SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Trade name: Urea
Chemical name: Urea
Index number according to Regulation No. 1272/2008: not applicable.
CAS number: 57-13-6
EC number: 200-315-5
REACH registration no: - 01-2119463277-33-XXXX

1.2 Relevant identified uses of the substance or mixture and uses advised against
1.2.1 Uses:
as fertilizer, for reduction of emission of formaldehyde.

Industrial use
- Industrial use: production of material (continuous and periodic production), including handling, warehousing, quality control;
- Industrial use: formation of chemicals, cosmetics and fertilizers (PC4, PC9a, PC12, PC21, PC39);
- Industrial use [SU8, SU9]: industrial use as an intermediate for the production of resins, polymers, pharmaceuticals, melamine, as raw material in the cement, steel, glass industry;
- Industrial use: industrial use as a cleaning agent and a support agent;
- Industrial use: exhaust gas cleaning - reduction of NOx gas;
- Industrial use [SU23]: use in sewage treatment systems;
- Industrial use [SU2a]: mining and quarrying industry;
- Industrial use [SU0]: for impregnation of packing paper (PC0).

Professional use
- Professional use: professional use as a cleaning and media support agent;
- Professional use: professional use as an intermediate product in the production of resins and polymers;
- Professional use [SU19]: as freezing agent;
- Professional use [SU1]: professional use as fertilizers (PC12);

Further customer use
- Further customer use: further customer use as fertilizers or in cosmetics industry (PC12, PC39).

Use in articles
Production of packing paper.

1.2.2 Uses advised against: None

1.3 Details of the supplier of the safety data sheet
Manufacturer/Importer/Supplier: Company name: AB „Achema”
full address: Jonalaukio k., Ruklos sen., LT55296
Tel.: +370 349 56465, +370 349 52074.
URL website: www.achema.lt
Person responsible for the Safety Data Sheet (with e-mail address): A. Lisauskas, a.lisauskas@achema.com
1.4 Emergency telephone number
Please contact: Poison Information and Control Office in the Republic of Lithuania by phone +370 52362052, cell phone +370 687 53378, on site http://www.apsinuodijau.lt/information-in-english/ or by the Common emergency Center by 112.
Helpdesk services work: 24 hours a day, 365 days a year.
Other remarks (language in which assistance is provided): assistance is provided in Lithuanian.
Poison Control Centers in Europe are available on site http://www.who.int/pcs/poisons/centre/directory/euro/en/.
Telephone numbers of poison control centers in the European Economic Area: IRELAND (Dublin) +353 1 8379964; AUSTRIA (Vienna) +43 1 406 43 43; BELGIUM (Brussels) +32 70 245 245; BULGARIA (Sofia) +359 2 9154 409; CZECH REPUBLIC (Praha) +420 224 919 293; DENMARK (Copenhagen) 82 12 12 12; ESTONIA (Tallinn) 112; GREECE (Athens) +30 10 779 3777; ICELAND (Reykjavik) +354 525 111, +354 543 2222; ITALY (Rome) +39 06 305 4343; LATVIA (Riga) +371 704 2468; MALTA (Valletta) 2425 0000; NORWAY (Oslo) 22 591300; NETHERLANDS (Bilthoven) +31 30 274 88 88; FRANCE (Paris) +33 1 40 0548 48; FINLAND (Helsinki) +358 9 471 9777; HUNGARY (Budapest) 06 80 20 11 99; GERMANY (Berlin) +49 30 19240.

SECTION 2. HAZARD IDENTIFICATION

2.1 Classification of the substance
Classification in accordance with Regulation 1272/2008 [CLP]:
Is not sufficient for classification under Regulation No.1272/2008

2.2 Label elements
Labeling in accordance with Regulation 1272/2008 [CLP]:
P102: Keep out of reach of children;
P280: Wear protective gloves/ protective clothing/ eye (face) protection,
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing,
P401: Store away from food, drinks and animal feeds.

2.3 Other hazards
According to Annex XIII of Regulation (EC) No 1907/2006, no PBT and vPvB assessment has been conducted.
The product is non-flammable. At temperatures above 130 °C, decomposes to ammonia and isocyanic acid.
Freely soluble in water. Hygroscopic.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS
3.1 Substances
According to the REACH Regulation (EC) No 1907/2006 the product is a mono-constituent substance containing no hazard components.

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>ID No. in accordance with Regulation (EB) No. 1272/2008</th>
<th>IUPAC name</th>
<th>Purity, %</th>
<th>EC No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-13-6</td>
<td>Not listed</td>
<td>Urea</td>
<td>98,8÷100</td>
<td>200-315-5</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST-AID MEASURES

4.1 Description of first aid measures
The material can get through: urea dust through the respiratory tract. 
Inhalation: remove the contaminated person from the exposure area; in severe cases, or if recovery is not fast or complete, seek specialized medical advice.
Skin contact: wash the affected area with plenty of water; remove contaminated clothing and wash them before reuse. If irritation persists, seek medical advice. 
Eye contact: rinse/irrigate eyes with plenty of water for at least 10 minutes; if irritation persists, seek medical advice. 
Ingestion: rinse mouth with water, do not induce vomiting; if the patient is conscious, give water to drink. If the patient feels unwell, seek medical advice. 
Individual protection measures recommended for first-aiders: Comply with general hygiene requirements. Avoid inhalation of urea dust. Product contact with eyes is prohibited. Avoid repeated or prolonged contact with skin or clothing. Wear suitable protective clothing and gloves.

4.2 Most important symptoms and effects
Inhaled: there is no available data on the inhalation of the product which causes adverse symptoms.
Skin Contact: may cause skin irritation on prolonged contact. 
Eye Contact: eye irritation.
Ingestion: the product is not acutely toxic. Possible symptoms are: nausea, vomiting, possible fainting.

4.3 Indication of any immediate medical attention and special treatment needed
None.

SECTION 5. FIRE-FIGHTING MEASURES
5.1 Extinguishing media
Suitable: CO₂, water foam jet.
Not suitable: chemical jet.

5.2 Special hazards arising from the substance or mixture
Heated under vacuum at it’s melting point (120-130 ºC) it sublimes without change. At 160-190 ºC under vacuum urea sublimes and is converted to ammonium cyanate. At atmospheric pressure at 180-190 ºC it sublimes completely and decomposes partially to biuret, cyanic acid. At higher temperature than 200 ºC urea sublimes and is converted to ammonium and cyanic acid. Self-inflammable temperature: +715 ºC.

5.3 Advice for firefighters
Wear protective work clothing, safety boots, protective gloves, eye, face and respiratory protective equipment according to LST EN 469.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
6.1.1 For none help providing staff: In the event of an accident, safely leave the place using personal protective equipment.
6.1.2 For help providing staff:

6.2 Environmental precautions
In case of accidental spillage or spillage, do not allow to enter drains, surface or ground water.

6.3 Methods and material for containment and cleaning up
Collect mechanically. Dispose of the material collected according to section 13 regulations. Depending on the degree of contamination dispose of by use on farm or to an authorized waste facility (e.g. producer). Wash up residues with much water.

6.4 Reference to other sections
See section 8 for personal protective equipment and section 13 for waste disposal.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Technical measures/ Precautions:
General occupation hygiene: keep common occupational hygiene requirements. Prevent formation of dust. Avoid contact with the eyes. Wear protective glasses, while spraying the fertilizer dissolved in water. Avoid repeated or prolonged contact with skin or clothing. When handling the product for longer periods of time, wear adequate protective equipment – gloves and goggles. Wear suitable protective clothing. After working with fertilizers – wash your hands.
SC „Achema”

Safety data sheet
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II with all subsequent amendments and supplements and EC Regulation No. 830/2015

Urea

7.2 Conditions for safe storage, including any incompatibilities
Packed urea may be stored outdoors for 9 months, if protected from direct sunlight, precipitation, humidity (rain or snow, do not let water be collected on the package or package lay in water). The product may also be stored in closed, dry and ventilated storing premises. Bulk product must be stored in closed, dry and ventilated storing premises for 12 months. Product packed in large bags should be kept in vertical position, on pallets without protruding nails and/or sharp wood splinters, which could damage the bag. Product packed in large bags and stored in stacks cannot be placed one on the other in not more than 4 rows.
Requirements to packages: fertilizer is packed into polyethylene, polypropylene or paper bags, large bags or other packages.
Bulk fertilizer may be loaded to the transportation or the purchaser’s package that ensures safe product transportation and keeping.
Directions for limited allowable quantities of the substance/ preparation to be stored under the specified conditions; maximum allowable limit for long-term exposure: 10 mg/m³.
Incompatible products: Contact with other (unpacked) chemical substances is not allowed.
The product is not subject to requirements according to the Government Resolution No. 966 of the Government of the Republic of Lithuania of 2004.08.07 „On Approval of the Description of the List and Attribution Criteria for List of Materials, Mixtures or Preparations of Hazardous Substances in the Hazardous Objects“ (Official Gazette, 2004, No. 130-4649) with all subsequent amendments and supplements) or according to European Parliament and Council regulation 2012/18/EU I annex part 2.

7.3 Specific final uses
All final uses specified in subsection 1.2.1.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Regulated occupational exposure limit values:
Maximum allowable value for long-term exposure: 10 mg/m³ according to urea (applicable in Lithuania according to HN 23).
Maximum allowable value for short-term exposure: unknown.

DNEL values for workers are calculated using assessment factors.

<table>
<thead>
<tr>
<th>Workers exposure</th>
<th>Exposure mode</th>
<th>Exposure type</th>
<th>Hazardous</th>
<th>Physicochemical property that could have the greatest negative effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Systemic effect – long lasting</td>
<td>DNEL: 292 mg/m³</td>
<td>Toxicity</td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td>Systemic effect - acute</td>
<td>DNEL: 292 mg/m³</td>
<td>Toxicity</td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td>Local effect – long lasting</td>
<td>The hazard is not known, but there is no need to collect more hazard information because there is no human exposure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td>Local effect – acute</td>
<td>The hazard is not known, but there is no need to collect more hazard information because there is no human exposure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Urea

<table>
<thead>
<tr>
<th>Dermal</th>
<th>Systemic effect – long lasting</th>
<th>DNEL: 580 mg/kg bw/day</th>
<th>Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal</td>
<td>Systemic effect - acute</td>
<td>DNEL: 580 mg/kg bw/day</td>
<td>Toxicity</td>
</tr>
<tr>
<td>Dermal</td>
<td>Local effect – long lasting</td>
<td>The hazard is not known</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>Local effect – acute</td>
<td>The hazard is not known</td>
<td></td>
</tr>
<tr>
<td>If in eyes</td>
<td>Local effect</td>
<td>The hazard is not known</td>
<td></td>
</tr>
</tbody>
</table>

Public exposure

<table>
<thead>
<tr>
<th>Exposure mode</th>
<th>Exposure type</th>
<th>Hazardous</th>
<th>Physicochemical property that could have the greatest negative effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Systemic effect – long lasting</td>
<td>DNEL: 125 mg/m³</td>
<td>Toxicity</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Systemic effect - acute</td>
<td>DNEL: 125 mg/m³</td>
<td>Toxicity</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Local effect – long lasting</td>
<td>The hazard is not known, but there is no need to collect more hazard information because there is no human exposure</td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td>Local effect – acute</td>
<td>The hazard is not known, but there is no need to collect more hazard information because there is no human exposure</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>Systemic effect – long lasting</td>
<td>DNEL: 580 mg/kg bw/day</td>
<td>Toxicity</td>
</tr>
<tr>
<td>Dermal</td>
<td>Systemic effect - acute</td>
<td>DNEL: 580 mg/kg bw/day</td>
<td>Toxicity</td>
</tr>
<tr>
<td>Dermal</td>
<td>Local effect – long lasting</td>
<td>The hazard is not known</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>Local effect – acute</td>
<td>The hazard is not known</td>
<td></td>
</tr>
<tr>
<td>If swallowed</td>
<td>Systemic effect – long lasting</td>
<td>DNEL: 42 mg/kg bw/day</td>
<td>Toxicity</td>
</tr>
<tr>
<td>If swallowed</td>
<td>Systemic effect - acute</td>
<td>DNEL: 42 mg/kg bw/day</td>
<td>Toxicity</td>
</tr>
<tr>
<td>In in eyes</td>
<td>Local effect</td>
<td>The hazard is not known</td>
<td></td>
</tr>
</tbody>
</table>

Predicted Inactive Concentration (s) (PNEC)

<table>
<thead>
<tr>
<th>Section</th>
<th>Hazardous</th>
<th>Comments / Grounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh water</td>
<td>PNEC aqua (fresh water): 0,47 mg/l</td>
<td>Exposure factor: 100</td>
</tr>
<tr>
<td></td>
<td>Periodic releases: there is no PNEC</td>
<td>Extrapolation method: exposure factor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The PNEC of water was derived using an effect factor of 100, up to 47 mg / L in aeruginosa (the most sensitive culture)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Justification for the re-release of the PNEC: Separate PNEC re-release was not proposed.</td>
</tr>
<tr>
<td>See water</td>
<td>PNEC aqua (see water): 0,047 mg/L</td>
<td>Exposure factor: 100</td>
</tr>
<tr>
<td></td>
<td>Periodic releases: there is no PNEC</td>
<td>Extrapolation method: exposure factor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No effect is expected due to the inclusion of urea in the urea cycle.</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>There is no probability of sediment exposure</td>
<td>No data available: It is proposed that the PNEC value should not be set.</td>
</tr>
<tr>
<td>See water sediment</td>
<td>There is no probability of sediment exposure</td>
<td>No data available: It is proposed that the PNEC value should not be set.</td>
</tr>
<tr>
<td>Microorganisms in sewage treatment system</td>
<td>The hazard is not known</td>
<td>Urea is naturally low toxic to microorganisms and is used as a nutrient and source of nitrogen (N). Based on this, PNEC is not proposed.</td>
</tr>
<tr>
<td>Soil</td>
<td>No hazard to soil</td>
<td>No data available: It is proposed that the PNEC value should not be set.</td>
</tr>
</tbody>
</table>
8.2 Exposure controls

Dispose of rinse water in accordance with local and national regulations.

8.2.1 Appropriate engineering controls: Air supply-extraction ventilation.

8.2.2 Individual protection measures, such as personal protective equipment

Respiratory protection: In the event of an accident (for example, accidentally pouring the product), wear mask class P3. Wear dust protection mask with A2B2E2K2P3 filter according to EN 405.

Hand protection: adequate protection gloves according to EN 420, EN ISO 374-1 due to chemical protection, EN 388 due to mechanical protection. Protective gloves must be made of one of the materials listed in the table, at least as specified, for penetration of thickness and resistance.

<table>
<thead>
<tr>
<th>Gloves material</th>
<th>Glove thickness, mm</th>
<th>Penetration time of glove material, min*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl rubber - butyl</td>
<td>0.50</td>
<td>&gt; 480</td>
</tr>
<tr>
<td>Nitrile rubber/Nitrile latex</td>
<td>0.35</td>
<td>&gt; 480</td>
</tr>
<tr>
<td>Fluorocarbon rubber</td>
<td>n.m. 0.40</td>
<td>&gt; 480</td>
</tr>
<tr>
<td>Polychloroprene</td>
<td>n.m. 0.50</td>
<td>&gt; 480</td>
</tr>
<tr>
<td>Natural rubber/Natural latex</td>
<td>0.50</td>
<td>&gt; 480</td>
</tr>
<tr>
<td>Polyvinyl chloride</td>
<td>0.50</td>
<td>&gt; 480</td>
</tr>
</tbody>
</table>

* the breakthrough time of the glove material is the time taken for the product to come in full contact with the glove. The shorter the penetration time, the less resistant the glove material to the product.

Skin protection creams do not adequately protect from the product.

Please note that the penetration time of the glove material in this section has been set at 22 °C and using pure ammonium nitrate. When using calcium ammonium nitrate consisting of a mixture of ammonium nitrate and dolomite, the time of penetration of the glove material should be similar in size. When working at a higher temperature, the resistance of the glove material may be considerably lower, and in such cases, the permitted life of the glove must be shortened. We recommend that when you start using a new type or other manufacturer's gloves, make sure that they are chemically and mechanically resistant to working conditions. If you have any questions about the suitability of the gloves, please contact the manufacturers / suppliers of gloves.

The inside of the gloves should not contain powders which can cause hand skin allergies.

Before using the gloves, please always make sure there are no tears, cracks, or other defects. When the work is finished, the gloves must be cleaned and washed thoroughly before they are dry. After work, care must be taken to the hand skin.

Eye and (or) face protection: protective hermetic goggles according to EN 166.

Skin and body protection: Working clothes according EN ISO 13688, special working boots according to EN ISO 20345.

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.
### 9.1 Information on basic physical and chemical properties

**Appearance:** white granules at a temperature of 20 °C and a pressure of 101.3 kPa.

**Granulomere:**
- between 2 mm and 5 mm, not less than 93%;
- smaller than 2 mm, not more than 5%;
- less than 1 mm, non-refined;
- more than 6 mm – none.

**Odor:** light ammonia smell.

**pH-value (100 g/l) at 20 ºC:** 9.2 ÷ 9.5

**Melting/Freezing temperature:** 407 K or 134 ºC at a pressure of 101.3 kPa. Justification: according to the literature, CRC Handbook, 2006 – the melting point at atmospheric pressure is 133.3 ºC. The melting temperature determined by the differential scanning calorimetry method was 134 ºC (source: Gwerder et al, 2009).

**Primary boiling temperature and interval of boiling temperature:** at 101.3 kPa, the product decomposes without reaching the boiling point (source: CRC Handbook, 2006).

**Flash-point:** Based on column 2 of Annex VII to the REACH Regulation, no clarification is provided: Urea is a solid material which decomposes below the melting point, so it is technically impossible to determine the flash point.

**Speed of vaporization:** Not applicable to solids.


**Limit values of flammability or explosion:** None flammable. Non-combustible.

**Vapor pressure:** 0.002 Pa at a temperature of 298 K. Justification: Jones, 1960, states that the vapor pressure is equal to 1.2 x 10 – 5mmHg at 25 °C.

**Vapor density:** Not applicable to solids.

**Relative density:** 1.33 g/cm³. Value used for CSA: 1330 at 20 ºC The relative density of urea was determined to be 1.33 g/cm³ at 20 ºC and is also reported at CRC Handbook, 2006 to be 1.323 g/cm³ at 20 ºC.

**Solubility:**
Highly soluble in water: 624 000 mg / l at 20 ºC. Justification: Solubility in water was determined at 624 g / l at 20 ºC (source – Gwerder et al, 2009). In the literature – Yalkowsky, 1989 – the declared solubility is 545000 mg / l at 25 ºC. Highly soluble in acetone (extractable of water);
Soluble in glycerin (33,3 (G/G) at 15 ºC);
Soluble in ethanol (5,1 (G/G) at 20 ºC) (13,1 (G/G) at 60 ºC);
Insoluble in chloroform, ether and xylene.

**Partition coefficient: n-octanol/water:** (Log Kow (Log Pow)): -1.73 at 20 ºC. Value used for CSA: log Kow (Pow): – 1.73 at 20 ºC.

**Auto ignition temperature:** not characteristic at a pressure of 1013 hPa. There was no evidence of autoinflammability in a proprietary study (Gwerder etal, 2009): the substance melted at 134 ºC. Below this temperature there was no selfignition of the sample.

**Viscosity:** Not applicable to solids.

**Explosive properties:** based to column 2 of Annex VII to the REACH Regulation, no explanation is given: Urea is a non-combustible substance and does not contain any groups that could lead to explosive properties.

**Oxidizing properties:** based on column 2 of Annex VII to the REACH Regulation, no explanation is given: Urea is not an oxidizing agent based on the chemical structure of urea, the experience with urea, other data found in the scientific literature, the criteria applicable under the ADR (urea contains oxygen, but it is connected only with coal).

### 9.2 Other information:
none.
SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
Stable under regular conditions of transportation and use (see section 7, “Handling and Storage”).

10.2 Chemical stability
Stable under regular storage, transportation and using conditions (see section 7, “Handling and Storage”). Need for and the presence of stabilizers: not necessary.

10.3 Possibility of hazardous reactions
None

10.4 Conditions to avoid
High ambient temperature.

10.5 Incompatible materials
Contact with other (unpacked) chemical substances is not allowed.

10.6 Hazardous decomposition products
Heated under vacuum at it’s melting point (120-130 ºC) it sublimes without change. At 160-190 ºC under vacuum urea sublimes and is converted to ammonium cyanate. At atmospheric pressure at 180-190 ºC it sublimes completely and decomposes partially to biuret, cyanic acid and alkali metals. At higher temperature than 200 ºC urea sublimes and is converted to ammonium and cyanic acid.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

**Acute toxicity:**
Human information: no available data.

**Effects on animals**

<table>
<thead>
<tr>
<th>Exposure dose / concentration</th>
<th>Routes</th>
<th>Method</th>
<th>Symptoms / delayed effects</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50: 14300 mg/kg bw (male)</td>
<td>Rats</td>
<td>OECD 423</td>
<td>Negative effects have not been established</td>
<td>Direct ATE Validation for Trusted Data</td>
</tr>
<tr>
<td>LD50: 15000 mg/kg bw (female)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Acute dermal toxicity: Data not available

Acute inhalation toxicity (vapour): Data not available

Other information: data not available.

Assessment/Classification: according to available data, does not fulfill the classification criteria according to Regulation (EC) No. 1272/2008.

Skin corrosion and / or irritation: urea is demonstrated to be of very low acute toxicity by the oral, subcutaneous and intravenous routes in the rat and mouse. Testing for acute dermal toxicity is not justified on scientific grounds and for reasons of human welfare (source – urea registration under the REACH dossier). According to available data, does not fulfill the classification criteria according to Regulation (EC) No. 1272/2008.
Eye irritation: studies in rats have shown that urea is easily irritating to the eyes. Based on medical data on urea-related incidents reported by urea manufacturers, it was interpreted that urea is not classified as irritating to humans (source – urea registration under the REACH dossier). According to available data, does not fulfill the classification criteria according to Regulation (EC) No. 1272/2008.

Respiratory sensitization: no data available (source – urea registration under the REACH dossier). According to available data, does not fulfill the classification criteria according to Regulation (EC) No. 1272/2008.

Mutagenicity: based on the results of the Ames-test study with the various urea concentrations so far (negative results of the research), it was interpreted that urea does not exhibit mutagenic effects (source - urea registration according to the REACH dossier). According to available data, does not fulfill the classification criteria according to Regulation (EC) No. 1272/2008.


Specific toxicity for particular organ (STOT) (one time effect): according to available data, does not fulfill the classification criteria according to Regulation (EC) No. 1272/2008.

Specific toxicity for particular organ (STOT) (repeated effect): according to available data, does not fulfill the classification criteria according to Regulation (EC) No. 1272/2008.

Aspiration hazard: does not meet the criteria for classification.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity
Maximum allowable concentration of urea in portable water reservoirs cannot exceed the calculated amount of organic substances in accordance with allowable biochemical concentration (ABC) and dissolved oxygen levels. Maximum allowable urea concentration in water reservoirs of fishery farms shall not exceed 80 mg/dm³.

Leuciscus idus (orfe) 96-h LC₅₀ > 6810 mg/l
Daphnia magna (short-term): 24-h EC₅₀: > 10000 mg/l
Daphnia magna (long-term): No data.

Toxicity for fish:

<table>
<thead>
<tr>
<th>Exposure dose / concentration</th>
<th>Test duration</th>
<th>The name of the organism used in the tests</th>
<th>Results</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC₅₀: &gt; 10 000 mg/l</td>
<td>48 h</td>
<td>Golden orphan</td>
<td>Urea is of inherently low toxicity for fish</td>
<td>OECD 203</td>
</tr>
<tr>
<td>LC₅₀: 6 810 mg/l</td>
<td>96 h</td>
<td>Golden orphan</td>
<td>Urea is of inherently low toxicity for fish</td>
<td>OECD 203</td>
</tr>
</tbody>
</table>

Toxicity to aquatic invertebrates (short-term effects):

<table>
<thead>
<tr>
<th>Exposure dose / concentration</th>
<th>Test duration</th>
<th>The name of the organism used in the tests</th>
<th>Results</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC₅₀: &gt; 10 000 mg/l</td>
<td>24 h</td>
<td>Daphnia magna</td>
<td>Low toxicity level</td>
<td>OECD 202</td>
</tr>
<tr>
<td>LC₅₀: 14 241 mg/l</td>
<td>24 h</td>
<td>Herisoma trivolvis</td>
<td>Low toxicity level</td>
<td>OECD 202</td>
</tr>
</tbody>
</table>

Toxicity to aquatic invertebrates (long-term effects): no data available.
Toxicity to algae and aquatic plants

<table>
<thead>
<tr>
<th>Exposure dose / concentration</th>
<th>Test duration</th>
<th>The name of the organism used in the tests</th>
<th>Results</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50: &gt; 10 000 mg/l</td>
<td>192 h</td>
<td>Algae</td>
<td>Low toxicity level</td>
<td>OECD 202</td>
</tr>
<tr>
<td>LC50: &gt; 10 000 mg/l</td>
<td>7 days</td>
<td>Algae</td>
<td>Low toxicity level</td>
<td>OECD 202</td>
</tr>
</tbody>
</table>

12.2 Persistence and degradability
The compound is well degradable. 4 mg/l in 1 h at 20 ºC / 68 ºF
Zahn-Wellens-Test / 400 mg/l: 3h: 2 %, 7d: 52 %, 14d: 85 %, 16 d: 96 %
In soil urea is easily transformed into forms, well-assimilated by vegetation.
Low potential for adsorption (based on substance properties).

12.3 Potential of bioaccumulation
Urea does not have any bio accumulative properties, does not form any toxic compound with other substances present in the air or drainage waters.

12.4 Mobility in soil
Rate of absorption: low (according to the parameters of substance).

12.5 Results of PBT and vPvB assessment
According to Annex XIII of Regulation (EC) No 1907/2006, no PBT and vPvB assessment has been conducted.

12.6 Other unwanted effect:
None.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Waste from residues. The contaminant free urea waste according to Regulation (EC) No. 1357/2014 is classified as non-hazardous waste. Depending on degree and nature of contamination dispose of by use as fertilizer on farm, as raw material or liquid fertilizer, or to an authorized waste facility. Do not empty into drains. Dispose of this material and its container in a safe way and in accordance with all applicable local and national regulations. The final product waste code is assigned by the waste manager / holder.

Package waste disposal. The bags should be empty by shaking to remove as much as possible of its contents. According to Regulation (EC) No. 1357/2014 the contaminant free packaging of urea is classified as non-hazardous waste. Dispose of package waste in a safe way and in accordance with all applicable local and national regulations. The final product waste code is assigned by the waste manager / holder.
Do not remove label, prepared according to Regulation (EC) No. 1272/2008, until package is thoroughly cleaned.

SECTION 14. TRANSPORT INFORMATION
Urea

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 UN Number</td>
<td>Not available because the product is not subject to ADR requirements.</td>
</tr>
<tr>
<td>14.2 Proper shipping name</td>
<td>Not available because the product is not subject to ADR requirements.</td>
</tr>
<tr>
<td>14.3 Transport hazard classes</td>
<td>Not available because the product is not subject to ADR requirements.</td>
</tr>
<tr>
<td>14.4 Packaging group</td>
<td>Not available because the product is not subject to ADR requirements.</td>
</tr>
<tr>
<td>14.5 Hazard to environment</td>
<td>The product is not classified as hazardous substance according to the Orange Book and International Transport Codes RID (Railway), ADR (Road) and IMDG (Sea transport).</td>
</tr>
<tr>
<td>14.6 Special precautions for users</td>
<td>Mixing of unpackaged product with other fertilizers is not permitted.</td>
</tr>
<tr>
<td>14.7 Bulk transport, according to Annex II to MARPOL 73/78 Convention and IBC Code</td>
<td>The product's hazard class according to the International Maritime Bulk Cargo Code (IMSBC Code) is urea.</td>
</tr>
</tbody>
</table>

SECTION 15. REGULATORY INFORMATION
SC „Achema”

Safety data sheet
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II with all subsequent amendments and supplements and EC Regulation No. 830/2015

Urea

<table>
<thead>
<tr>
<th>15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EU legislation:</strong></td>
</tr>
<tr>
<td>- European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR);</td>
</tr>
<tr>
<td>- The International Rule for Transport of Dangerous Substances by Railway (RID);</td>
</tr>
<tr>
<td>- The International Maritime Dangerous Goods (IMDG);</td>
</tr>
<tr>
<td>- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78);</td>
</tr>
<tr>
<td>- The International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code) (the IBC Code);</td>
</tr>
<tr>
<td><strong>Domestic legislation (Lithuania):</strong></td>
</tr>
<tr>
<td>- Applicable Law on Waste Disposal of the Republic of Lithuania;</td>
</tr>
<tr>
<td>- Applicable Law on Package and Package Waste Handling of the Republic of Lithuania;</td>
</tr>
<tr>
<td>- HN23 Maximum Allowable Concentrations of Hazardous Chemical Substances and Preparations in Working Environment. General Requirements;</td>
</tr>
<tr>
<td>- HN36 Banned and Restricted Substances;</td>
</tr>
<tr>
<td>- Applicable Regulations for Workers ”Protection against the Impact of Chemical Factors” and Regulations for Workers “Protection against Carcinogenous and Mutagenous Impacts”;</td>
</tr>
<tr>
<td>- Applicable Procedure of Safety Data Sheet Requirements and Supply thereof to Professional Users;</td>
</tr>
<tr>
<td>- Applicable Rules on Labeling of Items (Products) to be sold in Lithuania and Referring Price thereof;</td>
</tr>
<tr>
<td>- Applicable Rules on Waste Disposal;</td>
</tr>
</tbody>
</table>
SC „Achema”

Safety data sheet
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II with all subsequent amendments and supplements and EC Regulation No. 830/2015

Urea

- LST EN 166 “Personal eye protection. Technical requirements”;
- LST EN 388 “Protective gloves against mechanical hazards”;
- LST EN 420 “Protective gloves. General requirements and testing methods”;
- LST EN 469 “Protective clothing for firefighters. Performance requirements for firefighting protective clothing”;
- LST EN 780:2016 “Packaging. Distribution packs. Graphical symbols for packaging handling and storage”;
- LST EN ISO 13688 “Protective clothing. General requirements (ISO 13688: 2013)”;
- LST EN ISO 20345 “Personal protective equipment. Safe footwear (ISO 20345: 2011)”.

Additional information presented on the package (container) label of chemical substance:
- visual signs No.6 “Protect from rain” and No.4 “Protect from sun” in compliance with LST EN ISO 780.

Additional information about the relevant Community provisions on safety, health and the environment for the product:
The product is not subject to requirements according to the Government Resolution No. 966 of the Government of the Republic of Lithuania of 2004.08.07 „On Approval of the Description of the List and Attribution Criteria for List of Materials, Mixtures or Preparations of Hazardous Substances in the Hazardous Objects“ (Official Gazette, 2004, No. 130-4649) with all subsequent amendments and supplements) and Regulation’s No 2012/18 EU Annex 1, part 2.

Product Restrictions on Regulation (EU) No.98 / 2013: The product is not subject to restrictions in accordance with Regulation (EU) No 98/2013. However economic operators selling, using, and protecting the product must, in accordance with Regulation (EU) No 98/2013 to report suspicious transaction of this substance, material disappearances and theft or theft or loss of theft to a national contact point in the Member State in which the suspicious transaction occurred.

15.2 Chemical safety assessment

SECTION 16. OTHER INFORMATION
Urea

Revision date: 2020-01-30
Version: 6.0
Revision No. 0
Issuing date: 2020-01-30

(i) A clear evidence of added, deleted or modified information:
The following changes were made to the safety data sheet as compared to the previous version:
- sub-section 1.4: supplemented by contact information (telephone numbers) of poison control centers in the European Economic Area.
- sub-section 4.2: supplemented with symptoms according to routes of exposure.
- sub-section 5.3: supplemented according to LST EN 469.
- sub-section 14.7: included information on the hazard class of the product as given in the International Code for the Carriage of Solid Bulk Cargoes by Sea (IMSBS Code).
- sub-section 15.1: Updated information on national legislation.

(ii) List of abbreviations and acronyms used throughout the Safety Data Sheet:
ADR – European Agreement on Dangerous Goods by Road;
IATA – International Air Transport Organization;
IMO – International Marine Organization;
RID – Regulations Concerning the International Carriage of Dangerous Goods by Rail;
SMGS – International Agreement on Carriage of Loads by Rail.
PC0 – Other, UCN code: R20200 corrosion inhibitors;
PC4 – Freezing agents;
PC9a – Primers and paints, diluents, solvents;
PC12 – Fertilizers;
PC21 – Laboratory chemicals;
PC39 – Cosmetics, personal care products;
SDS – Safety Data Sheet;
SU0 – Other NACE C17.2.2 paper and cardboard manufacturing;
SU1 – Agriculture, Forestry and Fisheries;
SU2a – Mining (without the maritime industry);
SU8 – Production of large quantities of chemicals;
SU9 – Production of pure chemicals;
SU19 – Building and contruction works;
SU23 – Electricity, current, gas supply and sewage treatment.

(iii) Bibliography:
Report date.
3) Registration of urea according to the REACH dossier is published on the website of the European Chemicals Agency.
   (data taken 2019-01-29).

(v) Relevant precautionary phrases:
P102 - „Keep out of reach of children“;
P280 - “Wear protective gloves/ protective clothing/ eye (face) protection “;
P305+P351+P338 - “IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing“,
P401 - “Store away from food, drinks and animal feeds”.

(vi) Training Advice:
To ensure the protection of people and the environment, people who manufacture, handle and use this product must be trained to work with hazardous substances, hazardous materials, calcium ammonium nitrate properties, have adequate hygiene skills, first aid principles and information on emergency procedures. This safety data sheet must be made available to those working with the product. Persons must be instructed before working with the product.

NOTE. 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 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 proceed, unless specified in the text.

Release info: This version replaces all previous documents.