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NOTICE: Important information

Please note that this generic exposure scenario is by no means intended to be mandatory, prescriptive or exhaustive. The content of this document is intended for guidance only and whilst the information on uses covered is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk. Ultimately, it is for each company to assess the appropriateness and completeness of the information on a case-by case basis and decide what elements they wish to adopt or to add. In particular, the preparation and content of the e-SDS is the legal responsibility of each company for its own products placed on the market, and the user should verify, complete, correct or adapt this generic document appropriately.

No representations or warranties are made with regards to its completeness or accuracy, in particular regarding the list of uses that are covered, and no liability will be accepted by [the consortium members] for damages of any nature whatsoever resulting from the use of or reliance on the information.

The consortium members acknowledge that any activities carried out under REACH have to be carried out in full compliance with EU competition law, in particular but not limited to Articles 101 and 102 of the Treaty on the Functioning of the European Union (TFEU) as well as any applicable national laws.

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

1.1 Product identifier:

Trisodium orthophosphate

EINECS Number: 231-509-8 **CAS Number:** 7601-54-9

REACH Registration number: [to be filled in by company]

Other Identifiers: TSP

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

Industrial / professional uses:

- Manufacture of TSP
- Formulation (mixing/blending) of mixtures containing TSP
- Formulation (mixing/blending) of materials containing TSP
- Industrial use of TSP as an intermediate; includes use as a raw material for fertiliser synthesis
- Industrial use of TSP as a processing aid
- Industrial use of TSP as a reactive processing aid
- Industrial use in water and wastewater treatment
- Industrial use in dyes and auxiliary chemicals for textiles, leather, paper
- Industrial use as an additive/pigment/auxiliary in plastics, resins, paints, coatings and inks
- Industrial use as a binding agent ceramic materials and in ceramics, cement and plasters
- Industrial use in washing and cleaning products
- Industrial use in metal and non-metal surface treatment (no inclusion onto article)
- Industrial use in metal and non-metal surface treatment (inclusion onto article)
- Industrial use in metal-working fluids, lubricants, greases, heat transfer and hydraulic fluids
- Professional use as a laboratory chemical
- Professional use in water and wastewater treatment (indoor and outdoor)
- Professional use in dyes and auxiliary chemicals for textiles, leather, paper
- Professional use as an additive/pigment/auxiliary in plastics, resins, paints, coatings and inks
- Professional use in washing and cleaning products
- Professional use in metal and non-metal surface treatment (no inclusion onto article)
- Professional use in metal and non-metal surface treatment (inclusion onto article)
- Professional use in metal-working fluids, lubricants, greases, heat transfer and hydraulic fluids
- Professional use of TSP as a fertiliser: mixing and loading of liquid or solid fertilisers into the equipment and applying with different techniques (spreading, spraying, fertigation, etc.) for the crop by farmers, growers and contractors

Consumer uses:

- Consumer use of paint, varnish, coating and ink products
- End use of cosmetics, dentifrice and oral care products
- Use as a fertiliser; mixing and application of solid or liquid fertilisers at home for indoor or outdoor plants
- Consumer use of washing and cleaning products

Service life

- Service life of textiles and leather articles
- Service life of paper articles
- Service life of ceramic articles or articles containing cement, refractories or plaster
- Service life of plastic or metal treated articles

No known uses advised against.

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1.3 Details of the supplier of the safety data sheet:

[Insert relevant details including contact name, address, phone number, email here]

1.4 Emergency telephone number:

[Insert suitable emergency number and hours of operation]

SECTION 2. Hazards identification

2.1 Classification of the substance

2.1.1 According to Regulation (EC) No. 1272/2008 (EU CLP):

Eye Irritation - Cat 2 - H319
Skin Irritation - Cat 2 - H315
Irritating to the Respiratory Tract - Cat 3 - H335

2.2 Label elements

2.2.1 According to Regulation (EC) No. 1272/2008 (EU CLP):

Name: Trisodium orthophodphosphate

Index Number: Not applicable CAS Number: 7601-54-9



Signal word: Warning

Hazard Statements:

H315: Causes skin irritation

H319: Causes serious eye irritation H335: May cause respiratory irritation

Precautionary Statements:

Prevention:

P261: Avoid breathing dust/fume/gas/mist/vapours/spray.

P280: Wear protective gloves, eye protection and face protection.

Response:

P302 + P352: IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

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P332 + P313: If skin irritation occurs: Get medical advice/attention. P337 + P313: If eye irritation persists: Get medical advice/attention.

NOTE: Information in Section 2.2 MUST be consistent with the information provided on the supplier's labels – the above is a selection of 6 relevant P statements – please select from full requirements in line with the nedds of your supply chain

Other P-statements:

P264: Wash ... thoroughly after handling

P321: Specific treatment (see ... on this label).

P362 + P364: Take off contaminated clothing and wash it before reuse

P271: Use only outdoors or in a well-ventilated area; P304 + P341: IF INHALED: If breathing is difficult

remove victim to fresh air and keep at rest in a position comfortable for breathing

P312: Call a POISON CENTER or doctor/physician if you feel unwell

P403 + P233 Store in a well-ventilated place. Keep container tightly closed

P405: Store locked up

P501: Dispose of contents/container to

2.3 Other hazards

The material is not considered to be PBT or vPvB.

SECTION 3. Composition / information on ingredients

3.1 Substance:

Name EC Number CAS Number Typical Concentration concentration Range

Trisodium 231-509-8 7601-54-9 >90% [to be provided orthophosphate]

SIP - specific company to update where necessary]

Registration Number (if available): [specific to each registrant – insert number here]

EC name: trisodium orthophosphate

Identification of hazardous impurities (where applicable):

All impurities > 1% are other inorganic phosphates or other related inorganic substances, similar to the Registered substance, and which do not significantly affect its toxicological and ecotoxicological properties All hazardous impurities are < 0.1%

NOTE: The above information on impurities is company specific therefore suppliers to update where necessary and in line with the data that is provided in their joint registration dossier Section 1.2.

SECTION 4. First aid measures

4.1 Description of first aid measures

Inhalation

In case of exposure by inhalation, provide fresh air, rest and seek medical advice.

Ingestion

No special measures required.

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Skin Contact

In case of contact with skin, rinse with plenty of water, remove contaminated clothing.

Eye Contact

In case of contact with eyes, rinse immediately with plenty of water. Seek medical advice.

4.2 Most important symptoms and effects, both acute and delayed

Trisodium orthophosphate is irritating to the skin, eyes and respiratory tract. No delayed effects are noted.

4.3 Indication of any immediate medical attention and special treatment needed

No specific information available.

SECTION 5. Fire fighting measures

5.1 Extinguishing media

Suitable extinguishing media:

Trisodium orthophosphate is not flammable. All extinguishing agents are considered suitable for a surrounding fire.

Inappropriate extinguishing media:

Not applicable.

5.2 Special hazards arising from the substance or mixture

Trisodium orthophosphate may cause respiratory irritation.

5.3 Advice for fire-fighters

In cases where dust particles of trisodium orthophosphate may be present respiratory ventilation is recommended. Wear appropriate skin and eye protection. See Section 8.2.

SECTION 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with eyes, skin and respiratory system. Use personal protection equipment.

6.2 Environmental precautions

Trisodium phosphate should not arrive into the soil or the aquatic environment.

6.3 Methods and material for containment and cleaning up

Shovel up material and recycle if possible. Dispose of contaminated material according to the waste disposal recommendations.

6.4 Reference to other sections

Refer to Section 8 for suitable PPE.

Refer to Section 13 for disposal considerations.

SECTION 7. Handling and storage

7.1 Precautions for safe handling

Technical measures: sufficient ventilation and local suction is required in accordance with the details in the annex to the SDS.

Do not eat, smoke or drink.

7.2 Conditions for safe storage, including any incompatibilities

Trisodium orthophosphate is to be transported and stored in the original packaging and away from humidity. Trisodium orthophosphate reacts intensely with water.

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7.3 Specific end use(s)

See annex for details of end uses covered in the exposure scenarios and CSR. The exposure scenarios detailed in the annex represent a worst case for exposure to humans and the environment.

SECTION 8. Exposure controls / personal protection

8.1 Control parameters

Workplace exposure limits:

The general dust exposure limit of 3 mg/m3, measured as alveolic part has to be observed (German TRGS 900, 2006).

[Please check occupational limits for the country you supply to and insert limit here if available]

DNELS (worker):

Exposure route	Exposure pattern	DNEL (workers)	
Inhalation	Acute systemic effects	As no acute toxicity hazard has identified, there is no requirement to derive acute DNELs. Therefore only long term DNELs have been derived.	
	Long term systemic	17.87 mg/m ³	
Dermal	Acute systemic effects	As no acute toxicity hazard has identified, there is no requirement to derive acute DNELs. Therefore only long term DNELs have been derived.	
	Long term systemic	No systemic toxicity effects are expected due to the inorganic nature of the substance, however local effects may occur but these effects will not be dosedependent but will depend on the concentration of the substance present in the mixture/solution used in a specific application. As such these variations will be addressed in the risk assessment but no dermal DNEL is necessary.	

No DNELs can be derived for local effects as no dose-response relationship can be identified in any of the studies available.

DNELs (general population):

Exposure route	Exposure pattern	DNEL (general population)
Inhalation	Acute systemic effects	As no acute toxicity hazard has identified, there is no requirement to derive acute DNELs. Therefore only long term DNELs have been derived.
	Long term systemic	7.66 mg/m ³

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Oral	Acute systemic effects	As no acute toxicity hazard has identified, there is no requirement to derive acute DNELs. Therefore only long term DNELs have been derived.
	Long term systemic	70 mg/kg bw MTDI Trisodium orthophosphate is a food additive that is generally recognised as safe. Consumer uses of inorganic phosphates besides food and water, do not contribute noticeably to the oral intake of phosphates. Oral intake is predominately via food and water in the form of food additives or similar or from natural sources. It is therefore considered appropriate to take into account the maximum tolerable daily intake (MTDI) value of 70 mg/kg bw /day of phosphorus as calculated by the Joint FAO/WHO Expert Committee on Food Additives (JEFCA) as opposed to calculating and assessing a DNEL.
Dermal	Acute systemic effects	As no acute toxicity hazard has identified, there is no requirement to derive acute DNELs. Therefore only long term DNELs have been derived.
	Long term systemic	No systemic toxicity effects are expected due to the inorganic nature of the substance, however local effects may occur but these effects will not be dose-dependent but will depend on the concentration of the substance present in the mixture/solution used in a specific application., As such these variations will be addressed in the risk assessment but no dermal DNEL is necessary.

No DNEL can be derived for local effects as no dose-response relationship can be identified in any of the studies available.

PNECs:

No PNECs are derived since the substance is not classified for the environment.

8.2 Exposure controls

Appropriate engineering controls: Ensure work area is well ventilated or exhausted (where appropriate and in line with the exposure scenarios). Provide eye wash station.

Respiratory protection: See annex for details of processes requiring respiratory protection. In case of insufficient ventilation, wear suitable respiratory device such as EN141 or EN405.

Skin protection: Laboratory coat or overalls and plastic or rubber boots. Store protective clothing separately.

Eye protection: Tightly sealed chemical safety goggles (compliant with EN 166:2001)

Hand protection: Wear suitable gloves that are compliant with EN 374. Material: Chloroprene gloves or equivalent.

Environmental controls: Refer to Sections 6, 7, 12 and 13 of the SDS.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

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Property	Value	Method
Appearance; including colour and physical state	Solid, white granules	Observed
Odour	Odourless	Observed
Odour threshold	Not available	
рН	pH 12.4 -12.6.	As measured in the water solubility study (EU Method A.6)
Melting point/freezing point	>450°C	EU Method A.1
Initial boiling point and boiling range	Not determined	According to Regulation No. 1907/2006, a study for boiling point is not required for solids which melt above 300°C
Flash point	Not determined	According to Regulation No. 1907/2006, the flash point does not need to be assessed for inorganic chemicals.
Evaporation rate	Not available	
Flammability (Solid, gas)	Not flammable	Based on prediction and use based observations
Upper/lower flammability or explosive limits	Not applicable	
Vapour pressure	Not determined	According to Regulation No. 1907/2006, a study for the vapour pressure need not be conducted if the melting point is above 300°C. For the purpose of environmental fate modelling, the key value for chemical safety assessment has been set at 0.000001 Pa as recommended by the ECHA Guidance document Appendix R.7.13-2: Environmental risk assessment for metals and metal compounds (July 2008).
Vapour density (Air = 1)	Not applicable	and metal composition (cary 2000).
Relative density	Specific gravity: 2.356 at 16.5°C (anhydrous) 1.62 at 20°C (dodecahydrate)	In accordance with Annex XI, Section 1.2. of Regulation (EC) No. 1907/2006 (REACH) a weight of evidence approach has been used to fulfil the endpoint '7.4. Relative Density'. Data are provided for the anhydrous form and a hydrated form of trisodium phosphate. Taken together these data are considered to be acceptable to fulfil the endpoint as part of a weight of evidence and no further testing is considered to be justified.
Solubility(ies)	Water: 13.0 to 14.1% w/w at 20.0 ± 0.5°C (very soluble)	EU Method A.6 A temperature range 10 to 30°C had no significant influence on the observed solubility of the test material.
Partition coefficient: N-octanol/water	Not determined	According to Regulation No. 1907/2006, the partition coefficient n-octanol/water does not need to be assessed for inorganic chemicals.
Auto-ignition temperature	No auto-ignition anticipated	Based on prediction
Decomposition temperature	Not applicable	
Viscosity	Not determined	Testing not technically possible: According to the relevant OECD guideline (OECD 114) a study cannot be conducted on a substance that is a solid at room

		temperature.
Explosive properties	Not considered to be explosive	Prediction – in accordance with EU Method A14
Oxidising properties	No oxidising properties	Prediction – in accordance with EU Method A17

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9.2 Other information

Testing has been performed on trisodium orthophosphate, in accordance with Annex X of REACH.

SECTION 10. Stability and reactivity

10.1 Reactivity

Non-reactive under recommended storage and handling conditions.

10.2 Chemical stability

Trisodium orthophosphate exhibits an alkaline reaction with water.

10.3 Possibility of hazardous reactions

Reacts intensely with water.

10.4 Conditions to avoid

Avoid humid / damp conditions.

10.5 Incompatible materials

None identified.

10.6 Hazardous decomposition products

None identified.

SECTION 11. Toxicological information

11.1 Information on toxicological effects

Toxicological endpoint	Value (including relevance to CLP criteria)	Method
Acute toxicity		
Oral	LD ₅₀ > 2000 mg/kg bw/day. Not classified.	Rat, OECD 420. Klimisch reliability 1.
Dermal	LD ₅₀ > 2000 mg/kg bw/day	Rat, OECD 402. Klimisch reliability 2 – data is derived from structural analogue via read across.
Inhalation	LC ₅₀ (4h) > 0.83 mg/L	Rat, EPA OPP 81-3, OECD 403, EU Method B.2. Klimisch reliability 2 – data is derived from structural analogue via read across.
Skin corrosion/irritation	Irritating to skin – skin irritation category 2.	Rabbit, WoE approach. The data available for trisodium orthophosphate suggests no classification according to Regulation (EC) No 1272/2008

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Serious eye/damage/irritation	Irritating to eyes –	(EU CLP). However, workplace observations have noted that under certain conditions (for example; humidity) local irritation when the material is placed in contact with the skin occurs and for that reason and in accordance with the hazard evaluation guidelines set out in the Guidance to Regulation (EC) No 1272/2008 trisodium phosphate is considered to be irritating to the skin (category 2). Rabbit, WoE approach using reliability 2 studies conducted to appropriate methods.
Serious eye/damage/imtation	category 2	All available studies indicate that trisodium orthophosphate is irritating to the eyes.
Respiratory or skin sensitisation	Non-sensitiser	Mouse, OECD 429, EU Method B.42. Klimisch reliability 2 – read across from analogous substance. No data to suggest substance is a respiratory sensitiser.
Germ cell mutagenicity	Not considered to be mutagenic.	Trisodium orthophosphate is not expected to produce germ cell genotoxic damage.
Carcinogenicity	Not considered to be a carcinogen.	Not required for REACH. No data to suggest likelihood of carcinogenicity.
Reproductive toxicity	Not considered to be a reproductive toxicant	No data available.
STOT-single exposure – all routes	STOT Single Exp. 3 (Hazard statement: H335: May cause respiratory irritation.) Affected organs: Respiratory tract Route of exposure: Inhalation	Respiratory irritation has been noted in worker populations exposed to trisodium orthophosphate via the inhalation route and therefore a classification of STOT-SE category 3 for respiratory tract irritation is proposed.
STOT-Repeated exposure - all routes	Not considered to induce specific organ toxicity after repeated exposure via oral route.	Rats and dogs, Variety of sub acute, subchronic data available for trisodium orthophosphate and analogous materials. Key study conducted on sodium aluminium phosphate. The only indication of systemic toxicity observed in the tests performed on sodium aluminium phosphate was nephrocalcinosis observed in the renal tubes. Rats generally and particularly female rats are known to be susceptible to nephrocalcinosis when administered high doses of phosphates (typically starting at about 0.5 – 1.0 % in the diet). The effects are only seen in high dose animals (well above the recommended classification limits for STOT RE as defined in the Guidance on the Application of Regulation (EC) No 1272/2008) and therefore classification for STOT RE is not justified and no classification is proposed.
Aspiration hazard	No aspiration hazard identified	Not applicable.

The substance has been assessed with regards to the data requirements of Annex X of REACH.

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SECTION 12. Ecological information

12.1 Toxicity

Toxicological endpoint	Value (including relevance to CLP criteria)	Species, Method	
Acute fish toxicity	96 hr LC ₅₀ = > 100 mg/L 96 hr NOEC = 100 mg/L	Rainbow trout, OECD 203, EU Method C.1. Conducted on analogous substance, reliability 2.	
Acute <i>Daphnia</i> toxicity	48 hr EC ₅₀ = > 100 mg/L 48 hr NOEC = >100 mg/L	Daphnia magna, OECD 202, EU Method C.2. Conducted on analogous substance, reliability 2.	
Algal growth inhibition	72 hr EC ₅₀ = > 100 mg/L 72 hr NOEC = >100 mg/L Basis for effect: growth rate	Desmodesmus subspicatus (algae), OECD 201, EU Method C.3. Conducted on analogous substance, reliability 2.	
Activated Sludge Respiration	3 hr EC ₅₀ = > 1000 mg/L 3 hr NOEC = 1000 mg/L	Activated sludge of a predominantly domestic sewage, OECD 209, EU Method C.11, EPA OPPTS 850.6800. Conducted on analogous substance, reliability 2.	

The substance has been assessed with regards to the data requirements of Annex X of REACH

12.2 Persistence and degradability

Trisodium orthophosphate is an inorganic substance, biodegradation studies are not applicable. No further testing is deemed to be necessary.

12.3 Bioaccumulative potential

Trisodium orthophosphate dissociates to orthophosphate and sodium ions in aqueous and biological systems. The degradation products of trisodium orthophosphate are essential nutrients (food elements) for plants, and stimulate the growth of water plants (macrophytes) and/or algae (phytoplankton) and are ubiquitous in the environment.

The potential for bioaccumulation is therefore considered to be minimal.

12.4 Mobility in soil

No data available:

A batch equilibrium study according to OECD Guideline 106 was deemed to be not applicable to trisodium orthophosphate for the following reasons:

Firstly, analysis of the test material may not be possible due to interference from the soil extracts that may leach into the aqueous media during the test. This would prevent quantification of the test material. In addition, the mobility of the test item would be dependent on the anion exchange capacity of the soils as the main component of the test material is an anion. This absorption relationship would not be anticipated to correlate with the organic carbon content of the soils and is considered to be beyond the scope of the OECD 106 method.

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12.5 Results of PBT and vPvB assessment

According to the Guidance on Information Requirements and Chemical Safety Assessment, Chapter R.11: PBT Assessment, the PBT and vPvB criteria of Annex XIII to the regulation do not apply to inorganic substances. Therefore trisodium orthophosphate is not considered to require any further assessment of PBT properties.

12.6 Other adverse effects

No sediment or terrestrial toxicity data exists. Substance is not considered to be hazardous to sediment dwelling or terrestrial organisms. According to the criteria of the European classification and labelling system, the substance does not require classification as hazardous for the environment

SECTION 13. Disposal considerations

13.1 Waste treatment methods

Disposal recommendations are made based on the material as supplied. Disposal must be in accordance with current applicable laws and regulations.

Disposal of substance: Dispose of in accordance with national and local regulations for special waste via an appropriately licensed waste contractor. Do not discharge to drains or STP.

Disposal of packaging: Empty containers and clean out appropriately before reuse or disposal. Packaging may be recycled if thoroughly cleaned. Packaging that cannot be cleaned should be disposed of according to national and local regulations for special waste via an appropriately licensed waste contractor.

Regulatory disposal information:

European waste codes: Waste producers need to assess the process used when generating the waste and its contaminants in order to assign the most appropriate waste disposal code(s).

Recommended code: European waste catalogue 16 03 03 inorganic wastes containing dangerous substances

SECTION 14. Transport information

Transport classifications (ADR/RID/IMDG/IATA) are not defined in the REACH Registration Dossier for the substance. The information provided here is therefore not derived from this Dossier and is based on other information available to the Consortium Members. The Transport classifications (ADR/RID/IMDG/IATA) provided here are indicative and based on the data in the REACH dossier for the pure substance only and may not be applicable for solutions or other preparations. Please seek advice from your Dangerous Good Safety Advisor.

According to information available: UN transport classification: Not Classified (for pure substance as solid and solution in water

14.1 UN number			
	LAND (ADR/RID)	SEA (IMDG)	AIR (IATA)

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14.2 UN proper shipping name		
14.3 Transport hazard class(es)		
14.4 Packing group		
14.5 Environmental hazards		
14.6 Special precautions for user		
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code		

Other Information:

SECTION 15. Regulatory information

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

[COMPANY TO INCLUDE ANY INFORMATION RELEVANT TO THE COUNTRY OF PRODUCT AND/OR SUPPLY]

This safety data sheet is compliant with Regulation (EC) No 1907/2006 (REACH) (including the amendment, Regulation (EU) No 453/2010 and Regulation (EC) No. 1272/2008 (EU CLP).

15.2 Chemical Safety Assessment.

A Chemical Safety Assessment is available for trisodium orthophosphate.

SECTION 16. Other information

This SDS supersedes the SDS dated [TO BE COMPLETED BY COMPANY SUPPLYING SDS]

The following amendments have been made:

- SDS has been fully revised and re-written in accordance with Regulation (EU) No 453/2010 and Regulation (EC) No. 1272/2008 (EU CLP).
- Any further amendments to be detailed by supplier of SDS

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 Section 2.1: Classification according to Council Directive 67/548/EEC removed in accordance with Regulation (EU) No. 453/2010

Sources of Key data used:

- Registration dossier submitted to ECHA in accordance with Regulation (EC) No. 1907/2006 and therefore a full reference list can be found in the corresponding CSR.

Abbreviations and acronyms used:

AF = Assessment factor

DNEL = Derived no effect level

EC50 = Median effect concentration

LC50 = Median lethal concentration

LD50 = Median lethal dose LEV = Local Exhaust Ventilation

NOAEL = No observed adverse effect level NOEC = No observed effect concentration PBT Persistent bioaccumulative toxic

PEC = Predicted effect level PNEC = Predicted no effect level

PRE = Personal Respiratory Equipment
OEL = Occupational Exposure Limit

SDS = Safety data sheet

STOT-SE = Specific target organ toxicity - single exposure STOT-RE = Specific target organ toxicity - repeated exposure

STP = Sewage treatment plant

vPvB = Very persistent very bioaccumulative

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Annex: summary of relevant exposure scenarios