2-(2-HYDROXY-4-HEXYLOXYPHENYL)-4,6-DIPHENYL-1,3,5-TRIAZINE

(CAS #147315-50-2)

GREENSCREEN® FOR SAFER CHEMICALS (GREENSCREEN®) ASSESSMENT

Prepared by:

ToxServices LLC

Assessment Date: October 16, 2023

Expiration Date: October 16, 2028

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GreenScreen® Executive Summary for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is a relatively non-volatile light absorber and stabilizer. It allows polycarbonates and polyesters to achieve a higher resistance to weathering and has a low tendency to chelate, which allows for its use in polymer formulations containing catalyst residues. It has low water solubility, and is not flammable or reactive.

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a **GreenScreen Benchmark™ Score of 3** ("Use but Still Opportunity for Improvement"). This score is based on the following hazard score combinations:

- Benchmark 3a
    - Very High persistence (P)

A data gap (DG) exists for endocrine activity-E. As outlined in GreenScreen® Guidance Section 11.6.2.1 and Annex 5 (Conduct a Data Gap Analysis), 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine meets requirements for a GreenScreen Benchmark™ Score of 3 despite the hazard data gap. In a worst-case scenario, if 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine were assigned a High score for the data gap E, it would be categorized as a Benchmark 1 Chemical.

The GreenScreen® Benchmark Score for 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine has changed over time. The original GreenScreen® assessment was performed in 2017 under version 1.3 criteria and ToxServices assigned a Benchmark 2 (BM-2) score. Most recently, ToxServices changed the GreenScreen® benchmark score to a BM-3 due to reclassification of the chronic aquatic toxicity endpoint from Moderate (high confidence) to Low (low confidence) due to a change in the criteria for this endpoint.

New Approach Methodologies (NAMs) used in this GreenScreen® include in silico modeling for carcinogenicity, respiratory sensitization, aquatic toxicity, and persistence, and *in vitro* data for genotoxicity. The quality, utility, and accuracy of NAM predictions are greatly influenced by two primary types of uncertainties:

- Type I: Uncertainties related to the input data used
- Type II: Uncertainties related to extrapolations made

Type I (input data) uncertainties in 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine's NAMs dataset include limited availability of carcinogenicity data and lack of respiratory sensitization data. 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine's Type II (extrapolation output) uncertainties include lack of a defined applicability domain of Toxtree structural alerts, dissimilar chemicals identified in the VEGA CAESAR carcinogenicity model database, limitations of *in vitro* genotoxicity tests in mimicking *in vivo* metabolism, and lack of consideration of non-immunological mechanisms of respiratory sensitization.

GreenScreen® Hazard Summary Table for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine

Group I Human					Group II and II* Human									Ecotox		Fate		Physical	
C	M	R	D	E	AT	ST		N		SnS	SnR	IrS	IrE	AA	CA	P	B	Rx	F
						s	r*	s	r*	*	*								
L	**L**	*L*	*L*	DG	**L**	**L**	**L**		*L*	**L**	*L*	**L**	**L**	**L**	*L*	*vH*	**vL**	**L**	**L**

Note: Hazard levels (Very High (vH), High (H), Moderate (M), Low (L), Very Low (vL)) in *italics* reflect lower confidence in the hazard classification while hazard levels in **BOLD** font reflect higher confidence in the hazard classification. Group II Human Health endpoints differ from Group II* Human Health endpoints in that they have four hazard scores (i.e., vH, H, M, and L) instead of three (i.e., H, M, and L), and are based on single exposures instead of repeated exposures. Group II* Human Health endpoints are indicated by an * after the name of the hazard endpoint or after "repeat" for repeated exposure sub-endpoints. Please see Appendix A for a glossary of hazard acronyms.

GreenScreen® Chemical Assessment for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)

Method Version: GreenScreen® Version 1.4
Assessment Type[1]: Certified
Assessor Type: Licensed GreenScreen® Profiler

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Organization: ToxServices LLC
Date: February 7, 2017

Quality Control Performed By:
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Date: February 7, 2017

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Date: July 12, 2023

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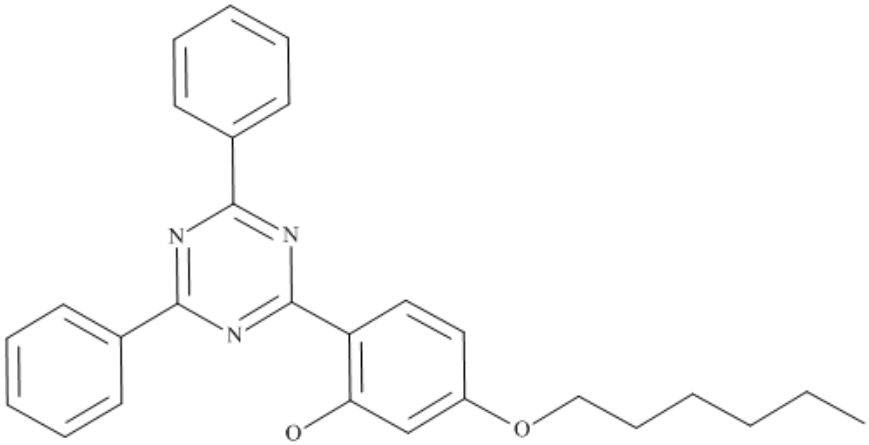
Title: Senior Toxicologist
Organization: ToxServices LLC
Date: August 28, 2023; October 16, 2023

Expiration Date: October 16, 2028[2]

Chemical Name: 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine

CAS Number: 147315-50-2

Chemical Structure(s):

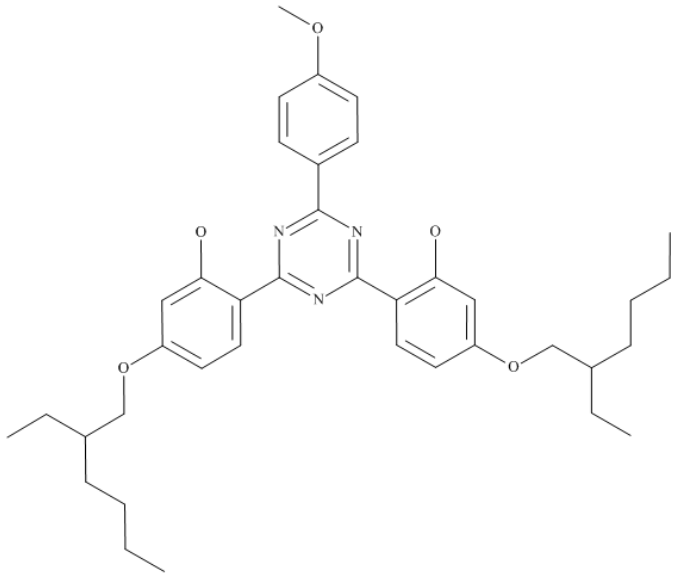


Also called:
2-(4,6-Diphenyl-1,3,5-triazin-2-yl)-5-(hexyloxy)phenol; 2-(4,6-Diphenyl-1,3,5-triazin-2-yl)-5-[(hexyl)oxy]-phenol; Tinuvin 1577; 2-(4,6-Diphenyl-1,3,5-triazin-2-yl)-5-hexoxyphenol; UV-1577; 2-

[1] GreenScreen® reports are either "UNACCREDITED" (by unaccredited person), "AUTHORIZED" (by Authorized GreenScreen® Practitioner), or "CERTIFIED" (by Licensed GreenScreen® Profiler or equivalent).
[2] Assessments expire five years from the date of completion starting from January 1, 2019. An assessment expires three years from the date of completion if completed before January 1, 2019 (CPA 2018a).

(4,6-Diphenyl-1,3,5-triazin-2-yl)-5-((hexyl)oxy)phenol; Phenol, 2-(4,6-diphenyl-1,3,5-triazin-2-yl)-5-(hexyloxy)-; EC 411-380-6; 2-(4,6-Diphenyl-s-triazin-2-yl)-5-hexyloxyphenol; 2,4-Diphenyl-6-(2-hydroxy-4-hexyloxyphenyl)-s-triazine; 2-(4,6-Diphenyl-1,3,5-triazin-2-yl)-5-[(hexyl)oxy]phenol; 2-(4,6-diphenyl-1,3,5-triazine-2-yl)-5-[(hexyl)oxy]phenol; 2-(4,6-DIPHENYL-1,3,5-TRIAZIN-2-YL)-5-HEXYLOXY)PHENOL; 2-(4,6-DIPHENYL-1,3,5-TRIAZIN-2-YL)-5-HEXYLOXY)PHENOL; 4,6-diphenyl-2-(4-hexyloxy-2-hydroxyphenyl)-s-triazine; 2-(4,6-Diphenyl-[1,3,5]triazin-2-yl)-5-hexyloxyphenol; 2,4-Diphenyl-6-[2-hydroxy-4-(hexyloxy)phenyl]-1,3,5-triazine; 2-(4,6-Diphenyl-1,3,5-triazine-2-yl)-5-[(hexyl) oxy]-phenol; 6-(4,6-Diphenyl-1,3,5-triazin-2-yl)-6-hexoxy-cyclohexa-2,4-dien-1-ol (PubChem 2023)

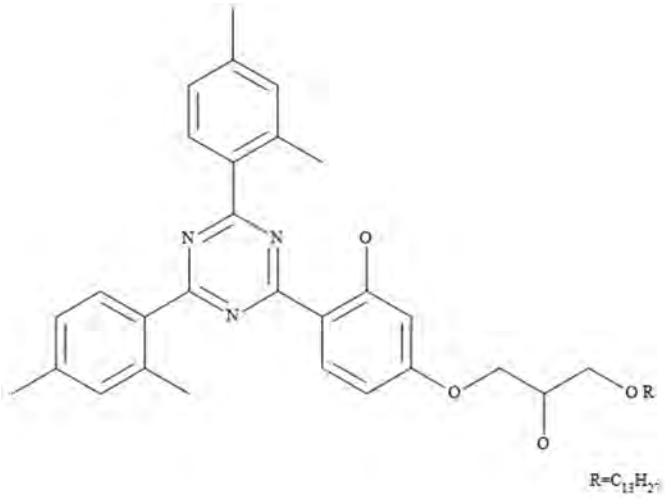
Suitable surrogates or moieties of chemicals used in this assessment (CAS #'s):
A relatively complete dataset was identified for 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine; however, data gaps exist for reproductive and developmental toxicity, endocrine activity, and neurotoxicity (single and repeated dose). Therefore, in order to fill these data gaps, ToxServices searched for surrogates using U.S. EPA's Analog Identification Methodology (AIM) software, and by performing a structural similarity search in PubChem. Limited chemical results with sufficient toxicological data were identified in the surrogate search; however, 2,2'-(6-(4-methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) (CAS #187393-00-6; EC #425-950-7) was identified in the PubChem structural similarity search. These chemicals have a maximum common substructure (MCS) Tanimoto similarity coefficient of 0.69578 (ChemMine 2023), and like the target compound, 2,2'-(6-(4-methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) is a triazine compound with similarly low water solubility, volatility, and a high estimated log K_{ow} (ECHA 2023a,b). Due to the larger size and dissimilar ether functional groups on the surrogate compared to the target chemical, ToxServices considers this surrogate to be a weak surrogate.



Surrogate: 2,2'-(6-(4-methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) (CAS #187393-00-6; EC #425-950-7)

In addition, the REACH dossier for 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine identifies reaction products of 2-(4,6-bis(2,4-dimethylphenyl)-1,3,5-triazin-2-yl)-5-hydroxyphenol with ((C10-16, rich in C12-13 alkyloxy)methyl)oxyrane as a read-across chemical. Reaction products of 2-

(4,6-bis(2,4-dimethylphenyl)-1,3,5-triazin-2-yl)-5-hydroxyphenol with ((C10-16, rich in C12-13 alkyloxy)methyl)oxyrane is also a triazine UV light absorber with low water solubility and volatility and a high log K_{ow} (ECHA 2023a,c). It is a mixture of triazine structurally similar triazine compounds with the main component shown below. The main component shares an MCS Tanimoto coefficient of 0.5686 with the target compound, and differs from the target by the identity of the ether substituent and presence of methyl groups on the benzyl rings. ToxServices also considers this compound to be a weak surrogate due to its larger size and differences in substituents.



Surrogate: Reaction products of 2-(4,6-bis(2,4-dimethylphenyl)-1,3,5-triazin-2-yl)-5-hydroxyphenol with ((C10-16, rich in C12-13 alkyloxy)methyl)oxyrane (CAS #153519-44-9)

Identify Applications/Functional Uses:
1. Low volatile UV light absorber and stabilizer (Sigma Aldrich 2023)

Known Impurities:
No information is available. The screen is performed on the theoretical pure substance.

GreenScreen® Summary Rating for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine[3,4,5,6]: 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a **GreenScreen Benchmark™ Score of 3** ("Use but Still Opportunity for Improvement") (CPA 2018b). This score is based on the following hazard score combinations:

- Benchmark 3a
    - Very High persistence (P)

A data gap (DG) exists for endocrine activity-E. As outlined in GreenScreen® Guidance (CPA 2018b) Section 11.6.2.1 and Annex 5 (Conduct a Data Gap Analysis), 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine meets requirements for a GreenScreen Benchmark™ Score of 3 despite the

[3] For inorganic chemicals with low human and ecotoxicity across all hazard endpoints and low bioaccumulation potential, persistence alone will not be deemed problematic. Inorganic chemicals that are only persistent will be evaluated under the criteria for Benchmark 4.
[4] See Appendix A for a glossary of hazard endpoint acronyms.
[5] For inorganic chemicals only, see GreenScreen® Guidance v1.4 Section 12 (Inorganic Chemical Assessment Procedure).
[6] For Systemic Toxicity and Neurotoxicity, repeated exposure data are preferred. Lack of single exposure data is not a Data Gap when repeated exposure data are available. In that case, lack of single exposure data may be represented as NA instead of DG. See GreenScreen® Guidance v1.4 Annex 2.

hazard data gap. In a worst-case scenario, if 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine were assigned a High score for the data gap E, it would be categorized as a Benchmark 1 Chemical.

Figure 1: GreenScreen® Hazard Summary Table for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine

Group I Human					Group II and II* Human									Ecotox		Fate		Physical	
C	M	R	D	E	AT	ST		N		SnS	SnR	IrS	IrE	AA	CA	P	B	Rx	F
						s	r*	s	r*	*	*								
L	**L**	*L*	*L*	DG	**L**	**L**	**L**		*L*	**L**	*L*	**L**	**L**	**L**	*L*	*vH*	**vL**	**L**	**L**

Note: Hazard levels (Very High (vH), High (H), Moderate (M), Low (L), Very Low (vL)) in *italics* reflect lower confidence in the hazard classification while hazard levels in **BOLD** font reflect higher confidence in the hazard classification. Group II Human Health endpoints differ from Group II* Human Health endpoints in that they have four hazard scores (i.e., vH, H, M, and L) instead of three (i.e., H, M, and L), and are based on single exposures instead of repeated exposures. Group II* Human Health endpoints are indicated by an * after the name of the hazard endpoint or after "repeat" for repeated exposure sub-endpoints. Please see Appendix A for a glossary of hazard acronyms.

Environmental Transformation Products

No data were identified on transformation products. The rate of hydrolysis for 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is negligible and this chemical does not biodegrade (ECHA 2023a).

Introduction

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is a relatively non-volatile light absorber and stabilizer. It allows polycarbonates and polyesters to achieve a higher resistance to weathering and has a low tendency to chelate, which allows for its use in polymer formulations containing catalyst residues (Sigma Aldrich 2023).

ToxServices assessed 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine against GreenScreen® Version 1.4 (CPA 2018b) following procedures outlined in ToxServices' SOPs (GreenScreen® Hazard Assessment) (ToxServices 2021).

U.S. EPA Safer Choice Program's Safer Chemical Ingredients List (SCIL)

The SCIL is a list of chemicals that meet the Safer Choice standard (U.S. EPA 2023). It can be accessed at: http://www2.epa.gov/saferchoice/safer-ingredients. Chemicals on the SCIL have been assessed for compliance with the Safer Choice Standard and Criteria for Safer Chemical Ingredients (U.S. EPA 2015).

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is not listed on the SCIL.

GreenScreen® List Translator Screening Results

The GreenScreen® List Translator identifies specific authoritative or screening lists that should be searched to identify GreenScreen Benchmark™ 1 chemicals (CPA 2018b). Pharos (Pharos 2023) is an online list-searching tool that is used to screen chemicals against all of the lists in the List Translator electronically. ToxServices also checks the U.S. Department of Transportation (U.S. DOT) lists (U.S.

DOT 2008a,b),[7] which are not considered GreenScreen® Specified Lists but are additional information sources, in conjunction with the Pharos query. The output indicates benchmark or possible benchmark scores for each human health and environmental endpoint. The output for 2-(2-hydroxy-4-hexyloxy phenyl)-4,6-diphenyl-1,3,5-triazine can be found in Appendix C.

- 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is an LT-U chemical when screened using Pharos, and therefore a full GreenScreen® is required.
- 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is not listed on the U.S. DOT list.
- 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is on the following lists for multiple endpoints.
    - EU - GHS (H-Statements) Annex 6 Table 3-1 H413 - May cause long lasting harmful effects to aquatic life [Hazardous to the aquatic environment (chronic) - Category 4]
    - GHS - Australia H413 - May cause long lasting harmful effects to aquatic life [Hazardous to the aquatic environment (chronic) - Category 4]
    - GHS - New Zealand Hazardous to the aquatic environment - chronic category 4
    - German FEA - Substances Hazardous to Waters Class 1 - Low Hazard to Waters
- Specified lists for single endpoints are reported in individual hazard endpoints in the hazard assessment section below.

Hazard Statement and Occupational Control

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine has a harmonized classification in the European Union (EU), as indicated in Table 1. General personal protective equipment (PPE) recommendations are presented in Table 2, below. No occupational exposure limits (OELs) were identified.

Table 1: GHS H Statements for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2) (Pharos 2023)

H Statement	H Statement Details
H413	May cause long lasting harmful effects to aquatic life [Hazardous to the aquatic environment (chronic) - Category 4]

Table 2: Occupational Exposure Limits and Recommended Personal Protective Equipment for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)

Personal Protective Equipment (PPE)	Reference	Occupational Exposure Limits (OEL)	Reference
Safety goggles, industrial clothing, impermeable gloves or mittens, occupational footwear	NICNAS 2006	None identified	N/A

Physicochemical Properties of 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is a yellowish powder at room temperature and has negligible water solubility. Based on its very low vapor pressure it is not expected to volatilize. Its calculated log K_{ow} indicates it is hydrophobic and may have a potential for bioaccumulation.

[7] DOT lists are not required lists for GreenScreen® List Translator v1.4. They are reference lists only.

Table 3: Physical and Chemical Properties of 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)		
Property	**Value**	**Reference**
Molecular formula	$C_{27}H_{27}N_3O_2$	PubChem 2023
SMILES Notation	CCCCCCOC1=CC(=C(C=C1)C2=NC(=NC(=N2)C3=CC=CC=C3)C4=CC=CC=C4)O	PubChem 2023
Molecular weight	425.5 g/mol	PubChem 2023
Physical state	Solid	ECHA 2023a
Appearance	Yellowish powder	ECHA 2023a
Melting point	148.8°C (EU Method A.1)	ECHA 2023a
Boiling point	515°C (extrapolated from BP at 11 Pa)	ECHA 2023a
Vapor pressure	3×10^{-10} Pa (2.25×10^{-12} mmHg) at 20°C 9×10^{-10} Pa (6.75×10^{-12} mmHg) at 25°C (OECD Guideline 104)	ECHA 2023a
Water solubility	< 0.0003 mg/L at 20°C (EU Method A.6)	ECHA 2023a
Dissociation constant	pKa = 11.45 at 25°C (calculated)	ECHA 2023a
Density/specific gravity	1.19 g/cm^3 at 23°C (EU Method A.3)	ECHA 2023a
Partition coefficient	Log K_{ow} = 6.24 (estimated)	ECHA 2023a, U.S. EPA 2017a

Toxicokinetics

No data are available regarding the toxicokinetics of 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine. According to the authors of the REACH dossier (ECHA 2023a), the ether bond is expected to be stable in the gastrointestinal tract, and due to its large size and very low water solubility, oral absorption is expected to be low. Most of the substance is expected to be excreted unchanged in the feces, and the small portion absorbed is expected to be glucuronidated in the liver and excreted in the bile.

Hazard Classification Summary

Group I Human Health Effects (Group I Human)

Carcinogenicity (C) Score (H, M, or L): *L*

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for carcinogenicity based on negative results in a dermal carcinogenicity study with a surrogate and a lack of structural alerts and negative predictions from the Danish QSAR Database. GreenScreen® criteria classify chemicals as a Low hazard for carcinogenicity when adequate negative data are available and they are not GHS classified (CPA 2018b). The confidence in the score is low as it is based on modeling and data on a weak surrogate.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- U.S. EPA 2021
  - ToxServices attempted to model 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine using OncoLogic™ 9.0; however, the chemical does not fall into the chemical classes supported by the program.
- U.S. EPA 2019

  - ToxServices modeled the phenolic portion of the structure of 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine using OncoLogic™ 8.0 as part of the Phenol and Phenolic Compound category. The overall level of carcinogenic concern for this portion of the structure is low (Appendix D).
- Toxtree 2018
  - Toxtree predicts that 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is negative for genotoxic and nongenotoxic carcinogenicity (Appendix E).
- VEGA 2021
  - The CAESAR model predicts that 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is a non-carcinogen with high reliability, based on a global ADI of 0.883 (similarity, accuracy, and concordance indices of 0.78, 1, and 1, respectively (Appendix F).
    - ToxServices notes that the read-across compounds used in this model differ from the target compound because none of them contain a triazine functional group; therefore, ToxServices did not weigh these results heavily in the weight of evidence.
  - The compound was outside the domains of the ISS, IRFMN-ISSCAN-CGX, IRFMN-Antares, IRFMN oral and inhalation, and CORAL male and female rat models. Therefore, these models are not included in the weight of evidence.
- DTU 2023
  - Within the Danish QSAR Database, 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is within the domains of the E Ultra FDA RCA Cancer male rat, female rat, rat, male mouse, female mouse, mouse, and rodent models, all of which predict that this chemical is negative for carcinogenicity. It is also within the domains of the Leadscope FDA RCA Cancer rat, male mouse, female mouse, and mouse models, which also predict that it is negative for carcinogenicity. It is outside the domains of the Leadscope male rat, female rat, and rodent models. Regarding liver-specific rat and mouse models, 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is within the domains of the CASE Ultra and SciQSAR models, which predict that it is negative and positive, respectively, and outside the domains of the battery and Leadscope model (Appendix G).
- ECHA 2023b
  - Surrogate: 2,2'-(6-(4-Methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) (CAS #187393-00-6; EC #425-950-7): In a GLP-compliant test conducted according to OECD Guideline 451, male and female Wistar rats (50/sex/dose) received dermal applications of the test substance (≥ 97% purity) in polyethylene glycol at 100, 500, or 1,000 mg/kg/day for 104 weeks. Treatment did not result in any neoplastic effects (Klimisch 1, reliable without restriction).
- Based on the weight of evidence, a score of Low was assigned. 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine does not contain any structural alerts for genotoxic or nongenotoxic carcinogenicity. With the exception of one model, all in-domain predictions from the Danish QSAR Database were negative. Although limited in their relevance, negative predictions from the VEGA CAESAR model and OncoLogic™ 8.0 also predict a lack of carcinogenic potential. This is supported by negative results in a dermal carcinogenicity study with a surrogate.

Mutagenicity/Genotoxicity (M) Score (H, M, or L): L

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for mutagenicity/genotoxicity based on negative results for mutagenicity and clastogenicity in *in vitro* genotoxicity assays. GreenScreen® criteria classify chemicals as a Low hazard for mutagenicity/genotoxicity when negative data are available for both gene mutations and chromosome aberrations, and they are not GHS classified (CPA 2018b). The confidence in the score is high as it is based on high-quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
  - *In vitro:* 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was negative in a GLP-compliant Ames reverse mutation assay according to OECD Guideline 471, EU Method B.12/14, EPA OTS 798.5265 and Japan Guidelines. *Salmonella typhimurium* test strains TA98, TA100, TA1535, and TA1537 and *Escherichia coli* strain WP2 uvrA were exposed to the test substance (purity not reported, dimethyl sulfoxide (DMSO) vehicle) at concentrations of 0, 312.5, 625, 1,250, 2,500, or 5,000 µg/plate with and without metabolic activation (S9 mix). There were no increases in the frequency of revertants in any strain at any dose level with or without metabolic activation. There was no evidence of cytotoxicity or precipitation, but the cells were tested up to the limit concentration. The authors reported the positive and vehicle controls as valid (Klimisch 1, reliable without restriction).
  - *In vitro:* 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was negative in a GLP-compliant mammalian cell gene mutation assay similar to OECD Guideline 476. Chinese hamster lung fibroblast (V79) cells were exposed to the test substance (purity not reported, DMSO vehicle) at concentrations of 0, 18.52, 55.56, 166.67, or 500 µg/mL (selected based on cytotoxicity in a pretest) with and without metabolic activation (rat liver S9). There were no increases in the frequency of mutations at any dose level with or without metabolic activation. Solvent and positive controls were included, but the REACH dossier did not include the results (Klimisch 1, reliable without restriction).
  - *In vitro:* 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was negative in a GLP-compliant chromosome aberration assay according to OECD Guideline 473, EU Method B.10, EPA OTS 798.5375 and Japan Guidelines. Chinese hamster ovary cells were exposed to the test substance (purity not reported, acetone vehicle) at concentrations of 3.91, 7.81, 15.63, 31.25, 62.5, 125, 250, or 500 µg/mL (selected based on cytotoxicity in a pretest) with and without metabolic activation (Aroclor 1254 induced rat liver homogenate). No evidence of clastogenic potential was observed at any dose level with or without metabolic activation. The authors reported the positive and vehicle controls as valid (Klimisch 1, reliable without restriction).

Reproductive Toxicity (R) Score (H, M, or L): *L*

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for reproductive toxicity based on the lack of reproductive toxicity in a reproductive function and embryonic development screening test in rats with a surrogate. GreenScreen® criteria classify chemicals as a Low hazard for reproductive toxicity when adequate negative data are available and they are not GHS classified (CPA 2018b). The confidence in the score is low as it is based on data on a weak surrogate.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.

  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023b
  - Surrogate: 2,2'-(6-(4-Methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) (CAS #187393-00-6; EC #425-950-7): In a GLP-compliant reproductive function and embryonic development screening test conducted according to Japanese MHW Guidelines, male and female Crj: CD(SD) rats (20/sex/dose) were administered the test substance (>98% purity) at doses of 0, 100, 300, or 1,000 mg/kg/day in polyethylene glycol via gavage. Animals were exposed 14 days prior to mating, through mating, and females though early stages of pregnancy (duration of exposure through pregnancy not specified). Animals were evaluated for mortality and clinical signs, body weight, food consumption, estrous cyclicity, sperm parameters (sperm count in epididymides, sperm motility, sperm morphology, sperm survivability), testes and epididymis weight and gross pathology, the number of corpora lutea, number of implantation sites, ovary and uterine content, and reproductive indices (implantation rate, number of pre-implantation losses, pre-implantation loss rate, number of dead embryos, dead embryo rate, and number of live embryos). There were no treatment-related adverse effects on any of the above parameters, and the authors established a NOAEL ≥ 1,000 mg/kg/day for this study (Klimisch 2, reliable with restrictions).

Developmental Toxicity incl. Developmental Neurotoxicity (D) Score (H, M, or L): *L*
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for developmental toxicity based on the lack of developmental toxicity in studies with rabbits and rats with surrogates. GreenScreen® criteria classify chemicals as a Low hazard for developmental toxicity when adequate negative data are available and they are not GHS classified (CPA 2018b). The confidence in the score is low as it is based on data on weak surrogates.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023b
  - Surrogate: 2,2'-(6-(4-Methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) (CAS #187393-00-6; EC #425-950-7): In a GLP-compliant prenatal developmental toxicity study conducted according to U.S. FDA Guidelines, female New Zealand white rabbits (20/dose) were administered the test substance (97.9% purity) at doses of 0, 100, 300, or 1,000 mg/kg/day in 0.5% (w/v) carboxymethylcellulose in 0.1% (w/v) Tween 80 via gavage on gestation days (GDs) 6-19. Caesarean sections and sacrifice were performed on GD 29. Maternal animals were evaluated for mortality and clinical signs, body weight, food consumption, gross pathology, and ovary and uterine content (gravid uterus weight, number of corpora lutea, number of implantations, number of early resorptions, number of late resorptions). Fetuses were examined for external, soft tissue, skeletal, and head malformations. There were no treatment-related adverse effects on any of the parameters examined, and the authors established a NOAEL of ≥ 1,000 mg/kg/day for maternal toxicity and embryotoxicity/teratogenicity (Klimisch 1, reliable without restriction).
  - Surrogate: 2,2'-(6-(4-Methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) (CAS #187393-00-6; EC #425-950-7): In a GLP-compliant developmental toxicity study conducted according to Japanese MHW Guidelines, female Crj: CD(SD) rats (18-20/dose) were administered the test substance (> 98% purity) at doses of 0, 100, 300, or 1,000 mg/kg/day in polyethylene glycol via gavage from day 7 of

pregnancy to 21 days after delivery of the F1 generation. The F1 generation was then mated to produce an F2 generation. There was no direct exposure of the F1 generation. Maternal animals (F0) were evaluated for mortality and clinical signs, body weight, food consumption, gross pathology (uterus only), and ovary and uterine content (implantation scars). F1 offspring were evaluated for developmental toxicity and reproduction function. F2 generation fetuses were examined for implantation rate, number of pre-implantation losses, pre-implantation loss rate, number of post-implantation losses, post-implantation loss rate, number of live fetuses, sex ratio of live fetuses, fetal body weight of either sex, incidence of external abnormalities, and incidence of placental abnormalities. There were no treatment-related adverse effects on maternal (F0) animals, F1 offspring, or F2 fetuses. The authors established a NOAEL of ≥ 1,000 mg/kg/day for maternal toxicity and embryotoxicity/teratogenicity (Klimisch 2, reliable with restrictions).

- Surrogate: 2,2'-(6-(4-Methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) (CAS #187393-00-6; EC #425-950-7): In a GLP-compliant prenatal developmental toxicity study according to OECD Guideline 414, female Wistar rats (22/dose) were administered the test substance (> 98% purity) at doses of 0, 100, 300, or 1,000 mg/kg/day in polyethylene glycol via gavage on GDs 6-17, and sacrificed on GD 21. Maternal animals were evaluated for mortality and clinical signs, body weight, food consumption, gross pathology, and ovary and uterine content (gravid uterus weight, number of corpora lutea, number of implantations, number of early resorptions, number of late resorptions). Fetuses were examined for external, soft tissue, skeletal, and head malformations. There were no treatment-related adverse effects on any of the parameters examined, and the authors established a NOAEL of ≥ 1,000 mg/kg/day for maternal toxicity and embryotoxicity/teratogenicity (Klimisch 1, reliable without restriction).

- ECHA 2023c
  - Surrogate: Reaction products of 2-(4,6-bis(2,4-dimethylphenyl)-1,3,5-triazin-2-yl)-5-hydroxyphenol with ((C10-16, rich in C12-13 alkyloxy)methyl)oxyrane (CAS #153519-44-9): In a GLP-compliant test conducted according to OECD Guideline 414, male and female Wistar rats (25/sex/dose) received reaction products of 2-(4,6-bis(2,4-dimethylphenyl)-1,3,5-triazin-2-yl)-5-hydroxyphenol with ((C10-16, rich in C12-13 alkyloxy)methyl)oxyrane in corn oil at doses of 60, 200, 300, or 600 mg/kg/day via gavage on GD 6-19 and were sacrificed on GD 20. Evaluations included maternal cage-side observations, food consumption, and body weight, ovary and uterine content, and external, soft tissue, and skeletal examinations. Maternal body weight gain decreased at the high dose, and there was a statistically significant decrease in the corrected (net) body weight gain at this dose. The authors reported incomplete ossification of sternebra, which they considered to represent a slight delay that did not impact morphology; the rate was within the range of the historical control values. Other statistically significant changes in skeletal variations and cartilage observations did not follow a dose-response and also fell within the range of historical control. Therefore, the authors did not consider these developmental changes to be toxicologically relevant. There were no other treatment-related effects on any of the developmental parameters, and the authors assigned a NOAEL of 300 mg/kg/day for maternal toxicity and ≥ 600 mg/kg/day for developmental toxicity (Klimisch 1, reliable without restriction).

Endocrine Activity (E) Score (H, M, or L): DG
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Data Gap for endocrine activity based on the lack of adequate data for this endpoint.

- Authoritative and Screening Lists
    - *Authoritative:* Not present on any authoritative lists for this endpoint.
    - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023b
    - Surrogate: 2,2'-(6-(4-Methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) (CAS #187393-00-6; EC #425-950-7): In a GLP-compliant developmental toxicity study conducted according to Japanese MHW Guidelines that is described below for developmental toxicity, female Crj: CD(SD) rats (18-20/dose) were administered the test substance (> 98% purity) at doses of 0, 100, 300, or 1,000 mg/kg/day in polyethylene glycol via gavage from day 7 of pregnancy to 21 days after delivery of the F1 generation. There were no treatment-related effects on sex ratio (Klimisch 2, reliable with restrictions).
    - Surrogate: 2,2'-(6-(4-Methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) (CAS #187393-00-6; EC #425-950-7): In a GLP-compliant prenatal developmental toxicity study according to OECD Guideline 414 that is described below for developmental toxicity, female Wistar rats (22/dose) were administered the test substance (> 98% purity) at doses of 0, 100, 300, and 1,000 mg/kg/day in polyethylene glycol via gavage on GDs 6-17, and sacrificed on GD 21. There were no treatment-related effects on sex ratio (Klimisch 1, reliable without restriction).
- ECHA 2023c
    - Surrogate: Reaction products of 2-(4,6-bis(2,4-dimethylphenyl)-1,3,5-triazin-2-yl)-5-hydroxyphenol with ((C10-16, rich in C12-13 alkyloxy)methyl)oxyrane (CAS #153519-44-9): In a GLP-compliant test conducted according to OECD Guideline 414 that is described below for developmental toxicity, male and female Wistar rats (25/sex/dose) received reaction products of 2-(4,6-bis(2,4-dimethylphenyl)-1,3,5-triazin-2-yl)-5-hydroxyphenol with ((C10-16, rich in C12-13 alkyloxy)methyl)oxyrane in corn oil at doses of 60, 200, 300, or 600 mg/kg/day via gavage on GD 6-19 and were sacrificed on GD20. There were no treatment-related changes in sex ratio (Klimisch 1, reliable without restriction).

Group II and II* Human Health Effects (Group II and II* Human)

Note: Group II and Group II* endpoints are distinguished in the v 1.4 Benchmark system (the asterisk indicates repeated exposure). For Systemic Toxicity and Neurotoxicity, Group II and II* are considered sub-endpoints. See GreenScreen® Guidance v1.4, Annex 2 for more details.

Acute Mammalian Toxicity (AT) (Group II) Score (vH, H, M, or L): L

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for acute toxicity based on an oral LD_{50} value of > 2,000 mg/kg in rats. GreenScreen® criteria classify chemicals as a Low hazard for acute toxicity when oral LD_{50} values are greater than 2,000 mg/kg (CPA 2018b). The confidence in the score is high as it is based on high-quality studies.

- Authoritative and Screening Lists
    - *Authoritative:* Not present on any authoritative lists for this endpoint.
    - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
    - *Oral:* LD_{50} (male and female Tif: RAI f (SPF) rats) > 2,000 mg/kg (Klimisch 1, reliable without restriction)
    - *Dermal:* LD_{50} (male and female Tif: RAI f (SPF) rats) > 1,333 mg/kg (Klimisch 1, reliable without restriction)
        - The authors stated that due to the high viscosity of the test item mixture, only 1,333

mg/kg could be applied, respecting the maximal application volume of 4 mL/kg.

Systemic Toxicity/Organ Effects incl. Immunotoxicity (ST-single) (Group II) Score (vH, H, M, or L): L

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for systemic toxicity (single dose) based on the lack of systemic effects in acute oral and dermal studies in rats. GreenScreen® criteria classify chemicals as a Low hazard for systemic toxicity (single dose) when there are no systemic effects below the guidance value of 2,000 mg/kg in acute oral and dermal studies (CPA 2018b). The confidence in the score is high as it is based on high-quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
  - *Oral:* In a GLP-compliant acute oral toxicity study according to OECD Guideline 401 and EU Method B.1, male and female Tif: RAI f (SPF) rats (5/sex/dose) were administered 2,000 mg/kg 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not reported) in 0.5% (w/v) carboxymethylcellulose in 0.1% (w/v) aqueous polysorbate 80 via gavage, and observed for 14 days. Animals were observed for mortality, clinical signs, and body weight, and necropsy was performed at sacrifice. There were no deaths reported, and no effects on body weight. Clinical signs included piloerection, hunched posture, dyspnea, and reduced locomotor activity; animals recovered within 6 to 7 days. One female displayed a spotted thymus; however, there were no other gross pathological changes noted (Klimisch 1, reliable without restriction).
  - *Dermal:* In a GLP-compliant acute dermal toxicity study according to OECD Guideline 402 and EU Method B.3, male and female Tif: RAI f (SPF) rats (5/sex/dose) were administered 1,333 mg/kg 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not reported) in 0.5% (w/v) carboxymethylcellulose in 0.1% (w/v) aqueous polysorbate 80 to shaved skin under semi-occlusive conditions for 24 hours, and were observed for 14 days. Animals were observed for mortality, clinical signs and body weight, and necropsy was performed at sacrifice. There were no deaths reported, and no effects to body weight. Clinical signs included piloerection and hunched posture; animals recovered within 2 days. A spotted thymus was observed in two males; however, no other gross pathology was noted (Klimisch 1, reliable without restriction).
    - The authors stated that due to the high viscosity of the test item mixture, only 1,333 mg/kg could be applied, respecting the maximal application volume of 4 mL/kg.

Systemic Toxicity/Organ Effects incl. Immunotoxicity (ST-repeat) (Group II*) Score (H, M, or L): L

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for systemic toxicity (repeated dose) based on NOAELs of 1,130 and 1,090 mg/kg/day in males and females, respectively (the highest dose tested), in a 28-day repeated dose toxicity study in rats. GreenScreen® criteria classify chemicals as a Low hazard for systemic toxicity (repeated dose) when LOAEL values are greater than 300 mg/kg/day for 28-day oral toxicity studies (CPA 2018b). The confidence in the score is high as it is based on a high-quality study.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.

- ECHA 2023a
    - *Oral:* In a GLP-compliant 28-day oral repeated dose toxicity study according to OECD Guideline 407 and EU Method B.7, male and female Sprague-Dawley rats (5/sex/dose) were fed diets containing 0, 100, 650, or 12,000 ppm 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not reported) (reported by authors as contributing doses of 8.95, 59.1, and 1,130 mg/kg/day, respectively, in males and 8.62, 55.5, and 1,090 mg/kg/day, respectively, in females) for 28 days. An additional 5 animals/sex were included in the control and high dose groups for a recovery assessment. Animals were evaluated for mortality, clinical signs, body weight, food consumption, hematology, clinical chemistry, gross pathology, and histopathology. There were no adverse effects reported on any of the parameters examined, and the authors established a NOAEL of 12,000 ppm (1,130 and 1,090 mg/kg/day in males and females, respectively), the highest dose tested (Klimisch 1, reliable without restriction).
        - As 28-day studies are approximately 1/3 the duration of 90-day studies, the guidance value of 100 mg/kg/day for oral repeated dose toxicity studies was tripled (i.e., 100 * 3 = 300 mg/kg/day) for comparing the NOAEL of this study to the guidance values to assign a hazard score for this endpoint.

Neurotoxicity (single dose, N-single) (Group II) Score (vH, H, M, or L): DG
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Data Gap for neurotoxicity (single dose) based on a lack of sufficient data for this endpoint.

- Authoritative and Screening Lists
    - *Authoritative:* Not present on any authoritative lists for this endpoint.
    - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
    - *Oral:* In the previously described GLP-compliant acute oral toxicity study according to OECD Guideline 401 and EU Method B.1, male and female Tif: RAI f (SPF) rats (5/sex/dose) were administered 2,000 mg/kg 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine in 0.5% (w/v) carboxymethylcellulose in 0.1% (w/v) aqueous polysorbate 80 via gavage, and observed for 14 days. Clinical signs included piloerection, hunched posture, dyspnea, and reduced locomotor activity; however, the authors reported these symptoms are common in acute tests. Animals recovered within 6 to 7 days (Klimisch 1, reliable without restriction).
    - *Dermal:* In the previously described GLP-compliant acute dermal toxicity study according to OECD Guideline 402 and EU Method B.3, male and female Tif: RAI f (SPF) rats (5/sex/dose) were administered 1,333 mg/kg 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine in 0.5% (w/v) carboxymethylcellulose in 0.1% (w/v) aqueous polysorbate 80 to shaved skin under semi-occlusive conditions for 24 hours, and were observed for 14 days. Clinical signs included piloerection and hunched posture; however, the authors reported these symptoms are common in acute tests. Animals recovered within 2 days (Klimisch 1, reliable without restriction).
- Based on the weight of evidence, a score of Data Gap was assigned, as insufficient data are available to evaluate this endpoint. Although piloerection, hunched posture, and reduced locomotor activity were observed in acute oral and dermal toxicity studies with rats, it was not clear if this is a specific neurotoxic effect or just reflects a general state of discomfort. As discussed by the authors, these signs are common for acute tests, further suggesting they are not specific neurotoxic effects. Section 3.8.2.2.2 of the GHS criteria (UN 2023) specifically identifies “lethargy, lack of coordination righting reflex, narcosis, and ataxia” as evidence for narcotic effects in experimental animals

following single exposures. Since the exposed animals did not display clear evidence of neurotoxicity such as narcosis or lack of coordination, ToxServices did not consider the generic clinical signs of piloerection, hunched posture, and reduced locomotor activity to be sufficient to classify 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine to Category 3 for transient narcotic effects, but also did not consider them to be sufficient to conclusively support a Low. Therefore, a score of Data Gap was assigned.

Neurotoxicity (repeated dose, N-repeated) (Group II*) Score (H, M, or L): *L*
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for neurotoxicity (repeated dose) based on the lack of neurotoxic effects in oral and dermal subchronic toxicity studies with a surrogate. GreenScreen® criteria classify chemicals as a Low hazard for neurotoxicity (repeated dose) when there is no evidence of neurotoxicity below the oral guidance value of 100 mg/kg/day and dermal guidance value of 200 mg/kg/day in 90-day studies (CPA 2018b). The confidence in the score is low as it is based on data on a weak surrogate.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023b
  - Surrogate: 2,2'-(6-(4-Methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) (CAS #187393-00-6; EC #425-950-7): In a GLP-compliant oral subchronic toxicity study according to OECD Guideline 408, male and female Wistar rats (20/sex/dose) were administered the test substance (> 98% purity) at doses of 0, 100, 500, or 1,000 mg/kg/day in polyethylene glycol via gavage for 13 weeks. A neurobehavioral examination, including a modified Irwin screen test with sensory activity and motor activity, and hind-forelimb grip strength, was performed pre-test, at week 6 and at week 12. There was no evidence of any neurotoxic effects of the test article. Therefore, ToxServices assigned a neurotoxicity NOAEL of ≥ 1,000 mg/kg/day (Klimisch 1, reliable without restriction).
  - Surrogate: 2,2'-(6-(4-Methoxyphenyl)-1,3,5-triazine-2,4-diyl)bis(5-((2-ethylhexyl)oxy)phenol) (CAS #187393-00-6; EC #425-950-7): In a GLP-compliant dermal subchronic toxicity study according to OECD Guideline 411, male and female Wistar rats (13/sex/dose) were administered the test substance (> 98% purity) at doses of 0, 250, 50 0, or 1,000 mg/kg/day in polyethylene glycol under open conditions for 13 weeks. A functional observation battery (FOB) (control and high dose groups only), including touch response, forelimb grip strength, pupillary reflex, visual stimulus response, auditory startle reflex, tail pinch response, righting reflex, landing foot splay, and rectal temperature, was performed at the end of the study. There were no treatment-related changes in neurotoxicological parameters and motor activity was not affected by treatment. The authors concluded there was no evidence of any neurotoxic effects of the test article. Therefore, ToxServices identified a neurotoxicity NOAEL of ≥ 1,000 mg/kg/day (Klimisch 1, reliable without restriction)

Skin Sensitization (SnS) (Group II*) Score (H, M, or L): L
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for skin sensitization based on negative results in a guinea pig maximization test. GreenScreen® criteria classify chemicals as a Low hazard for skin sensitization when adequate data are available and negative, there are no structural alerts, and they are not GHS classified (CPA 2018b). The confidence in the score is high as it is based on a high-quality study.

- Authoritative and Screening Lists
    - *Authoritative:* Not present on any authoritative lists for this endpoint.
    - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
    - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not specified) was not sensitizing a GLP-compliant guinea pig maximization assay according to OECD Guideline 406 and EU Method B.6. Male and female Pirbright White Strain (Tif: DHP) guinea pigs (treated = 10/sex, control = 5/sex) were intradermally and epicutaneously induced with 5% and 40% of the test substance (purity not reported), respectively, in petrolatum. Animals were epicutaneously challenged with 40% of the test substance in petrolatum under occlusive conditions. There were no positive sensitization reactions upon challenge (Klimisch 2, reliable with restrictions).

Respiratory Sensitization (SnR) (Group II*) Score (H, M, or L): *L*
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for respiratory sensitization based on a lack of structural alerts and negative results for skin sensitization, according to ECHA's guidance. GreenScreen® criteria classify chemicals as a Low hazard for respiratory sensitization when adequate data are available and negative, there are no structural alerts, and they are not GHS classified (CPA 2018b). The confidence in the score is low as no specific respiratory sensitization data are available, and the ECHA guidance does not consider non-immunological mechanisms of respiratory sensitization.

- Authoritative and Screening Lists
    - *Authoritative:* Not present on any authoritative lists for this endpoint.
    - *Screening:* Not present on any screening lists for this endpoint.
- OECD 2023
    - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine does not contain any structural alerts for respiratory sensitization (Appendix H)
- No data were identified for the target compound for this endpoint. Therefore, ToxServices attempted to evaluate the respiratory sensitization potential of 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine according to ECHA's guideline (ECHA 2017), which states that the mechanisms leading to respiratory sensitization are essentially similar to those leading to skin sensitization (ECHA 2017). ECHA recommended that if a chemical is not a dermal sensitizer based on high quality data, it is unlikely to be a respiratory sensitizer. ECHA also noted that this rationale does not cover respiratory hypersensitivity caused by non-immunological mechanisms, for which human experience is the main evidence of activity (ECHA 2017). As 2-(2-hydroxy-4-hexyloxy phenyl)-4,6-diphenyl-1,3,5-triazine was not sensitizing to the skin (see skin sensitization section above), and a literature search did not find any human evidence of respiratory sensitization by 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine, and as 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine does not contain any structural alerts for respiratory sensitization (OECD 2023), 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is not expected to be a respiratory sensitizer. Confidence in the score is low as this evaluation does not include non-immunologic mechanisms of respiratory sensitization, and no specific data are available for respiratory sensitization.

Skin Irritation/Corrosivity (IrS) (Group II) Score (vH, H, M, or L): L
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for skin irritation/corrosivity based on it not being classified as irritating due to the lack of irritation in two acute dermal irritation assays in rabbits. GreenScreen® criteria classify chemicals as a Low hazard for skin

irritation/corrosivity when adequate data are available and negative, there are no structural alerts, and they are not GHS classified (CPA 2018b). The confidence in the score is high as it is based on high-quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not reported) was not irritating to the skin in a GLP-compliant acute dermal irritation study according to OECD Guideline 404. Female New Zealand white rabbits (n=3) were administered 0.5 g of the test substance to shaved skin under semi-occlusive conditions for 4 hours, and observed for 3 days. Treatment did not produce any signs of dermal irritation, and the mean erythema and edema scores were both 0 at 24, 48, and 72 hours (Klimisch 1, reliable without restriction).
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not reported) was not irritating to the skin in an acute dermal irritation study similar to OECD Guideline 404. One New Zealand white rabbit was administered 0.5 g of the test substance to shaved skin under occlusive conditions for 4 hours, and observed for 3 days. The erythema score was 1 (max. 4) at the one hour timepoint and the edema scores were all 0; all effects were fully reversible within 24 hours, and the authors concluded the test substance was non-irritating (Klimisch 2, reliable with restrictions).

Eye Irritation/Corrosivity (IrE) (Group II) Score (vH, H, M, or L): L

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for eye irritation/corrosivity based on it not being classified as irritating due to the lack of irritation in two acute ocular irritation assays in rabbits. GreenScreen® criteria classify chemicals as a Low hazard for eye irritation/corrosivity when adequate data are available and negative, there are no structural alerts, and they are not GHS classified (CPA 2018b). The confidence in the score is high as it is based on high-quality studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not reported) was not irritating to the eye in an a GLP-compliant acute ocular irritation study according to OECD Guideline 405. The left eye of female New Zealand white rabbits (n=3) was instilled with 0.1 mL of the test substance (purity not reported, assumed undiluted) and animals were observed for 3 days. Minimal conjunctival redness (score 1), minimal conjunctival swelling (score 1), and minimal iris reaction (score 1) were observed in some test animals at the one-hour reading. At 24, 48, and 72 hours, the mean corneal opacity score was 0/4, the mean iris score was 0/2, the mean conjunctival redness score was 0.11/3 (0.33 at 24 hours, 0 and 48 and 72 hours), and the mean chemosis score was 0/4. Effects were fully reversible within 24 hours (iris reaction, conjunctival swelling) or 48 hours (conjunctival redness). There were no other signs of eye irritation noted throughout the test (Klimisch 1, reliable without restriction).
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not specified) was not irritating to the eye in an a GLP-compliant acute ocular irritation study similar to OECD Guideline 405. The left eye of one New Zealand white rabbit was instilled with 0.1 mL of the undiluted test substance (purity not reported) and observed for 7 days. At 1, 24, 48, and

72 hours, the mean cornea, iris, conjunctivae and chemosis scores were 0/4, 0/2, 1.33/3, and 0.33/4, respectively. All effects were fully reversible within 7 days. There were no other signs of eye irritation noted and the authors concluded the test substance is not irritating to the eye (Klimisch 2, reliable with restrictions).

Ecotoxicity (Ecotox)

Acute Aquatic Toxicity (AA) Score (vH, H, M, or L): L

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for acute aquatic toxicity based on a lack of effects at saturation in fish, daphnia, and algae. GreenScreen® criteria classify chemicals as a Low hazard for acute aquatic toxicity when sufficient data are available and they are not GHS classified (CPA 2018b). The confidence in the score is high as it is based on a measured water solubility value and experimental aquatic toxicity data.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine has a water solubility of < 0.0003 mg/L at 20°C as identified in a GLP-compliant, EU Method A.6 test (Klimisch 1, reliable without restriction).
  - 96hr LC_{50} (*Danio rerio*, zebrafish) > 100 mg/L (nominal), > 9.2 mg/L (measured) as identified in a GLP-compliant, OECD Guideline 203 test (Klimisch 2, reliable with restrictions).
  - 48hr EC_{50} (*Daphnia magna*, daphnia) > 100 mg/L (nominal), > 11.2 mg/L (measured) as identified in a GLP-compliant, OECD Guideline 202 test (Klimisch 2, reliable with restrictions).
  - 72hr EC_{50} (*Desmodesmus subspicatus*, algae) > 100 mg/L (nominal) for biomass (growth values not provided), > 74.5 mg/L (measured) in a GLP-compliant, OECD Guideline 201 test (Klimisch 2, reliable with restrictions).
- Based on the weight of evidence, a score of low was assigned. 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine has negligible water solubility (< 0.0003 mg/L at 20°C) and acute aquatic toxicity studies in all three trophic levels found no effects at levels greatly exceeding this concentration, indicating no effects are expected at saturation. Therefore, a score of Low was assigned.

Chronic Aquatic Toxicity (CA) Score (vH, H, M, or L): *L*

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for chronic aquatic toxicity based on experimental data for daphnia and algae and modeled data for fish that indicate no effects at saturation. GreenScreen® criteria classify chemicals as a Low hazard for chronic aquatic toxicity when sufficient data are available and they are not GHS classified (CPA 2018b). The confidence in the score is low as there are no experimental data available for fish.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine has a water solubility of < 0.0003 mg/L at 20°C as identified in a GLP-compliant, EU Method A.6 test (Klimisch 1, reliable without restriction).

  - 21day NOEC (*D. magna*, daphnia) ≥ 1.5 mg/L (nominal) for reproduction in a GLP-compliant, OECD Guideline 211/EU Method C.20 test (Klimisch 1, reliable without restriction)
  - 72hr NOEC (*D. subspicatus*, algae) ≥ 100 mg/L (nominal), ≥ 74.5 mg/L for biomass (growth values not provided) (measured) in a GLP-compliant, OECD Guideline 201 test (Klimisch 2, reliable with restrictions.
- U.S. EPA 2017b
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine belongs to the Neutral Organics; Phenols; and Triazines, Aromatics ECOSAR chemical classes. The most conservative predicted chronic value (ChV) is 0.0040 mg/L in fish. Because this value exceeds the experimental water solubility of < 0.0003 mg/L by more than 10X, no effects are expected at saturation (Appendix I).
- CCID 2023

  2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is classified as a GHS Category 4 chronic aquatic toxicant in New Zealand based on its association with the EU risk phrase R53.

Environmental Fate (Fate)

Persistence (P) Score (vH, H, M, L, or vL): *vH*

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Very High for persistence based on a predicted half-life of 337.5 days in its expected major compartment of sediment, supported by experimental data showing that it is not biodegradable. GreenScreen® criteria classify chemicals as a Very High hazard for persistence when they mainly partition to sediment and the half-life in sediment is > 180 days (CPA 2018b). The confidence in the score is low as it is based on a predicted degradation half-life.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not reported) was not biodegradable in a GLP-compliant CO_2 Evolution Test according to OECD Guideline 301B. In this study activated sludge (adaption not specified) was exposed to 10.1 or 20 mg/L of the test substance for 28 days. The test substance degraded 2% in 28 days (10.1 mg/L starting concentration) and 0% in 28 days (20 mg/L starting concentration). The reference substance (aniline) performed as expected (Klimisch 2, reliable with restrictions).
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not reported) was not biodegradable in a Modified MITI Test according to OECD Guideline 301C. In this study aerobic, domestic, adapted, activated sludge was exposed to 100 µg/g of the test substance for 28 days. The test substance degraded 0.3-0.5% in 28 days. Performance of the reference substance (aniline) was not provided (Klimisch 2, reliable with restrictions).
- U.S. EPA 2017a
  - The BIOWIN modeling Ready Biodegradable Predictor indicates that 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is not expected to be readily biodegradable. Fugacity modeling (MCI method) predicts 69.9% will partition to soil with a half-life of 337.5 days, 28.3% will partition to soil with a half-life of 75 days, and 1.77% will partition to water with a half-life of 37.5 days (Appendix J).

Bioaccumulation (B) Score (vH, H, M, L, or vL): vL
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Very Low for bioaccumulation based on an experimental BCF of < 8.1. GreenScreen® criteria classify chemicals as a Very Low hazard for bioaccumulation when the BCF is less than 100 (CPA 2018b). The confidence in the score is high as it is based on measured data from a well-conducted study.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
  - A BCF of < 8.1 was established for 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not specified) in *Cyprinus carpio* following an 8-week exposure period in a non-GLP-compliant, OECD Guideline 305C bioaccumulation test (Klimisch 2, reliable with restrictions).

Physical Hazards (Physical)

Reactivity (Rx) Score (vH, H, M, or L): L
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for reactivity based on a lack of oxidizing and explosive properties. GreenScreen® criteria classify chemicals as a Low hazard for reactivity when adequate data are available and they are not GHS classified (CPA 2018b). Confidence in the score is high as it is based on well-conducted studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not reported) was non-explosive in a GLP-compliant explosive properties test according to EU Method A.14 (Klimisch 1, reliable without restriction).
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (purity not reported) has no oxidizing properties, as determined in a GLP-compliant oxidizing properties (solids) test according to EU Method A.17 (Klimisch 1, reliable without restriction).

Flammability (F) Score (vH, H, M, or L): L
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine was assigned a score of Low for flammability based on negative results in flammability tests. GreenScreen® criteria classify chemicals as a Low hazard for flammability when adequate data are available and they are not GHS classified (CPA 2018b). Confidence in the score is high as it is based on well-conducted studies.

- Authoritative and Screening Lists
  - *Authoritative:* Not present on any authoritative lists for this endpoint.
  - *Screening:* Not present on any screening lists for this endpoint.
- ECHA 2023a
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine did not self-ignite up to its melting point of 149°C, as determined in a GLP-complaint relative self-ignition temperature for solids test according to EU Method A.16 (Klimisch 1, reliable without restriction).
  - 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine is not considered to be highly flammable, as determined in a GLP-compliant flammability (solids) test according to EU Method A.10. The test substance melted when exposed to a hot platinum wire and did not sustain a flame (Klimisch 1, reliable without restriction).

Use of New Approach Methodologies (NAMs)[8] in the Assessment, Including Uncertainty Analyses of Input and Output

New Approach Methodologies (NAMs) used in this GreenScreen® include in silico modeling for carcinogenicity, respiratory sensitization, aquatic toxicity, and persistence, and *in vitro* data for genotoxicity. NAMs are non-animal alternative that can be used alone or in combination to provide information for safety assessment (Madden et al. 2020). At present, there is not a uniformly accepted framework on how to report and apply individual NAMs (U.S. EPA 2020, OECD 2020). The expanded application of NAMs greatly amplifies the need to communicate uncertainties associated with their use. As defined by EFSA (2018), uncertainty is "a general term referring to all types of limitations in available knowledge that affect the range and probability of possible answers to an assessment question." The quality, utility, and accuracy of NAM predictions are greatly influenced by two primary types of uncertainties (OECD 2020):

- Type I: Uncertainties related to the input data used
- Type II: Uncertainties related to extrapolations made

As shown in Table 5, Type I (input data) uncertainties in 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine's NAMs dataset include limited availability of carcinogenicity data and lack of respiratory sensitization data. 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine's Type II (extrapolation output) uncertainties include lack of a defined applicability domain of Toxtree structural alerts, dissimilar chemicals identified in the VEGA CAESAR carcinogenicity model database, limitations of *in vitro* genotoxicity tests in mimicking *in vivo* metabolism, and lack of consideration of non-immunological mechanisms of respiratory sensitization. Some of 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine's type II uncertainties were alleviated by the use of *in vitro* test batteries and/or in combination of *in vivo* data.

Table 4: Summary of NAMs Used in the GreenScreen® Assessment, Including Uncertainty Analyses

Uncertainty Analyses (OECD 2020)	
Type I Uncertainty: Data/Model Input	**Carcinogenicity**: Only limited experimental data are available. **Respiratory sensitization**: No experimental data are available.
Type II Uncertainty: Extrapolation Output	**Carcinogenicity**: Toxtree only identifies structural alerts (SAs), and no applicability domain can be defined (Toxtree 2018). VEGA tool does not evaluate ionic substances (VEGA 2021). Of the one model in VEGA that produced reliable (i.e., Global AD index > 0.7) predictions, the similarity index of the CAESAR model is 0.78 but the read-across chemicals used in this model do not have the triazine functional group, limiting the confidence of the prediction from this model. **Genotoxicity:** The bacterial reverse mutation assay (as defined in OECD Guideline 471) only tests point-mutation inducing activity in

[8] NAMs refers to any non-animal technology, methodology, approach, or combination thereof that inform chemical hazard and risk assessments. NAMs include *in silico*/computational tools, *in vitro* biological profiling (e.g., cell cultures, 2,3-D organotypic culture systems, genomics/transcriptomics, organs on a chip), and frameworks (i.e., adverse outcome pathways (AOPs), defined approaches (DA), integrated approaches to testing and assessment (IATA).

	non-mammalian cells, and the exogenous metabolic activation system does not entirely mimic *in vivo* conditions[9]. The mammalian cell gene mutation assay (as defined in OECD Guideline 476) only detects gene mutations, and the exogenous metabolic activation system does not entirely mirror *in vivo* metabolism (i.e., the liver S9 mix contains enzymes present in the endoplasmic reticulum but not the cytosol of liver cells).[10] The *in vitro* chromosome aberration assay (OECD Guideline 473) does not measure aneuploidy and it only measures structural chromosomal aberrations. The exogenous metabolic activation system does not entirely mirror *in vivo* metabolism[11]. **Respiratory sensitization**: The OECD Toolbox only identifies structural alerts, and does not define applicability domains. Additionally, the ECHA guidance (2017), on which the use of OECD Toolbox structural alerts is based, does not evaluate non-immunologic mechanisms for respiratory sensitization.	
Endpoint	**NAMs Data Available and Evaluated? (Y/N)**	**Types of NAMs Data (*in silico* modeling/*in vitro* biological profiling/frameworks)**
Carcinogenicity	Y	*In silico* modeling: VEGA/Toxtree/OncoLogic™/OECD Toolbox/Danish QSAR
Mutagenicity	Y	*In vitro* data: Bacterial reverse mutation assay/*in vitro* gene mutation assay/*in vitro* chromosome aberration assay
Reproductive toxicity	N	
Developmental toxicity	N	
Endocrine activity	N	
Acute mammalian toxicity	N	
Single exposure systemic toxicity	N	
Repeated exposure systemic toxicity	N	
Single exposure neurotoxicity	N	
Repeated exposure neurotoxicity	N	
Skin sensitization	N	

[9] https://www.oecd-ilibrary.org/docserver/9789264071247-en.pdf?expires=1614097593&id=id&accname=guest&checksum=89925F80B9F4BD2FFC6E90F94A0EE427
[10] https://www.oecd-ilibrary.org/docserver/9789264264809-en.pdf?expires=1614097800&id=id&accname=guest&checksum=C0DE371FB9C5A878E66C9AB7F84E6BBE
[11] https://www.oecd-ilibrary.org/docserver/9789264264649-en.pdf?expires=1614098015&id=id&accname=guest&checksum=6A4F9CE52EA974F5A74793DD54D54352

Respiratory sensitization	Y	*In silico* modeling: OECD Toolbox structural alerts
Skin irritation	N	
Eye irritation	N	
Acute aquatic toxicity	N	
Chronic aquatic toxicity	Y	*In silico* modeling: ECOSAR
Persistence	Y	*In silico* modeling: EPI Suite™ Non-animal testing: OECD 301 Biodegradation tests
Bioaccumulation	N	

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APPENDIX A: Hazard Classification Acronyms
(in alphabetical order)

(AA) Acute Aquatic Toxicity

(AT) Acute Mammalian Toxicity

(B) Bioaccumulation

(C) Carcinogenicity

(CA) Chronic Aquatic Toxicity

(D) Developmental Toxicity

(E) Endocrine Activity

(F) Flammability

(IrE) Eye Irritation/Corrosivity

(IrS) Skin Irritation/Corrosivity

(M) Mutagenicity and Genotoxicity

(N) Neurotoxicity

(P) Persistence

(R) Reproductive Toxicity

(Rx) Reactivity

(SnS) Sensitization- Skin

(SnR) Sensitization- Respiratory

(ST) Systemic/Organ Toxicity

APPENDIX B: Results of Automated GreenScreen® Score Calculation for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)

TOXSERVICES
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GreenScreen® Score Inspector

Table 1: Hazard Table

			Group I Human					Group II and II* Human									Ecotox		Fate		Physical	
			Carcinogenicity	Mutagenicity/Genotoxicity	Reproductive Toxicity	Developmental Toxicity	Endocrine Activity	Acute Toxicity	Systemic Toxicity		Neurotoxicity		Skin Sensitization*	Respiratory Sensitization*	Skin Irritation	Eye Irritation	Acute Aquatic Toxicity	Chronic Aquatic Toxicity	Persistence	Bioaccumulation	Reactivity	Flammability
Table 2: Chemical Details									S	R *	S	R *	*	*								
Inorganic Chemical?	**Chemical Name**	**CAS#**	**C**	**M**	**R**	**D**	**E**	**AT**	**STs**	**STr**	**Ns**	**Nr**	**SNS***	**SNR***	**IrS**	**IrE**	**AA**	**CA**	**P**	**B**	**Rx**	**F**
No	**2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-**	**147315-50-2**	*L*	**L**	*L*	*L*	DG	**L**	**L**	**L**	DG	*L*	**L**	*L*	**L**	**L**	**L**	*L*	*vH*	**vL**	**L**	**L**

Table 3: Hazard Summary Table

Benchmark	a	b	c	d	e	f	g
1	No	No	No	No	No		
2	No	No	No	No	No	No	No
3	Yes	No	No	No			
4	STOP						

Table 4

Chemical Name	Preliminary GreenScreen® Benchmark Score
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-	3

Note: Chemical has not undergone a data gap assessment. Not a Final GreenScreen™ Score

Table 6

Chemical Name	Final GreenScreen® Benchmark Score
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-	3

After Data gap Assessment
Note: No Data gap Assessment Done if Preliminary GS Benchmark Score is 1.

Table 5: Data Gap Assessment Table

Datagap Criteria	a	b	c	d	e	f	g	h	i	j	bm4	End Result
1												
2												
3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		3
4												

APPENDIX C: Pharos Output for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)

147315-50-2
2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine
ALSO CALLED (6E)-6-(4,6-diphenyl-1H-1,3,5-triazin-2-ylidene)-3-hexoxycyclohexa-2,4-dien-1-one, 1372550-53-2, 162...
View all synonyms (15)

Share Profile

Hazards | Properties | Functional Uses | Process Chemistry | Resources

All Hazards View

Show PubMed Results | Request Assessment | Add to Comparison

		Group I Human					Group II and II* Human								Ecotox			Fate		Physical		Mult	Non-GSLT			
	GREENSCREEN®	C	M	R	D	E	AT	ST	ST	N	N	SnS	SnR	IrS	IrE	AA	CA	ATB	P	B	Rx	F	Mult	PBT	GW	O	Other
List Hazard Summary	LT-UNK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	-	-	-	R

Hazard Lists

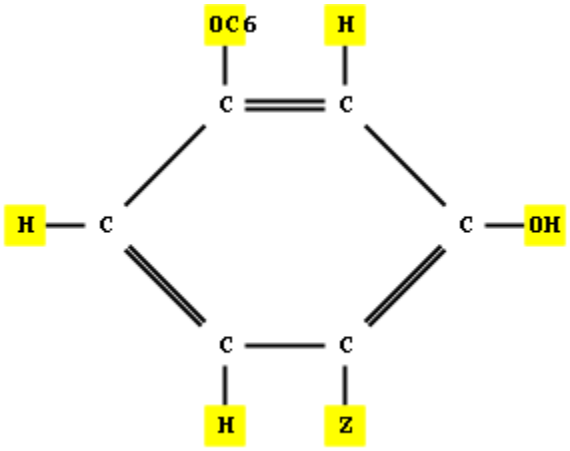
Download Lists

ENDPOINT	HAZARD LEVEL	GREENSCREEN®	LIST NAME	HAZARD DESCRIPTION	OTHER LISTS
T & P and/or B [(Chronic Aquatic Toxicity and Persistence) or (Acute Aquatic Toxicity and Persistence and/or Bioaccumulation)]	M	LT-UNK	GHS - Australia	H413 - May cause long lasting harmful effects to aquatic life [Hazardous to the aquatic environment (chronic) - Category 4]	+3
	M	LT-UNK	GHS - New Zealand	Hazardous to the aquatic environment - chronic category 4	
	U	LT-UNK	EU - GHS (H-Statements) Annex 6 Table 3-1	H413 - May cause long lasting harmful effects to aquatic life [Hazardous to the aquatic environment (chronic) - Category 4]	
	pC	NoGS	EU - Manufacturer REACH hazard submissions	H413 - May cause long lasting harmful effects to aquatic life (unverified) [Hazardous to the aquatic environment (chronic) - Category 4]	
Human and/or Aquatic toxicity and/or Persistence and/or Bioaccumulation	U	LT-UNK	German FEA - Substances Hazardous to Waters	Class 1 - Low Hazard to Waters	

Restricted Substance Lists (3)

APPENDIX D: OncoLogic™ Results for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)

OncoLogic Justification Report



SUMMARY :

CODE NUMBER : 147315

SUBSTANCE ID :

The level of concern for this compound,disregarding any substituent denoted as 'Z', is LOW

The effect of any substitutent (denoted by 'Z') is uncertain.

JUSTIFICATION:

Phenolic compounds have generally not attracted much attention as carcinogens because (a) many phenolics are normal constituents of animal and plant tissues, (b) aromatic hydroxylation is often considered to be detoxifying in nature because of increased hydrophilicity, and (c) a large number of phenolics are inhibitors of carcinogenesis. However, at least several types of phenolics should be of concern as potential carcinogens or tumorigenesis promoters. These include (a) polyhydric phenolics capable of being oxidized to reactive simple or conjugated quinones, (b) phenolics capable of being oxidized to reactive quinoneimine or quinonemethide intermediates, (c) phenolics with structural similarity to estrogenic/androgenic compounds, and (d) phenolics containing linear tricyclic ring structure with hydroxy groups at both the 1- and 8-positions or all the peri positions on one side (e.g., 1,8,9-positions of anthracene).

Ring substitution with halogens may increase the activity depending on the number, position, and nature of the halogen. Ring substitution with bulky or hydrophilic groups tends to decrease activity. Phenolics which stimulate cell proliferation may contribute to carcinogenic activity. Some phenolics may have both

carcinogenic and anticarcinogenic activity depending on the exposure scenario.

The baseline level of concern for an unsubstituted phenol is LOW.

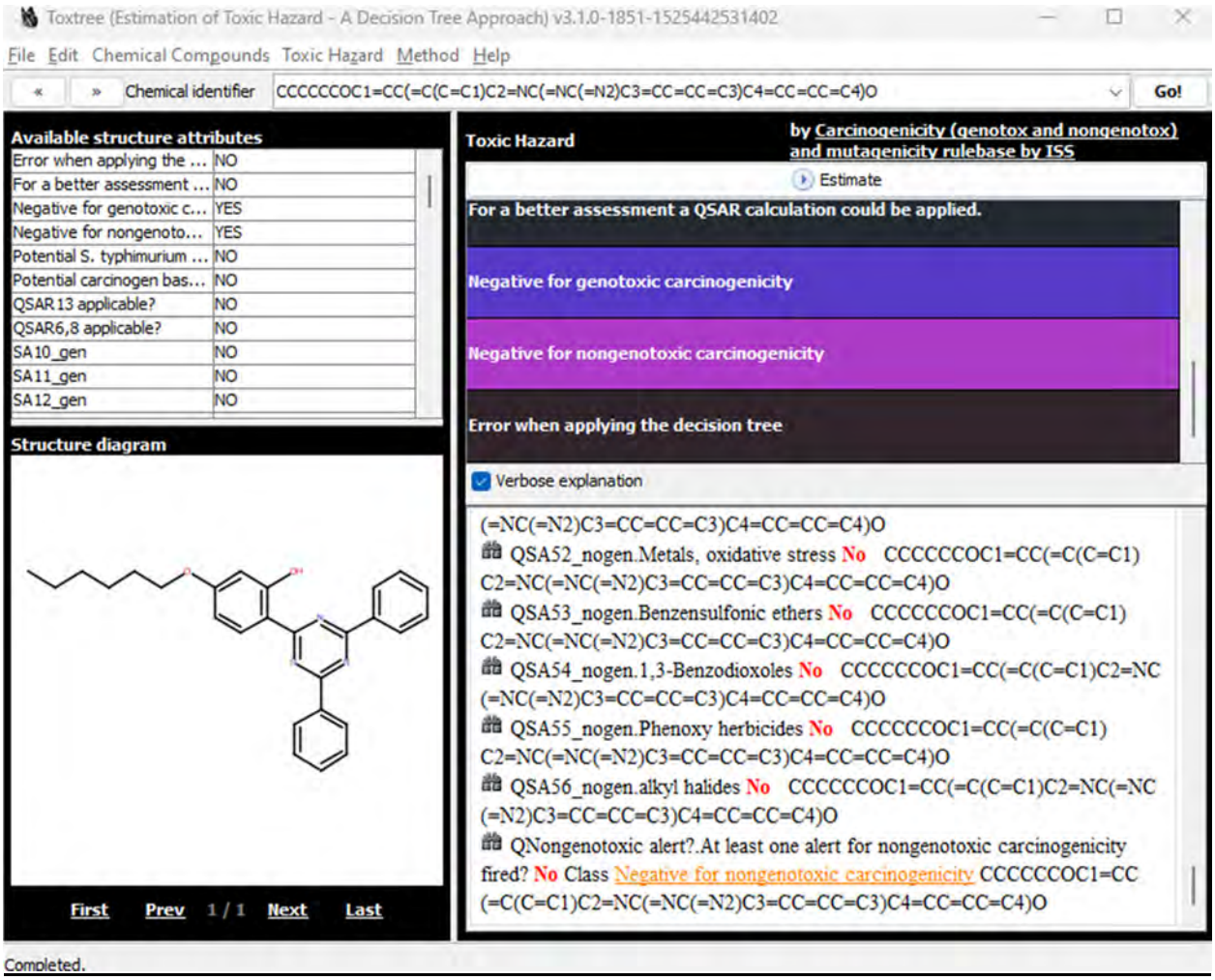
The no alkyl and/or alkoxy groups with a total of four to eight carbons, none of which are a tertiary butyl or pentyl, are expected to lower the level of concern.

As a result of the combined substituent modifications, the level of concern remains LOW.

The effect of any other substitutent (denoted by 'Z') is uncertain. Therefore, the level of concern remains LOW.

The final level of concern for this compound is LOW.

APPENDIX E: Toxtree Carcinogenicity Results for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)

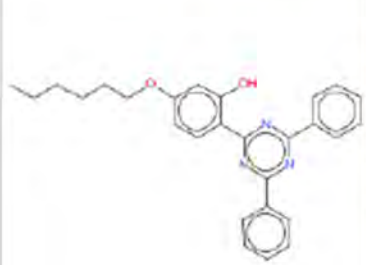


APPENDIX F: VEGA Carcinogenicity Results for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)

VEGA — Carcinogenicity model (CAESAR) 2.1.10 — page 1

1. Prediction Summary

Prediction for compound Molecule 0 -

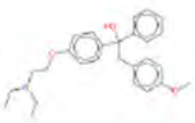


Prediction: Reliability:

Prediction is NON-Carcinogen, the result appears reliable. Anyhow, you should check it through the evaluation of the information given in the following sections.Anyway some issues could be not optimal:
- Only moderately similar compounds with known experimental value in the training set have been found

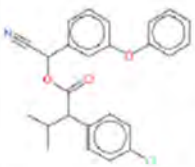
Compound: Molecule 0
Compound SMILES: Oc4cc(OCCCCCC)ccc4(c1nc(nc(n1)c2ccccc2)c3ccccc3)
Experimental value: -
Predicted Carcinogen activity: NON-Carcinogen
P(Carcinogen): 0.325
P(NON-Carcinogen): 0.675
Reliability: The predicted compound is into the Applicability Domain of the model
Remarks:
none

3.1 Applicability Domain:
Similar Compounds, with Predicted and Experimental Values



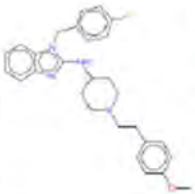
Compound #1

CAS: 67-98-1
Dataset id:428 (Training Set)
SMILES: OC(c1ccccc1)(c2ccc(OCCN(CC)CC)cc2)Cc3ccc(OC)cc3
Similarity: 0.791
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



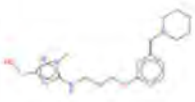
Compound #2

CAS: 51630-58-1
Dataset id:325 (Training Set)
SMILES: N#CC(OC(=O)C(c1ccc(cc1)Cl)C(C)C)c3cccc(Oc2ccccc2)c3
Similarity: 0.769
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



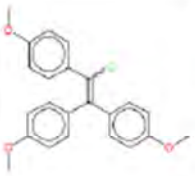
Compound #3

CAS: 68844-77-9
Dataset id:61 (Test Set)
SMILES: Fc1ccc(cc1)Cn3c(nc2ccccc23)NC5CCN(CCc4ccc(OC)cc4)CC5
Similarity: 0.759
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



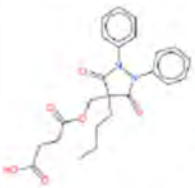
Compound #4

CAS: 76956-02-0
Dataset id:417 (Training Set)
SMILES: OCc3nc(NCCCOc1cccc(c1)CN2CCCCC2)n(n3)C
Similarity: 0.741
Experimental value : Carcinogen
Predicted value : NON-Carcinogen



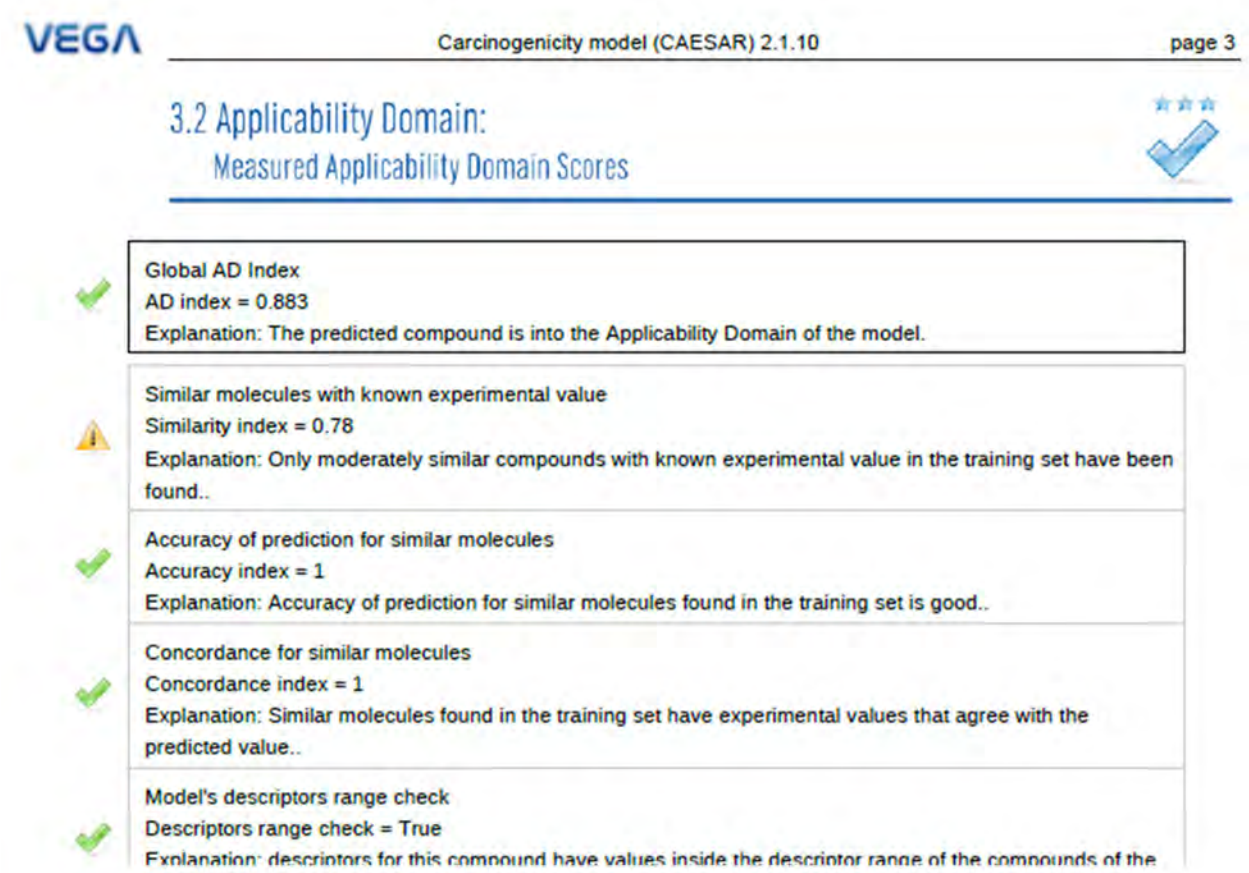
Compound #5

CAS: 569-57-3
Dataset id:717 (Training Set)
SMILES: O(c1ccc(cc1)C(c2ccc(OC)cc2)=C(c3ccc(OC)cc3)Cl)C
Similarity: 0.735
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



Compound #6

CAS: 27470-51-5
Dataset id:715 (Training Set)
SMILES: O=C(O)CCC(=O)OCC2(C(=O)N(c1ccccc1)N(C2(=O))c3ccccc3)CCCC
Similarity: 0.727
Experimental value : NON-Carcinogen
Predicted value : NON-Carcinogen



VEGA Carcinogenicity model (CAESAR) 2.1.10 page 3

3.2 Applicability Domain:
Measured Applicability Domain Scores

Global AD Index
AD index = 0.883
Explanation: The predicted compound is into the Applicability Domain of the model.

Similar molecules with known experimental value
Similarity index = 0.78
Explanation: Only moderately similar compounds with known experimental value in the training set have been found..

Accuracy of prediction for similar molecules
Accuracy index = 1
Explanation: Accuracy of prediction for similar molecules found in the training set is good..

Concordance for similar molecules
Concordance index = 1
Explanation: Similar molecules found in the training set have experimental values that agree with the predicted value..

Model's descriptors range check
Descriptors range check = True
Explanation: descriptors for this compound have values inside the descriptor range of the compounds of the

APPENDIX G: Danish QSAR Database Carcinogenicity Results for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)

Carcinogenicity

	E-Ultra	Leadscope
FDA-RCA-Cancer-Male-Rat	NEG_IN	NEG_OUT
FDA-RCA-Cancer-Female-Rat	NEG_IN	INC_OUT
FDA-RCA-Cancer-Rat	NEG_IN	NEG_IN
FDA-RCA-Cancer-Male-Mouse	NEG_IN	NEG_IN
FDA-RCA-Cancer-Female-Mouse	NEG_IN	NEG_IN
FDA-RCA-Cancer-Mouse	NEG_IN	NEG_IN
FDA-RCA-Cancer-Rodent	NEG_IN	NEG_OUT

Commercial models from CASE Ultra and Leadscope

FDA RCA: Data from US Food and Drug Administration as part of Research Cooperation Agreement

Carcinogenicity (genotox and nongenotox) alerts by ISS, alerts in:	
-parent only	
Oncologic Primary Classification, alerts in:	
-parent only	

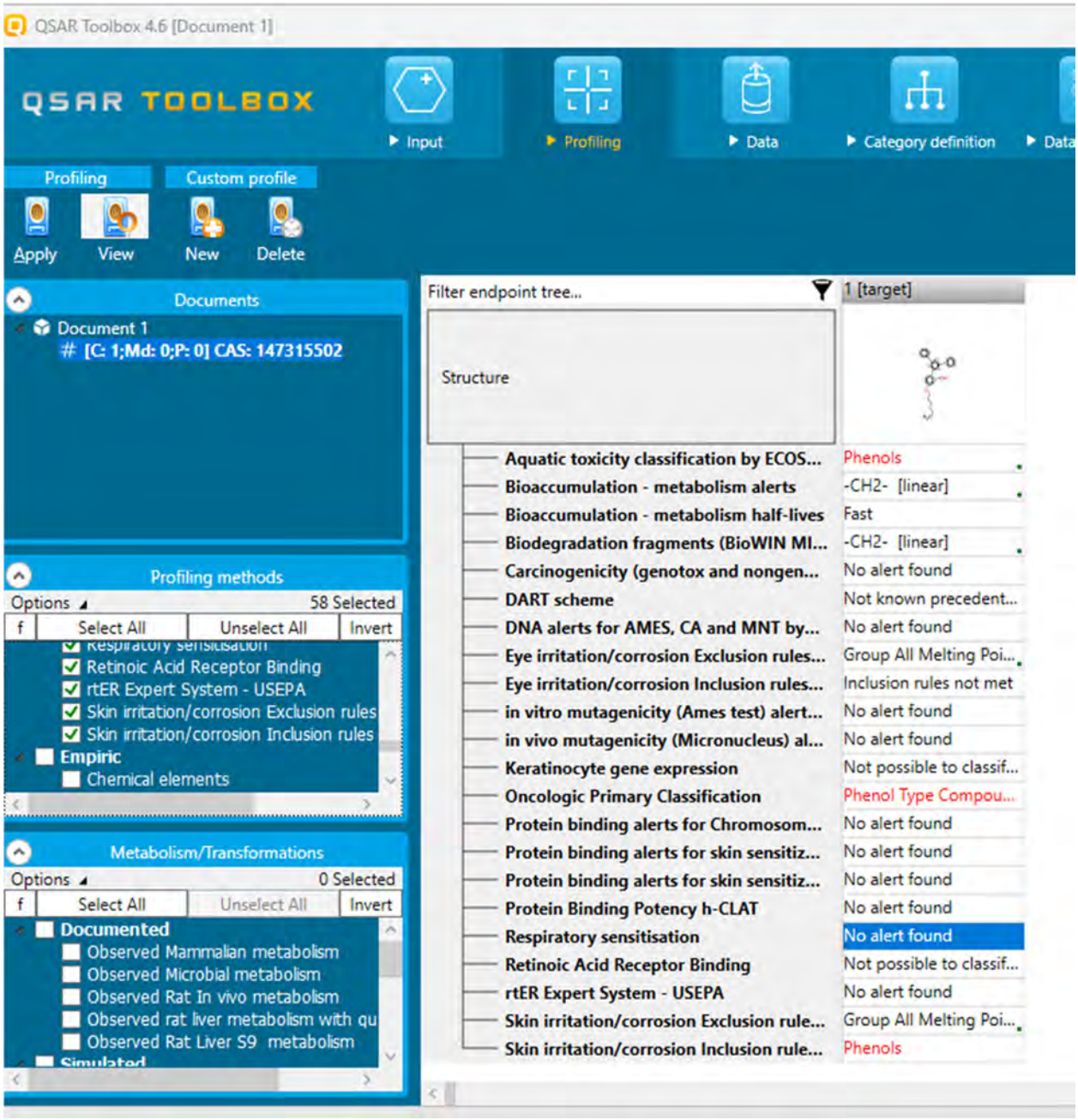
OECD QSAR Toolbox v.4.2 profilers

Profiler predictions are supporting information to be used together with the relevant QSAR predictions

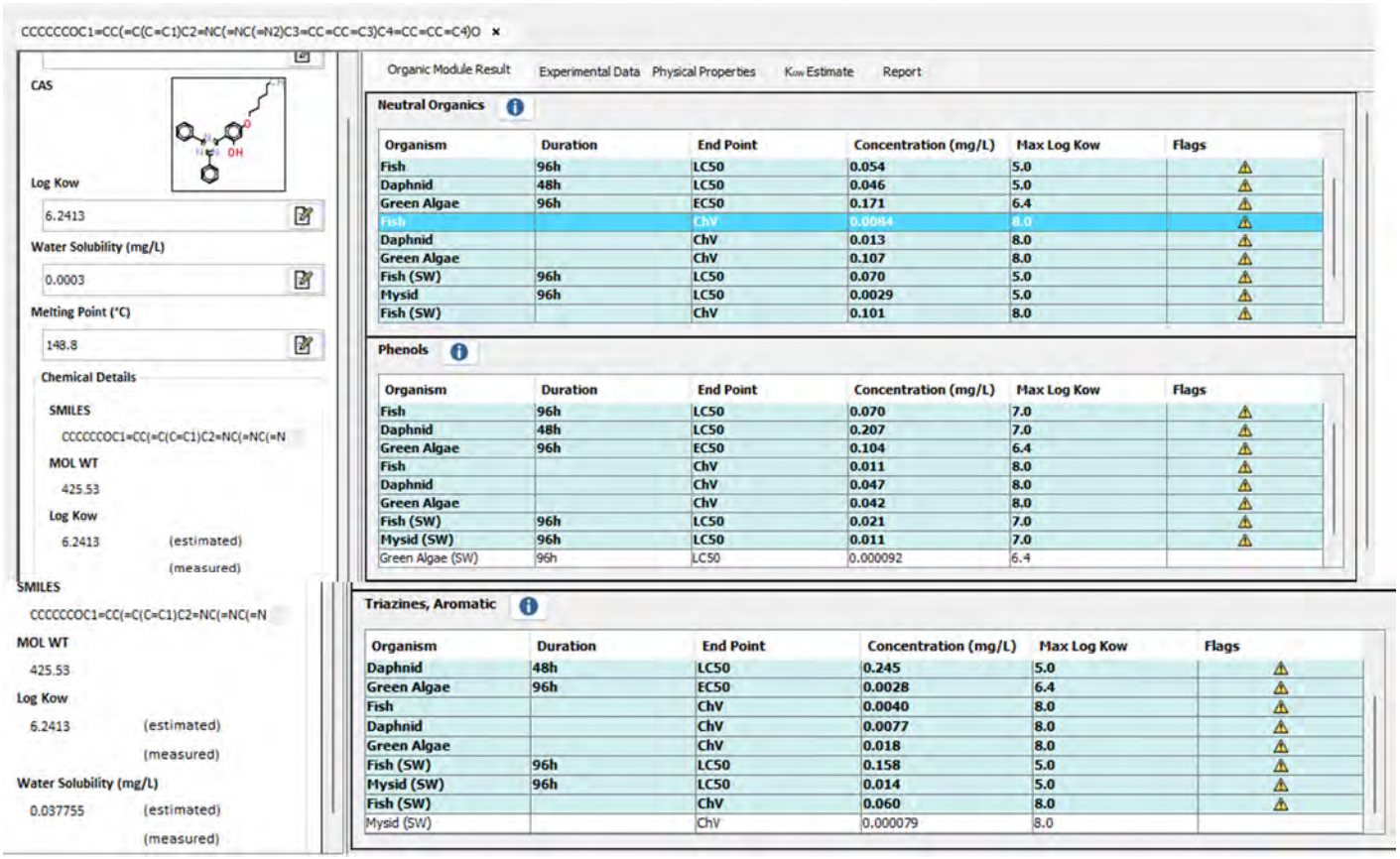
	Exp	Battery	CASE Ultra	Leadscope	SciQSAR
Liver Specific Cancer in Rat or Mouse		INC_OUT	NEG_IN	POS_OUT	POS_IN

DTU-developed models

APPENDIX H: OECD QSAR Toolbox Respiratory Sensitization Results for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)



APPENDIX I: ECOSAR Modeling Results for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)



CCCCCCOC1=CC(=C(C=C1)C2=NC(=NC(=N2)C3=CC=CC=C3)C4=CC=CC=C4)O

CAS

Log Kow
6.2413

Water Solubility (mg/L)
0.0003

Melting Point (°C)
148.8

Chemical Details

SMILES
CCCCCCOC1=CC(=C(C=C1)C2=NC(=NC(=N

MOL WT
425.53

Log Kow
6.2413 (estimated)
(measured)

SMILES
CCCCCCOC1=CC(=C(C=C1)C2=NC(=NC(=N

MOL WT
425.53

Log Kow
6.2413 (estimated)
(measured)

Water Solubility (mg/L)
0.037755 (estimated)
(measured)

Organic Module Result | Experimental Data | Physical Properties | Kow Estimate | Report

Neutral Organics

Organism	Duration	End Point	Concentration (mg/L)	Max Log Kow	Flags
Fish	96h	LC50	0.054	5.0	⚠
Daphnid	48h	LC50	0.046	5.0	⚠
Green Algae	96h	EC50	0.171	6.4	⚠
Fish		ChV	0.0084	8.0	⚠
Daphnid		ChV	0.013	8.0	⚠
Green Algae		ChV	0.107	8.0	⚠
Fish (SW)	96h	LC50	0.070	5.0	⚠
Mysid	96h	LC50	0.0029	5.0	⚠
Fish (SW)		ChV	0.101	8.0	⚠

Phenols

Organism	Duration	End Point	Concentration (mg/L)	Max Log Kow	Flags
Fish	96h	LC50	0.070	7.0	⚠
Daphnid	48h	LC50	0.207	7.0	⚠
Green Algae	96h	EC50	0.104	6.4	⚠
Fish		ChV	0.011	8.0	⚠
Daphnid		ChV	0.047	8.0	⚠
Green Algae		ChV	0.042	8.0	⚠
Fish (SW)	96h	LC50	0.021	7.0	⚠
Mysid (SW)	96h	LC50	0.011	7.0	⚠
Green Algae (SW)	96h	LC50	0.000092	6.4	

Triazines, Aromatic

Organism	Duration	End Point	Concentration (mg/L)	Max Log Kow	Flags
Daphnid	48h	LC50	0.245	5.0	⚠
Green Algae	96h	EC50	0.0028	6.4	⚠
Fish		ChV	0.0040	8.0	⚠
Daphnid		ChV	0.0077	8.0	⚠
Green Algae		ChV	0.018	8.0	⚠
Fish (SW)	96h	LC50	0.158	5.0	⚠
Mysid (SW)	96h	LC50	0.014	5.0	⚠
Fish (SW)		ChV	0.060	8.0	⚠
Mysid (SW)		ChV	0.000079	8.0	

APPENDIX J: EPI Suite™ Modeling Results for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine (CAS #147315-50-2)

(Estimated values included in the GreenScreen® are highlighted and bolded)

CAS Number:
SMILES : CCCCCCOc1cc(c(cc1)c2nc(nc(n2)c3ccccc3)c4ccccc4)O
CHEM :
MOL FOR: C27 H27 N3 O2
MOL WT : 425.53
---------- EPI SUMMARY (v4.11) ----------

Physical Property Inputs:
Log Kow (octanol-water): ------
Boiling Point (deg C) : 515.00
Melting Point (deg C) : 148.80
Vapor Pressure (mm Hg) : 2.25E-012
Water Solubility (mg/L): 0.0003
Henry LC (atm-m3/mole) : ------

Log Octanol-Water Partition Coef (SRC):
Log Kow (KOWWIN v1.69 estimate) = 6.24

Boiling Pt, Melting Pt, Vapor Pressure Estimations (MPBPVP v1.43):
Boiling Pt (deg C): 614.03 (Adapted Stein & Brown method)
Melting Pt (deg C): 265.86 (Mean or Weighted MP)
VP(mm Hg,25 deg C): 7.6E-011 (Modified Grain method)
VP (Pa, 25 deg C) : 1.01E-008 (Modified Grain method)
Subcooled liquid VP: 3.77E-011 mm Hg (-999 deg C, user-entered VP)
: 5.03E-009 Pa (-999 deg C, user-entered VP)

Water Solubility Estimate from Log Kow (WSKOW v1.42):
Water Solubility at 25 deg C (mg/L): 0.06549
log Kow used: 6.24 (estimated)
melt pt used: 148.80 deg C

Water Sol Estimate from Fragments:
Wat Sol (v1.01 est) = 2.7382e-005 mg/L

ECOSAR Class Program (ECOSAR v1.11):
Class(es) found:
Phenols
Triazines, Aromatic

Henrys Law Constant (25 deg C) [HENRYWIN v3.20]:
Bond Method : 1.39E-014 atm-m3/mole (1.41E-009 Pa-m3/mole)
Group Method: 2.03E-018 atm-m3/mole (2.06E-013 Pa-m3/mole)
For Henry LC Comparison Purposes:
User-Entered Henry LC: not entered
Henrys LC [via VP/WSol estimate using User-Entered or Estimated values]:

HLC: 4.199E-009 atm-m3/mole (4.255E-004 Pa-m3/mole)
VP: 2.25E-012 mm Hg (source: User-Entered)
WS: 0.0003 mg/L (source: User-Entered)

Log Octanol-Air Partition Coefficient (25 deg C) [KOAWIN v1.10]:
Log Kow used: 6.24 (KowWin est)
Log Kaw used: -12.245 (HenryWin est)
Log Koa (KOAWIN v1.10 estimate): 18.485
Log Koa (experimental database): None

Probability of Rapid Biodegradation (BIOWIN v4.10):
Biowin1 (Linear Model) : 1.1668
Biowin2 (Non-Linear Model) : 0.4600
Expert Survey Biodegradation Results:
Biowin3 (Ultimate Survey Model): 2.3536 (weeks-months)
Biowin4 (Primary Survey Model) : 3.5719 (days-weeks)
MITI Biodegradation Probability:
Biowin5 (MITI Linear Model) : 0.4098
Biowin6 (MITI Non-Linear Model): 0.0000
Anaerobic Biodegradation Probability:
Biowin7 (Anaerobic Linear Model): -0.0550
Ready Biodegradability Prediction: NO

Hydrocarbon Biodegradation (BioHCwin v1.01):
Structure incompatible with current estimation method!

Sorption to aerosols (25 Dec C)[AEROWIN v1.00]:
Vapor pressure (liquid/subcooled): 5.03E-009 Pa (3.77E-011 mm Hg)
Log Koa (Koawin est): 18.485
Kp (particle/gas partition coef. (m3/ug)):
Mackay model : 597
Octanol/air (Koa) model: 7.5E+005
Fraction sorbed to airborne particulates (phi):
Junge-Pankow model : 1
Mackay model : 1
Octanol/air (Koa) model: 1

Atmospheric Oxidation (25 deg C) [AopWin v1.92]:
Hydroxyl Radicals Reaction:
OVERALL OH Rate Constant = 215.3109 E-12 cm3/molecule-sec
Half-Life = 0.050 Days (12-hr day; 1.5E6 OH/cm3)
Half-Life = 0.596 Hrs
Ozone Reaction:
No Ozone Reaction Estimation
Reaction With Nitrate Radicals May Be Important!
Fraction sorbed to airborne particulates (phi):
1 (Junge-Pankow, Mackay avg)
1 (Koa method)
Note: the sorbed fraction may be resistant to atmospheric oxidation

Soil Adsorption Coefficient (KOCWIN v2.00):
Koc : 6.375E+007 L/kg (MCI method)
Log Koc: 7.804 (MCI method)
Koc : 2.989E+004 L/kg (Kow method)
Log Koc: 4.475 (Kow method)

Aqueous Base/Acid-Catalyzed Hydrolysis (25 deg C) [HYDROWIN v2.00]:
Rate constants can NOT be estimated for this structure!

Bioaccumulation Estimates (BCFBAF v3.01):
Log BCF from regression-based method = 3.268 (BCF = 1854 L/kg wet-wt)
Log Biotransformation Half-life (HL) = -0.4229 days (HL = 0.3777 days)
Log BCF Arnot-Gobas method (upper trophic) = 2.071 (BCF = 117.8)
Log BAF Arnot-Gobas method (upper trophic) = 2.077 (BAF = 119.3)
log Kow used: 6.24 (estimated)

Volatilization from Water:
Henry LC: 4.2E-009 atm-m3/mole (calculated from VP/WS)
Half-Life from Model River: 2.876E+005 hours (1.198E+004 days)
Half-Life from Model Lake : 3.138E+006 hours (1.307E+005 days)

Removal In Wastewater Treatment:
Total removal: 92.95 percent
Total biodegradation: 0.77 percent
Total sludge adsorption: 92.17 percent
Total to Air: 0.00 percent
(using 10000 hr Bio P,A,S)

Level III Fugacity Model: (MCI Method)

	Mass Amount (percent)	Half-Life (hr)	Emissions (kg/hr)
Air	**0.0168**	**1.19**	**1000**
Water	**1.77**	**900**	**1000**
Soil	**28.3**	**1.8e+003**	**1000**
Sediment	**69.9**	**8.1e+003**	**0**

Persistence Time: 3.19e+003 hr

Level III Fugacity Model: (MCI Method with Water percents)

	Mass Amount (percent)	Half-Life (hr)	Emissions (kg/hr)
Air	0.0168	1.19	1000
Water	1.77	900	1000
water	(0.0183)		
biota	(0.00159)		
suspended sediment	(1.75)		
Soil	28.3	1.8e+003	1000
Sediment	69.9	8.1e+003	0

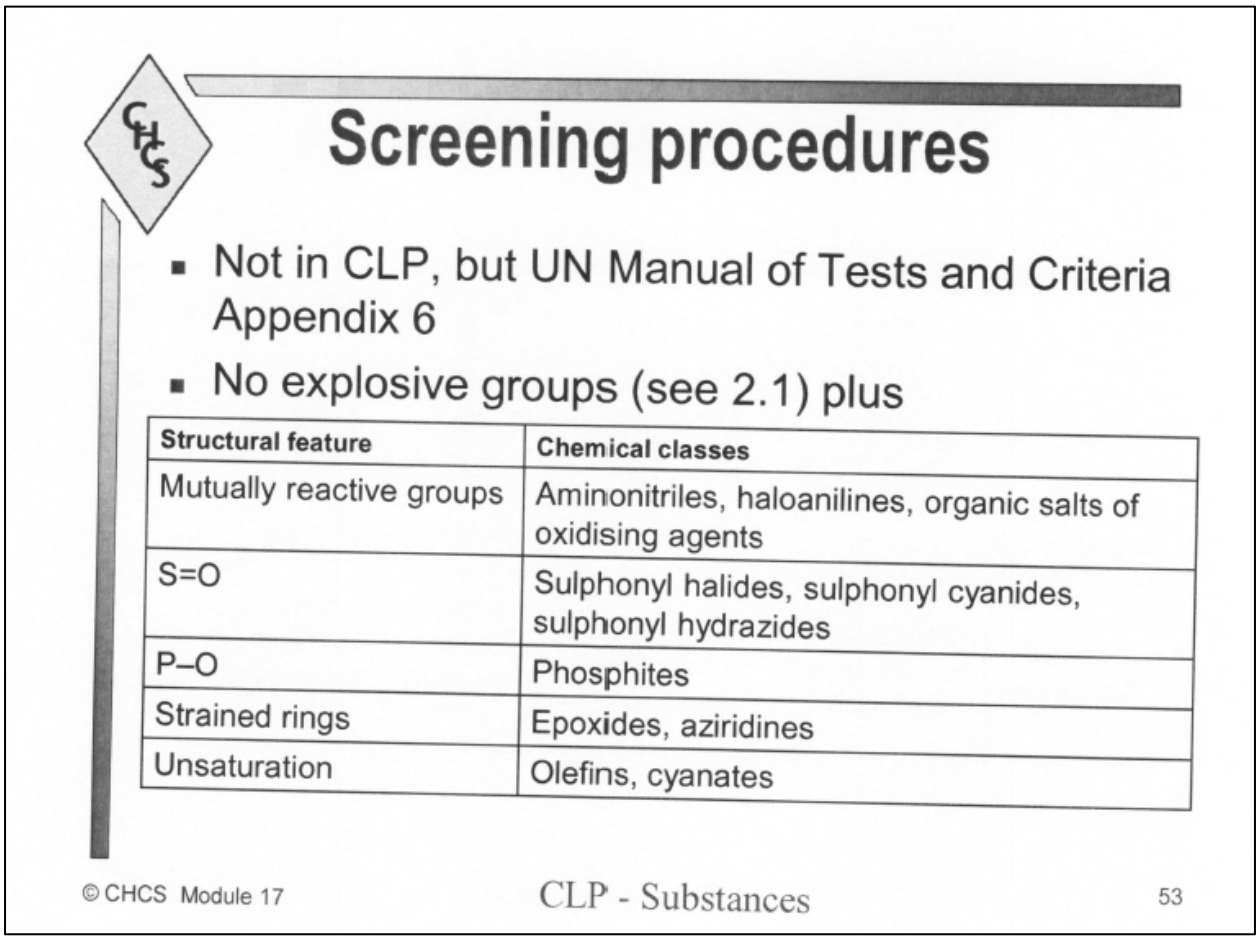
Persistence Time: 3.19e+003 hr

Level III Fugacity Model: (EQC Default)

	Mass Amount (percent)	Half-Life (hr)	Emissions (kg/hr)
Air	0.0198	1.19	1000
Water	3.21	900	1000
water	(1.49)		
biota	(0.129)		
suspended sediment	(1.59)		
Soil	33.4	1.8e+003	1000
Sediment	63.4	8.1e+003	0

Persistence Time: 2.71e+003 hr

Self-Reactive Substances



Screening procedures

- Not in CLP, but UN Manual of Tests and Criteria Appendix 6
- No explosive groups (see 2.1) plus

Structural feature	Chemical classes
Mutually reactive groups	Aminonitriles, haloanilines, organic salts of oxidising agents
S=O	Sulphonyl halides, sulphonyl cyanides, sulphonyl hydrazides
P–O	Phosphites
Strained rings	Epoxides, aziridines
Unsaturation	Olefins, cyanates

APPENDIX K: Change in Benchmark Score

Table 5 provides a summary of changes to ToxServices' GreenScreen® Benchmark™ for 2-(2-hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine. The original GreenScreen® assessment was performed in 2017 under version 1.3 criteria and ToxServices assigned a Benchmark 2 (BM-2) score. A BM-3 score was assigned in the version 1.4 update in 2023, due to a change in criteria for the chronic aquatic toxicity endpoint.

Table 5: Change in GreenScreen® Benchmark™ for 2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine

Date	GreenScreen® Benchmark™	GreenScreen® Version	Comment
February 7, 2017	BM-2	v. 1.3	New assessment
August 28, 2023	BM-3	v. 1.4	Change in BM score from BM-2 to BM-3 due a change in the chronic aquatic toxicity criteria under v.1.4.
October 16, 2023	BM-3	v. 1.4	No change in BM score. ToxServices revised wording in the Neurotoxicity section to provide more insight into our weight of evidence rationale.

Licensed GreenScreen® Profilers

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine GreenScreen® v1.3 Evaluation Prepared by:

SIGNATURE BLOCK

Rachel Galante, M.P.H.
Associate Toxicologist
ToxServices LLC

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine GreenScreen® v1.3 Evaluation QC'd by:

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Bingxuan Wang, Ph.D., D.A.B.T.
Senior Toxicologist
ToxServices LLC

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine GreenScreen® v1.4 Evaluation Prepared by:

SIGNATURE BLOCK

Jennifer Rutkiewicz, Ph.D.
Senior Toxicologist
ToxServices LLC

2-(2-Hydroxy-4-hexyloxyphenyl)-4,6-diphenyl-1,3,5-triazine GreenScreen® v1.4 Evaluation QC'd by:

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