 or 671 or 672 or 673 or 674 or 675 or 676 or 677 or 678 or 679 or 680 or 681 or 682 or 683 or 684 or 685 or 686 or 687 or 688 or 689 or 690 or 691 or 692 or 693 or 694 or 695 or 696 or 697 or 698 or 699 or 700 or 701 or 702 or 703 or 704 or 705 or 706 or 707 or 708 or 709 or 710 or 711 or 712 or 713 or 714 or 715 or 716 or 717 or 718 or 719 or 720 or 721 or 722 or 723 or 724 or 725 or 726 or 727 or 728 or 729 or 730 or 731 or 732 or 733 or 734 or 735 or 736 or 737 or 738 or 739 or 740 or 741 or 742 or 743 or 744 or 745 or 746 or 747 or 748 or 749 or 750 or 751 or 752 or 753 or 754 or 755 or 756 or 757 or 758 or 759 or 760 or 761 or 762 or 763 or 764 or 765 or 766 or 767 or 768 or 769 or 770 or 771 or 772 or 773 or 774 or 775 or 776 or 777 or 778 or 779 or 780 or 781 or 782 or 783 or 784 or 785 or 786 or 787 or 788 or 789 or 790 or 791 or 792 or 793 or 794 or 795 or 796 or 797 or 798 or 799 or 800 or 801 or 802 or 803 or 804 or 805 or 806 or 807 or 808 or 809 or 810 or 811 or 812 or 813 or 814 or 815 or 816 or 817 or 818 or 819 or 820 or 821 or 822 or 823 or 824 or 825 or 826 or 827 or 828 or 829 or 830 or 831 or 832 or 833 or

[illegible]

Skin contact: The amount inhaled within 10 min in its container and entered the respiratory tract in the container or doctor's treatment advice should be reduced. Should the patient enter the container should be decontaminated and decontaminated. Suitable personal protective equipment should be provided.

[illegible]

Ingestion: See ☐ ed ☐ tention i ☐ ed ☐ te ☐ Don't induce ☐ itin ☐ C ☐ ☐ ☐ ☐ n and/or
trn ☐ r t e ☐ er en ☐ ☐ it i ☐ ed ☐ te

Most important symptoms and effects, both acute and delayed: ☐ide ☐t e in ☐t i o n ☐und
under De ☐r i t i o n ☐i r t i d e e ☐u r e ☐m m e e ☐nd ☐i t i o n ☐i d ☐e d i t e ☐e d i t i o n ☐t t e n t i o n ☐nd

The information needed to determine the content of the text is derived in Section 4.4. The information needed to determine the content of the text is derived in Section 4.4.

Indication of any immediate medical attention and special treatment needed[illegible]

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water spray or fine stream. Do not use foam fire extinguisher. Carbon dioxide fire extinguisher should be used for electrical equipment. In addition, water or protein foam are preferred in some cases. Resistant to all TC types of function after modification. Can be used as an agent for fire extinguishment.

Unsuitable extinguishing media: Do not use direct water spray. Striking or direct water spray may not be effective in extinguishing fire.

Special hazards arising from the substance or mixture

Hazardous combustion products: During fire, the material contains the original material. In addition to the combustion product, carbon monoxide is produced, which is toxic and/or irritating. Combustion products include and are not limited to carbon dioxide, carbon monoxide, carbon dioxide.

Unusual Fire and Explosion Hazards: Container structure may generate fire in fire situation electric ground and wind equipment onto fire picture after product are reclassified even as it is disassembled container leader torch air and other trace substances and substance in the wind reclassification and air mass may occur some of the pictures of credit bit in the power source container at room temperature some of the concentration substance can substance if the temperature above ambient Section

Advice for firefighters

[illegible]

Special protective equipment for firefighters: ☐ **See** **Positive-pressure containment breathing apparatus** SC and **Protective fire fighting clothing** include fire fighting coat and trousers, coat and pants, hood, contact with the exterior during fire fighting operations, protection from the chance to suffer a direct fire fighting action with containment breathing apparatus, **It is not possible** **See** **Water-repellent action with containment breathing apparatus** and **Hot fire** **See** **Protection of protective equipment in hot fire or non-fire rescue situation** **See** **to the relevant section**

6. ACCIDENTAL RELEASE MEASURES

[illegible]

Environmental precautions: Prevent from entering into the immediate perimeter after work and ground after. See Section 0000000000 in the Instruction Sheet or direct the contractor to the site to direct the crane.

[illegible]

7. HANDLING AND STORAGE

Precautions for safe handling: See Out Core container See core room set-up and use of electricity and ground container power line and equipment before transfer or use of materials. Containers are loaded from air and protect the distance and volume in the wind. Precondition and/or other conditions occur avoid contact with equipment and certain avoid creating spark or fire. Do not attempt to repair container after handling. See container used. Use only adequate ventilation. Never use air pressure for transferring product. No open flames, open fire or source of ignition in handling and storage areas. Containers are to be used only when they are tied down within container. Do not cut, drill, grind, weld, or perform other operations on or near the container. Use only authorized or equipment. Do not use near open flame or other source of ignition. See Section 9. SUR CONTROLS AND PERSONAL PROTECTION.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

☐ I have no interest

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING COMMERCIAL
LANDING AND COCKPIT REPAIRS ONLY. REPAIRS TO LICITORS AND ENDLERS SHOULD BE
PRODUCT LABEL FOR REPAIR PERSONS. REPAIRS TO EQUIPMENT AND GLASSING

Engineering controls: Use engineering controls to contain airborne infectious exposure if it requires an OSHA guideline. There are no OSHA guidelines for exposure if it requires an OSHA guideline. Use an appropriate ventilation system to contain the exposure if it requires an OSHA guideline.

Eye/face protection: Use eye protection if there is a possibility of exposure to liquids or solids. Use eye and face protection if there is a possibility of exposure to gases, vapors, or dusts.

[illegible]

Other protection: Use protective clothing and equipment resistant to the chemical.
Selection of protective equipment should be based on the chemical and the work conditions.
Depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit if it requires an enclosure. If there are no enclosure exposures, it requires an enclosure or guideline. Use an approved respirator. Selection criteria include or outside of enclosure. Qualified air depend on the media operation and the potential for airborne concentration of the material or other conditions. Use an approved enclosure. Requirements for respiratory protection should be maintained. Creating a respiratory

[illegible]

Physical state Liquid

Color	Colorless to pale
Odor	Sweet
Odor Threshold	Not detectable
pH	000 00 CIPAC MT 75 000 aqueous suspension
Melting point/range	Not applicable
Freezing point	Not detectable
Boiling point (760 mmHg)	000 °C 0000 000
Flash point	closed cup 00 °C 000 000 EC Method A9
Evaporation Rate (Butyl Acetate = 1)	Not detectable
Flammability (solid, gas)	Not applicable to liquid
Lower explosion limit	Not detectable
Upper explosion limit	Not detectable
Vapor Pressure	00 0 0 00 at 00 °C 000 000
Relative Vapor Density (air = 1)	000
Relative Density (water = 1)	0000 at 00 °C 000 000 00 °C Pyknometer
Water solubility	Insoluble
Partition coefficient: n-octanol/water	000 0000000 0000 Measured
Auto-ignition temperature	92/69/EEC A15 none 0000 000 de°C
Decomposition temperature	Not detectable
Dynamic Viscosity	0000 0 0000 at 00 °C 0000 000
Kinematic Viscosity	00000 0 0 000 at 00 °C 000 000
Explosive properties	not detectable
Oxidizing properties	not detectable
Liquid Density	00000 0000 0 at 00 °C 000 000 Digital density meter
Molecular weight	not detectable

Not to be used as a fumigant for food and feed. It is a toxic substance and should not be handled in a confined space.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Unstable at elevated temperatures.

Possibility of hazardous reactions: No reaction with water.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose with generation of toxic gases during decomposition can cause pressure in closed vessels or rapid deterioration.

Incompatible materials: Oxidant contact with oxidizing substances, oxidant contact with ethyl alcohol, acetone, carbon disulfide, methanol, and other flammable liquids.

Hazardous decomposition products: Decomposition products depend upon temperature, air humidity and the presence of other materials. Decomposition products can include and are not limited to Carbon monoxide, Carbon dioxide, hydrogen cyanide. Toxic gases are released during decomposition. Decomposition products can include trace amounts of acrylonitrile.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Moderate to slightly toxic. Small amounts consumed incidentally as a result of normal use and in the operation are not likely to cause injury. Excessive consumption or contact with the mouth in the stomach may result in gastrointestinal irritation.

LD₅₀ Rat 1000 mg/kg

Acute dermal toxicity

Provoked or abraded skin contact may result in irritation. No acute effects.

LD₅₀ Rat 1000 mg/kg

Acute inhalation toxicity

Provoked exposure may cause serious adverse effects. Excessive exposure may cause irritation to upper respiratory tract, nose and throat and unconsciousness. In this include Let's go.

LC₅₀ Rat 4000 ppm for 4 hours

Skin corrosion/irritation

Irritation may cause moderate skin irritation. It is reddened. Moderate dryness and minor skin irritation.

Serious eye damage/eye irritation

Moderate severe eye irritation.

Moderate eye irritation.

Minor eye irritation (tear).

Minor eye irritation experienced. Mild discharge and redness.

Sensitization

No data indicate that dimethylacrylonitrile is a potential sensitizer.

No respiratory sensitization.

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Moderate respiratory irritation.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

In this case, it has been reported on the main organ.

Adverse.

No irritative

Lacer

Lun

No irritative

Reproductive

No irritative in the presence of other substances

Carcinogenicity

No irritative substances to cause cancer in the presence of other substances. In addition, exposure resulted in an increase in the number of current cancer cases. Unusually high incidence of cancer.

Teratogenicity

Did not cause birth defects or other effects in the fetus. It does not cause other effects in the fetus.

Reproductive toxicity

In the studies, did not interfere with reproduction.

Mutagenicity

In the genetic toxicity studies, were negative in the presence of other substances. In the genetic toxicity studies, were negative.

Aspiration Hazard

May be aspirated and enter the lungs.

Carcinogenicity**Component****1,3-Dichloropropene****List**

IARC

US NTP

CCL

Classification

Group 2B: Possibly carcinogenic to humans.

Reproductive: Anticipated to be a human carcinogen.

Chronic: Induced in the presence of other substances, but no known reference to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity**Acute toxicity to fish**

Material is expected to be acute toxic to fish. LC50 values are between 100 and 1000 in the most sensitive species tested.

LC50 in rainbow trout: 1000 mg/L

LC50 in rainbow trout: 1000 mg/L

LC50 in rainbow trout: 1000 mg/L

Acute toxicity to aquatic invertebrates

CCD values are high after treatment with the substance.

Center for Creative Industries

Acute toxicity to algae/aquatic plants

CCeudirnerieauititreeneettiteitcuri

Condition Number

Clenched

Chronic aquatic toxicity

Chronic toxicity to fish

No Cij e e r e t e d i n n t r u t e t d u r j

Chronic toxicity to aquatic invertebrates

N □ C □ D □ □ ni □ □ n □ □ ter □ e □ □ □ □ d □ nu □ er □ □ □ □ □ rin □ □ □ □ □ □ □ □

Toxicity to Above Ground Organisms

Materialen die tot dit zijn toegevoegd zijn LD en een andere

Materiali per la ricerca in nutrizione dietetica LC

LDContinuity of the derivative

diet r LC n t r n M rd du diet

Toxicity to soil-dwelling organisms

LC□□□□jenj□etid□e□rt□□□r□□□□□d□□□□□□□□□□

Persistence and degradability

Biodegradability: ☐ biodegradation ☐ occurs under aerobic conditions in the presence of oxygen

ind i

Biodegradation: ☐ ☐ ☐ ☐

Method: ☐ CD Text ☐ guideline ☐ D ☐ r ☐ ui ☐ ent

Theoretical Oxygen Demand:

Biological oxygen demand (BOD)

Incubation Time	BOD

Stability in Water (1/2-life)

□ □ □ □ □ □ □ □ d

Photodegradation

Atmospheric half-life: ur

Bioaccumulative potential

Bioaccumulation: Nodot ooiioe irtio rduot or iioi r tertiioioio
oioio nentritio n tentioioio io C o oio or L o oio o oio

Mobility in soil

[illegible]

_____tenti____r _____it in _____er _____et____een _____nd _____

Partition coefficient(Koc): Measured

13. DISPOSAL CONSIDERATIONS

Disposal methods: I can't find any information on how to dispose of the product. The directions don't mention anything about disposal. I'm not sure if I should take it to a recycling center or if I can just throw it away. I'm not sure if I should take it to a recycling center or if I can just throw it away. I'm not sure if I should take it to a recycling center or if I can just throw it away.

14. TRANSPORT INFORMATION

DOT

Proper shipping name

te ti de i uid t i e n

Di _____ r _____ ene _____

UN number

UN

Class

11/11/2019

Packing group

11

Marine pollutant

Diarrhoea

Reportable Quantity

Directorine

Classification for SEA transport (IMO-IMDG):

Proper shipping name

STICID LIUID TIC LMM LN S

Di r r ene

UN number

UN

Class

11/11/2019

Packing group

11

Marine pollutant

Diene

Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code

Content Management Requirements for the New User

Classification for AIR transport (IATA/ICAO):

Proper shipping name

☐ e t i d e ☐ i u i d t ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ e n ☐ ☐ ☐ ☐ ☐ ☐ D i ☐ ☐ r ☐ ☐ r ☐ e n e ☐

UN number

UN

Class

Page 10 of 10

Packing group

11

This information is not intended to induce anyone to require or operation require ent in information relating to this product. Transportation information on container due and is influenced by region or country variation in regulation. Additional transportation code information can be obtained from an authorized dealer or customer service representative. It is the responsibility of the transportation organization to follow applicable regulations and rules relating to the transportation code criteria.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard

This product is in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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

Fire Hazard
Route Data
Chronic Data

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

Components

Dimethoate

CASRN

00000000

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

Prop 65: This product contains chemicals known to the State of California to cause cancer.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

The main product components are listed in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Hazardous Substance List and are present at levels that require reporting.

Components

Dimethoate

CASRN

00000000

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:

The main product components are listed in the Pennsylvania Special Hazardous Substance List and are present at levels that require reporting.

Components

Dimethoate

CASRN

00000000

United States TSCA Inventory (TSCA)

This product contains chemicals that are on the U.S. TSCA Inventory. It is required to be a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act

Registration Number 0000000000

The pesticide product registered for the end use entomoprotection of corn and is subject to certain specific requirements under Federal pesticide law. These requirements differ from the registration criteria and standards for registration required for pesticides that meet and for products that do not meet the pesticide registration criteria in the standards required for the pesticide use.

RNIN

Moe ut in quested

The use of this product on the ground to our left. This product contains a modified microgene which has been determined to be a true grain growth inhibitor. Risk can be reduced by the following directions for use: resolution of the content and the grain size per unit of the equipment specified in the table.

More motivated try in

Mo e t i n e

C u e u t n t i u t t e r r e e i n u r

16. OTHER INFORMATION

Hazard Rating System

NFPA

Health	Fire	Reactivity
☐	☐	☐

Revision

Identification Number _____ Date _____

D S Code RM

Most recent refinements noted the added value of in addition to in the output of the document.

Legend

Red	Red
Col	US Col Treated Limit
T	Current Weighted

Information Source and References

The SDS is reproduced in **Product Receptor Service** and **Card Counting** in our **intranet** and **internal reference** in our **intranet**.

[illegible]

Obtained on MSDS from another source or issuer are not sure that the MSDS you have is current.
Please contact us for the most current version.

1. Identification

Product identifier	VAPAM® HL Soil Fumigant	
Other means of identification		
SDS number	141	
Product registration number	5481-468	
Synonyms	Metam sodium * Metam * VAPAM	
Recommended use	Soil Fumigant.	
Recommended restrictions	This is a Restricted Use Pesticide and is for use by licensed applicators only. No other uses are advised. Keep out of the Reach of Children!	
EPA Registration number	EPA: 5481-468	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	AMVAC Chemical Corporation	
Address	4695 MacArthur Court Suite 1200 Newport Beach, CA 92660 United States	
Telephone	AMVAC Chemical Corp	949-260-1200
	AMVAC Chemical Corp	949-260-6270(FAX)
	Product Use	888-462-6822
Website	www.amvac.com	
E-mail	CustServ@amvac.com	
Emergency phone number	Medical	888-681-4261
	CHEMTREC®	800-424-9300
	(USA+Canada)	
	CHEMTREC® (Outside USA)	+1-703-527-3887

2. Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Acute toxicity, oral	Category 4
	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2B
	Sensitization, skin	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1
OSHA defined hazards	Not classified.	
Label elements		


Signal word

Warning

Hazard statement	May be corrosive to metals. Harmful if swallowed. Harmful if inhaled. Causes skin irritation. Causes eye irritation. May cause an allergic skin reaction. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Keep only in original container. Use only outdoors or in a well-ventilated area. Wear protective gloves. Avoid breathing mist/vapors. Avoid release to the environment. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.
Response	If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth. If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. Absorb spillage to prevent material damage.
Storage	Store in corrosive resistant container with a resistant inner liner.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	This is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced in section 15. The pesticide label also includes other important information, including directions for use.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
Sodium Methylthiocarbamate	Metam Sodium Metam	137-42-8	42

Composition comments All concentrations are in percent by weight.

4. First-aid measures

Inhalation	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. Administer oxygen or artificial respiration if needed. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Never give anything by mouth to a victim who is unconscious or is having convulsions.

Most important symptoms/effects, acute and delayed

Overexposure to Metam Sodium as sold may result in damage to the skin, skin irritation, excessive salivation, sweating, fatigue, weakness, nausea, headache, dizziness, eye, nose, throat and respiratory tract irritation. In addition, dilution to use levels results in the release of methyl isothiocyanate (MITC) and/or hydrogen sulfide. Overexposure to MITC may result in strong skin and eye irritation, running nose, dizziness, cramps, nausea, vomiting, and mild to severe disturbances of the nervous system. Overexposure to hydrogen sulfide may result in severe irritation to the eyes and mucous membranes. In addition, exposure may result in headache, dizziness, excitement, staggering gait, diarrhea, difficult or painful urination, difficult breathing, chronic pulmonary edema, coma and death.

Chronic exposure may also cause conjunctivitis, photophobia, digestive disturbances, weight loss, general bodily weakness, and blurred vision. In addition, laboratory studies have shown that exposure to the active ingredient, followed by ingestion of alcohol, may cause an adverse reaction, including low blood pressure, rapid heartbeat, and flushing of the skin. Consumption of alcohol during and after exposure to this product should be avoided.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed. Contact your local or State Poison control Center for further information.

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media

Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media

Material reacts with water. Dilution with water may cause generation of flammable and toxic fumes of MITC and Hydrogen sulfide. See Chemical Stability information in Section 10.

Specific hazards arising from the chemical

Material reacts with water. This product can release toxic fumes of methyl isothiocyanate (MITC) and hydrogen sulfide, as well as nitrogen oxides, when heated to decomposition or diluted with water. Fire may produce irritating, corrosive and/or toxic gases.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Firefighting equipment/instructions

Evacuate the area promptly. Move containers from fire area if you can do so without risk.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Siphon the majority of the liquid into drums for use or disposal, depending on the circumstances. Clean the area as described for a small spill.

Small Spills: Absorb spillage with non-combustible, absorbent material. Scoop up used absorbent into drums or other appropriate container. Scrub the area with detergent and water. Rinse with water. Pick up wash liquid with additional absorbent and place in a disposable container.

Never return spills to original containers for reuse.

Environmental precautions

Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases.

7. Handling and storage

Precautions for safe handling

Read label before use. Keep out of the reach of children. Keep away from food, drink and animal feedstuffs. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash thoroughly after handling. Avoid release to the environment. Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities

Keep away from food, drink and animal feedstuffs. Store in a cool, dry place out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-2 (29 CFR 1910.1000)

Decomposition	Type	Value
Hydrogen sulfide (CAS 7783-06-4)	Ceiling	20 ppm

US. ACGIH Threshold Limit Values

Decomposition	Type	Value
Hydrogen sulfide (CAS 7783-06-4)	STEL	5 ppm
	TWA	1 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Decomposition	Type	Value
Hydrogen sulfide (CAS 7783-06-4)	Ceiling	15 mg/m3
		10 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Mechanical ventilation or local exhaust ventilation may be required. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Safety glasses with side shields or tight fitting chemical goggles should be used whenever hazardous chemicals are being handled. A full face respirator should be worn whenever there is a chance of splashing or misting.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Other

Wear appropriate chemical resistant clothing (see label).

Respiratory protection

For exposures that may exceed the TLV, a respirator with either an organic vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G) is required. A full-face respirator or a SCBA may be required if misting or splashing are possible.

Thermal hazards

Not applicable.

General hygiene considerations

Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance

Physical state	Liquid.
Form	Liquid.
Color	Light yellow-green

Odor Essentially odorless to fairly strong odor of amine or sulfur.

Odor threshold Not available.

pH 9.5 - 11

Melting point/freezing point 32 °F (0 °C)

Initial boiling point and boiling range 233.6 °F (112 °C)

Flash point > 200 °F (> 93.3 °C) Closed Cup

Evaporation rate 1 (compared to water)

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Explosive limit - lower (%) Not available.

Explosive limit - upper (%)	Not available.
Vapor pressure	24 mm Hg (77 °F (25 °C))
Vapor density	Not available.
Relative density	1.21 at 20 °C/4 °C (68 °F/39 °F)
Solubility(ies)	
Solubility (water)	Miscible.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Bulk density	10.07 lb/gal
Molecular formula	C2-H4-N-S2.Na
Molecular weight	129.18 g/mol

10. Stability and reactivity

Reactivity	May be corrosive to metals.
Chemical stability	Material is stable under normal conditions.
	Metam Sodium decomposes, when diluted with water, to methyl isothiocyanate (MITC, a lachrymator and moderate poison) and/or to hydrogen sulfide (a highly poisonous gas). Use the solution promptly after mixing. Do not allow the solution to stand. Metam Sodium can also decompose to carbon disulfide and monomethylamine (both highly flammable) if contacted with a strong acid.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Contact with water liberates flammable gas.
Incompatible materials	This product is incompatible with additional water and strong aqueous acids. In addition, it is corrosive to copper, brass, and zinc, and may soften and/or discolor iron.
Hazardous decomposition products	When treated with water or heated to decomposition, this product will give off toxic fumes of methyl isothiocyanate (MITC), hydrogen sulfide, and nitrogen oxides. If treated with strong acids, fumes of carbon disulfide and monomethylamine will be given off.

11. Toxicological information

Information on likely routes of exposure	
Inhalation	Harmful if inhaled.
Skin contact	Causes skin irritation. May cause an allergic skin reaction.
Eye contact	Causes eye irritation.
Ingestion	Harmful if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Overexposure to Metam Sodium as sold may result in damage to the skin, skin irritation, excessive salivation, sweating, fatigue, weakness, nausea, headache, dizziness, eye, nose, throat and respiratory tract irritation. In addition, dilution to use levels results in the release of methyl isothiocyanate (MITC) and/or hydrogen sulfide. Overexposure to MITC may result in strong skin and eye irritation, running nose, dizziness, cramps, nausea, vomiting, and mild to severe disturbances of the nervous system. Overexposure to hydrogen sulfide may result in severe irritation to the eyes and mucous membranes. In addition, exposure may result in headache, dizziness, excitement, staggering gait, diarrhea, difficult or painful urination, difficult breathing, chronic pulmonary edema, coma and death. Chronic exposure may also cause conjunctivitis, photophobia, digestive disturbances, weight loss, general bodily weakness, and blurred vision. In addition, laboratory studies have shown that exposure to the active ingredient, followed by ingestion of alcohol, may cause an adverse reaction, including low blood pressure, rapid heart beat, and flushing of the skin. Consumption of alcohol during and after exposure to this product should be avoided. Impaired pulmonary function and preexisting eye problems may be aggravated. Preexisting skin diseases may also be aggravated by exposure to the decomposition products.
Information on toxicological effects	
Acute toxicity	Harmful if swallowed. Harmful if inhaled.

Product	Species	Test Results
VAPAM® HL Soil Fumigant		
Acute		
Dermal		
LD50	Rabbit	> 2020 mg/kg
Inhalation		
<i>Mist</i>		
LC50	Rat	2.28 mg/l, 4 h
Oral		
LD50	Rat	812 mg/kg
Decomposition	Species	Test Results
Methyl isothiocyanate (MITC) (CAS 556-61-6)		
Acute		
Dermal		
LD50	Rabbit	33 mg/kg
Inhalation		
LC50	Rat	1.9 mg/l, 1 h
Oral		
LD50	Rat	175 mg/kg
Skin corrosion/irritation	Causes skin irritation.	
Irritation Corrosion - Skin		
VAPAM® HL Soil Fumigant		Result: Moderate Irritant Species: Rabbit
Serious eye damage/eye irritation	Causes eye irritation.	
Irritation Corrosion - Eye		
VAPAM® HL Soil Fumigant		Result: Mild Irritant Species: Rabbit
Respiratory or skin sensitization		
Respiratory sensitization	Based on available data, the classification criteria are not met.	
Skin sensitization	May cause an allergic skin reaction.	
Skin sensitization		
VAPAM® HL Soil Fumigant		Result: Sensitizer Species: Guinea pig
Germ cell mutagenicity	No evidence of mutagenicity "in vivo", but some evidence has been observed "in vitro", in mutagenicity animal testing.	
Carcinogenicity	Limited evidence of a carcinogenic effect.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Not listed.		
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)		
Not listed.		
US. National Toxicology Program (NTP) Report on Carcinogens		
Not listed.		
Reproductive toxicity	This product has shown some developmental effects but has not shown any reproductive effects in laboratory animals.	
Specific target organ toxicity - single exposure	Not classified.	
Specific target organ toxicity - repeated exposure	Not classified.	
Aspiration hazard	Not classified.	
Chronic effects	Prolonged inhalation may be harmful.	

12. Ecological information

Ecotoxicity	Very toxic to aquatic life with long lasting effects. This product is toxic to fish. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.
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Decomposition		Species	Test Results
Hydrogen sulfide (CAS 7783-06-4)			
Aquatic			
Acute			
Crustacea	EC50	Scud (Gammarus pseudolimnaeus)	0.062 mg/l, 2 days
Fish	LC50	Fathead minnow (Pimephales promelas)	0.007 mg/l, 96 hours
Methyl isothiocyanate (MITC) (CAS 556-61-6)			
Aquatic			
Acute			
Crustacea	LC50	Water flea (Daphnia magna)	0.18 - 0.56 mg/l, 48 hours
			0.032 - 0.1 mg/l, 14 days
Persistence and degradability	Product decomposes rapidly in wet environments.		
Bioaccumulative potential	Decomposes rapidly - will not bioaccumulate.		
Partition coefficient n-octanol / water (log Kow)			
Sodium Methylthiocarbamate	< 1		
Mobility in soil	This product decomposes when diluted with water and the decomposition products will leach from the soil.		
Other adverse effects	None known.		
13. Disposal considerations			
Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site according to all applicable regulations. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with all applicable local/regional/national/international regulations.		
Local disposal regulations	Dispose in accordance with all applicable regulations.		
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.		
Waste from residues / unused products	Dispose of in accordance with all applicable regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal methods/information). Avoid discharge into water courses or onto the ground.		
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal according to all applicable regulations. Since emptied containers may retain product residue, follow label warnings even after container is emptied.		
14. Transport information			
DOT			
UN number	UN3266		
UN proper shipping name	Corrosive liquid, basic, inorganic, n.o.s. (Metam Sodium 42%), MARINE POLLUTANT		
Transport hazard class(es)			
Class	8		
Subsidiary risk	-		
Label(s)	8		
Packing group	III		
Environmental hazards			
Marine pollutant	Yes		
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.		
Special provisions	IB3, T7, TP1, TP28		
Packaging exceptions	154		
Packaging non bulk	203		
Packaging bulk	241		
IATA			
UN number	UN3266		
UN proper shipping name	Corrosive liquid, basic, inorganic, n.o.s. (Metam Sodium 42%)		
Transport hazard class(es)			
Class	8		
Subsidiary risk	-		
Packing group	III		
Environmental hazards	No		

ERG Code 8L
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Other information
Passenger and cargo aircraft Allowed with restrictions.
Cargo aircraft only Allowed with restrictions.
Read safety instructions, SDS and emergency procedures before handling.

IMDG
UN number UN3266
UN proper shipping name CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (Metam Sodium 42%), MARINE POLLUTANT
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group III
Environmental hazards
Marine pollutant Yes
EmS F-A, S-B
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.
DOT



IATA; IMDG



Marine pollutant



General information DOT Regulated Marine Pollutant. IMDG Regulated Marine Pollutant.

15. Regulatory information

US federal regulations

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

This product is registered under EPA/FIFRA Regulations as a RESTRICTED USE PESTICIDE. It is a violation of Federal Law to use this product in any manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

DANGER -- POISON

KEEP OUT OF REACH OF CHILDREN!

HAZARD TO HUMANS AND DOMESTIC ANIMALS.

DANGER

Fatal if absorbed through skin. Corrosive. Causes skin burns and irreversible eye damage. Do not get in eyes, on skin, or on clothing. May be fatal if inhaled or swallowed. Do not breathe vapors or spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to mammals, birds, fish, and aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

Metam sodium has certain properties and characteristics in common with chemicals that have been detected in groundwater (highly soluble in water and has low adsorption to soil). For untarped applications, leaching and runoff may occur if there is heavy rainfall after soil fumigation.

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
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Hydrogen sulfide	7783-06-4	100	500		
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Methyl isothiocyanate (MITC)	556-61-6	500	500		
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SARA 311/312 Hazardous chemical

Classified hazard categories	Corrosive to metal Acute toxicity (any route of exposure) Skin corrosion or irritation Serious eye damage or eye irritation Respiratory or skin sensitization
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SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Sodium Methylthiocarbamate	137-42-8	42

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Contains component(s) regulated under the Safe Drinking Water Act.

US state regulations

California Proposition 65



WARNING: This product can expose you to Sodium Methylthiocarbamate, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California Proposition 65 - CRT: Listed date/Carcinogenic substance

Sodium Methylthiocarbamate (CAS 137-42-8) Listed: November 6, 1998

California Proposition 65 - CRT: Listed date/Developmental toxin

Sodium Methylthiocarbamate (CAS 137-42-8) Listed: May 15, 1998

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date Apr-07-2015

Revision date Nov-04-2022

Version # 5.3

HMIS® ratings Health: 2
Flammability: 1
Physical hazard: 1

NFPA ratings Health: 2
Flammability: 1
Instability: 1

Disclaimer This information is provided for the limited guidance to the user. While AMVAC believes that the information is, as of the date hereof, reliable, it is the user's responsibility to determine the suitability of the information for its purposes. The user is advised not to construe the information as absolutely complete since additional information may be necessary or desirable when particular, exceptional, or variable conditions or circumstances exist (like combinations with other materials), or because of applicable regulations. No express or implied warranty of merchantability or fitness for a particular purpose or otherwise is made hereunder with respect to the information or the product to which the information relates.

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Revision information This document has undergone significant changes and should be reviewed in its entirety.

Appendix B
Well Resources Information

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The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WELL LOG

Record by.....

Source.....

Location: State of WASHINGTON

County.....

Area.....

Map.....

NW 1/4 NW 1/4 sec. 34 T. 16 N., R. 29 E.

0			

Diagram of Section

Drilling Co.....

Address.....

Method of Drilling..... Date....., 19.....

Owner.....

Address.....

Land surface, datum..... ft. above
below

SWL:..... Date....., 19..... Dims:.....

CORRE- LATION	MATERIAL	From (feet)	To (feet)
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(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings, perforations, screens, etc.)

16/29-34D1. Chef Reddy Food Plant.
Altitude, 1,078 ft. Drilled by O. F. Zinkgraf, 1962
Casing, 20- to 16-in. to 374 ft.

Pleistocene:

Fluvial and lacustrine deposits:

Fluvial gravel:

Gravel and boulders 17
Basalt, broken, and clay 26

Ringold Formation:

Lacustrine clay:

Clay, hard, light tan 80
Clay, hard, dark brown 114
Clay, yellow, contains sand 125
Clay, yellow 135
Clay, gray 156
Clay, blue 160
Clay, gray 166
Clay, blue, contains sand 175
Clay, blue, traces of basalt at 179 ft. 196

Turn up

Sheet.....of.....sheets

WELL LOG.—Continued

No. /

Pliocene-Miocene:

Yakima Basalt:

Saddle Mountains Member:

Basalt, brown.....	229
Basalt, red.....	233
Basalt, medium hard, brown.....	248
Shale, brown.....	249
Basalt, broken, and blue clay.....	258
Basalt, black, contains green shale.....	288
Basalt, black, contains reddish-brown shale....	305
Basalt, firm.....	315
Basalt, with blue shale.....	321

Priest Rapids Member:

Basalt, medium hard to hard, gray.....	336
Basalt, medium hard, light tan.....	340
Basalt, soft to medium hard (caving).....	374
Basalt, soft, and caving badly.....	377
Basalt, medium hard, brown.....	381
Basalt, black and gray.....	429
Basalt, hard, gray.....	455
Basalt, softer, black.....	503
Basalt, hard, gray.....	516
Basalt, soft, black, contains layers of green and yellow shale.....	543

Roza Member:

Basalt, hard, gray.....	560
Basalt, "honeycombed," black.....	605
Basalt, firm, black.....	607
Basalt, loose and broken, black.....	625
Basalt, firm, black.....	630
Basalt, soft to firm, black.....	642
Basalt, medium hard, gray.....	650
Basalt, hard.....	659
Basalt, medium hard, black.....	681
Basalt, hard, black.....	684
Basalt, medium hard, black.....	703
Basalt, gray.....	707
Basalt, hard, gray.....	733
Basalt, medium hard, caving, black.....	746

Frenchman Springs Member:

Basalt, softer, black.....	790
Basalt, hard, black.....	843
Basalt, soft, black.....	846
Basalt, hard, black (caving slightly at 891 ft.)	921
Basalt, loose.....	922
Basalt, hard.....	944
Basalt, soft, caving badly.....	999

Vantage Sandstone Member:

ECY 050- Sand and clay.....	1,002
Shale, green.....	1,003
Lower basalt, undifferentiated:	
Basalt, medium hard, black.....	1,043

Spokane, Washington.

December 10, 1962

WELL LOG? CHEF REDDY FOOD PLANT.
Othello, Washington.

Sheet No. 1

- 0 ft. to 17 ft. Gravel and boulders.
- 17 ft. to 26. ft. Broken basalt and clay.
- 26 ft. to 80 ft. Light tan hard clay.
- 80 ft. to 114 ft. Hard dark brown clay.
- 114 ft. to 125 ft. Yellow clay with heavy sand deposit, hole making quite a bit of sand. Will have to run 20 in. casing.
- 125 ft. to 135 ft. Yellow clay (20 in. pipe down to 125 ft.)
- 135 ft. to 156 ft. Gray clay (added 2 joints of 20 in. pipe - 159 ft. 10 in. of casing, Casing to 146 ft.
- 156 ft. to 160 ft. Blue clay.
- 160 ft. to 166 ft. Gray clay.
- 166 ft. to 175 ft. Blue clay with sand.
- 175 ft. to 196 ft. Blue clay, traces of basalt at 179 ft. Water static level at 150 ft. capacity unknown - 20 in. casing to 178 ft. 10 in.
- 196 ft. to 229 ft. Loose brown basalt.
- 229 ft. to 233 ft. Red basalt.
- 233 ft. to 248 ft. Brown basalt, medium hard. (still caves)
- 248 ft. to 249 ft. Brown shale, 20 in. casing seated into rock at 248 ft. 3 in.
- 249 ft. to 258 ft. Broken basalt and blue clay - sluffing.
- 258 ft. to 288 ft. Black basalt with green shale mixed.
- 288 ft. to 305 ft. Black basalt with reddish brown shale.
- 305 ft. to 315 ft. Basalt, firm at 309, 314 formation hard.
- 315 ft. to 321 ft. Basalt with blue shale.
- 321 ft. to 336 ft. Medium hard to hard gray basalt, water level 107 ft.
- 336 ft. to 340 ft. Light tan basalt, medium hard.
- 340 ft. to 374 ft. Basalt soft to medium hard, caving.
- 374 ft. to 377 ft. Basalt, soft and caving badly, will have to run 16 in. casing.

Recovery 19' in
Casing 20' - 0 - 242
16" - 0 - 374
12" 0P" 1043

WELL LOG. CHEF REDDY FOOD PLANT.
Othello, Washington.

Sheet No. 2

377 ft. to 381 ft. Brown basalt, medium hard. Hole cased with 16 in. casing to 374 ft.

381 ft. to 429 ft. Black and gray basalt in medium and hard layers.

429 ft. to 442 ft. Gray basalt hard - start drilling 12 in. hole.

442 ft. to 453 ft. Gray basalt, hard

453 ft. to 455 ft. Gray basalt, hard

455 ft. to 503 ft. Black basalt, softer.

503 ft. to 518 ft. Gray basalt, hard.

518 ft. to 543 ft. Soft black basalt with layers of green shale and yellow soap stone.

543 ft. to 560 ft. Hard gray basalt.

560 ft. to 605 ft. Black-honey combed basalt, good water bearing formation. water 110

605 ft. to 607 ft. Black basalt, firm.

607 ft. to 625 ft. Black basalt, loose and broken.

625 ft. to 630 ft. Black basalt, firm, water 114 ft.

630 ft. to 642 ft. Black basalt, soft to firm.

642 ft. to 650 ft. Gray basalt, medium hard.

650 ft. to 659 ft. Basalt, Hard. Stopped drilling to test well.

659 ft. to 681 ft. Black basalt, medium hard.

681 ft. to 684 ft. Black basalt, hard.

684 ft. to 703 ft. Black basalt, medium hard.

703 ft. to 707 ft. Gray basalt. water 117 ft.

707 ft. to 718 ft. Gray basalt, hard.

718 ft. to 733 ft. Gray basalt, hard.

733 ft. to 740 ft. Black basalt, medium hard, some caving.

740 ft. to 746 ft. Black basalt, medium hard and some caving.

746 ft. to 790 ft. Black basalt, softer. water dropping slowly to 165 ft. then to
190 ft. water stabilized.

790 ft. to 843 ft. Black basalt, hard.

843 ft. to 846 ft. Black basalt, soft. water level 209 ft.

846 ft. to 848 ft. Black basalt, hard. stopped drilling to test well.

LOG - Chief Ready Land - Othello Wn.

848-853 - Black Basalt - Hard.

53-860 - Gray Basalt - Hard

860-880 - Black Basalt - Med. Hard

880-888 - Black Basalt - Hard

888-913 - Med Hard Black Basalt

913-941 - Black Basalt - Hard - Water Level - 199 FT

941-950 - Blue Basalt - Med Hard & Loose

950-959 - Black Basalt - Med Hard

959-999 - Black Basalt - Hard

999-1002 - Black Clay & sand mixed

1002-1016 - Brown Basalt - Broken & Loose - Static Head - 205 FT

- 1041 - Black Basalt - Med Hard

1041-1043 - Black Basalt - Hard

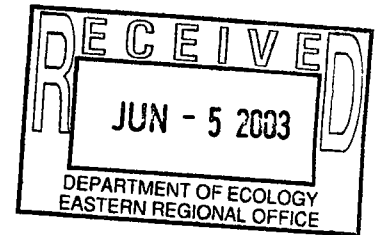
Hole finished

Note - To the best of my knowledge
the pump we installed was new. This
is what I was told!

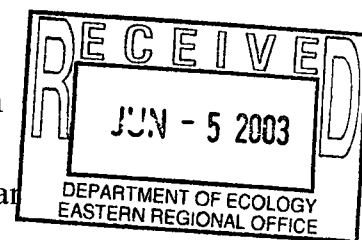
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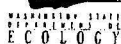
McCain Foods USA - Othello Plant Well**by Schneider Drilling Co****Start Card #W07500****Label #AAS230**

<u>FM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	2	Top Soil
2	6	Cobbles, gravel & sand, cemented
6	12	Cobbles, gravel & sand w/some clay
12	27	Gravel, cobbles, boulders & sand, coarse, cemented
27	80	Clay, brown, med-soft, sandy
80	100	Clay, grey, soft
100	122	Claystone, brown, hard
122	132	Clay, brown, medium-soft
132	152	Clay, yellow, soft
152	198	Clay, grey, soft, silty
198	220	Clay, blue-grey, soft
220	225	Clay, brown, medium-soft
225	246	Claystone, brown, medium w/some basalt, brown, soft
246	249	Basalt, brown & grey, medium
249	251	Basalt, red-brown, medium-soft
251	260	Basalt, brown & grey, medium
260	285	Basalt, black & red-brown, broken, vesicular w/some clay/claystone
285	290	Basalt, grey & brown, medium-hard, fractured
290	321	Basalt, grey & brown, medium, fractured w/claystone, blue
321	333	Basalt, brown, medium-soft, vesicular, fractured
333	346	Basalt, grey & some brown, medium, fractured
346	353	Basalt, grey & brown w/traces claystone, brown
353	376	Basalt, grey & brown, medium-hard, fractured w/some claystone, tan
376	413	Basalt, grey & black, hard, fractured
413	451	Basalt, grey, hard, some fractures
451	473	Basalt, black, medium, vesicular, fractured
473	500	Basalt, black, medium, fractured
500	515	Basalt, grey, hard, some fractures
515	521	Basalt, black, medium, fractured
521	545	Basalt, grey, hard, some fractures
545	559	Basalt, black, vesicular w/trace claystone, green
559	565	Basalt, black, soft, vesicular, broken w/some claystone, green
565	575	Basalt, black, medium, vesicular, fractured w/some claystone



575	595	Basalt, black ,medium-soft, vesicular, broken
595	598	Basalt, black, medium, fractured
598	601	Basalt, black, medium-soft, fractured, some vesicles
601	647	Basalt, black, medium, fractured
647	650	Basalt, grey, medium-hard, fractured
650	660	Basalt, reddish grey, medium-soft, vesicular, broken w/some claystone
660	663	Basalt, black, soft, broken, vesicular
663	678	Basalt, black, medium-soft, vesicular, broken w/some claystone, brown
678	693	Basalt, black, medium, fractured, some vesicles
693	700	Basalt, black, soft, broken, vesicular w/some claystone
700	713	Basalt, black, medium, fractured
713	721	Basalt, black medium, fractured w/claystone, green
721	724	Basalt, black, medium, fractured
724	732	Basalt, grey, medium-hard, occasional fractures
732	738	Basalt, black, fractured, vesicular w/claystone, green
738	757	Basalt, dark grey, medium-hard, fractured
757	765	Basalt, black, medium-hard, fractured, some vesicular
765	790	Basalt, black-grey, medium-hard, fractured
790	813	Basalt, dark grey, occasional fractures
813	830	Basalt, black - dark grey, medium-soft, fractured, some vesicular
830	850	Basalt, grey, medium-hard, fractured
850	856	Basalt, grey, medium-hard, fractured w/trace claystone, green
856	862	Basalt, grey, soft, fractured w/some claystone, green
862	875	Basalt, grey, medium, fractured
875	882	Basalt, dark grey, medium, fractured, some vesicular
882	890	Basalt, dark grey (almost black), soft-medium, very fractured, vesicular
890	896	Basalt, dark grey, fractured, medium
896	897	Basalt, dark grey, fractured, medium w/clay, hard, green, dry
897	905	Basalt, dark grey, fractured, medium
905	913	Basalt, dark grey, fractured, hard
913	915	Basalt, grey, fractured w/claystone, green
915	955	Basalt, grey, some fractures, hard
955	957	Basalt, black, medium-soft, broken w/clay, grey, soft
957	959	Claystone, black & clay, grey & green, soft
959	961	Basalt, black, soft, broken, vesicular w/some claystone, green
961	963	Basalt, black, medium, fractured, some vesicles
963	976	Basalt, black, medium, some-fractures
976	1005	Basalt, dark grey, medium, some-fractures
1005	1015	Basalt, dark grey, medium-hard, few fractures





Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

- ☒ Construction
☐ Decommission *ORIGINAL INSTALLATION Notice of Intent Number*

CURRENT

Notice of Intent No. WE 18148

Unique Ecology Well ID Tag No. BIN 133

Water Right Permit No. G3-00246C

Property Owner Name McCain Foods USA, Inc.

Well Street Address 100 E 4th Rd

City Othello County Adams

Location NW 1/4-1/4 NW 1/4 Sec 34 Twp 16N R 29E EW or circle

Lat/Long (s, t, r) Lat Deg Lat Min/Sec

Still **REQUIRED**) Long Deg Long Min/Sec

Tax Parcel No. 1529030680269

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL	FROM	TO
Black black basalt	1032	1073
Hard grey basalt	1073	1080
Very hard grey basalt	1080	1093
Swift black basalt	1093	1100

Lower Port hole
was grouted back
from 1100' to 1032'
4 1/2 yds of grout
were used

RECEIVED

JAN 05 2015

Department of Ecology
Eastern Washington Office

Start Date 5-6-14

Completed Date 5-21-14

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (Print) David Smith

Driller/Engineer/Trainee Signature Don [Signature]

Driller or trainee License No. 2844

IF TRAINEE,

Driller's Licensed No.

Driller's Signature

Drilling Company Blue Star Enterprises

Address 2019 Butler Loop

City, State, Zip Richland WA. 99354

Contractor's

Registration No. Bluesen 942 RM Date 12-29-14

Ecology is an Equal Opportunity Employer.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

STATE OF WASHINGTON

Permit No.

Address Lee & N. Broadway Rd Othello, WA 99344

NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 34 T ~~29~~ N R ~~16~~ W M

16 29

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
----------	------	----

Knocked iron out of pump chamber	
and knocked down to bottom of hole.	
Air line, part of pump bowls and other	
iron is at the bottom of the hole.	
At customers request we pulled out of	
the hole and didn't attempt to fish	
or mill iron up.	

Perforations: Yes ☐ No ☒

Screens: Yes ☐ No ☒

Gravel packed: Yes ☐ No ☒ Size of gravel: _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☐ No ☐ To what depth? ft.
 Material used in seal..... DONE PREVIOUSLY
 Did any strata contain unusable water? Yes ☐ No ☐
 Type of water?..... Depth of strata.....
 Method of sealing strata off.....

(7) **PUMP:** Manufacturer's Name.....
Type: HP.

(8) WATER LEVELS: Land-surface elevation above mean sea level.....ft.
 Static levelft. below top of well Date.....
 Artesian pressurelbs. per square inch Date.....
 Artesian water is controlled by.....(Cap. valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? Yes ☐ No ☐ If yes, by whom?

Yield:	gal./min. with	ft. drawdown after	hrs.
"	"	"	"
"	"	"	"

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

[illegible]

Date of test
 Bailer test..... gal./min. with..... ft. drawdown after..... hrs.
 Artesian flow..... g.p.m. Date.....
 Temperature of water..... Was a chemical analysis made? Yes ☐ No ☐

Work started 9/9/91, 1991. Completed 9/15/91, 1991.

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME BJ Exploration Co., Inc.
(Person, firm, or corporation) (Type or print)

Address. Rt 4 Box 4517 Clodfelter
Kennewick, WA 99337

[Signed] Tony Mc (Well Driller)

License No. 0337 Date 10/6/91 19

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

RESOURCE PROTECTION WELL REPORT

Notice of Intent No R53445

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ('x' in circle) 140861

☒ Construction

☐ Decommission Original Construction Notice
of Intent Number _____

Type of Well ('x' in circle)

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner SVZ-USA

Unique Ecology Well ID Tag No AHR 161

Consulting Firm Lowdau

Driller or Trainee Name Randall E Wilder

Driller or Trainee Signature [Signature]

Driller or Trainee License No 2578

If trainee licensed driller's

Signature and License no _____

Site Address Othello

City Othello County ~~Walla~~ Adams

Location SW 1/4 1/4 SW 1/4 Sec 27 Twn 16N R 29E WWM circle or one

Lat/Long (s t r still REQUIRED) Lat Deg _____ Lat Min/Sec _____

Long Deg _____ Long Min/Sec _____

Tax Parcel No _____

Cased or Uncased Diameter _____ Static Level 15.2

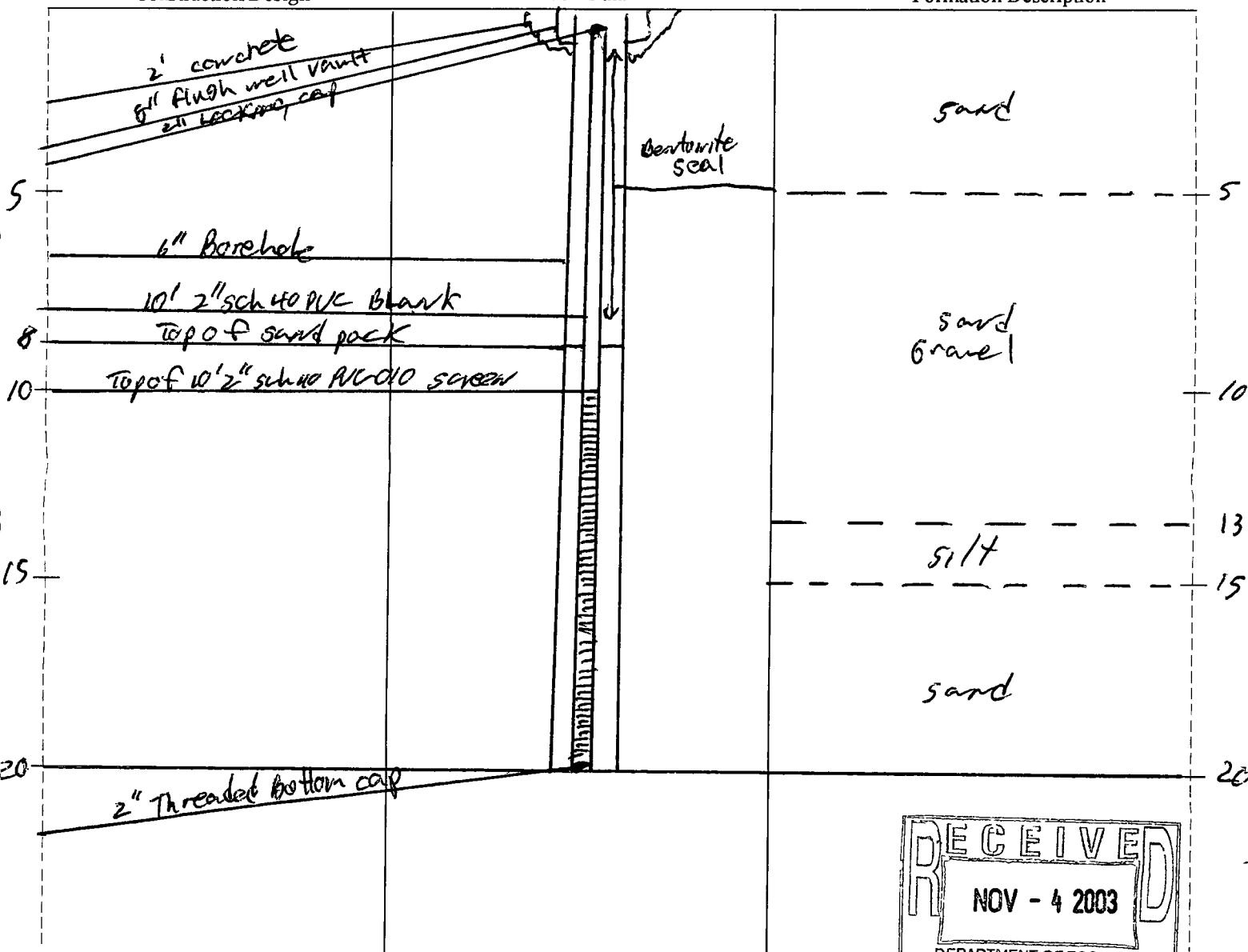
Work/Decommission Start Date 9-23-03

Work/Decommission Completed Date 9-23-03

Construction/Design

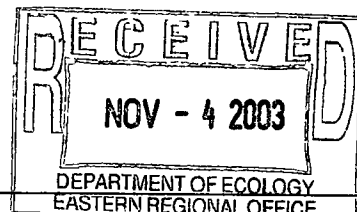
Well Data

Formation Description



Scale 1' = _____

Page _____ of _____



ECY 050 12 (Rev 2/01)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

RESOURCE PROTECTION WELL REPORT

Notice of Intent No R53445

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ('x' in circle)

☒ Construction

☐ Decommission Original Construction Notice
of Intent Number _____

140862

Type of Well ('x' in circle)

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner SVZ-USA

Unique Ecology Well ID Tag No AHR 162

Consulting Firm Lowdau

Driller or Trainee Name Randall E. Wilder

Driller or Trainee Signature [Signature]

Driller or Trainee License No 2578

If trainee licensed driller's
Signature and License no _____

Site Address Othello

City Othello County Adams

Location SW 1/4 1/4 SW 1/4 Sec 27 Twn 16N R 29E circle one WWM

Lat/Long (s t r Lat Deg Lat Min/Sec

still REQUIRED) Long Deg Long Min/Sec

Tax Parcel No _____

Cased or Uncased Diameter _____ Static Level 13.3

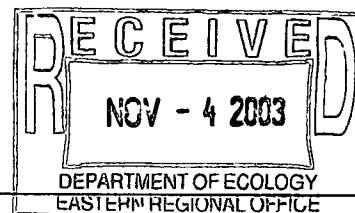
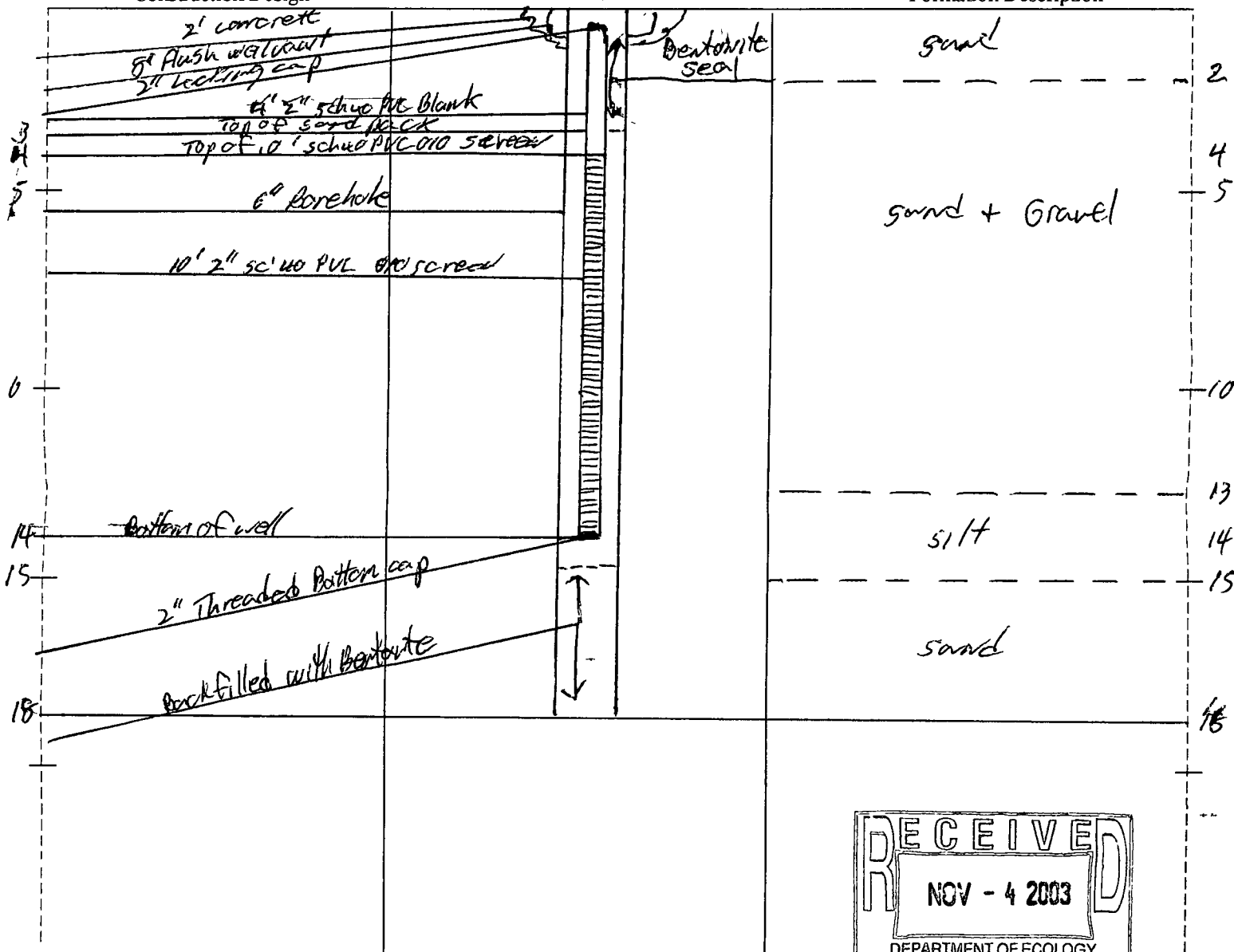
Work/Decommission Start Date 9-28-03

Work/Decommission Completed Date 9-24-03

Construction/Design

Well Data

Formation Description



Scale 1"= _____

Page _____ of _____

ECY 050 12 (Rev 2/01)

Notice of Intent No R 53445

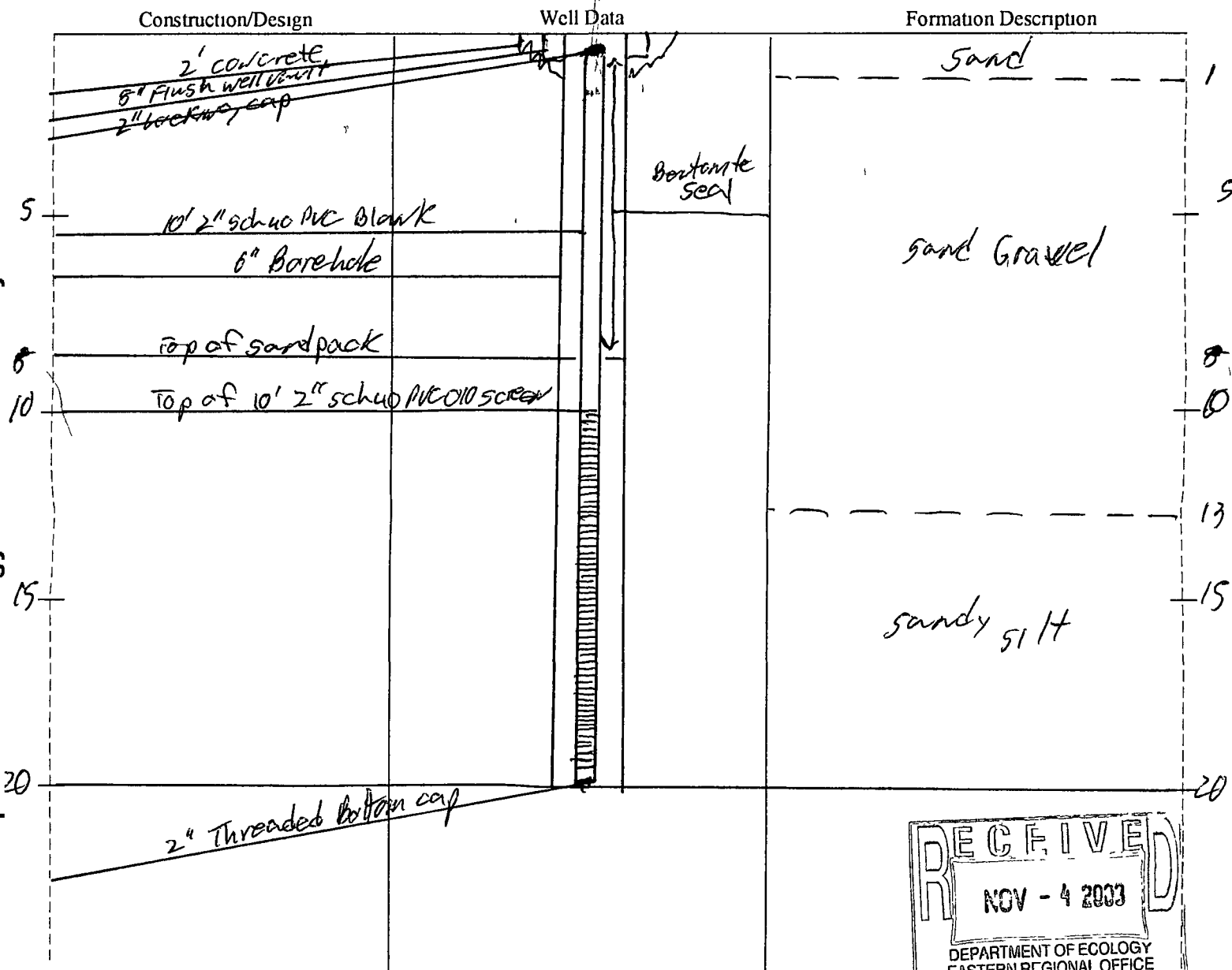
140863

☐ Decommission *Original Construction Notice of Intent* Number

☐ Geotech Soil Boring

If trainee licensed driller's _____
Signature and License no _____

Work/Decommission Completed Date 9-24-03



ECY 050 12 (Rev 2/01)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

RESOURCE PROTECTION WELL REPORT

Notice of Intent No R53445

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ('x' in circle)

☒ Construction

☐ Decommission Original Construction Notice
of Intent Number _____

Type of Well ('x' in circle)

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner SVZ - USA

Unique Ecology Well ID Tag No AHR164

Consulting Firm handdave

Driller or Trainee Name Randall E Wilder

Driller or Trainee Signature [Signature]

Driller or Trainee License No 2578

Site Address Othello

City Othello County Adams

Location SW 1/4 1/4 SW 1/4 Sec 27 Twn 16N R29 EWM circle or one WWM

Lat/Long (s t r Lat Deg Lat Min/Sec

still REQUIRED) Long Deg Long Min/Sec

Tax Parcel No _____

Cased or Uncased Diameter _____ Static Level NO water

Work/Decommission Start Date 9-24-03

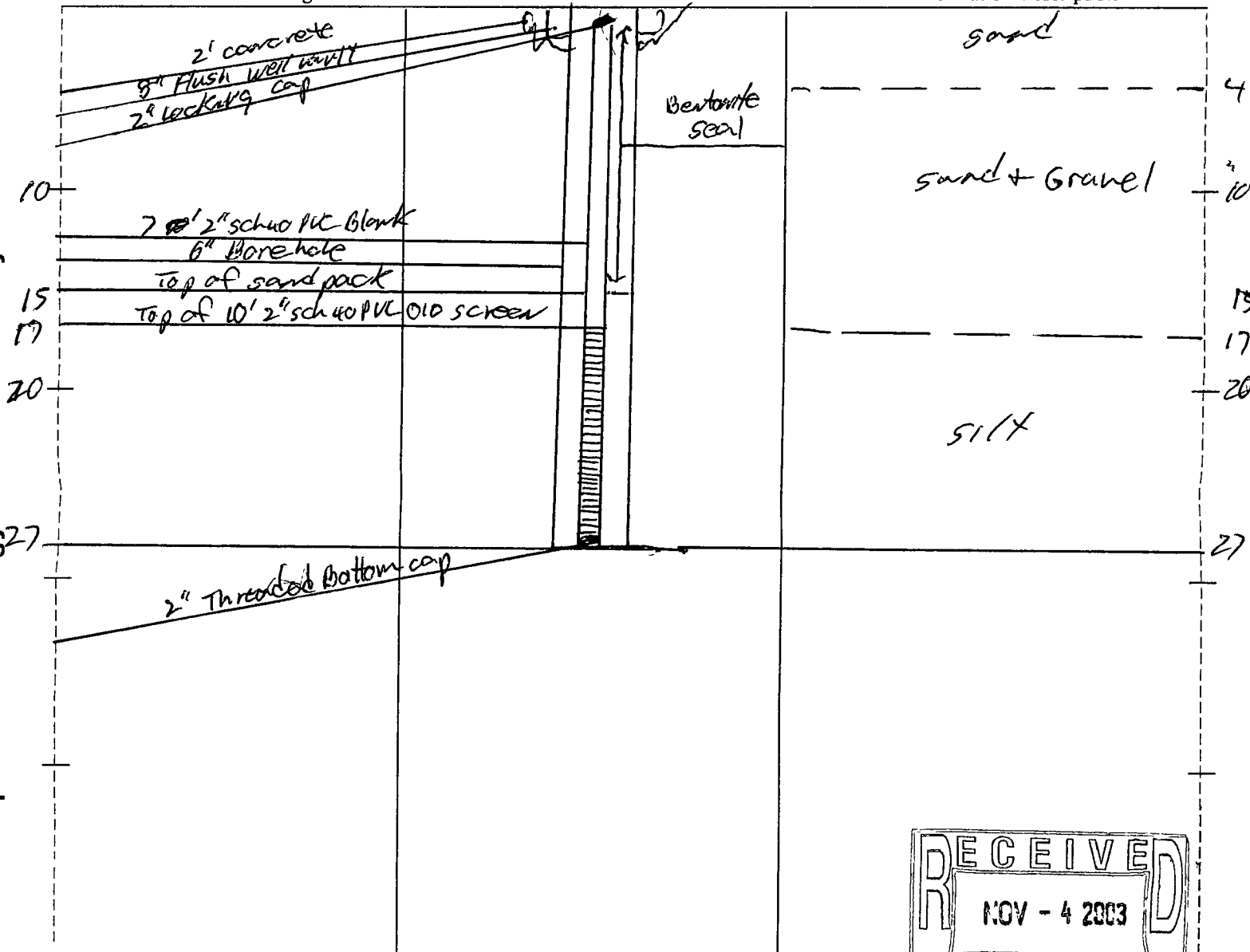
Work/Decommission Completed Date 9-24-03

If trainee licensed driller's
Signature and License no _____

Construction/Design

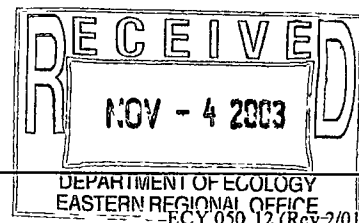
Well Data

Formation Description



Scale 1"= _____

Page _____ of _____



The Department of Ecology does NOT Warranty the Data and/or the information on this Well Report.

RESOURCE PROTECTION WELL REPORT

Notice of Intent No R53445

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ('x' in circle)

☒ Construction

☐ Decommission Original Construction Notice
of Intent Number _____

Type of Well ('x' in circle)

☐ Resource Protection

☒ Geotech Soil Boring

Property Owner SV2-USA

Unique Ecology Well ID Tag No AHR 165

Consulting Firm Landan

Driller or Trainee Name Randall E Wilder

Driller or Trainee Signature [Signature]

Driller or Trainee License No 2578

If trainee licensed driller's
Signature and License no _____

Site Address Othello

City Othello County Adams

Location S21/4 1/4 SW 1/4 Sec 27 Twn 16N R29 EW circle or one WWM

Lat/Long (s t r Lat Deg Lat Min/Sec

still REQUIRED) Long Deg Long Min/Sec

Tax Parcel No _____

Cased or Uncased Diameter _____ Static Level 251

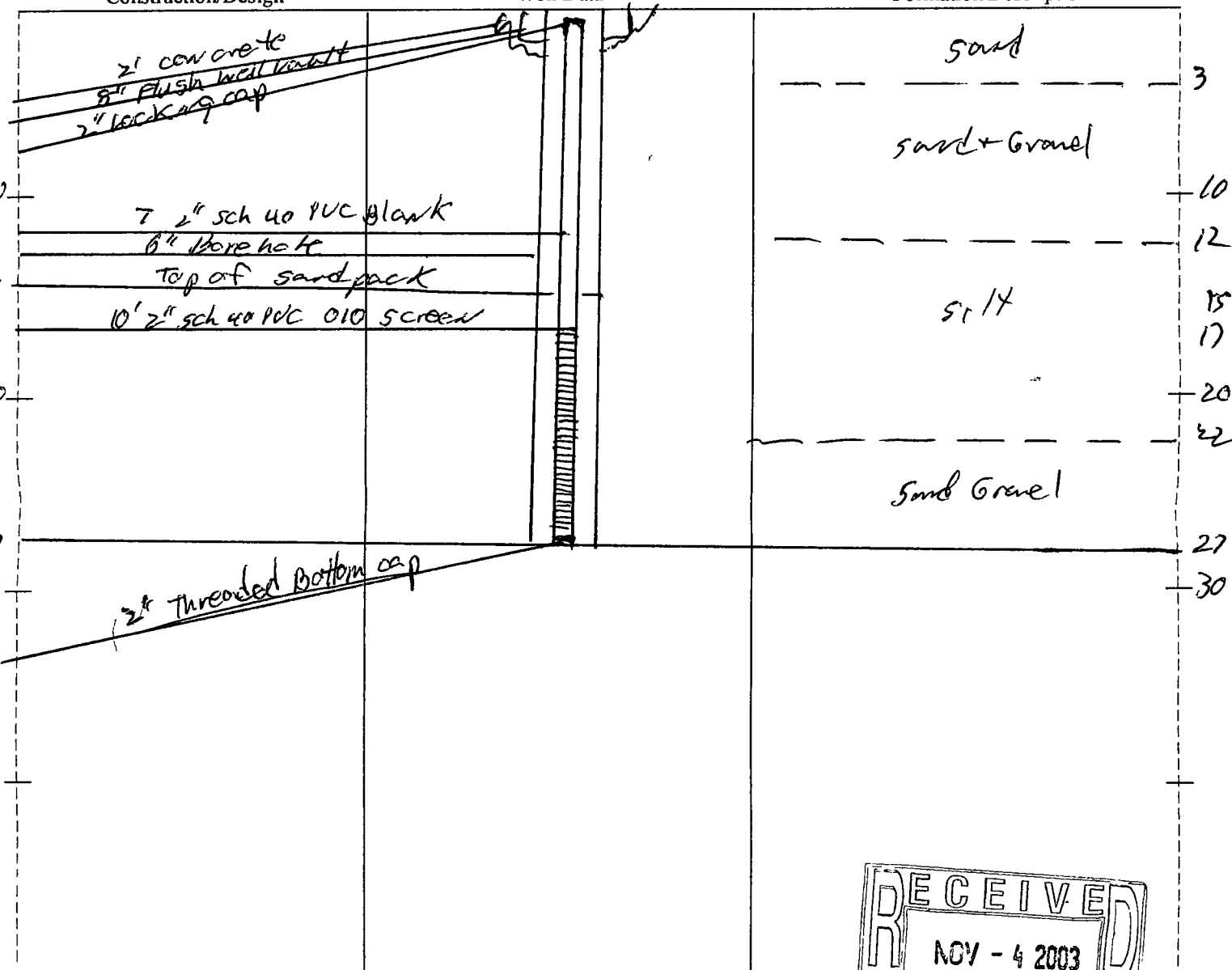
Work/Decommission Start Date 9-24-03

Work/Decommission Completed Date 9-24-03

Construction/Design

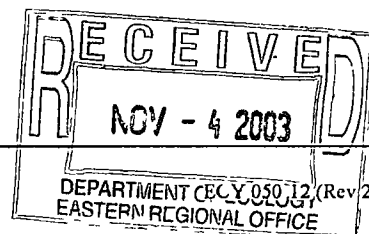
Well Data

Formation Description



Scale 1"= _____

Page _____ of _____



RESOURCE PROTECTION WELL REPORT

Notice of Intent No R53445

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ('x' in circle)

☒ Construction

☐ Decommission Original Construction Notice
of Intent Number _____

140862

Type of Well ('x' in circle)

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner SVZ-USA

Unique Ecology Well ID Tag No AHR 162

Consulting Firm Lowdown

Driller or Trainee Name Randall E. Wilder

Driller or Trainee Signature [Signature]

Driller or Trainee License No 2578

Site Address Othello

City Othello County Adams

Location SW 1/4 1/4 SW 1/4 Sec 27 Twn 16N R 29E ^{WWM} circle or one

Lat/Long (s t r) Lat Deg _____ Lat Min/Sec _____
still REQUIRED) Long Deg _____ Long Min/Sec _____

Tax Parcel No _____

Cased or Uncased Diameter _____ Static Level 13 3

Work/Decommission Start Date 9-28-03

Work/Decommission Completed Date 9-24-03

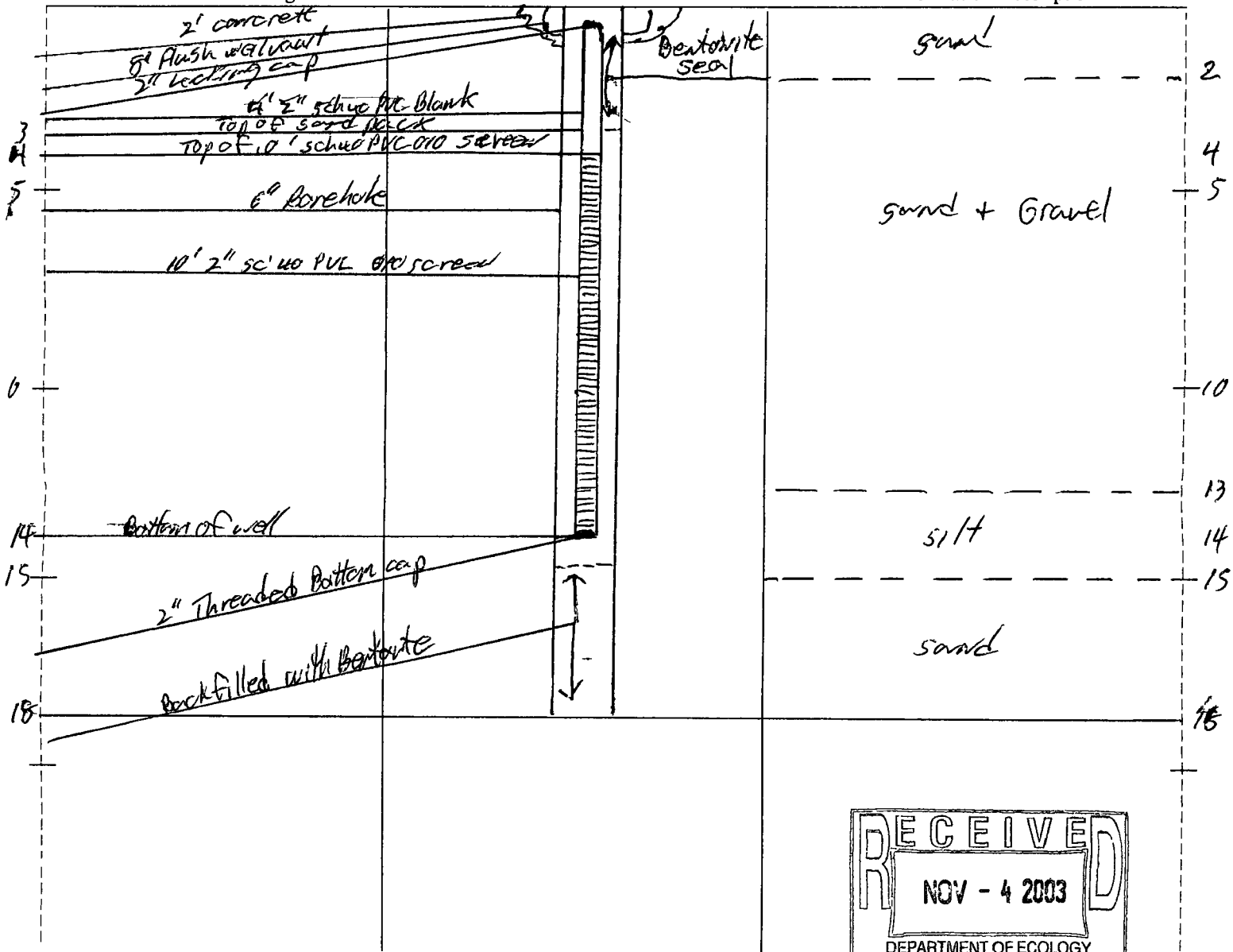
If trainee licensed driller s

Signature and License no _____

Construction/Design

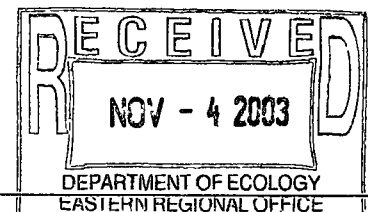
Well Data

Formation Description



Scale 1"= _____

Page _____ of _____



ECY 050 12 (Rev 2/01)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Appendix C

Boring Logs

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EA Engineering, Science,
and Technology, Inc., PBC

Site Name: Wilbur-Ellis Othello

Project No. 1621509

Site Location: Othello, WA

Date/Time: 2/7/2023 0900

Page 1 of 1

Field Technician: Drew Roberts/Merry
Clayton

Surface Conditions: Dry-Medium Moisture, Soft-Medium Density, Exposed Soil, Scattered Leaves

Weather / Temperature: Clear/Sunny 25-49°F, 0% Rain, 3mph Wind N-NE

Drilling Equipment: Hand Auger

Sample Collection Equipment/Method: Hand Auger and stainless-steel trowel

Analyses: Ammonia, Nitrite/Nitrate, 8260D, 8270D

Sample Appearance / Description

Medium dense, brown, silty sand with gravel
Medium Moisture

Medium dense, brown, silty sand with gravel
Medium Moisture

Sample
Interval
(in.)

PID
(ppm)

Sample
Date

Sample
Time

Sample ID

QA/QC
Collected

Surface

N/A

2/7/2023

0911

HA01-0

24 inches

N/A

2/7/2023

0931

HA01-2-3

Logged by:

Drew Roberts

Signature:



EA Engineering, Science,
and Technology, Inc., PBC

Site Name: Wilbur-Ellis Othello

Project No. 1621509

Site Location: Othello, WA

Date/Time: 2/7/2023 0940

Page 1 of 1

Field Technician: Drew Roberts/Merry
Clayton

Surface Conditions: Dry-Medium Moisture, Soft-Medium Density, Exposed Soil, Scattered Leaves

Weather / Temperature: Clear/Sunny 25-49°F, 0% Rain, 3mph Wind N-NE

Drilling Equipment: Hand Auger

Sample Collection Equipment/Method: Hand Auger and stainless-steel trowel

Analyses: Ammonia, Nitrite/Nitrate, 8260D, 8270D

Sample Appearance / Description

Medium dense, brown, silty sand with organics
Low Moisture

Green tint, fertilizer smell, brown to tan silty sand with >1 inch diameter peddles
Medium Moisture

Sample
Interval
(in.)

PID
(ppm)

Sample
Date

Sample
Time

Sample ID

QA/QC
Collected

Surface

N/A

2/7/2023

0944

HA02-0

30 inches

N/A

2/7/2023

1106

HA02-2-3

Logged by:

Drew Roberts

Signature:



EA Engineering, Science,
and Technology, Inc., PBC

Site Name: Wilbur-Ellis Othello

Project No. 1621509

Site Location: Othello, WA

Date/Time: 2/7/2023 1016

Page 1 of 1

Field Technician: Drew Roberts/Merry
Clayton

Surface Conditions: Dry-Medium Moisture, Soft-Medium Density, Exposed Soil, Scattered Leaves

Weather / Temperature: Clear/Sunny 25-49°F, 0% Rain, 3mph Wind N-NE

Drilling Equipment: Hand Auger

Sample Collection Equipment/Method: Hand Auger and stainless-steel trowel

Analyses: Ammonia, Nitrite/Nitrate, 8260D, 8270D

Sample Appearance / Description

Medium dense, brown, silty sand with organics
Medium Moisture

Medium dense, brown, silty sand with organics
Medium Moisture

Medium dense, tan, silty sand with >1 inch diameter peddles, strong chemical odor
Medium-High moisture

Medium dense, tan, silty sand with >1 inch diameter peddles, strong chemical odor
Medium-High moisture

Logged by: Drew Roberts

Signature:



EA Engineering, Science,
and Technology, Inc., PBC

Site Name: Wilbur-Ellis Othello

Project No. 1621509

Site Location: Othello, WA

Date/Time: 2/7/2023 1036

Page 1 of 1

Field Technician: Drew Roberts/Merry
Clayton

Surface Conditions: Dry-Medium Moisture, Soft-Medium Density, Exposed Soil, Scattered Leaves

Weather / Temperature: Clear/Sunny 25-49°F, 0% Rain, 3mph Wind N-NE

Sample Interval (in.)	PID (ppm)	Sample Date	Sample Time	Sample ID	QA/QC Collected	Drilling Equipment: Hand Auger
						Sample Collection Equipment/Method: Hand Auger and stainless-steel trowel
						Analyses: Ammonia, Nitrite/Nitrate, 8260D, 8270D
						Sample Appearance / Description
Surface	N/A	2/7/2023	1039	HA04-0		Medium dense, brown silty sand with organic, soft white material in small pieces with chemical odor scattered throughout sample Medium moisture
24 inches	N/A	2/7/2023	1045	HA04-2-3		Medium dense, brown, silty sand with 1-2 inch diameter gravel High moisture

Logged by: Drew Roberts

Signature:



EA Engineering, Science,
and Technology, Inc., PBC

Site Name: Wilbur-Ellis Othello

Project No. 1621509

Site Location: Othello, WA

Date/Time: 2/7/2023 1115

Page 1 of 1

Field Technician: Drew Roberts/Merry
Clayton

Surface Conditions: Dry-Medium Moisture, Soft-Medium Density, Exposed Soil, Scattered Leaves

Weather / Temperature: Clear/Sunny 25-49°F, 0% Rain, 3mph Wind N-NE

Drilling Equipment: Hand Auger

Sample Collection Equipment/Method: Hand Auger and stainless-steel trowel

Analyses: Ammonia, Nitrite/Nitrate, 8260D, 8270D

Sample Appearance / Description

Medium dense, brown silty sand with fine sands, >1 inch diameter peddles, and
organics
Medium-High moisture

Medium dense, brown silty sand with fine sands, 2-3-inch diameter rocks
Medium-High moisture

Sample
Interval
(in.)

PID
(ppm)

Sample
Date

Sample
Time

Sample ID

QA/QC
Collected

Surface

N/A

2/7/2023

1119

HA05-0

MS/MSD

24 inches

N/A

2/7/2023

1132

HA05-2-3

MS/MSD

Logged by:

Drew Roberts

Signature:



EA Engineering, Science,
and Technology, Inc., PBC

Site Name: Wilbur-Ellis Othello

Project No. 1621509

Site Location: Othello, WA

Date/Time: 2/7/2023 1115

Page 1 of 1

Field Technician: Drew Roberts/Merry
Clayton

Surface Conditions: Dry-Medium Moisture, Soft-Medium Density, Exposed Soil, Scattered Leaves

Weather / Temperature: Clear/Sunny 25-49°F, 0% Rain, 3mph Wind N-NE

Sample Interval (in.)	PID (ppm)	Sample Date	Sample Time	Sample ID	QA/QC Collected	
						Drilling Equipment: Hand Auger
						Sample Collection Equipment/Method: Hand Auger and stainless-steel trowel
						Analyses: Ammonia, Nitrite/Nitrate, 8260D, 8270D
						Sample Appearance / Description
Surface	N/A	2/7/2023	1144	HA06-0		Loose, brown, fine sand Low-Medium moisture
24 inches	N/A	2/7/2023	1150	HA06-2-3		Loose, tan, fine sand Low-Medium moisture

Logged by: Drew Roberts

Signature:



EA Engineering, Science,
and Technology, Inc., PBC

Site Name: Wilbur-Ellis Othello

Project No. 1621509

Site Location: Othello, WA

Date/Time: 2/7/2023 1201

Page 1 of 1

Field Technician: Drew Roberts/Merry
Clayton

Surface Conditions: Dry-Medium Moisture, Soft-Medium Density, Exposed Soil, Scattered Leaves

Weather / Temperature: Clear/Sunny 25-49°F, 0% Rain, 3mph Wind N-NE

Drilling Equipment: Hand Auger

Sample Collection Equipment/Method: Hand Auger and stainless-steel trowel

Analyses: Ammonia, Nitrite/Nitrate, 8260D, 8270D

Sample Appearance / Description

Medium dense, brown silty sand with organics, and light chemical odor
Medium moisture

Medium dense, brown fine sands with ~1 inch diameter gravel
Medium moisture

Sample
Interval
(in.)

PID
(ppm)

Sample
Date

Sample
Time

Sample ID

QA/QC
Collected

Surface

N/A

2/7/2023

1221

HA07-0

24 inches

N/A

2/7/2023

1239

HA07-2-3

Logged by: Drew Roberts

Signature:



EA Engineering, Science,
and Technology, Inc., PBC

Site Name: Wilbur-Ellis Othello

Project No. 1621509

Site Location: Othello, WA

Date/Time: 2/7/2023 1248

Page 1 of 1

Field Technician: Drew Roberts/Merry
Clayton

Surface Conditions: Dry-Medium Moisture, Soft-Medium Density, Exposed Soil, Scattered Leaves

Weather / Temperature: Clear/Sunny 25-49°F, 0% Rain, 3mph Wind N-NE

Drilling Equipment: Hand Auger

Sample Collection Equipment/Method: Hand Auger and stainless-steel trowel

Analyses: Ammonia, Nitrite/Nitrate, 8260D, 8270D

Sample Appearance / Description

Medium dense, light brown silty sand with fine sand with organics
Medium-High Moisture

Medium dense, light brown silty sand with fine sand and >1 inch diameter peddles
Medium-High Moisture

Logged by: Drew Roberts

Signature:



EA Engineering, Science,
and Technology, Inc., PBC

Site Name: Wilbur-Ellis Othello

Project No. 1621509

Site Location: Othello, WA

Date/Time: 2/7/2023 1305

Page 1 of 1

Field Technician: Drew Roberts/Merry
Clayton

Surface Conditions: Dry-Medium Moisture, Soft-Medium Density, Exposed Soil, Scattered Leaves

Weather / Temperature: Clear/Sunny 25-49°F, 0% Rain, 3mph Wind N-NE

Drilling Equipment: Hand Auger

Sample Collection Equipment/Method: Hand Auger and stainless-steel trowel

Analyses: Ammonia, Nitrite/Nitrate, 8260D, 8270D

Sample Appearance / Description

Loose, dark brown, silty sand with organics
Medium-High moisture

Medium dense, dark brown, silty sand
Medium-High Moisture
Refusal due to large rocks at 20 inches deep and sample was taken at that depth

Logged by: Drew Roberts

Signature:



EA Engineering, Science,
and Technology, Inc., PBC

Site Name: Wilbur-Ellis Othello

Project No. 1621509

Site Location: Othello, WA

Date/Time: 2/7/2023 1348

Page 1 of 1

Field Technician: Drew Roberts/Merry
Clayton

Surface Conditions: Dry-Medium Moisture, Soft-Medium Density, Exposed Soil, Scattered Leaves

Weather / Temperature: Clear/Sunny 25-49°F, 0% Rain, 3mph Wind N-NE

Drilling Equipment: Hand Auger

Sample Collection Equipment/Method: Hand Auger and stainless-steel trowel

Analyses: Ammonia, Nitrite/Nitrate, 8260D, 8270D

Sample Appearance / Description

Medium dense, dark brown sandy silt with organics
Medium moisture

Medium dense, dark brown sandy silt with organics
Medium moisture
Refusal due to large rocks at 18 inches deep and sample was taken at that depth

Sample
Interval
(in.)

PID
(ppm)

Sample
Date

Sample
Time

Sample ID

QA/QC
Collected

Surface

N/A

2/7/2023

1350

HA10-0

18 inches

N/A

2/7/2023

1416

HA10-2-3

Logged by: Drew Roberts

Signature:



EA Engineering, Science,
and Technology, Inc., PBC

Site Name: Wilbur-Ellis Othello

Project No. 1621509

Site Location: Othello, WA

Date/Time: 2/7/2023 1420

Page 1 of 1

Field Technician: Drew Roberts/Merry
Clayton

Surface Conditions: Dry-Medium Moisture, Soft-Medium Density, Exposed Soil, Scattered Leaves

Weather / Temperature: Clear/Sunny 25-49°F, 0% Rain, 3mph Wind N-NE

Drilling Equipment: Hand Auger

Sample Collection Equipment/Method: Hand Auger and stainless-steel trowel

Analyses: Ammonia, Nitrite/Nitrate, 8260D, 8270D

Sample Appearance / Description

Medium dense, light brown, fine sand
Low moisture

Medium dense, light brown, fine sand
Medium moisture

Sample
Interval
(in.)

PID
(ppm)

Sample
Date

Sample
Time

Sample ID

QA/QC
Collected

Surface

N/A

2/7/2023

1422

HA11-0

24 inches

N/A

2/7/2023

1429

HA11-2-3

Logged by: Drew Roberts

Signature:

Appendix D
Analytical Laboratory Report

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AGRICULTURE & PRIORITY POLLUTANTS LABORATORIES

 A METIRI GROUP COMPANY

908 N. Temperance Ave., Clovis, CA 93611 - Phone 559-275-2175 - www.applinc.com

NELAP Certification Number: CA00046

DoD-ELAP Certification Number: 4064.01

State Certification Number:

March 17, 2023

Hannah Dennis
EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

RE: Othello
23C0072

Enclosed are the results of analyses for samples received by our laboratory on 3/9/2023. If you have any questions concerning this report, please feel free to contact me.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Sincerely,

Karen Volpendesta
Project Manager

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EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Analysis Case Narrative

131:

Due to the chemical nature of metam-sodium, the analyte is being reported as the degradant MITC (methyl isothiocyanate). Methyl isothiocyanate is the active form of the pesticide and in the environment metam sodium degrades rapidly into MITC.

Six samples recovered the surrogate butylate above the upper control limit in the secondary column. Corrective action: None, the surrogate recovered within the control limits in the primary column and all samples did not detect the targeted analyte.

In the ending continuing calibration verification, MITC decreased in sensitivity in primary column, but increased in sensitivity in the secondary column. Butylate also increased in sensitivity in the secondary column. Corrective action: None, the samples did not detect the targeted analyte.

Chloropicrin:

The analyses for chloropicrin is a semiquantitative screening method. The results are reported to the LOQ only as no MDL has been performed.

The surrogate recovered above the upper control limit on the secondary column for sample HA10-0. Corrective action: None, the surrogate recovered within the control limits in the primary column and the sample did not detect the target analyte.

Manual integrations were performed for this method in accordance with APPL's SOP. Chromatograms for before and after manual integration are enclosed for specific samples and analytes. Abbreviated flags for technical justification are listed on the chromatogram.

EPA 8260D:

The internal standard chlorobenzene-d5 increased in sensitivity above the upper limit in samples HA08-2-3, HA09-0, and HA10-2-3. The internal standard fluorobenzene increased in sensitivity above the upper limit in sample HA10-2-3. Corrective Action: None, the increase in sensitivity may be attributed to the matrix.

The surrogate 4-bromofluorobenzene recovered below the lower control limit in sample HA07-0. Corrective Action: None, the recovery may be attributed to the matrix.

In the MS/MSD performed on samples HA05-0 and HA05-2-3, Ammonia and Nitrate/Nitrite-N recovered outside of control limits. Corrective action: the client was notified.

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
23C0072-01	HA01-0	Solid	03/07/2023 09:11	03/09/2023
23C0072-02	HA01-2-3	Solid	03/07/2023 09:31	03/09/2023
23C0072-03	HA03-0	Solid	03/07/2023 10:19	03/09/2023
23C0072-04	HA03-2-3	Solid	03/07/2023 10:26	03/09/2023

EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Samples in this Report (Continued)

Lab ID	Sample	Matrix	Date Sampled	Date Received
23C0072-05	HA04-0	Solid	03/07/2023 10:39	03/09/2023
23C0072-06	HA04-2-3	Solid	03/07/2023 10:45	03/09/2023
23C0072-07	FD HA03-0	Solid	03/07/2023 10:21	03/09/2023
23C0072-08	FD HA03-2-3	Solid	03/07/2023 10:28	03/09/2023
23C0072-09	HA05-0	Solid	03/07/2023 11:19	03/09/2023
23C0072-10	HA05-2-3	Solid	03/07/2023 11:32	03/09/2023
23C0072-11	HA02-0	Solid	03/07/2023 09:44	03/09/2023
23C0072-12	HA02-2-3	Solid	03/07/2023 11:06	03/09/2023
23C0072-13	HA06-0	Solid	03/07/2023 11:44	03/09/2023
23C0072-14	HA06-2-3	Solid	03/07/2023 11:50	03/09/2023
23C0072-15	HA07-0	Solid	03/07/2023 12:21	03/09/2023
23C0072-16	HA07-2-3	Solid	03/07/2023 12:39	03/09/2023
23C0072-17	HA08-0	Solid	03/07/2023 12:51	03/09/2023
23C0072-18	HA08-2-3	Solid	03/07/2023 12:57	03/09/2023
23C0072-19	HA09-0	Solid	03/07/2023 13:09	03/09/2023
23C0072-20	HA09-2-3	Solid	03/07/2023 13:44	03/09/2023
23C0072-21	HA10-0	Solid	03/07/2023 13:50	03/09/2023
23C0072-22	HA10-2-3	Solid	03/07/2023 14:16	03/09/2023
23C0072-23	HA11-0	Solid	03/07/2023 14:22	03/09/2023
23C0072-24	HA11-2-3	Solid	03/07/2023 14:29	03/09/2023

EA Engineering Honolulu	Project: Othello	
615 Piikoi Street, Suite 515	Project Number: Othello	
Honolulu, HI 96814	Project Manager: Hannah Dennis	Reported: 03/17/2023 16:25

Sample Results

Sample: HA01-0
23C0072-01 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
---------	--------------	-----	-----	-------	---------------	----	--------	------------

WetLab

% Solids	84.2	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	430	30	11	mg/kg dry	03/14/23	5	EPA 350.1	BCC0155
NITRATE-NITRITE-N	1.6	1.2	0.74	mg/kg dry	03/10/23	1	EPA 353.2	BCC0185

EA Engineering Honolulu
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Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Sample Results (Continued)

Sample: HA01-2-3
23C0072-02 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
---------	-------------	-----	-----	-------	---------------	----	--------	------------

WetLab

% Solids	81.5	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	450	30	11	mg/kg dry	03/14/23	5	EPA 350.1	BCC0155
NITRATE-NITRITE-N	46	1.2	0.79	mg/kg dry	03/10/23	1	EPA 353.2	BCC0185

EA Engineering Honolulu	Project: Othello	
615 Piikoi Street, Suite 515	Project Number: Othello	
Honolulu, HI 96814	Project Manager: Hannah Dennis	Reported: 03/17/2023 16:25

Sample Results
(Continued)

Sample: HA03-0
23C0072-03 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	73.9	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	1800	170	63	mg/kg dry	03/14/23	25	EPA 350.1	BCC0155
NITRATE-NITRITE-N	41	1.4	0.87	mg/kg dry	03/10/23	1	EPA 353.2	BCC0185

EA Engineering Honolulu	Project: Othello	
615 Piikoi Street, Suite 515	Project Number: Othello	
Honolulu, HI 96814	Project Manager: Hannah Dennis	Reported: 03/17/2023 16:25

Sample Results
(Continued)

Sample: HA03-2-3
23C0072-04 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	84.5	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	2400	150	54	mg/kg dry	03/14/23	25	EPA 350.1	BCC0155
NITRATE-NITRITE-N	990	140	87	mg/kg dry	03/10/23	120	EPA 353.2	BCC0185

EA Engineering Honolulu	Project: Othello	
615 Piikoi Street, Suite 515	Project Number: Othello	
Honolulu, HI 96814	Project Manager: Hannah Dennis	Reported: 03/17/2023 16:25

Sample Results
(Continued)

Sample: HA04-0
23C0072-05 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	73.3	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	2500	170	63	mg/kg dry	03/14/23	25	EPA 350.1	BCC0155
NITRATE-NITRITE-N	140	14	8.7	mg/kg dry	03/10/23	10	EPA 353.2	BCC0185

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Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Sample Results (Continued)

Sample: HA04-2-3
23C0072-06 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	85.8	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	2000	150	54	mg/kg dry	03/14/23	25	EPA 350.1	BCC0155
NITRATE-NITRITE-N	3500	130	86	mg/kg dry	03/10/23	120	EPA 353.2	BCC0185

EA Engineering Honolulu	Project: Othello	
615 Piikoi Street, Suite 515	Project Number: Othello	
Honolulu, HI 96814	Project Manager: Hannah Dennis	Reported: 03/17/2023 16:25

Sample Results
(Continued)

Sample: FD HA03-0
23C0072-07 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	84.3	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	1500	150	55	mg/kg dry	03/14/23	25	EPA 350.1	BCC0155
NITRATE-NITRITE-N	56	1.2	0.75	mg/kg dry	03/10/23	1	EPA 353.2	BCC0185

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Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Sample Results (Continued)

Sample: FD HA03-2-3
23C0072-08 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	86.7	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	2400	140	53	mg/kg dry	03/14/23	25	EPA 350.1	BCC0155
NITRATE-NITRITE-N	1400	140	88	mg/kg dry	03/10/23	120	EPA 353.2	BCC0185

EA Engineering Honolulu	Project: Othello	
615 Piikoi Street, Suite 515	Project Number: Othello	
Honolulu, HI 96814	Project Manager: Hannah Dennis	Reported: 03/17/2023 16:25

Sample Results
(Continued)

Sample: HA05-0
23C0072-09 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
---------	--------------	-----	-----	-------	---------------	----	--------	------------

WetLab

% Solids	73.8	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	2600	170	63	mg/kg dry	03/14/23	25	EPA 350.1	BCC0155
NITRATE-NITRITE-N	31	1.3	0.85	mg/kg dry	03/10/23	1	EPA 353.2	BCC0185

EA Engineering Honolulu	Project: Othello	
615 Piikoi Street, Suite 515	Project Number: Othello	
Honolulu, HI 96814	Project Manager: Hannah Dennis	Reported: 03/17/2023 16:25

Sample Results
(Continued)

Sample: HA05-2-3
23C0072-10 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
---------	-------------	-----	-----	-------	---------------	----	--------	------------

WetLab

% Solids	81.5	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	1700	150	56	mg/kg dry	03/14/23	25	EPA 350.1	BCC0156
NITRATE-NITRITE-N	710	12	7.9	mg/kg dry	03/13/23	10	EPA 353.2	BCC0186

EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Sample Results (Continued)

Sample: HA02-0
23C0072-11 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	75.3	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	3200	160	61	mg/kg dry	03/14/23	25	EPA 350.1	BCC0155
NITRATE-NITRITE-N	55	1.3	0.84	mg/kg dry	03/10/23	1	EPA 353.2	BCC0185

EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Sample Results (Continued)

Sample: HA02-2-3
23C0072-12 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	83.3	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0208
AMMONIA AS N	1600	150	56	mg/kg dry	03/14/23	25	EPA 350.1	BCC0155
NITRATE-NITRITE-N	1300	140	89	mg/kg dry	03/10/23	120	EPA 353.2	BCC0185

EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Sample Results (Continued)

Sample: HA06-0
23C0072-13 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	87.7	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	ND	5.7	2.1	mg/kg dry	03/14/23	1	EPA 350.1	BCC0155
NITRATE-NITRITE-N	31	1.1	0.72	mg/kg dry	03/10/23	1	EPA 353.2	BCC0185

EA Engineering Honolulu	Project: Othello	
615 Piikoi Street, Suite 515	Project Number: Othello	
Honolulu, HI 96814	Project Manager: Hannah Dennis	Reported: 03/17/2023 16:25

Sample Results
(Continued)

Sample: HA06-2-3
23C0072-14 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	92.3	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	7.6	5.4	2.0	mg/kg dry	03/14/23	1	EPA 350.1	BCC0156
NITRATE-NITRITE-N	3.1	1.1	0.68	mg/kg dry	03/13/23	1	EPA 353.2	BCC0186

EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Sample Results (Continued)

Sample: HA07-0
23C0072-15 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Semivolatiles

METHYL ISOTHIOCYANATE	ND	25	8.7	ug/kg dry	03/15/23	1	EPA 131	BCC0160
<i>Surrogate: BUTYLATE</i>	<i>136%</i>	<i>25-173</i>			<i>03/15/23</i>	<i>1</i>	<i>EPA 131</i>	
CHLOROPICRIN	ND	25		ug/kg dry	03/16/23	1	Chloropicrin Sonication	BCC0161
<i>Surrogate: TETRACHLORO-M-XYLENE</i>	<i>79.0%</i>	<i>42-129</i>			<i>03/16/23</i>	<i>1</i>	<i>Chloropicrin Sonication</i>	

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Volatiles GCMS

CIS-1,3-DICHLOROPROPENE	ND	4.0	0.75	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
TRANS-1,3-DICHLOROPROPENE	ND	4.0	0.75	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
<i>Surrogate: DIBROMOFLUOROMETHANE</i>	<i>113%</i>	<i>78-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: TOLUENE-D8</i>	<i>112%</i>	<i>85-116</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 1,2-DICHLOROETHANE-D4</i>	<i>105%</i>	<i>71-136</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 4-BROMOFLUOROBENZENE</i>	<i>78.5%</i>	<i>79-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	78.8	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	2000	160	58	mg/kg dry	03/14/23	25	EPA 350.1	BCC0156
NITRATE-NITRITE-N	24	1.2	0.80	mg/kg dry	03/13/23	1	EPA 353.2	BCC0186

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Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

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Sample Results (Continued)

Sample: HA07-2-3
23C0072-16 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Semivolatiles

METHYL ISOTHIOCYANATE	ND	23	8.2	ug/kg dry	03/15/23	1	EPA 131	BCC0160
<i>Surrogate: BUTYLATE</i>	<i>111%</i>	<i>25-173</i>			<i>03/15/23</i>	<i>1</i>	<i>EPA 131</i>	
CHLOROPICRIN	ND	23		ug/kg dry	03/16/23	1	Chloropicrin Sonication	BCC0161
<i>Surrogate: TETRACHLORO-M-XYLENE</i>	<i>68.2%</i>	<i>42-129</i>			<i>03/16/23</i>	<i>1</i>	<i>Chloropicrin Sonication</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Volatiles GCMS

CIS-1,3-DICHLOROPROPENE	ND	4.7	0.88	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
TRANS-1,3-DICHLOROPROPENE	ND	4.7	0.88	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
<i>Surrogate: DIBROMOFLUOROMETHANE</i>	<i>109%</i>	<i>78-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: TOLUENE-D8</i>	<i>99.3%</i>	<i>85-116</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 1,2-DICHLOROETHANE-D4</i>	<i>99.6%</i>	<i>71-136</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 4-BROMOFLUOROBENZENE</i>	<i>89.3%</i>	<i>79-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	84.4	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	1900	150	54	mg/kg dry	03/14/23	25	EPA 350.1	BCC0156
NITRATE-NITRITE-N	420	12	7.5	mg/kg dry	03/13/23	10	EPA 353.2	BCC0186

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Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

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Sample Results (Continued)

Sample: HA08-0
23C0072-17 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Semivolatiles

METHYL ISOTHIOCYANATE	ND	27	9.4	ug/kg dry	03/15/23	1	EPA 131	BCC0160
<i>Surrogate: BUTYLATE</i>	<i>120%</i>	<i>25-173</i>			<i>03/15/23</i>	<i>1</i>	<i>EPA 131</i>	
CHLOROPICRIN	ND	26		ug/kg dry	03/16/23	1	Chloropicrin Sonication	BCC0161
<i>Surrogate: TETRACHLORO-M-XYLENE</i>	<i>70.6%</i>	<i>42-129</i>			<i>03/16/23</i>	<i>1</i>	<i>Chloropicrin Sonication</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Volatiles GCMS

CIS-1,3-DICHLOROPROPENE	ND	8.6	1.6	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
TRANS-1,3-DICHLOROPROPENE	ND	8.6	1.6	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
<i>Surrogate: DIBROMOFLUOROMETHANE</i>	<i>105%</i>	<i>78-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: TOLUENE-D8</i>	<i>101%</i>	<i>85-116</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 1,2-DICHLOROETHANE-D4</i>	<i>98.5%</i>	<i>71-136</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 4-BROMOFLUOROBENZENE</i>	<i>85.1%</i>	<i>79-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	73.3	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	2100	170	63	mg/kg dry	03/14/23	25	EPA 350.1	BCC0156
NITRATE-NITRITE-N	190	13	8.3	mg/kg dry	03/13/23	10	EPA 353.2	BCC0186

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Project Number: Othello
Project Manager: Hannah Dennis

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Sample Results (Continued)

Sample: HA08-2-3
23C0072-18 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Semivolatiles

METHYL ISOTHIOCYANATE	ND	23	8.2	ug/kg dry	03/15/23	1	EPA 131	BCC0160
<i>Surrogate: BUTYLATE</i>	<i>92.3%</i>	<i>25-173</i>			<i>03/15/23</i>	<i>1</i>	<i>EPA 131</i>	
CHLOROPICRIN	ND	23		ug/kg dry	03/16/23	1	Chloropicrin Sonication	BCC0161
<i>Surrogate: TETRACHLORO-M-XYLENE</i>	<i>70.8%</i>	<i>42-129</i>			<i>03/16/23</i>	<i>1</i>	<i>Chloropicrin Sonication</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Volatiles GCMS

CIS-1,3-DICHLOROPROPENE	ND	5.3	0.98	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
TRANS-1,3-DICHLOROPROPENE	ND	5.3	0.98	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
<i>Surrogate: DIBROMOFLUOROMETHANE</i>	<i>108%</i>	<i>78-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: TOLUENE-D8</i>	<i>96.3%</i>	<i>85-116</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 1,2-DICHLOROETHANE-D4</i>	<i>100%</i>	<i>71-136</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 4-BROMOFLUOROBENZENE</i>	<i>89.7%</i>	<i>79-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	84.3	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	1800	150	55	mg/kg dry	03/14/23	25	EPA 350.1	BCC0156
NITRATE-NITRITE-N	420	12	7.6	mg/kg dry	03/13/23	10	EPA 353.2	BCC0186

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Project Manager: Hannah Dennis

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Sample Results (Continued)

Sample: HA09-0
23C0072-19 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Semivolatiles

METHYL ISOTHIOCYANATE	ND	27	9.4	ug/kg dry	03/15/23	1	EPA 131	BCC0160
<i>Surrogate: BUTYLATE</i>	<i>75.9%</i>	<i>25-173</i>			<i>03/15/23</i>	<i>1</i>	<i>EPA 131</i>	
CHLOROPICRIN	ND	26		ug/kg dry	03/16/23	1	Chloropicrin Sonication	BCC0161
<i>Surrogate: TETRACHLORO-M-XYLENE</i>	<i>82.0%</i>	<i>42-129</i>			<i>03/16/23</i>	<i>1</i>	<i>Chloropicrin Sonication</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Volatiles GCMS

CIS-1,3-DICHLOROPROPENE	ND	6.7	1.2	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
TRANS-1,3-DICHLOROPROPENE	ND	6.7	1.2	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
<i>Surrogate: DIBROMOFLUOROMETHANE</i>	<i>111%</i>	<i>78-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: TOLUENE-D8</i>	<i>101%</i>	<i>85-116</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 1,2-DICHLOROETHANE-D4</i>	<i>100%</i>	<i>71-136</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 4-BROMOFLUOROBENZENE</i>	<i>85.6%</i>	<i>79-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	72.9	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	1400	170	63	mg/kg dry	03/14/23	25	EPA 350.1	BCC0156
NITRATE-NITRITE-N	56	1.3	0.84	mg/kg dry	03/13/23	1	EPA 353.2	BCC0186

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Project Number: Othello
Project Manager: Hannah Dennis

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Sample Results (Continued)

Sample: HA09-2-3
23C0072-20 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Semivolatiles

METHYL ISOTHIOCYANATE	ND	23	8.1	ug/kg dry	03/15/23	1	EPA 131	BCC0160
<i>Surrogate: BUTYLATE</i>	<i>87.3%</i>	<i>25-173</i>			<i>03/15/23</i>	<i>1</i>	<i>EPA 131</i>	
CHLOROPICRIN	ND	23		ug/kg dry	03/16/23	1	Chloropicrin Sonication	BCC0161
<i>Surrogate: TETRACHLORO-M-XYLENE</i>	<i>83.1%</i>	<i>42-129</i>			<i>03/16/23</i>	<i>1</i>	<i>Chloropicrin Sonication</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Volatiles GCMS

CIS-1,3-DICHLOROPROPENE	ND	4.9	0.91	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
TRANS-1,3-DICHLOROPROPENE	ND	4.9	0.91	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
<i>Surrogate: DIBROMOFLUOROMETHANE</i>	<i>113%</i>	<i>78-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: TOLUENE-D8</i>	<i>96.3%</i>	<i>85-116</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 1,2-DICHLOROETHANE-D4</i>	<i>108%</i>	<i>71-136</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 4-BROMOFLUOROBENZENE</i>	<i>92.5%</i>	<i>79-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	83.9	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	1400	150	55	mg/kg dry	03/14/23	25	EPA 350.1	BCC0156
NITRATE-NITRITE-N	130	12	7.6	mg/kg dry	03/13/23	10	EPA 353.2	BCC0186

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Project Number: Othello
Project Manager: Hannah Dennis

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Sample Results (Continued)

Sample: HA10-0
23C0072-21 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Semivolatiles

METHYL ISOTHIOCYANATE	ND	28	10	ug/kg dry	03/15/23	1	EPA 131	BCC0160
<i>Surrogate: BUTYLATE</i>	<i>153%</i>	<i>25-173</i>			<i>03/15/23</i>	<i>1</i>	<i>EPA 131</i>	
CHLOROPICRIN	ND	28		ug/kg dry	03/16/23	1	Chloropicrin Sonication	BCC0161
<i>Surrogate: TETRACHLORO-M-XYLENE</i>	<i>83.6%</i>	<i>42-129</i>			<i>03/16/23</i>	<i>1</i>	<i>Chloropicrin Sonication</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Volatiles GCMS

CIS-1,3-DICHLOROPROPENE	ND	8.1	1.5	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
TRANS-1,3-DICHLOROPROPENE	ND	8.1	1.5	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
<i>Surrogate: DIBROMOFLUOROMETHANE</i>	<i>112%</i>	<i>78-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: TOLUENE-D8</i>	<i>102%</i>	<i>85-116</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 1,2-DICHLOROETHANE-D4</i>	<i>101%</i>	<i>71-136</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 4-BROMOFLUOROBENZENE</i>	<i>81.3%</i>	<i>79-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	68.0	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	1100	180	68	mg/kg dry	03/14/23	25	EPA 350.1	BCC0156
NITRATE-NITRITE-N	7.9	1.4	0.91	mg/kg dry	03/13/23	1	EPA 353.2	BCC0186

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Project Number: Othello
Project Manager: Hannah Dennis

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Sample Results (Continued)

Sample: HA10-2-3
23C0072-22 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Semivolatiles

METHYL ISOTHIOCYANATE	ND	24	8.4	ug/kg dry	03/15/23	1	EPA 131	BCC0160
<i>Surrogate: BUTYLATE</i>	<i>76.2%</i>	<i>25-173</i>			<i>03/15/23</i>	<i>1</i>	<i>EPA 131</i>	
CHLOROPICRIN	ND	23		ug/kg dry	03/16/23	1	Chloropicrin Sonication	BCC0161
<i>Surrogate: TETRACHLORO-M-XYLENE</i>	<i>87.0%</i>	<i>42-129</i>			<i>03/16/23</i>	<i>1</i>	<i>Chloropicrin Sonication</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Volatiles GCMS

CIS-1,3-DICHLOROPROPENE	ND	3.9	0.73	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
TRANS-1,3-DICHLOROPROPENE	ND	3.9	0.73	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
<i>Surrogate: DIBROMOFLUOROMETHANE</i>	<i>98.6%</i>	<i>78-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: TOLUENE-D8</i>	<i>101%</i>	<i>85-116</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 1,2-DICHLOROETHANE-D4</i>	<i>94.6%</i>	<i>71-136</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 4-BROMOFLUOROBENZENE</i>	<i>88.9%</i>	<i>79-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	81.6	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	1600	150	57	mg/kg dry	03/14/23	25	EPA 350.1	BCC0156
NITRATE-NITRITE-N	240	12	7.8	mg/kg dry	03/13/23	10	EPA 353.2	BCC0186

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Project Manager: Hannah Dennis

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Sample Results (Continued)

Sample: HA11-0
23C0072-23 (Solid)

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Semivolatiles

METHYL ISOTHIOCYANATE	ND	22	7.8	ug/kg dry	03/15/23	1	EPA 131	BCC0160
<i>Surrogate: BUTYLATE</i>	<i>70.6%</i>	<i>25-173</i>			<i>03/15/23</i>	<i>1</i>	<i>EPA 131</i>	
CHLOROPICRIN	ND	22		ug/kg dry	03/16/23	1	Chloropicrin Sonication	BCC0161
<i>Surrogate: TETRACHLORO-M-XYLENE</i>	<i>85.3%</i>	<i>42-129</i>			<i>03/16/23</i>	<i>1</i>	<i>Chloropicrin Sonication</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Volatiles GCMS

CIS-1,3-DICHLOROPROPENE	ND	5.2	0.97	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
TRANS-1,3-DICHLOROPROPENE	ND	5.2	0.97	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
<i>Surrogate: DIBROMOFLUOROMETHANE</i>	<i>111%</i>	<i>78-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: TOLUENE-D8</i>	<i>99.8%</i>	<i>85-116</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 1,2-DICHLOROETHANE-D4</i>	<i>104%</i>	<i>71-136</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 4-BROMOFLUOROBENZENE</i>	<i>87.9%</i>	<i>79-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	

Analyte	Result /Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	87.5	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	6.2	5.6	2.1	mg/kg dry	03/14/23	1	EPA 350.1	BCC0156
NITRATE-NITRITE-N	6.8	1.1	0.72	mg/kg dry	03/13/23	1	EPA 353.2	BCC0186

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Project: Othello
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Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Sample Results (Continued)

Sample: HA11-2-3
23C0072-24 (Solid)

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Semivolatiles

METHYL ISOTHIOCYANATE	ND	21	7.5	ug/kg dry	03/15/23	1	EPA 131	BCC0160
<i>Surrogate: BUTYLATE</i>	<i>113%</i>	<i>25-173</i>			<i>03/15/23</i>	<i>1</i>	<i>EPA 131</i>	
CHLOROPICRIN	ND	21		ug/kg dry	03/16/23	1	Chloropicrin Sonication	BCC0161
<i>Surrogate: TETRACHLORO-M-XYLENE</i>	<i>88.2%</i>	<i>42-129</i>			<i>03/16/23</i>	<i>1</i>	<i>Chloropicrin Sonication</i>	

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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Volatiles GCMS

CIS-1,3-DICHLOROPROPENE	ND	8.8	1.6	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
TRANS-1,3-DICHLOROPROPENE	ND	8.8	1.6	ug/kg dry	03/13/23	1	EPA 8260D	BCC0187
<i>Surrogate: DIBROMOFLUOROMETHANE</i>	<i>113%</i>	<i>78-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: TOLUENE-D8</i>	<i>92.6%</i>	<i>85-116</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 1,2-DICHLOROETHANE-D4</i>	<i>122%</i>	<i>71-136</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	
<i>Surrogate: 4-BROMOFLUOROBENZENE</i>	<i>92.5%</i>	<i>79-119</i>			<i>03/13/23</i>	<i>1</i>	<i>EPA 8260D</i>	

Analyte	Result/Qual	PQL	MDL	Units	Date Analyzed	DF	Method	Prep Batch
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WetLab

% Solids	92.2	2.00	0.750	%	03/13/23	1	ISM02.2	BCC0209
AMMONIA AS N	ND	5.4	2.0	mg/kg dry	03/14/23	1	EPA 350.1	BCC0156
NITRATE-NITRITE-N	ND	1.1	0.69	mg/kg dry	03/13/23	1	EPA 353.2	BCC0186

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Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

PREPARATION BATCH SUMMARY

EPA 350.1

Laboratory: APPL, LLC

Client: EA Engineering Honolulu

Batch: BCC0155 Batch Matrix: Solid Preparation: EPA 350.1

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT g	FINAL VOL. mL
HA01-0	23C0072-01	03/09/23 15:01	2.50	25.00
HA01-2-3	23C0072-02	03/09/23 15:01	2.54	25.00
HA03-0	23C0072-03	03/09/23 15:01	2.50	25.00
HA03-2-3	23C0072-04	03/09/23 15:01	2.53	25.00
HA04-0	23C0072-05	03/09/23 15:01	2.50	25.00
HA04-2-3	23C0072-06	03/09/23 15:01	2.51	25.00
FD HA03-0	23C0072-07	03/09/23 15:01	2.49	25.00
FD HA03-2-3	23C0072-08	03/09/23 15:01	2.51	25.00
HA05-0	23C0072-09	03/09/23 15:01	2.50	25.00
HA02-0	23C0072-11	03/09/23 15:01	2.54	25.00
HA02-2-3	23C0072-12	03/09/23 15:01	2.49	25.00
HA06-0	23C0072-13	03/09/23 15:01	2.51	25.00
Blank	BCC0155-BLK1	03/09/23 15:01	2.50	25.00
LCS	BCC0155-BS1	03/09/23 15:01	2.50	25.00
LCS Dup	BCC0155-BS1	03/09/23 15:01	2.50	25.00
HA05-0	BCC0155-MS1	03/09/23 15:01	2.50	25.00
HA05-0	BCC0155-MSD1	03/09/23 15:01	2.50	25.00

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Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

PREPARATION BATCH SUMMARY

EPA 350.1

Laboratory: APPL, LLC

Client: EA Engineering Honolulu

Batch: BCC0156 Batch Matrix: Solid Preparation: EPA 350.1

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT g	FINAL VOL. mL
HA05-2-3	23C0072-10	03/09/23 15:03	2.54	25.00
HA06-2-3	23C0072-14	03/09/23 15:03	2.52	25.00
HA07-0	23C0072-15	03/09/23 15:03	2.54	25.00
HA07-2-3	23C0072-16	03/09/23 15:03	2.54	25.00
HA08-0	23C0072-17	03/09/23 15:03	2.51	25.00
HA08-2-3	23C0072-18	03/09/23 15:03	2.50	25.00
HA09-0	23C0072-19	03/09/23 15:03	2.52	25.00
HA09-2-3	23C0072-20	03/09/23 15:03	2.54	25.00
HA10-0	23C0072-21	03/09/23 15:03	2.50	25.00
HA10-2-3	23C0072-22	03/09/23 15:03	2.50	25.00
HA11-0	23C0072-23	03/09/23 15:03	2.54	25.00
HA11-2-3	23C0072-24	03/09/23 15:03	2.52	25.00
Blank	BCC0156-BLK1	03/09/23 15:03	2.52	25.00
LCS	BCC0156-BS1	03/09/23 15:03	2.52	25.00
LCS Dup	BCC0156-BSD1	03/09/23 15:03	2.52	25.00
HA05-2-3	BCC0156-MS1	03/09/23 15:03	2.49	25.00
HA05-2-3	BCC0156-MSD1	03/09/23 15:03	2.52	25.00

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Project: Othello
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Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

PREPARATION BATCH SUMMARY

EPA 131

Laboratory: APPL, LLC

Client: EA Engineering Honolulu

Batch: BCC0160 Batch Matrix: Solid Preparation: EPA 131

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT g	FINAL VOL. mL
HA07-0	23C0072-15	03/14/23 13:00	20.47	10.00
HA07-2-3	23C0072-16	03/14/23 13:00	20.33	10.00
HA08-0	23C0072-17	03/14/23 13:00	20.30	10.00
HA08-2-3	23C0072-18	03/14/23 13:00	20.32	10.00
HA09-0	23C0072-19	03/14/23 13:00	20.52	10.00
HA09-2-3	23C0072-20	03/14/23 13:00	20.54	10.00
HA10-0	23C0072-21	03/14/23 13:00	20.67	10.00
HA10-2-3	23C0072-22	03/14/23 13:00	20.48	10.00
HA11-0	23C0072-23	03/14/23 13:00	20.46	10.00
HA11-2-3	23C0072-24	03/14/23 13:00	20.36	10.00
Blank	BCC0160-BLK1	03/14/23 13:00	20.40	10.00
LCS	BCC0160-BS1	03/14/23 13:00	20.55	10.00
LCS Dup	BCC0160-BSD1	03/14/23 13:00	20.31	10.00

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Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

PREPARATION BATCH SUMMARY

Chloropicrin Sonication

Laboratory: APPL, LLC

Client: EA Engineering Honolulu

Batch: BCC0161 Batch Matrix: Solid Preparation: EPA 3550B MC/ACE

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT g	FINAL VOL. mL
HA07-0	23C0072-15	03/10/23 06:49	10.23	20.00
HA07-2-3	23C0072-16	03/10/23 06:49	10.30	20.00
HA08-0	23C0072-17	03/10/23 06:49	10.46	20.00
HA08-2-3	23C0072-18	03/10/23 06:49	10.31	20.00
HA09-0	23C0072-19	03/10/23 06:49	10.52	20.00
HA09-2-3	23C0072-20	03/10/23 06:49	10.47	20.00
HA10-0	23C0072-21	03/10/23 06:49	10.51	20.00
HA10-2-3	23C0072-22	03/10/23 06:49	10.45	20.00
HA11-0	23C0072-23	03/10/23 06:49	10.29	20.00
HA11-2-3	23C0072-24	03/10/23 06:49	10.27	20.00
Blank	BCC0161-BLK1	03/10/23 06:49	10.28	20.00
LCS	BCC0161-BS1	03/10/23 06:49	10.26	20.00
LCS Dup	BCC0161-BSD1	03/10/23 06:49	10.17	20.00

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Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

PREPARATION BATCH SUMMARY

EPA 353.2

Laboratory: APPL, LLC

Client: EA Engineering Honolulu

Batch: BCC0185 Batch Matrix: Solid Preparation: EPA 353.2

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT g	FINAL VOL. mL
HA01-0	23C0072-01	03/10/23 11:50	1.03	10.00
HA01-2-3	23C0072-02	03/10/23 11:50	1.00	10.00
HA03-0	23C0072-03	03/10/23 11:50	1.00	10.00
HA03-2-3	23C0072-04	03/10/23 11:50	1.05	10.00
HA04-0	23C0072-05	03/10/23 11:50	1.00	10.00
HA04-2-3	23C0072-06	03/10/23 11:50	1.04	10.00
FD HA03-0	23C0072-07	03/10/23 11:50	1.01	10.00
FD HA03-2-3	23C0072-08	03/10/23 11:50	1.01	10.00
HA05-0	23C0072-09	03/10/23 11:50	1.02	10.00
HA02-0	23C0072-11	03/10/23 11:50	1.01	10.00
HA02-2-3	23C0072-12	03/10/23 11:50	1.04	10.00
HA06-0	23C0072-13	03/10/23 11:50	1.01	10.00
Blank	BCC0185-BLK1	03/10/23 11:50	1.01	10.00
LCS	BCC0185-BS1	03/10/23 11:50	1.01	10.00
LCS Dup	BCC0185-BSD1	03/10/23 11:50	1.01	10.00
HA05-0	BCC0185-MS1	03/10/23 11:50	1.00	10.00
HA05-0	BCC0185-MSD1	03/10/23 11:50	1.00	10.00

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Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

PREPARATION BATCH SUMMARY

EPA 353.2

Laboratory: APPL, LLC

Client: EA Engineering Honolulu

Batch: BCC0186 Batch Matrix: Solid Preparation: EPA 353.2

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT g	FINAL VOL. mL
HA05-2-3	23C0072-10	03/12/23 11:52	1.00	10.00
HA06-2-3	23C0072-14	03/12/23 11:52	1.02	10.00
HA07-0	23C0072-15	03/12/23 11:52	1.02	10.00
HA07-2-3	23C0072-16	03/12/23 11:52	1.01	10.00
HA08-0	23C0072-17	03/12/23 11:52	1.05	10.00
HA08-2-3	23C0072-18	03/12/23 11:52	1.00	10.00
HA09-0	23C0072-19	03/12/23 11:52	1.05	10.00
HA09-2-3	23C0072-20	03/12/23 11:52	1.00	10.00
HA10-0	23C0072-21	03/12/23 11:52	1.03	10.00
HA10-2-3	23C0072-22	03/12/23 11:52	1.00	10.00
HA11-0	23C0072-23	03/12/23 11:52	1.01	10.00
HA11-2-3	23C0072-24	03/12/23 11:52	1.01	10.00
Blank	BCC0186-BLK1	03/12/23 11:52	1.01	10.00
LCS	BCC0186-BS1	03/12/23 11:52	1.02	10.00
HA05-2-3	BCC0186-MS1	03/12/23 11:52	1.05	10.00
HA05-2-3	BCC0186-MSD1	03/12/23 11:52	1.03	10.00

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Honolulu, HI 96814

Project: Othello
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Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

PREPARATION BATCH SUMMARY

EPA 8260D

Laboratory: APPL, LLC

Client: EA Engineering Honolulu

Batch: BCC0187 Batch Matrix: Solid Preparation: EPA 5035

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT g	FINAL VOL. mL
HA07-0	23C0072-15	03/13/23 12:17	7.83	5.00
HA07-2-3	23C0072-16	03/13/23 12:17	6.26	5.00
HA08-0	23C0072-17	03/13/23 12:17	3.95	5.00
HA08-2-3	23C0072-18	03/13/23 12:17	5.63	5.00
HA09-0	23C0072-19	03/13/23 12:17	5.13	5.00
HA09-2-3	23C0072-20	03/13/23 12:17	6.11	5.00
HA10-0	23C0072-21	03/13/23 12:17	4.56	5.00
HA10-2-3	23C0072-22	03/13/23 12:17	7.85	5.00
HA11-0	23C0072-23	03/13/23 12:17	5.48	5.00
HA11-2-3	23C0072-24	03/13/23 12:17	3.09	5.00
Blank	BCC0187-BLK1	03/10/23 11:59	5.00	5.00
LCS	BCC0187-BS1	03/10/23 11:59	5.00	5.00
LCS Dup	BCC0187-BSD1	03/10/23 11:59	5.00	5.00

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Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

PREPARATION BATCH SUMMARY

ISM02.2

Laboratory: APPL, LLC

Client: EA Engineering Honolulu

Batch: BCC0208 Batch Matrix: Solid Preparation: ISM02.2

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT g	FINAL VOL. g
HA01-0	23C0072-01	03/13/23 08:17	6.00	6.00
HA01-2-3	23C0072-02	03/13/23 08:17	6.00	6.00
HA03-0	23C0072-03	03/13/23 08:17	6.00	6.00
HA03-2-3	23C0072-04	03/13/23 08:17	6.00	6.00
HA04-0	23C0072-05	03/13/23 08:17	6.00	6.00
HA04-2-3	23C0072-06	03/13/23 08:17	6.00	6.00
FD HA03-0	23C0072-07	03/13/23 08:17	6.00	6.00
FD HA03-2-3	23C0072-08	03/13/23 08:17	6.00	6.00
HA05-0	23C0072-09	03/13/23 08:17	6.00	6.00
HA05-2-3	23C0072-10	03/13/23 08:17	6.00	6.00
HA02-0	23C0072-11	03/13/23 08:17	6.00	6.00
HA02-2-3	23C0072-12	03/13/23 08:17	6.00	6.00
HA05-0	BCC0208-DUP1	03/13/23 08:17	6.00	6.00

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Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

PREPARATION BATCH SUMMARY

ISM02.2

Laboratory: APPL, LLC

Client: EA Engineering Honolulu

Batch: BCC0209 Batch Matrix: Solid Preparation: ISM02.2

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT g	FINAL VOL. g
HA06-0	23C0072-13	03/13/23 08:32	6.00	6.00
HA06-2-3	23C0072-14	03/13/23 08:32	6.00	6.00
HA07-0	23C0072-15	03/13/23 08:32	6.00	6.00
HA07-2-3	23C0072-16	03/13/23 08:32	6.00	6.00
HA08-0	23C0072-17	03/13/23 08:32	6.00	6.00
HA08-2-3	23C0072-18	03/13/23 08:32	6.00	6.00
HA09-0	23C0072-19	03/13/23 08:32	6.00	6.00
HA09-2-3	23C0072-20	03/13/23 08:32	6.00	6.00
HA10-0	23C0072-21	03/13/23 08:32	6.00	6.00
HA10-2-3	23C0072-22	03/13/23 08:32	6.00	6.00
HA11-0	23C0072-23	03/13/23 08:32	6.00	6.00
HA11-2-3	23C0072-24	03/13/23 08:32	6.00	6.00
HA06-0	BCC0209-DUP1	03/13/23 08:32	6.00	6.00

EA Engineering Honolulu
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Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Quality Control

Semivolatiles

Analyte	Result/ Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Method: EPA 131

Batch: BCC0160 - EPA 131

Blank (BCC0160-BLK1)

Prepared: 03/14/23 13:00 Analyzed: 03/15/23 17:33

METHYL ISOTHIOCYANATE	ND	20	6.9	ug/kg wet						
Surrogate: BUTYLATE	280			ug/kg wet	245		114	25-173		

LCS (BCC0160-BS1)

Prepared: 03/14/23 13:00 Analyzed: 03/15/23 18:00

METHYL ISOTHIOCYANATE	245		6.8	ug/kg wet	243		101	34-191		
Surrogate: BUTYLATE	240			ug/kg wet	243		98.6	25-173		

LCS Dup (BCC0160-BSD1)

Prepared: 03/14/23 13:00 Analyzed: 03/15/23 18:27

METHYL ISOTHIOCYANATE	224		6.9	ug/kg wet	246		90.9	34-191	9.06	20
Surrogate: BUTYLATE	232			ug/kg wet	246		94.1	25-173		

Method: Chloropicrin Sonication

Batch: BCC0161 - EPA 3550B MC/ACE

Blank (BCC0161-BLK1)

Prepared: 03/10/23 06:49 Analyzed: 03/16/23 17:11

CHLOROPICRIN [2C]	ND	19		ug/kg wet						
CHLOROPICRIN	ND	19		ug/kg wet						
Surrogate: TETRACHLORO-M-XYLENE	147			ug/kg wet	195		75.4	42-129		
Surrogate: TETRACHLORO-M-XYLENE [2C]	145			ug/kg wet	195		74.5	42-129		

LCS (BCC0161-BS1)

Prepared: 03/10/23 06:49 Analyzed: 03/16/23 17:33

CHLOROPICRIN [2C]	87.4			ug/kg wet	487		17.9	0-200		
CHLOROPICRIN	90.8			ug/kg wet	487		18.6	0-200		
Surrogate: TETRACHLORO-M-XYLENE	146			ug/kg wet	195		74.9	42-129		
Surrogate: TETRACHLORO-M-XYLENE [2C]	142			ug/kg wet	195		72.8	42-129		

LCS Dup (BCC0161-BSD1)

Prepared: 03/10/23 06:49 Analyzed: 03/16/23 17:56

CHLOROPICRIN [2C]	788			ug/kg wet	492		160	0-200	160	200
CHLOROPICRIN	702			ug/kg wet	492		143	0-200	154	200
Surrogate: TETRACHLORO-M-XYLENE	164			ug/kg wet	197		83.3	42-129		
Surrogate: TETRACHLORO-M-XYLENE [2C]	159			ug/kg wet	197		80.8	42-129		

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Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Quality Control (Continued)

Volatiles GCMS

Analyte	Result/ Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Method: EPA 8260D

Batch: BCC0187 - EPA 5035

Blank (BCC0187-BLK1)

Prepared: 03/10/23 11:59 Analyzed: 03/13/23 13:36

CIS-1,3-DICHLOROPROPENE	ND	5.0	0.93	ug/kg wet						
TRANS-1,3-DICHLOROPROPENE	ND	5.0	0.93	ug/kg wet						
Surrogate: DIBROMOFLUOROMETHANE	52.4			ug/L	50.0		105	78-119		
Surrogate: TOLUENE-D8	52.8			ug/L	50.0		106	85-116		
Surrogate: 1,2-DICHLOROETHANE-D4	44.7			ug/L	50.0		89.4	71-136		
Surrogate: 4-BROMOFLUOROBENZENE	48.8			ug/L	50.0		97.5	79-119		

LCS (BCC0187-BS1)

Prepared: 03/10/23 11:59 Analyzed: 03/13/23 12:48

CIS-1,3-DICHLOROPROPENE	51.6		0.93	ug/kg wet	50.0		103	74-126		
TRANS-1,3-DICHLOROPROPENE	49.7		0.93	ug/kg wet	50.0		99.4	71-130		
Surrogate: DIBROMOFLUOROMETHANE	55.3			ug/kg wet	50.0		111	78-119		
Surrogate: TOLUENE-D8	53.7			ug/kg wet	50.0		107	85-116		
Surrogate: 1,2-DICHLOROETHANE-D4	52.6			ug/kg wet	50.0		105	71-136		
Surrogate: 4-BROMOFLUOROBENZENE	51.3			ug/kg wet	50.0		103	79-119		

LCS Dup (BCC0187-BSD1)

Prepared: 03/10/23 11:59 Analyzed: 03/13/23 13:12

CIS-1,3-DICHLOROPROPENE	54.9		0.93	ug/kg wet	50.0		110	74-126	6.12	20
TRANS-1,3-DICHLOROPROPENE	49.6		0.93	ug/kg wet	50.0		99.3	71-130	0.181	20
Surrogate: DIBROMOFLUOROMETHANE	55.3			ug/kg wet	50.0		111	78-119		
Surrogate: TOLUENE-D8	53.6			ug/kg wet	50.0		107	85-116		
Surrogate: 1,2-DICHLOROETHANE-D4	52.0			ug/kg wet	50.0		104	71-136		
Surrogate: 4-BROMOFLUOROBENZENE	51.1			ug/kg wet	50.0		102	79-119		

EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Quality Control (Continued)

WetLab

Analyte	Result/ Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Method: EPA 350.1

Batch: BCC0155 - EPA 350.1

Blank (BCC0155-BLK1)

Prepared: 03/09/23 15:01 Analyzed: 03/14/23 16:09

AMMONIA AS N ND 5.0 1.9 mg/kg wet

LCS (BCC0155-BS1)

Prepared: 03/09/23 15:01 Analyzed: 03/14/23 16:11

AMMONIA AS N 47.8 1.9 mg/kg wet 50.0 95.7 80-120

LCS Dup (BCC0155-BSD1)

Prepared: 03/09/23 15:01 Analyzed: 03/14/23 16:14

AMMONIA AS N 49.0 1.9 mg/kg wet 50.0 98.1 80-120 2.45 20

Matrix Spike (BCC0155-MS1)

Source: 23C0072-09

Prepared: 03/09/23 15:01 Analyzed: 03/14/23 19:31

AMMONIA AS N 2450 MS1 63 mg/kg dry 67.8 2580 NR 80-120

Matrix Spike Dup (BCC0155-MSD1)

Source: 23C0072-09

Prepared: 03/09/23 15:01 Analyzed: 03/14/23 19:34

AMMONIA AS N 2480 MS1 63 mg/kg dry 67.8 2580 NR 80-120 1.13 20

Method: EPA 350.1

Batch: BCC0156 - EPA 350.1

Blank (BCC0156-BLK1)

Prepared: 03/09/23 15:03 Analyzed: 03/14/23 16:51

AMMONIA AS N ND 5.0 1.8 mg/kg wet

LCS (BCC0156-BS1)

Prepared: 03/09/23 15:03 Analyzed: 03/14/23 16:53

AMMONIA AS N 51.5 1.8 mg/kg wet 49.6 104 80-120

LCS Dup (BCC0156-BSD1)

Prepared: 03/09/23 15:03 Analyzed: 03/14/23 17:00

AMMONIA AS N 52.1 1.8 mg/kg wet 49.6 105 80-120 1.16 20

Matrix Spike (BCC0156-MS1)

Source: 23C0072-10

Prepared: 03/09/23 15:03 Analyzed: 03/14/23 20:01

AMMONIA AS N 1980 MS2 57 mg/kg dry 61.6 1740 391 80-120

EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Quality Control (Continued)

WetLab (Continued)

Analyte	Result/ Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Matrix Spike Dup (BCC0156-MSD1)		Source: 23C0072-10			Prepared: 03/09/23 15:03		Analyzed: 03/14/23 20:04			
AMMONIA AS N	1900 MS2		57	mg/kg dry	60.9	1740	256	80-120	4.37	20

Method: EPA 353.2

Batch: BCC0185 - EPA 353.2

Blank (BCC0185-BLK1)

NITRATE-NITRITE-N	ND	0.99	0.63	mg/kg wet	Prepared & Analyzed: 03/10/23 15:58					
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LCS (BCC0185-BS1)

NITRATE-NITRITE-N	31.6		0.63	mg/kg wet	29.7		106	90-110		
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LCS Dup (BCC0185-BSD1)

NITRATE-NITRITE-N	30.1		0.63	mg/kg wet	29.7		101	90-110	4.67	20
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Matrix Spike (BCC0185-MS1)

NITRATE-NITRITE-N	52.4 MS1		0.87	mg/kg dry	40.7	30.7	53.5	90-110		
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Matrix Spike Dup (BCC0185-MSD1)

NITRATE-NITRITE-N	41.7 MS1		0.87	mg/kg dry	40.7	30.7	27.0	90-110	22.9	20
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Method: EPA 353.2

Batch: BCC0186 - EPA 353.2

Blank (BCC0186-BLK1)

NITRATE-NITRITE-N	ND	0.99	0.63	mg/kg wet	Prepared: 03/12/23 11:52 Analyzed: 03/13/23 16:36					
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LCS (BCC0186-BS1)

NITRATE-NITRITE-N	31.6		0.63	mg/kg wet	29.4		107	90-110		
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EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Quality Control (Continued)

WetLab (Continued)

Analyte	Result/ Qual	PQL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Matrix Spike (BCC0186-MS1)		Source: 23C0072-10			Prepared: 03/12/23 11:52		Analyzed: 03/13/23 16:43			
NITRATE-NITRITE-N	817 MS2		7.5	mg/kg dry	35.1	709	308	90-110		
Matrix Spike Dup (BCC0186-MSD1)		Source: 23C0072-10			Prepared: 03/12/23 11:52		Analyzed: 03/13/23 16:45			
NITRATE-NITRITE-N	696 MS1		7.6	mg/kg dry	35.7	709	NR	90-110	16.0	20

Method: ISM02.2

Batch: BCC0208 - ISM02.2

Duplicate (BCC0208-DUP1)		Source: 23C0072-09			Prepared & Analyzed: 03/13/23 08:17					
% Solids	73.9		0.750	%		73.8			0.118	20
MOISTURE	26.1		0.750	%		26.2			0.332	20

Method: ISM02.2

Batch: BCC0209 - ISM02.2

Duplicate (BCC0209-DUP1)		Source: 23C0072-13			Prepared & Analyzed: 03/13/23 08:32					
% Solids	87.6		0.750	%		87.7			0.0888	20
MOISTURE	12.4		0.750	%		12.3			0.628	20

EA Engineering Honolulu
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Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Notes and Definitions

Item	Definition
IS2	Internal standard recovered above the upper control limit
MS1	Matrix spike recovered below the lower control limit
MS2	Matrix spike recovered above the upper control limit
S1	Surrogate recovered below the lower control limit
S2	Surrogate recovered above the upper control limit
U	Not detected
Dry	Sample results reported on a dry weight basis.
MDL	Method Detection Limit (only displays if reported to the MDL)
ND	Analyte NOT DETECTED at or above the reporting limit.
DF	Dilution Factor
DL	Detection Limit
RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
PQL, Practical Quantitation Limit = Method Reporting Limit (MRL).	

EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25



WORK ORDER

23C0072

Printed: 03/17/2023 4:25 pm

Project: Othello
Project Number: Othello
Project Manager: Karen Volpendesta
PO Number: 25139

Report To:

EA Engineering Honolulu
Hannah Dennis
615 Piikoi Street, Suite 515
Honolulu, HI 96814
Phone: (206) 452-5359

Invoice To:

EA Engineering Honolulu
PAC Accounts Payable
615 Piikoi Street, Suite 515
Honolulu, HI 96814
Phone: (808) 358-6614

Date Received: 03/09/2023 09:40 AM
Date Due: 03/16/2023 (5.00 day TAT)

Logged In By: Megan Salata
Received By: Megan Salata

Analysis	Comments
23C0072-01 HA01-0 [Solid] Sampled 3/7/2023 9:11:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-02 HA01-2-3 [Solid] Sampled 3/7/2023 9:31:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-03 HA03-0 [Solid] Sampled 3/7/2023 10:19:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-04 HA03-2-3 [Solid] Sampled 3/7/2023 10:26:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-05 HA04-0 [Solid] Sampled 3/7/2023 10:39:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-06 HA04-2-3 [Solid] Sampled 3/7/2023 10:45:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE

EA Engineering Honolulu
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Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Analysis	Comments
23C0072-07 FD HA03-0 [Solid] Sampled 3/7/2023 10:21:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-08 FD HA03-2-3 [Solid] Sampled 3/7/2023 10:28:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-09 HA05-0 [Solid] Sampled 3/7/2023 11:19:00AM	
<i>Sample Comments: MS/MSD</i>	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-10 HA05-2-3 [Solid] Sampled 3/7/2023 11:32:00AM	
<i>Sample Comments: MS/MSD</i>	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-11 HA02-0 [Solid] Sampled 3/7/2023 9:44:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-12 HA02-2-3 [Solid] Sampled 3/7/2023 11:06:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-13 HA06-0 [Solid] Sampled 3/7/2023 11:44:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-14 HA06-2-3 [Solid] Sampled 3/7/2023 11:50:00AM	
% Solids	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
23C0072-15 HA07-0 [Solid] Sampled 3/7/2023 12:21:00PM	
% Solids	NONE
131	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
8260D	cis & trans 1,3-Dichloropropene
Chloropicrin SON	NONE
23C0072-16 HA07-2-3 [Solid] Sampled 3/7/2023 12:39:00PM	
% Solids	NONE
131	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
8260D	cis & trans 1,3-Dichloropropene
Chloropicrin SON	NONE

Metam Sodium only

Metam Sodium only

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615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Analysis	Comments
23C0072-17 HA08-0 [Solid] Sampled 3/7/2023 12:51:00PM	
% Solids	NONE
131	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
8260D	cis & trans 1,3-Dichloropropene
Chloropicrin SON	NONE
23C0072-18 HA08-2-3 [Solid] Sampled 3/7/2023 12:57:00PM	
% Solids	NONE
131	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
8260D	cis & trans 1,3-Dichloropropene
Chloropicrin SON	NONE
23C0072-19 HA09-0 [Solid] Sampled 3/7/2023 1:09:00PM	
% Solids	NONE
131	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
8260D	cis & trans 1,3-Dichloropropene
Chloropicrin SON	NONE
23C0072-20 HA09-2-3 [Solid] Sampled 3/7/2023 1:44:00PM	
% Solids	NONE
131	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
8260D	cis & trans 1,3-Dichloropropene
Chloropicrin SON	NONE
23C0072-21 HA10-0 [Solid] Sampled 3/7/2023 1:50:00PM	
% Solids	NONE
131	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
8260D	cis & trans 1,3-Dichloropropene
Chloropicrin SON	NONE
23C0072-22 HA10-2-3 [Solid] Sampled 3/7/2023 2:16:00PM	
% Solids	NONE
131	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
8260D	cis & trans 1,3-Dichloropropene
Chloropicrin SON	NONE
23C0072-23 HA11-0 [Solid] Sampled 3/7/2023 2:22:00PM	
% Solids	NONE
131	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
8260D	cis & trans 1,3-Dichloropropene
Chloropicrin SON	NONE

EA Engineering Honolulu
615 Piikoi Street, Suite 515
Honolulu, HI 96814

Project: Othello
Project Number: Othello
Project Manager: Hannah Dennis

Reported: 03/17/2023 16:25

Analysis	Comments
23C0072-24 HA11-2-3 [Solid] Sampled 3/7/2023 2:29:00PM	
% Solids	NONE
131	NONE
350.1	NONE
353.2 Nitrate/N-Nitrite/N (TOXN)	NONE
8260D	cis & trans 1,3-Dichloropropene
Chloropicrin SON	NONE
	Metam Sodium only

23C0072

Sample Receipt Log

Default Cooler

Samples Received at: **2.0°C**

Custody Seals	Yes	Were all containers sealed in separate bags?	Yes
Containers Intact	Yes	Did all containers arrive in good condition?	Yes
COC/Labels Agree	Yes	Correct containers/preserv. for tests indicated?	Yes
Preservation Confirmed	Yes	Sufficient volume sent for tests requested?	Yes
Received On Ice	Yes	Were bubbles absent in volatile samples?	No
Was a chain of custody received?	Yes	Sufficient remaining holding time for analyses?	Yes
COCs complete/signed in the appropriate places?	Yes	pH of non-VOA preserved containers documented?	No
Sample labels complete? Sample ID, date/time, etc.	Yes	Unpreserved vials received for VOA analysis?	No
Did all container labels agree with COCs?	Yes	If "yes", are unpreserved VOA vials noted on ARF?	No



APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611
www.applinc.com

Phone: (559) 275-2175
Fax: (559) 275-4422
coc@applinc.com

CHAIN OF CUSTODY RECORD
C.O.C. 55071

2360072

Report to: PLEASE PRINT
Company Name: EA Engineering Science & Technology Phone: 206-452-5359
Address: 2200 5th Ave, Suite 707
Seattle, WA 98121 Fax: _____
Attn: Wilbur-Ells Othello 1621509 3/7/23
Email: hdennis@east.com

Invoice to: PLEASE PRINT
Company Name: EA Engineering Science & Technology Phone: 206-452-5359
Address: 2200 5th Ave, Suite 707
Seattle, WA 98121 Fax: _____
Attn: _____
Email: hdennis@east.com

Project Name/Number		Sampler (Print)			Analysis Requested/Method Number				Date Shipped:		
Purchase Order Number		Sampler (Signature)							Carrier:		
Sample Identification		Location							Waybill No.:		
		Date Collected							Comments:		
		Time Collected									
		Time Zone									
		No. of Containers									
		Matrix									
		Aq									
		Sed.									
		Soil									
		Ammonia									
		Nitrite/Nitrate									
		8260D									
		8270D									
HA01-0	WE Othello	3/7/23	0911	PST	1			1	1		None
HA01-2-3	WE Othello	3/7/23	0931	PST	1			1	1		
HA03-0	WE Othello	3/7/23	1019	PST	1			1	1		
HA03-2-3	WE Othello	3/7/23	1026	PST	1			1	1		
HA04-0	WE Othello	3/7/23	1039	PST	1			1	1		
HA04-2-3	WE Othello	3/7/23	1045	PST	1			1	1		
FD HA03-0	WE Othello	3/7/23	1021	PST	1			1	1		
FD HA03-2-3	WE Othello	3/7/23	1028	PST	1			1	1		
HA05-0	WE Othello	3/7/23	1119	PST	3			3	3		MS/MSD
HA05-2-3	WE Othello	3/7/23	1132	PST	3			3	3		MS/MSD
HA02-0	WE Othello	3/7/23	0944	PST	1			1	1		↓
Shuttle Temperature: <u>On ice RIC3/2C</u>		Turnaround Requested: Check one <u>3/7/23</u> ☐ Standard 2-3 wk ☐ One week ☒ 3 days ☐ 24/48 Hrs. ☒ Other: <u>5 day</u>								Sample Disposal: ☐ Return to client ☒ Disposal by Lab (30-day retention)	
Relinquished by sampler: <u>Brew Roberts / Drew Roberts</u>		Date: <u>3/8/23</u>	Time: <u>1215</u>	Received by: <u>FedEx</u>		Relinquished by:		Date:	Time:	Received by:	
Relinquished by:		Date:	Time:	Received by:		Relinquished by:		Date: <u>3-9-23</u>	Time: <u>940</u>	Received at lab by: <u>[Signature]</u>	

White: Return to client with report

Yellow: Laboratory Copy

See reverse side for Container Preservative and Sampling Information



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908 N Temperance Ave
Clovis, CA 93611
www.applinc.com

CHAIN OF CUSTODY RECORD
Phone: (559) 275-2175
Fax: (559) 275-4422
coc@applinc.com C.O.C. 55070

Report to: PLEASE PRINT Company Name: <u>EA Engineering, Science, & Tech</u> Phone: <u>206-452-5359</u> Address: <u>2200 5th Ave, Suite 707</u> <u>Seattle, WA 98121</u> Fax: <u> </u> Attn: <u> </u> Email: <u>ndennis@eaest.com</u>	Invoice to: PLEASE PRINT Company Name: <u>EA Engineering, Science, & Tech</u> Phone: <u>206-452-5359</u> Address: <u>2200 5th Ave, Suite 707</u> <u>Seattle, WA 98121</u> Fax: <u> </u> Attn: <u> </u> Email: <u>ndennis@eaest.com</u>
---	--

Project Name/Number		Sampler (Print)			No. of Containers		Matrix				Analysis Requested/Method Number												Date Shipped:								
Purchase Order Number		Sampler (Signature)									Ammonia Nitrate/Nitrite 8260D 8270D												Carrier:								
Sample Identification		Location																					Date Collected			Time Collected			Time Zone		
																	Comments:														
HA02-2-3		WE Othello			3/7/23			1100			PST			1															None		
HA00-0		WE Othello			3/7/23			1144			PST			1																	
HA00-2-3		WE Othello			3/7/23			1150			PST			1																	
HA07-0		WE Othello			3/7/23			1221			PST			4						4						1					
HA07-2-3		WE Othello			3/7/23			1239			PST			4						4						1					
HA08-0		WE Othello			3/7/23			1251			PST			4						4						1					
HA08-2-3		WE Othello			3/7/23			1257			PST			4						4						1					
HA09-0		WE Othello			3/7/23			1309			PST			4						4						1					
HA09-2-3		WE Othello			3/7/23			1344			PST			4						4						1					
HA10-0		WE Othello			3/7/23			1350			PST			4						4						1					
HA10-2-3		WE Othello			3/7/23			1410			PST			4						4						1					
Shuttle Temperature: <u>WS</u> <u>DATE</u> <u>REC3/22</u>					Turnaround Requested: Check one ☐ Standard 2-3 wk ☐ One week ☐ 3 days ☐ 24/48 Hrs. ☒ Other: <u>5 days</u>															Sample Disposal: ☐ Return to client ☒ Disposal by Lab (30-day retention)											
Relinquished by sampler:		Date		Time		Received by:				Relinquished by:				Date		Time		Received by:													
Drew Roberts		3/8/2023		1215		Fedex																									
Relinquished by:		Date		Time		Received by:				Relinquished by:				Date		Time		Received at lab by:													
														3-9-23		940															

White: Return to client with report

Yellow: Laboratory Copy

See reverse side for Container Preservative and Sampling Information



APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611
www.applinc.com

Phone: (559) 275-2175
Fax: (559) 275-4422
coc@applinc.com

CHAIN OF CUSTODY RECORD

C.O.C. 55070

Report to: PLEASE PRINT
Company Name: EA Engineering, Science, + Technology Phone: 206-452-5359
Address: 2200 5th Ave, Suite 707
Seattle, WA. 98121 Fax: —
Attn: —
Email: ndennis@eaest.com

Invoice to: PLEASE PRINT
Company Name: EA Engineering, Science, + Technology Phone: 206-452-5359
Address: 2200 5th Ave, Suite 707
Seattle, WA. 98121 Fax: —
Attn: —
Email: ndennis@eaest.com

Project Name/Number		Sampler (Print)			Analysis Requested/Method Number				Date Shipped:									
Purchase Order Number		Sampler (Signature)			Carrier:													
Sample Identification		Location			Waybill No.:													
Date Collected		Time Collected			Comments:													
Wildux Ellis/1021509	Drew Roberts																	
25139	<i>Drew Roberts</i>																	
HAI1-0	WE Othello	3/7/23	1422	PST	4		4	1	1	3	1							None
HAI1-2-3	WE Othello	3/7/23	1429	PST	4		4	1	1	3	1							
3/8/23																		
my <i>BO</i>																		
Shuttle Temperature: <i>ice</i>		Turnaround Requested: Check one			Sample Disposal:													
<i>ON ICE R103/22</i>		☐ Standard 2-3 wk ☐ One week ☐ 3 days ☐ 24/48 Hrs. ☒ Other: <i>5 days</i>			☐ Return to client ☒ Disposal by Lab (30-day retention)													
Relinquished by sampler:		Date	Time	Received by:		Relinquished by:		Date	Time	Received by:								
<i>Drew Roberts</i>		3/8/23	1215	<i>Fedex</i>														
Relinquished by:		Date	Time	Received by:		Relinquished by:		Date	Time	Received at lab by:								
								3-9-23	140	<i>[Signature]</i>								

White: Return to client with report

Yellow: Laboratory Copy

See reverse side for Container Preservative and Sampling Information

CUSTODY SEAL

APPL, Inc.

(559) 275-2175

Initials MC

Date 3/8/23