Compound	Dipropylene glycol mono-n-propylether (DPGPE)		*Data collection sheet (1/1)*
N°CAS 29911-27-1 **1 ppm ~ 7.25 mg/m³**	**CLP:** Not classified		
Organisation name	**AgBB**	**ANSES**	**Reach Registrants**
Risk value name	NIK (=LCI)	CLI (=LCI)	$DNEL_{(General\ population,\ long\text{-}term,\ systemic,\ inhalation)}$
Risk value (ppm)	0.102	0.090	2.9
Risk value (mg/m³)	0.740	0.650	21
Reference period	Chronic	Chronic	Chronic
Year	2018	2009	2017
Key study	BASF, 1992 (read-across using diethylene glycol monobutylether/DEGBE)	BASF, 1992 (read-across using DEGBE; based on SCOEL, 2002)	Not specified
Study type	Subchronic inhalation study	Subchronic inhalation study	Repeated dose toxicity study
Species	Rats	Rats	Rats
Duration of exposure	90 days	90 days	Not specified
Critical effect	Lung effects	Lung effects	Not specified
Critical dose value	EU-LCI for DEGBE = 67500 µg/m³ (based on the EU-OEL of 10 ppm)	OEL = 67.5 mg/m³ (10 ppm)	NOAEC (no further information specified)
Adjusted critical dose	N/A	N/A	Not specified
Single assessment factors	Molar adjustment factor of 1.086	100	UF_{total}=21
Other effects	N/A	N/A	N/A

Compound	**Dipropylene glycol mono-n-propylether (DPGPE) C9H20O3**		***Factsheet***
Parameter	**Note**	**Comments**	**Value / descriptor**
EU-LCI value and status			
EU-LCI value	1	Mass/volume [µg/m^3]	200
EU-LCI status	2	Draft/Final	Final
EU-LCI year of issue	3	Year when the EU-LCI value has been issued	2019
General information			
CLP-INDEX-No.	4	INDEX	N/A
EC-No.	5	EINECS – ELINCS - NLP	249-949-4
CAS-No.	6	Chemical Abstracts Service number	29911-27-1
Harmonised CLP classification	7	Human health risk related classification	Not classified
Molar mass and conversion factor	8	[g/mol] and [ppm – mg/m^3]	176.26 1 ppm = 7.25 mg/m^3
Key data / database			
Key study, author(s), year	9	Critical study with lowest relevant effect level	
Read across compound	10	Where applicable	Dipropylene glycol mono n-butyl ether
Species	11	Rat, human, etc.	
Route/type of study	12	Inhalation, oral feed, etc.	
Study length	13	Days, subchronic, chronic	
Exposure duration	14	Hrs/day, days/week	
Critical endpoint	15	Effect(s), site of	
Point of departure (POD)	16	LOAEC*L, NOAEC*L, NOEC*L, Benchmark dose, etc.	
POD value	17	[mg/m^3] or [ppm] or [mg/kg$_{BW}$×d]	POD/TAF from the fact sheet for dipropylene glycol mono n-butyl ether: 0.238 mg/m^3
Assessment factors (AF)	**18**		
Adjustment for exposure duration	19	Study exposure hrs/day, days/week	-
Study length	20	sa→ sc→ c *(R8-5)*	-
Route-to-route extrapolation factor	21		-
Dose-response	22 a	Reliability of dose-response, LOAEL → NOAEL	-
	22 b	Severity of effect *(R 8-6d)*	-
Interspecies differences	23 a	Allometric Metabolic rate *(R8-3)*	-
	23 b	Kinetic + dynamic	-

Intraspecies differences	24	Kinetic + dynamic Worker - general population	-
AF (sensitive population)	25	Children or other sensitive groups	-
Other adjustment factors Quality of whole database	26	Completeness and consistency Reliability of alternative data *(R8-6 d,e)*	-
Result			
Summary of assessment factors	27	Total Assessment Factor (TAF)	-
POD/TAF	28	Calculated value (µg/m³ and ppb)	-
Molar adjustment factor	29	Used in read-across (176.26/190.28)	0.926
Rounded value	30	[µg/m³] (238 µg/m³ x 0.926 = 220.39 µg/m³)	200
Additional comments	31		

EU-LCI values of other dipropylene glycol ethers:

Dipropylene glycol monomethyl ether (CAS 34590-94-8) – 3100 µg/m³

Dipropylene glycol dimethyl ether (CAS 63019-84-1, 89399-28-0, 111109-77-4) – 1300 µg/m³

Rationale section	32		

Data compilation and evaluation for dipropylene glycol mono-n-propylether (DPGPE) are based on a project funded by the European Commission and carried out by Ramboll Environment & Health GmbH.

Limited information and reports on the toxicity of DPGPE were identified (California Air Resources Board, 2010; ECETOC, 2005). Literature searches using PubMed, TOXNET and Google Scholar were conducted to identify toxicological studies on DPGPE. A REACH registration dossier for DPGPE has also been submitted (ECHA, 2017). All relevant data were used for the evaluation and derivation of the EU-LCI value for DPGPE.

Rationale for read-across

No animal or human data were available on inhalation exposure to DPGPE for the derivation of the EU-LCI. There are existing repeated exposure studies (performed under GLP compliance or using OECD Test Guidelines) on DPGPE (ECHA, 2017; Stebbins & Baker, 1999), including one with subchronic exposure to DPGPE (Yano and Baker, 2000). All these studies were performed via oral route. The overall observations from these repeated oral exposure studies were that DPGPE increased liver weight in rats but with no accompanying histopathological findings observed from 300 mg/kg/day in the 14-day drinking water study (Cragg, 2012; ECETOC, 2005; ECHA, 2017; Stebbins & Baker, 1999). However, at a higher dose of 1000 mg/kg/day, longer exposure (e.g. ≥29 days) led to increased liver weight accompanied with hepatocellular hypertrophy in both male and female rats (ECHA, 2017). This suggests that there is a dose-response relationship in liver effects. Subchronic (13 weeks) exposure to 150 mg/kg bw/day DPGPE had no observed effects in either male or female rats (Cragg, 2012; ECETOC, 2005; ECHA, 2017; Yano & Baker, 2000).

For the EU-LCI derivation of DPGPE, a read-across approach using its structural analogue dipropylene glycol mono n-butyl ether (DPGBE; CAS numbers 29911-28-2 for the α isomer and 35884-42-5 for the isomer mixture) was applied. Even though experimental data are available for DPGPE, the rationale for taking this approach is that there is an existing subacute inhalation rat study on DPGBE performed in accordance with OECD test guideline 412 as described in the REACH registration dossier for DPGBE (ECHA, 2019).

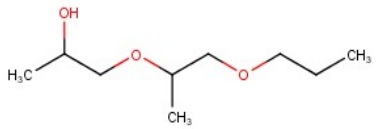
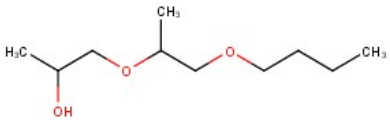
In this study, F344 rats (n = 5 sex/group) were exposed (nose only) to 0, 200, 810 or 2010 mg/m³ DPGBE (or 0, 25, 100 or 250 ppm, respectively; concentrations analytically confirmed) for 6 hours/day, 5 days/week for 2 weeks (a total of 9 exposures). No lethality was observed. At the highest exposure, most

animals initially exhibited lethargic behaviour, but this disappeared for all but one animal after the second exposure. Body weights of 2010 mg/m^3 DPGBE-exposed rats, especially of males, were lower and weight gain was reduced compared with the control. Absolute and relative liver weight was increased at the mid- and high concentrations (i.e. 810 and 2010 mg/m^3, respectively). This was largely attributed to the reduced body weight as well as to hepatocellular hypertrophy. Slight vacuolation or multifocal hepatocyte necrosis was also observed in some animals when testing at the highest concentration. Rats from the mid- and high-concentration groups also exhibited multifocal epithelial hyperplasia and squamous metaplasia in the anterior nasal cavity (the incidence and severity of the lesions were not reported). Nasal effects were considered a direct response to irritation from DPGBE typical for mucosal tissue and were sometimes accompanied by suppurative inflammation or degeneration of the olfactory epithelium. No adverse effects were noted in the deeper respiratory tract. To sum up, repeated inhalation exposure to DPGBE led to nasal epithelial lesions, and the NOAEC in the described study was 200 mg/m^3 (ECHA, 2019).

Given the structural similarity between DPGPE and its read-across substance DPGBE (the sole difference being a propyl alkyl chain vs. a butyl alkyl chain, respectively) and the available inhalation data on DPGBE showing local respiratory irritation in rats, it is expected that inhalation exposure to DPGPE will exhibit similar respiratory irritation.

In the OECD assessment report on propylene glycol ethers (PGEs), DPGBE was used as a read-across substance for most of the PGEs as there is an *in vivo* toxicokinetics study (GLP-compliant and in line with OECD Guideline 417) investigating the metabolism and elimination of DPGBE (OECD, 2003; Zemple et al., 1991). This study showed rapid oral absorption (peak blood level as early as 0.5 h), wide distribution in various tissues (e.g. liver, bone marrow and kidneys) and rapid excretion of DPGBE (almost complete within 48 h). Given the structural similarities between DPGBE and DPGPE, DPGPE is expected to have similar toxicokinetic behaviour to DPGBE.

It is considered more appropriate to derive an EU-LCI value for DPGPE using the inhalation data of its structural analogue, DPGBE, instead of using oral data of DPGPE. It is expected that local respiratory irritation would also occur from inhalation exposure to DPGPE.

Compound	Structure	MW (g/mol)	EU-LCI value
Dipropylene glycol mono-n-propylether (DPGPE)		176.26	Read-across to be used 200 µg/m^3 or ~27.6 ppb
Dipropylene glycol mono n-butyl ether (DPGBE)		190.28	250 µg/m^3 (*de novo* protocol) Unrounded value: 238 µg/m^3 or 30.4 ppb

The unrounded EU-LCI value of DPGBE: 238 µg/m^3 was used for read-across to derive the EU-LCI value for DPGPE. Applying the molar adjustment factor: EU-LCI DPGPE = 238 µg/m^3 x 0.926 = 220.39 µg/m^3, the proposed rounded EU-LCI value for DPGPE is 200 µg/m^3 (27.6 ppb).

No information was identified on the odour threshold of DPGPE.

References

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ECHA, 2017. 1-(1-methyl-2-propoxyethoxy)propan-2-ol. Retrieved from https://echa.europa.eu/registration-dossier/-/registered-dossier/5828 (last accessed on 10.02.2021).

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