



# SAFETY DATA SHEET

RADIATE®

## Section 1. Identification

**Product identifier** : RADIATE®  
**SDS #** : 929  
**Other means of identification** : Fertilizers Act: 2015035S  
**Product type** : Liquid.

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

Identified uses
Plant growth regulator.
Uses advised against
Not available.

**Supplier's details** : Loveland Products Canada, Inc.  
 789 Donnybrook Drive  
 Dorchester, Ontario N0L 1G5  
**Telephone no.** : 1-800-328-4678 (Customer Service)  
**Email** : retail-SDS2@nutrien.com  
**Emergency telephone number (with hours of operation)** : CHEMTREC (24 hrs) 1-800-424-9300 or +1-703-527-3887

## Section 2. Hazard identification

### Classification in accordance with the Hazardous Products Regulations (SOR/2015-17; SOR/2022-272)

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

### GHS label elements

**Hazard pictograms** : Not applicable.  
**Signal word** : Warning  
**Hazard statements** : Causes eye irritation.  
**Precautionary statements**  
**General** : Read carefully and follow all instructions. Keep out of reach of children. If medical advice is needed, have product container or label at hand.  
**Prevention** : Wash thoroughly after handling.  
**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 advice or attention.  
**Storage** : Not applicable.  
**Disposal** : Not applicable.

## Section 3. Composition/information on ingredients

**Substance/mixture** : Mixture

Ingredient name	% (w/w)	Identifiers
indole-3-butyric acid	0.85	CAS: 133-32-4
kinetin	0.15	CAS: 525-79-1

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 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** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Never give anything by mouth to an unconscious person. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

- Eye contact** : Causes eye irritation.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : May cause slight transient irritation.
- Ingestion** : No known significant effects or critical hazards. Over-exposure by ingestion is unlikely under normal working conditions.

#### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:  
irritation  
watering  
redness
- Inhalation** : No specific data.
- Skin contact** : No specific data.

## Section 4. First-aid measures

**Ingestion** : No specific data.

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

**Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

**Specific treatments** : Treat symptomatically and supportively.

**Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. Decontamination measures may be necessary. Personnel and equipment must be checked and decontaminated prior to leaving the area.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### Extinguishing media

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

**Unsuitable extinguishing media** : None known.

**Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst.

**Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide

**Special protective actions for fire-fighters** : No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Contain and collect the water used to fight the fire for later treatment and disposal.

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

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

**For non-emergency personnel** : 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 spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

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

**Environmental precautions** : 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

## Section 6. Accidental release measures

- 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.
- Large spill** : Stop leak if without risk. Approach release from upwind. Put on appropriate personal protective equipment (see Section 8). Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Use appropriate equipment to put the spilled substance in a container for reuse or disposal. Recycle to process, if possible.  
or  
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** : Read label before use. Apply this product only as specified on the label. Do not handle until all safety precautions have been read and understood. Put on appropriate personal protective equipment (see Section 8). Avoid contact with eyes, skin and clothing. Do not ingest. 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. 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.
- 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.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

None.

#### Biological exposure indices

No exposure indices known.

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- 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

**Contact your personal protective equipment supplier to verify the compatibility of the equipment for the intended purpose.**

## Section 8. Exposure controls/personal protection

- 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** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

## Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

### Appearance

- Physical state** : Liquid.
- Color** : Yellow.
- Odor** : Odorless.
- Odor threshold** : Not available.
- pH** : 3.71 [Conc. (% w/w): 1%]
- Melting point/freezing point** : <0°C (<32°F)
- Boiling point or initial boiling point and boiling range** : 100°C (212°F)
- Flash point** : Closed cup: >100°C (>212°F)
- Evaporation rate** : Not available.
- Flammability** : Not available.
- Lower and upper explosion limit/flammability limit** : Not available.
- Vapor pressure** :

## Section 9. Physical and chemical properties

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
water	17.5	2.3				

- Relative vapor density** : Not available.  
**Relative density** : 1.01 to 1.05  
**Density** : 1.01 to 1.05 g/cm<sup>3</sup>  
**Bulk density** : 8.42 to 8.77 lb/gal  
**Solubility(ies)** :

Media	Result
water	Easily soluble

- Solubility in water** : Miscible in water.  
**Partition coefficient: n-octanol/water** : Not applicable.  
**Auto-ignition temperature** : Not available.  
**Decomposition temperature** : Not available.  
**Viscosity** : Kinematic (20°C (68°F)): 4.305 mm<sup>2</sup>/s (4.305 cSt)  
 Kinematic (40°C (104°F)): 2.6 mm<sup>2</sup>/s (2.6 cSt)

### Particle characteristics

- Median particle size** : Not applicable.

## Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.  
**Chemical stability** : The product is stable.  
**Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.  
**Conditions to avoid** : Keep away from incompatible materials. Keep away from heat and direct sunlight. Keep from freezing.  
**Incompatible materials** : Strong oxidizers and strong alkalis.  
**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
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## Section 11. Toxicological information

RADIATE®

**Rat - Dermal - LD50**

&gt;5000 mg/kg

**Rat - Oral - LD50**

&gt;5000 mg/kg

**Rat - Inhalation - LC50 Dusts and mists**

&gt;2.13 mg/l [4 hours]

**Conclusion/Summary [Product]** : No known significant effects or critical hazards.

### Skin corrosion/irritation

**Product/ingredient name**

RADIATE®

**Result****Rabbit - Skin - Mild irritant**

**Conclusion/Summary [Product]** : May cause slight transient irritation.

### Serious eye damage/eye irritation

**Product/ingredient name**

RADIATE®

**Result****Rabbit - Eyes - Mild irritant**

**Conclusion/Summary [Product]** : Mildly irritating to the eyes.

### Respiratory corrosion/irritation

**Conclusion/Summary [Product]** : No known significant effects or critical hazards.

### Respiratory or skin sensitization

**Product/ingredient name**

RADIATE®

**Result****Guinea pig - skin**Result: Not sensitizing

### Skin

**Conclusion/Summary [Product]** : No known significant effects or critical hazards.

### Respiratory

**Conclusion/Summary [Product]** : No known significant effects or critical hazards.

### Germ cell mutagenicity

**Conclusion/Summary [Product]** : No known significant effects or critical hazards.

### Carcinogenicity

**Conclusion/Summary [Product]** : No known significant effects or critical hazards.

### Reproductive toxicity

## Section 11. Toxicological information

**Conclusion/Summary [Product]** : No known significant effects or critical hazards.

### Specific target organ toxicity (single exposure)

**Product/ingredient name**

indole-3-butyric acid

**Result**

SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

### Specific target organ toxicity (repeated exposure)

Based on available data, the classification criteria are not met.

### Aspiration hazard

Based on available data, the classification criteria are not met.

### Information on the likely routes of exposure

Dermal contact. Eye contact. Ingestion.

### Potential acute health effects

- Eye contact** : Causes eye irritation.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : May cause slight transient irritation.
- Ingestion** : No known significant effects or critical hazards. Over-exposure by ingestion is unlikely under normal working conditions.

### 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** : No specific data.

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

#### Short term exposure

- Potential immediate effects** : See above.
- Potential delayed effects** : See below.

#### Long term exposure

- Potential immediate effects** : See above.
- Potential delayed effects** : See below.

### Potential chronic health effects

**Conclusion/Summary [Product]** : No known significant effects or critical hazards.

**General** : No known significant effects or critical hazards.

## Section 11. Toxicological information

- Carcinogenicity** : No known significant effects or critical hazards.  
**Mutagenicity** : No known significant effects or critical hazards.  
**Reproductive toxicity** : No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
indole-3-butyric acid	100	N/A	N/A	N/A	N/A

### Other information

Not available.

## Section 12. Ecological information

### Toxicity

#### Product/ingredient name

indole-3-butyric acid

#### Result

**Acute - EC50 - Fresh water**

US EPA

Daphnia - Water flea - *Daphnia magna*

57 ppm [48 hours]

kinetin

**Acute - EC50 - Fresh water**

Daphnia - Water flea - *Daphnia magna* - Egg

0.64 mg/l [48 hours]

#### Conclusion/Summary [Product]

: Based on available data, the classification criteria are not met. Apply this product only as specified on the label. 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 and rinsate.

### Persistence and degradability

Not available.

### Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
indole-3-butyric acid	2.3	-	Low

### Mobility in soil

#### Soil/Water partition coefficient

: Not available.

## Section 12. Ecological information

### Other adverse effects

No known significant effects or critical hazards.

## Section 13. Disposal considerations

**Disposal methods** : Follow disposal instructions on label. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Triple rinse containers with water and add the rinse water to the spray tank. Do not reuse containers for any purpose. Disposal should be in accordance with applicable regional, national and local laws and regulations. Recycling decontaminated containers is the best option of container disposal. Do not contaminate water, food, or feed by storage or disposal.

## Section 14. Transport information

	<b>TDG Classification</b>	<b>DOT Classification</b>	<b>IMDG</b>	<b>IATA</b>
<b>UN number</b>	Not regulated.	Not regulated.	Not regulated.	Not regulated.
<b>UN proper shipping name</b>	-	-	-	-
<b>Transport hazard class(es)</b>	-	-	-	-
<b>Packing group</b>	-	-	-	-
<b>Environmental hazards</b>	No.	No.	No.	No.

**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.

## Section 15. Regulatory information

### Canadian lists

**Canadian NPRI** : None of the components are listed.

**CEPA Toxic substances** : None of the components are listed.

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol

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.

## Section 15. Regulatory information

### Inventory list

<b>Australia</b>	: Not determined.
<b>Canada</b>	: All components are listed or exempted.
<b>China</b>	: Not determined.
<b>Eurasian Economic Union</b>	: <b>Russian Federation inventory</b> : All components are listed or exempted.
<b>Japan</b>	: <b>Japan inventory (CSCL)</b> : Not determined. <b>Japan inventory (ISHL)</b> : Not determined.
<b>New Zealand</b>	: All components are listed or exempted.
<b>Philippines</b>	: Not determined.
<b>Republic of Korea</b>	: All components are listed or exempted.
<b>Taiwan</b>	: All components are listed or exempted.
<b>Thailand</b>	: Not determined.
<b>Turkey</b>	: Not determined.
<b>United States</b>	: All components are active or exempted.
<b>Viet Nam</b>	: All components are listed or exempted.

## Section 16. Other information

### History

**Date of issue/Date of revision** : 2/20/2025

**Date of previous issue** : No previous validation

**Version** : 1

### Key to abbreviations

: ATE = Acute Toxicity Estimate  
 BCF = Bioconcentration Factor  
 DOT = Department of Transportation  
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
 HPR = Hazardous Products Regulations  
 IATA = International Air Transport Association  
 IBC = Intermediate Bulk Container  
 IMDG = International Maritime Dangerous Goods  
 IMO = International Maritime Organization  
 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)  
 N/A = Not available  
 SGG = Segregation Group  
 TDG = Transportation of Dangerous Goods  
 UN = United Nations

### Procedure used to derive the classification

Classification	Justification
EYE IRRITATION - Category 2B	On basis of test data

✔ Indicates information that has changed from previously issued version.

### Notice to reader

## Section 16. Other information

Supply chain partners must ensure they pass this SDS, and all other relevant safety information to their customers.

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