SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Revision Date 11.01.2016 Version 5.3

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

1.1 Product identifier

Catalogue No.	100924
Product name	Ammonium chloride extra pure Ph Eur,BP,USP
REACH Registration Number	01-2119487950-27-XXXX
CAS-No.	12125-02-9

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

Identified uses	Pharmaceutical production, Cosmetic raw material In compliance with the conditions described in the annex to this safety data sheet.

1.3 Details of the supplier of the safety data sheet

Company	Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72-0
Responsible Department	EQ-RS * e-mail: prodsafe@merckgroup.com

1.4 Emergency telephone number

Please contact the regional company representation in your country.

SECTION 2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Acute toxicity, Category 4, Oral, H302
Eye irritation, Category 2, H319

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification (67/548/EEC or 1999/45/EC)

Xn	Harmful	R22
Xi	Irritant	R36

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms

Signal word
Warning

Hazard statements
H302 Harmful if swallowed.
H319 Causes serious eye irritation.

Precautionary statements
Response
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Reduced labelling (≤125 ml)
Hazard pictograms

Signal word
Warning

Index-No. 017-014-00-8

2.3 Other hazards
None known.

SECTION 3. Composition/information on ingredients

3.1 Substance

Formula	NH_4Cl	H_4ClN (Hill)
Index-No.	017-014-00-8	
EC-No.	235-186-4	
Molar mass	53,49 g/mol	

Hazardous components (REGULATION (EC) No 1272/2008)
Chemical Name (Concentration)
CAS-No. Registration number Classification
ammonium chloride *(<= 100 %)*
Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.
12125-02-9 01-2119487950-27-XXXX Acute toxicity, Category 4, H302
Eye irritation, Category 2, H319

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous components (1999/45/EC)
Chemical Name (Concentration)
CAS-No. Classification
ammonium chloride *(<= 100 %)*
12125-02-9 Xn, Harmful; R22
Xi, Irritant; R36

For the full text of the R-phrases mentioned in this Section, see Section 16.

3.2 Mixture
Not applicable

SECTION 4. First aid measures

4.1 Description of first aid measures

After inhalation: fresh air.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

After eye contact: rinse out with plenty of water. Call in ophthalmologist.

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

irritant effects
The following applies to ammonium salts in general: after swallowing: local irritation symptoms, nausea, vomiting, diarrhoea. Systemic effect: after the uptake of very large qantities: drop in blood pressure, collapse, CNS disorders, spasms, narcotic conditions, respiratory paralysis, haemolysis.

4.3 Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Not combustible.
Ambient fire may liberate hazardous vapours.
Fire may cause evolution of:
nitrogen oxides, Hydrogen chloride gas

5.3 Advice for firefighters

Special protective equipment for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information
Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

6.2 Environmental precautions

Do not empty into drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.
Observe possible material restrictions (see sections 7 and 10).
Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

Indications about waste treatment see section 13.

SECTION 7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Observe label precautions.

Hygiene measures
Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Dry.

Recommended storage temperature see product label.

7.3 Specific end use(s)

See exposure scenario in the Annex to this MSDS.

SECTION 8. Exposure controls/personal protection

8.1 Control parameters

Derived No Effect Level (DNEL)

Worker DNEL, longterm	Systemic effects	inhalation	43,97 mg/m³
Worker DNEL, longterm	Systemic effects	dermal	128,9 mg/kg Body weight
Consumer DNEL, longterm	Systemic effects	inhalation	9,4 mg/m³
Consumer DNEL, longterm	Systemic effects	dermal	55,2 mg/kg Body weight
Consumer DNEL, longterm	Systemic effects	oral	55,2 mg/kg Body weight

Predicted No Effect Concentration (PNEC)

PNEC Fresh water	0,25 mg/l
PNEC Fresh water sediment	0,9 mg/kg
PNEC Marine water	0,025 mg/l
PNEC Marine sediment	0,09 mg/kg
PNEC Aquatic intermittent release	0,43 mg/l
PNEC Soil	50,7 mg/kg
PNEC Sewage treatment plant	13,1 mg/l

8.2 Exposure controls

Engineering measures
Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

Individual protection measures
Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Eye/face protection
Safety glasses

Hand protection
full contact:

Glove material:	Nitrile rubber
Glove thickness:	0,11 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0,11 mm
Break through time:	> 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).
The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.
This recommendation applies only to the product stated in the safety data sheet<(>,<)> supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Other protective equipment
protective clothing

Respiratory protection
required when dusts are generated.
Recommended Filter type: Filter P 2 (acc. to DIN 3181) for solid and liquid particles of harmful substances
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Environmental exposure controls
Do not empty into drains.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form	Crystalline powder
Colour	white

Odour	odourless
Odour Threshold	Not applicable
pH	ca. 4,7 at 200 g/l 25 °C (External MSDS)
Melting point	338 °C (sublimed), (External MSDS)
Boiling point/boiling range	Not applicable
Flash point	Not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	The product is not flammable.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapour pressure	66 hPa at 250 °C (External MSDS) 1,3 hPa at 30 °C
Relative vapour density	No information available.
Density	1,53 g/cm3 at 25 °C
Relative density	No information available.
Water solubility	372 g/l at 20 °C (External MSDS)
Partition coefficient: n-octanol/water	log Pow: -3,2 (25 °C) (experimental) (ECHA) Bioaccumulation is not expected.
Auto-ignition temperature	No information available.
Decomposition temperature	Not applicable
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.

Oxidizing properties	none

9.2 Other data

Ignition temperature	> 400 °C
Bulk density	ca.600 - 900 kg/m3
Particle size	Mean particle size 0,116 mm

SECTION 10. Stability and reactivity

10.1 Reactivity
See section 10.3

10.2 Chemical stability
sublimable

10.3 Possibility of hazardous reactions
Violent reactions possible with:

alkali hydroxides, acids

Risk of ignition or formation of inflammable gases or vapours with:

halogen-halogen compounds, alkalines, alkaline substances

Risk of explosion with:

nitrates, chlorates, Heavy metal salts, nitrites, Hydrogen cyanide (hydrocyanic acid), Chlorine, silver salt, Strong oxidizing agents

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
Aluminium, Lead, Iron, Copper, copper compounds

10.6 Hazardous decomposition products
in the event of fire: See section 5.

SECTION 11. Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity
LD50 Rat: 1.410 mg/kg
OECD Test Guideline 401

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.
absorption

Acute inhalation toxicity

Symptoms: Possible damages:, mucosal irritations

Acute dermal toxicity
This information is not available.

Skin irritation
Rabbit
Result: No skin irritation
Draize Test

Eye irritation
Rabbit
Result: Eye irritation
OECD Test Guideline 405
Causes serious eye irritation.

Sensitisation
Maximisation Test (GPMT) Guinea pig
Result: negative

(ECHA)

Germ cell mutagenicity
Genotoxicity in vivo
Micronucleus test
Mouse
male
Intraperitoneal injection
Bone marrow
Result: negative
Method: OECD Test Guideline 474

Genotoxicity in vitro
HGPRT (cell forward mutation assay)
Result: negative
Method: OECD Test Guideline 476

Ames test
Escherichia coli/Salmonella typhimurium
Result: negative
Method: OECD Test Guideline 471

Carcinogenicity
This information is not available.

Reproductive toxicity
This information is not available.

Teratogenicity
This information is not available.

Specific target organ toxicity - single exposure
This information is not available.

Specific target organ toxicity - repeated exposure
This information is not available.

Repeated dose toxicity
Rat
male and female
Oral
90 d
daily
NOAEL: 1.695,7 mg/kg
OECD Test Guideline 408
Subchronic toxicity

Aspiration hazard
This information is not available.

11.2 Further Information
The following applies to ammonium salts in general: after swallowing: local irritation symptoms, nausea, vomiting, diarrhoea. Systemic effect: after the uptake of very large qantities: drop in blood pressure, collapse, CNS disorders, spasms, narcotic conditions, respiratory paralysis, haemolysis.
Other dangerous properties can not be excluded.
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

12.1 Toxicity
Toxicity to fish
LC50 Oncorhynchus mykiss (rainbow trout): 42,91 mg/l; 96 h
Analytical monitoring: yes
(ECHA)

Toxicity to daphnia and other aquatic invertebrates
EC50 Daphnia magna (Water flea): > 100 mg/l; 48 h
Analytical monitoring: yes
(ECHA)

Toxicity to algae
static test EC50 Chlorella vulgaris (Fresh water algae): 1.300 mg/l; 5 d
(ECHA) (in analogy to similar products)

Toxicity to bacteria
static test EC50 activated sludge: 1.310 mg/l; 0,5 h
OECD Test Guideline 209

Toxicity to fish (Chronic toxicity)
flow-through test EC10 Lepomis macrochirus (Bluegill sunfish): 4,28 mg/l; 30 d

Analytical monitoring: yes
(ECHA)

12.2 Persistence and degradability
Biodegradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential
Partition coefficient: n-octanol/water
log Pow: -3,2 (25 °C)
(experimental)

(ECHA) Bioaccumulation is not expected.

12.4 Mobility in soil
No information available.

12.5 Results of PBT and vPvB assessment
Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

12.6 Other adverse effects
Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

Waste treatment methods
See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14. Transport information

Land transport (ADR/RID)

14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

Inland waterway transport (ADN)

Not relevant

Air transport (IATA)

14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

Sea transport (IMDG)

14.1 - 14.6 Not classified as dangerous in the meaning of transport regulations.

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

Not relevant

SECTION 15. Regulatory information

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

EU regulations

Major Accident Hazard Legislation	SEVESO III Not applicable
Occupational restrictions	Take note of Dir 94/33/EC on the protection of young people at work. Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	not regulated
Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC	not regulated
Substances of very high concern (SVHC)	This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of ≥ 0.1 % (w/w).

National legislation
Storage class 10 - 13

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

SECTION 16. Other information

Full text of H-Statements referred to under sections 2 and 3.

H302	Harmful if swallowed.
H319	Causes serious eye irritation.

Full text of R-phrases referred to under sections 2 and 3

R22	Harmful if swallowed.
R36	Irritating to eyes.

Training advice
Provide adequate information, instruction and training for operators.

Labelling
Hazard pictograms

Signal word
Warning

Hazard statements
H302 Harmful if swallowed.
H319 Causes serious eye irritation.

Precautionary statements
Response
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Labelling (67/548/EEC or 1999/45/EC)

Symbol(s)	☒ Xn	Harmful
R-phrase(s)	22-36	Harmful if swallowed. Irritating to eyes.
S-phrase(s)	22	Do not breathe dust.
EC-No.	235-186-4	EC Label

Reduced labelling (≤125 ml)

Symbol(s)	☒ Xn	Harmful
R-phrase(s)	22	Harmful if swallowed.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Regional representation
This information is given on the authorised Safety Data Sheet for your country.

The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.

EXPOSURE SCENARIO 1 (Industrial use)

1. Industrial use (Pharmaceutical production, Cosmetic raw material)

Sectors of end-use

SU 3	Industrial uses: Uses of substances as such or in preparations at industrial sites
SU 10	Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)

Chemical product category

PC19	Intermediate
PC39	Cosmetics, personal care products

Process categories

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
PROC8a	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
PROC8b	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC14	Production of preparations or articles by tabletting, compression, extrusion, pelletisation
PROC15	Use as laboratory reagent

Environmental Release Categories

ERC1	Manufacture of substances
ERC2	Formulation of preparations
ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b	Industrial use of reactive processing aids

2. Contributing scenarios: Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 %.
Physical Form (at time of use)	Solid, medium dustiness

Frequency and duration of use

Frequency of use	5 days/week
Frequency of use	8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	Indoor without local exhaust ventilation (LEV)

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection.

3. Exposure estimation and reference to its source

Environment
A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard Assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.1	PROC1	longterm, inhalative, systemic	< 0,02	ECETOC TRA
		longterm, dermal, systemic	< 0,003	ECETOC TRA
		longterm, combined, systemic	< 0,02	
2.1	PROC2	longterm, inhalative, systemic	0,01	ECETOC TRA
		longterm, dermal, systemic	0,01	ECETOC TRA
		longterm, combined, systemic	0,02	
2.1	PROC3	longterm, inhalative, systemic	0,02	ECETOC TRA
		longterm, dermal, systemic	0,003	ECETOC TRA
		longterm, combined, systemic	0,023	
2.1	PROC4	longterm, inhalative, systemic	0,11	ECETOC TRA
		longterm, dermal, systemic	0,05	ECETOC TRA
		longterm, combined, systemic	0,16	
2.1	PROC5	longterm, inhalative, systemic	0,11	ECETOC TRA
		longterm, dermal, systemic	0,11	ECETOC TRA
		longterm, combined, systemic	0,22	
2.1	PROC8a	longterm, inhalative, systemic	0,11	ECETOC TRA
		longterm, dermal, systemic	0,11	ECETOC TRA
		longterm, combined, systemic	0,22	
2.1	PROC8b	longterm, inhalative, systemic	0,11	ECETOC TRA
		longterm, dermal, systemic	0,05	ECETOC TRA
		longterm, combined, systemic	0,16	
2.1	PROC9	longterm, inhalative, systemic	0,11	ECETOC TRA
		longterm, dermal, systemic	0,05	ECETOC TRA
		longterm, combined, systemic	0,16	
2.1	PROC14	longterm, inhalative, systemic	0,02	ECETOC TRA
		longterm, dermal, systemic	0,03	ECETOC TRA
		longterm, combined, systemic	0,05	
2.1	PROC15	longterm, inhalative, systemic	0,01	ECETOC TRA
		longterm, dermal, systemic	0,003	ECETOC TRA
		longterm, combined, systemic	0,013	

The default parameters and -efficiencies of the applied exposure assessment model were used for the calculation (unless stated differently).
For (other) local effects risk management measures are based on qualitative risk characterisation.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).

For scaling of worker exposure assessments performed with ECETOC TRA, please consult the Merck tool ScIDeEx® at www.merckmillipore.com/scideex.

EXPOSURE SCENARIO 2 (Professional use)

1. Professional use (Pharmaceutical production, Cosmetic raw material)

Sectors of end-use

SU 22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Chemical product category

PC39 Cosmetics, personal care products

Environmental Release Categories

ERC8a Wide dispersive indoor use of processing aids in open systems
ERC8d Wide dispersive outdoor use of processing aids in open systems

2. Contributing scenarios: Operational conditions and risk management measures

3. Exposure estimation and reference to its source

Environment

A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard Assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

In accordance with REACH Article 14(5b), exposure estimations and risk characterizations for human health do not need to be performed for uses of substances in cosmetic products which are under the scope of Directive 76/768/EEC.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).

EXPOSURE SCENARIO 3 (Consumer use)

1. Consumer use (Pharmaceutical production, Cosmetic raw material)

Sectors of end-use
SU 21 Consumer uses: Private households (= general public = consumers)

Chemical product category
PC39 Cosmetics, personal care products

Environmental Release Categories
ERC8a Wide dispersive indoor use of processing aids in open systems
ERC8d Wide dispersive outdoor use of processing aids in open systems

2. Contributing scenarios: Operational conditions and risk management measures

3. Exposure estimation and reference to its source

Environment

A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard Assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

In accordance with REACH Article 14(5b), exposure estimations and risk characterizations for human health do not need to be performed for uses of substances in cosmetic products which are under the scope of Directive 76/768/EEC.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).