

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 1 of 15

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

LEAF ZONE

OTHER NAMES

"Solution ID# 3309"

PRODUCT USE

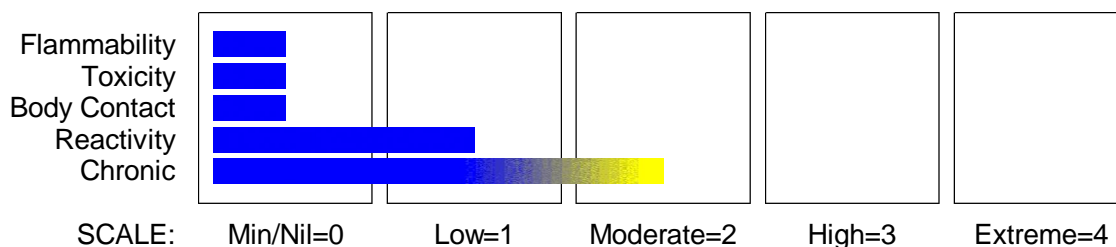
Used according to manufacturer's directions.
For product 576.

SUPPLIER

Company: Mars Fishcare Inc
Address:
50 East Hamilton Street
Chalfont
PA, 18914
USA
Telephone: +1 215 822 8181
Fax: +1 215 822 1906

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS



GHS Classification

Skin Corrosion/Irritation Category 3
Skin Sensitizer Category 1



continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 2 of 15
Section 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HAZARD

WARNING

Determined by Chemwatch using GHS criteria:

H317 H316

May cause allergic skin reaction

Causes mild skin irritation

PRECAUTIONARY STATEMENTS

Prevention

Avoid breathing dust/fume/gas/mist/vapours/spray.

Contaminated work clothing should not be allowed out of the workplace.

Wear protective gloves/protective clothing/eye protection/face protection.

Response

IF ON SKIN: Wash with plenty of soap and water.

If skin irritation occurs: Get medical advice/ attention.

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

Wash contaminated clothing before reuse.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
potassium sulfate	7778-80-5	6.2
EDTA iron sodium salt	15708-41-5	1.2

Section 4 - FIRST AID MEASURES

SWALLOWED

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

EYE

If this product comes in contact with eyes:

- Wash out immediately with water.
- If irritation continues, seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:

- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Other measures are usually unnecessary.

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 3 of 15
Section 4 - FIRST AID MEASURES

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

FIRE/EXPLOSION HAZARD

- Non combustible.
 - Not considered a significant fire risk, however containers may burn.
- Decomposition may produce toxic fumes of: carbon dioxide (CO₂), sulfur oxides (SO_x), metal oxides, other pyrolysis products typical of burning organic material.
May emit poisonous fumes.

FIRE INCOMPATIBILITY

- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

PERSONAL PROTECTION

Glasses:
Chemical goggles.

Gloves:
PVC chemical resistant type.

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- Wipe up.
- Place in a suitable, labelled container for waste disposal.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
 For Domestic Use Only.
 Dec-23-2009
 NC614TDP

CHEMWATCH 4658-25
 Version No:4
 CD 2010/1 Page 4 of 15
 Section 7 - HANDLING AND STORAGE

- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

- Polyethylene or polypropylene container.
- Packing as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



- +: May be stored together
 O: May be stored together with specific precautions
 X: Must not be stored together

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

US OSHA Permissible Exposure Levels (PELs)

Z	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³	Max excursion ppm	Max excursion mg/m ³	Max excursion duration (mins)	TWA F/CC
Z3	Inert or Nuisance Dust: (d) Respirable fraction		5								
Z3	Inert or Nuisance Dust: (d) Total dust		15								

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Notes

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 5 of 15

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Notes
US - Oregon Permissible Exposure Limits (Z3)	potassium sulfate (Inert or Nuisance Dust: (d) Total dust)		10			*
US OSHA Permissible Exposure Levels (PELs) - Table Z3	potassium sulfate (Inert or Nuisance Dust: (d) Respirable fraction)		5			
US OSHA Permissible Exposure Levels (PELs) - Table Z3	potassium sulfate (Inert or Nuisance Dust: (d) Total dust)		15			
US - Hawaii Air Contaminant Limits	potassium sulfate (Particulates not other wise regulated - Total dust)		10			
US - Hawaii Air Contaminant Limits	potassium sulfate (Particulates not other wise regulated - Respirable fraction)		5			
US - Oregon Permissible Exposure Limits (Z3)	potassium sulfate (Inert or Nuisance Dust: (d) Respirable fraction)		5			*
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	potassium sulfate (Particulates not otherwise regulated Respirable fraction)		5			
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	potassium sulfate (Particulates not otherwise regulated (PNOR)(f)- Respirable fraction)		5			
US - Michigan Exposure Limits for Air Contaminants	potassium sulfate (Particulates not otherwise regulated, Respirable dust)		5			
Canada - British Columbia Occupational Exposure Limits	EDTA iron sodium salt (Iron salts - soluble, as Fe)		1		2	
Canada - Ontario Occupational Exposure Limits	EDTA iron sodium salt (Iron salts, water- soluble (as iron))		1			
Canada - Alberta Occupational Exposure Limits	EDTA iron sodium salt (Iron salts, soluble, as Fe)		1			
US ACGIH Threshold Limit Values (TLV)	EDTA iron sodium salt (Iron salts - soluble (as Fe))		1			TLV Basis: upper respiratory tract & skin irritation

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 6 of 15

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Notes
US NIOSH Recommended Exposure Limits (RELs)	EDTA iron sodium salt (Iron salts (soluble, as Fe))		1			
US - Vermont Permissible Exposure Limits Table Z- 1- A Final Rule Limits for Air Contaminants	EDTA iron sodium salt (Iron salts (soluble) (as Fe))		1			
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	EDTA iron sodium salt (Iron salts (soluble) (as Fe))		1			
US - Minnesota Permissible Exposure Limits (PELs)	EDTA iron sodium salt (Iron salts (soluble)(as Fe))		1			
US - California Permissible Exposure Limits for Chemical Contaminants	EDTA iron sodium salt (Iron salts, soluble, as Fe)		1			
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	EDTA iron sodium salt (Iron salts, soluble (as Fe))		1			
US - Hawaii Air Contaminant Limits	EDTA iron sodium salt (Iron salts (soluble) (as Fe))		1		2	(CAS (Varies with compound))
US - Alaska Limits for Air Contaminants	EDTA iron sodium salt (Iron salts (soluble) (as Fe))		1			
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	EDTA iron sodium salt (Iron salts, soluble, (as Fe))		1		3	
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	EDTA iron sodium salt (Iron salts, soluble (as Fe))	-	1	-	2	
US - Washington Permissible exposure limits of air contaminants	EDTA iron sodium salt (Iron salts, soluble (as Fe))		1		3	
Canada - Nova Scotia Occupational Exposure Limits	EDTA iron sodium salt (Iron salts - soluble (as Fe))		1			TLV Basis: upper respiratory tract & skin irritation

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 7 of 15

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Notes
Canada - Prince Edward Island Occupational Exposure Limits	EDTA iron sodium salt (Iron salts - soluble (as Fe))		1			TLV Basis: upper respiratory tract & skin irritation
Canada - Northwest Territories Occupational Exposure Limits (English)	EDTA iron sodium salt (Iron salts, soluble (as Fe))		1		2	
US - Michigan Exposure Limits for Air Contaminants	EDTA iron sodium salt (Iron salts (soluble) (as Fe))		1			
US - Oregon Permissible Exposure Limits (Z1)	EDTA iron sodium salt (Iron salts, soluble, as Fe)		1			*

MATERIAL DATA

LEAF ZONE:

Not available

POTASSIUM SULFATE:

It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace.

At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience). Airborne concentrations must be maintained as low as is practically possible and occupational exposure must be kept to a minimum.

NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

EDTA IRON SODIUM SALT:

The recommended TLV is thought to reduce the likelihood of respiratory irritation and skin irritation from exposure to aerosols and mists of soluble iron salts.

PERSONAL PROTECTION



EYE

- Safety glasses with side shields
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 8 of 15

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

- Wear chemical protective gloves, eg. PVC.
- Wear safety footwear or safety gumboots, eg. Rubber.

OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant: solvent, vapours, degreasing etc., evaporating from tank (in still air)	Air Speed: 0.25- 0.5 m/s (50- 100 f/min)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5- 1 m/s (100- 200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1- 2.5 m/s (200- 500 f/min)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 9 of 15

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Lower end of the range

- 1: Room air currents minimal or favourable to capture
- 2: Contaminants of low toxicity or of nuisance value only
- 3: Intermittent, low production.
- 4: Large hood or large air mass in motion

Upper end of the range

- 1: Disturbing room air currents
- 2: Contaminants of high toxicity
- 3: High production, heavy use
- 4: Small hood - local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Orange brown slightly acidic liquid with no odour; mixes with water.

PHYSICAL PROPERTIES

Liquid.
Mixes with water.

State	Liquid	Molecular Weight	Not Applicable
Melting Range (°F)	Not Available	Viscosity	Not Available
Boiling Range (°F)	Not Available	Solubility in water (g/L)	Miscible
Flash Point (°F)	Not Applicable	pH (1% solution)	Not Available
Decomposition Temp (°F)	Not Available	pH (as supplied)	3.0- 5.0
Autoignition Temp (°F)	Not Applicable	Vapour Pressure (mmHG)	Not Available
Upper Explosive Limit (%)	Not Applicable	Specific Gravity (water=1)	1.08
Lower Explosive Limit (%)	Not Applicable	Relative Vapour Density (air=1)	Not Available
Volatile Component (%vol)	Not Available	Evaporation Rate	Not Available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

For incompatible materials - refer to Section 7 - Handling and Storage.

continued...

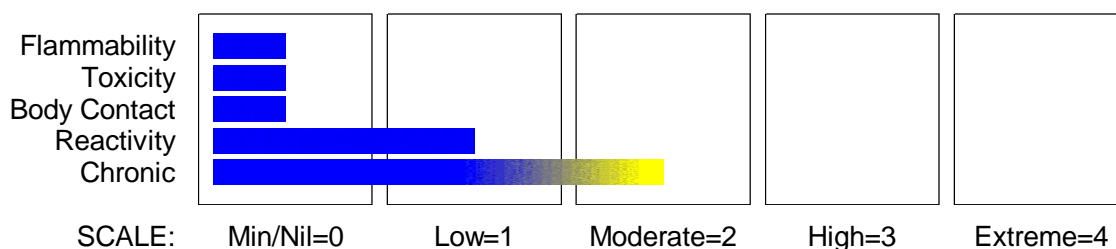
LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 10 of 15

Section 11 - TOXICOLOGICAL INFORMATION

CHEMWATCH HAZARD RATINGS



POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (eg. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

EYE

Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).

SKIN

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

CHRONIC HEALTH EFFECTS

Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

TOXICITY AND IRRITATION

Not available. Refer to individual constituents.

POTASSIUM SULFATE:

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 11 of 15
Section 11 - TOXICOLOGICAL INFORMATION

TOXICITY

Oral (rat) LD50: 6600 mg/kg

IRRITATION

Nil Reported

EDTA IRON SODIUM SALT:

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY

Oral (rat) LD50: 5000 mg/kg

IRRITATION

Nil Reported

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.

For ethylenediaminetetraacetic acid (EDTA) and its salts:

EDTA is a strong organic acid (approximately 1000 times stronger than acetic acid). It has a high affinity for alkaline-earth ions (for example, calcium and magnesium) and heavy-metal ions (for example, lead and mercury). This affinity generally results in the formation of highly stable and soluble hexadentate chelate complexes. EDTA's ability to complex is used commercially to either promote or inhibit chemical reactions, depending on application

EDTA and its salts are expected to be absorbed the lungs and gastrointestinal tract; absorption through the skin is unlikely.

In general, EDTA and its salts are mild skin irritants but considered severe eye irritants. The greatest risk in the human body will occur when the EDTA attempts to scavenge the trace metals used and required by the body. The binding of divalent and trivalent cations by EDTA can cause mineral deficiencies, which seem to be responsible for all of the known pharmacological effects. Sensitivity to the toxic effects of EDTA is, at least in part, related to the deficiency of zinc.

Several short term studies, reported no adverse effects from administering doses up to 5% of EDTA and its salts to lab rodents daily and for several weeks. Only diarrhoea and lowered food consumption were reported in animals given 5% disodium EDTA. However, abnormal effects were seen in animals that were fed mineral deficient diets. Abnormal symptoms were observed in male and female rats fed a low mineral diet (0.54% Ca and 0.013%Fe) with the addition of 0%, 0.5%, or 1% disodium EDTA for 205 days. Rats fed a low percent of disodium EDTA in the diet for short term studies with adequate minerals showed no signs of toxicity. Rats fed 0.5% disodium EDTA for 44-52 weeks were without deleterious effects on weight gain, appetite, activity and appearance. Rats fed 1% disodium EDTA with adequate mineral diet for 220 days showed no evidence of dental erosion.

EDTA and its salts are eliminated from the body, 95% via the kidneys and 5% by the bile, along with the metals and free ionic calcium which was bound in transit through the circulatory system

Trisodium EDTA was tested in a bioassay for carcinogenicity by the National Cancer Institute. Trisodium EDTA administered to male and female rats at low (3,750 ppm) or high (7,500 ppm) concentrations for 103 weeks

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 12 of 15
Section 11 - TOXICOLOGICAL INFORMATION

produced no compound-related signs of chemical toxicity, and tumor incidence was not related to treatment. EDTA and its salts should not pose a teratogenic concern based on previous studies in lab rodents. Study results indicate no teratogenic effects are likely in lab rodents at doses up to 1000 mg/kg. Adequate minerals in the diet and administration of tap water prevented possible teratogenic effects of EDTA during pregnancy. Teratogenic effects observed in lab rodents were likely due to animals maintained on deionised water and a semi-purified diet, and housed in nonmetallic caging. Infants and children will unlikely be exposed to high concentrations as in lab rodents.

Rats given 1250 mg/kg or 1500 mg/kg by gavage exhibited more maternal toxicity than the diet group, but produced only 21% malformations in the offspring at the lower dose. The subcutaneously administration of 375 mg/kg was also maternally toxic, but did not result in malformations in the offspring. Differences in toxicity and teratogenicity are probably related to absorption differences and interaction with metals.

Disodium EDTA ingested during pregnancy is teratogenic in rats at 2% in the diet and greater.

The maximum human consumption of EDTA and its salts in foods was reported to be on the order of 0.4 mg/kg/day. Infants and children also generally drink tap water instead of deionised or distilled water. Even if young infants were to be fed some solid food, given the characteristics of EDTA and its salts, residues are not likely to be present at concentrations for potential sensitivity.

Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:

POTASSIUM SULFATE:

EDTA IRON SODIUM SALT:

LEAF ZONE:

DO NOT discharge into sewer or waterways.

LEAF ZONE:

POTASSIUM SULFATE:

Data from tap water studies with human volunteers indicate that sulfates produce a laxative effect at concentrations of 1000 - 1200 mg/litre, but no increase in diarrhoea, dehydration or weight loss. The presence of sulfate in drinking-water can also result in a noticeable taste; the lowest taste threshold concentration for sulfate is approximately 250 mg/litre as the sodium salt. Sulfate may also contribute to the corrosion of distribution systems. No health-based guideline value for sulfate in drinking water is proposed. However, there is an increasing likelihood of complaints arising from a noticeable taste as concentrations in water increase above 500 mg/litre.

Sulfates are removed from the air by both dry and wet deposition processes. Wet deposition processes including rain-out (a process that occurs within the clouds) and washout (removal by precipitation below the clouds) contribute to the removal of sulfate from the atmosphere.

In soil, the inorganic sulfates can adsorb to soil particles or leach into surface water and groundwater.

Sulfates can be taken up by plants and be incorporated into the parenchyma of the plant.

Sulfate in water can also be reduced by sulfate bacteria (Thiobacilli) which use them as a source of energy.

EDTA IRON SODIUM SALT:

For ethylenediaminetetraacetic acid (EDTA) (and its salts)

Environmental fate:

Based on its physicochemical properties and collateral experimental results, EDTA is not expected to volatilize from soil or water. When released to the atmosphere, EDTA should sorb to particulate matter, and appears to have the potential to photolyse. In water, EDTA may react with photochemically generated hydroxyl radicals (half-life of approximately 230 days or 8 months).

When released to soil, EDTA is mobile and expected to complex trace metals and alkaline earth metals, thereby

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 13 of 15
Section 12 - ECOLOGICAL INFORMATION

causing an increase in the total solubility of the metals. EDTA may eventually predominate as the Fe(III) chelate in acidic soils and as the Ca chelate in alkaline soils. EDTA and its chelates are expected to leach readily through soil. When released to water, EDTA is also expected to form soluble complexes with trace metals and alkaline earth metals. It would not be expected to sorb appreciably to sediments or suspended solids in water, and is known not to be retained or altered chemically in typical water treatment facilities

. However depending upon speciation and local conditions, some sorption (approximately 6 to 25%) occurred within a contact time of one month in a sediment removed from a lake in Finland

When released to soil or water EDTA is slow to degrade, with aerobic biodegradation (mineralisation) being the dominant mechanism. Possible biodegradation products include ethylenediamine triacetic acid, iminodiacetic acid, N,N-ethylenediamine diacetic acid, ethylenediamine monoacetic acid, nitrilotriacetic acid and glycine

Recalcitrance to degradation is associated with the high thermodynamic stability of metal complexes and is problematic for treatment facilities. In a variety of representative soils, common values for the degree of aerobic metabolism of EDTA at a temperature of 30 C and soil concentrations of 2-4 ppm are 13-45% after 15 weeks and 65-70% after 45 weeks

Biodegradation in subsoil or under anaerobic conditions is essentially negligible.

Abiotic degradation in the environment, except for photolysis, is also negligible. Results in sediments were similar to those for soil.

Although EDTA is slow to degrade under typical environmental conditions, based on experimental results with bluegill sunfish and its intrinsic physicochemical properties (ionic nature and water solubility), EDTA is not expected to bioconcentrate

Ecotoxicity:

For EDTA and various salts

Fish LC50 (96 h): 20-430 mg/l

Daphnia LC50 (48 h): 14-100 mg/l

Green algae EC50 (96 h): 3-60 mg/l

EDTA compounds range from practically non-toxic to moderately toxic on an acute basis depending on the salt.

Algae and invertebrates are among the most sensitive species based on predictive modeling for acute and chronic endpoints for EDTA, depending on the compound. EDTA and its salts also do not appear to be very toxic for terrestrial wild mammals and adverse effects from reasonably expected agricultural uses are not expected.

Polyanionic monomers, for example, ethylenediaminetetraacetic acid (EDTA) are of concern only for their toxicity to green algae. Toxicity to algae is moderate and it appears that the mode of toxic action of these polyanionic monomers is overchelation of nutrient elements needed by algae for growth. Polyanionic monomers are assessed similarly to the polycarboxylic acid polymers.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
EDTA iron sodium salt	HIGH		LOW	MED

Section 13 - DISPOSAL CONSIDERATIONS

- Recycle where possible
Otherwise ensure that:
- licenced contractors dispose of the product and its container.
- disposal occurs at a licenced facility.

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 14 of 15

Section 14 - TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

Section 15 - REGULATORY INFORMATION

REGULATIONS

Regulations for ingredients

potassium sulfate (CAS: 7778-80-5) is found on the following regulatory lists;

"Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (French)", "CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP", "International Council of Chemical Associations (ICCA) - High Production Volume List", "OECD Representative List of High Production Volume (HPV) Chemicals", "US DOE Temporary Emergency Exposure Limits (TEELs)", "US EPA High Production Volume Chemicals Additional List", "US Food Additive Database", "US Toxic Substances Control Act (TSCA) - Inventory"

EDTA iron sodium salt (CAS: 15708-41-5, 15708-42-6, 149022-26-4) is found on the following regulatory lists;

"Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (French)", "International Council of Chemical Associations (ICCA) - High Production Volume List", "OECD Representative List of High Production Volume (HPV) Chemicals", "US EPA High Production Volume Program Chemical List", "US Toxic Substances Control Act (TSCA) - Inventory"

No data for Leaf Zone (CW: 4658-25)

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
EDTA iron sodium salt	15708- 41- 5, 15708- 42- 6, 149022- 26- 4

CONTACT

Mars Fishcare

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net/references.

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

For detailed advice on Personal Protective Equipment, refer to the following U.S. Regulations and Standards:

OSHA Standards - 29 CFR:

1910.132 - Personal Protective Equipment - General requirements

1910.133 - Eye and face protection

1910.134 - Respiratory Protection

continued...

LEAF ZONE

Chemwatch GHS Safety Data Sheet
For Domestic Use Only.
Dec-23-2009
NC614TDP

CHEMWATCH 4658-25
Version No:4
CD 2010/1 Page 15 of 15
Section 16 - OTHER INFORMATION

1910.136 - Occupational foot protection
1910.138 - Hand Protection
Eye and face protection - ANSI Z87.1
Foot protection - ANSI Z41
Respirators must be NIOSH approved.

This document is copyright. Apart from any fair dealing for the purposes of private study, research, review or criticism, as permitted under the Copyright Act, no part may be reproduced by any process without written permission from CHEMWATCH. TEL (+61 3) 9572 4700.

Issue Date: Dec-23-2009
Print Date: May-20-2010