

Stofdocument deel A

CAS-nr: 6423-43-4

Propyleenglycoldinitraat $C_3H_6N_2O_6$

VN-nr: geen

GEVI: geen

Synoniemen: isopropyleennitraat, 1,2-propyleenglycoldinitraat, PGDN (Engels: 1,2-propanediol dinitrate)

Interventiewaarden		10 min.	30 min.	1 uur	2 uur	4 uur	8 uur
Voorlichtingsrichtwaarden	VRW (mg/m^3)	6,9	2,3	1,2	0,58	0,35	0,17
Alarmeringsgrenswaarden	AGW (mg/m^3)	42	14	6,9	3,5	1,7	0,86
Levensbedreigende waarden	LBW (mg/m^3)	160	110	88	70	55	36

Datum vaststelling: November 2015 1 mg/m^3 = 0,145 ppm; 1 ppm = 6,91 mg/m^3

Explosiegrens: De stof kan detoneren.

Geur: onaangename geur

LOA: niet afgeleid

Fysisch-chemische eigenschappen

Uiterlijk: kleurloze vloeistof

Brand: brandbare vloeistof
(ontleedt bij 121 °C)

Relatieve dichtheid van verzadigd damp-lucht mengsel: 1

Molecuulmassa: 166,1 g/mol

Zuurgraad: geen data

LogKow: geen data

Wateroplosbaarheid: 0,13 g/100 ml

Verzadigde dampdruk: 0,093 mbar

Overige informatie

Publieke grenswaarde:
niet afgeleid

MAK: 0,34 mg/m^3

TLV-TWA:
0,35 mg/m^3

Toxicologische eigenschappen

Effecten bij inhalatoire blootstelling

Onder VRW: geen effecten

VRW → AGW: lichte hoofdpijn, lichte evenwichtsstoornissen

AGW → LBW: oog irritatie, hoofdpijn, duizeligheid, misselijkheid, matige tot ernstige evenwichtsstoornissen, toename bloeddruk

Boven LBW: braken, bleek zien, blauwe lippen en nagels, convulsies, bewusteloosheid, sterfte

Toxiciteit bij eenmalige, inhalatoire blootstelling

- De stof is licht irriterend voor de ogen.
- De stof kan inwerken op het centrale zenuwstelsel met als gevolg hoofdpijn, duizeligheid, evenwichtsstoornis en bewustzijnsdaling.
- De stof kan uitwerking hebben op het bloed en de bloedsomloop en resulteren in bloeddrukstijgingen en de vorming van methemoglobine.

Effecten bij blootstelling aan vloeistof

Huidcontact: De stof wordt door de huid opgenomen! hoofdpijn, duizeligheid, evenwichtsstoornissen, misselijkheid, sufheid, convulsies, bewusteloosheid.

Oogcontact: Roodheid en pijn

Carcinogeniteit

IARC classificatie: niet geclassificeerd

CRP: niet afgeleid

Beknopte medische informatie

Ontsmetting damp

algemeen: frisse lucht, rust, en direct spoedeisende medische hulp inzetten

Ontsmetting vloeistof

huid: verontreinigde kleding uittrekken, spoelen en wassen met water en onmiddellijk arts raadplegen.

ogen: minimaal 15 min. spoelen met water (evt. contactlenzen verwijderen).

inslikken: mond laten spoelen (uitspugen!), GEEN braken opwekken, direct spoedeisende medische hulp inzetten.

Specifieke behandeling en materialen: geen.

Neem contact op met het NVIC (Tel: +31 (0)30 274 8888) voor informatie met betrekking tot medisch handelen

Stofdocument deel B

CAS-nr: 6423-43-4

1,2-propanediol dinitrate $C_3H_6N_2O_6$

UN-nr: none

Basis for the Dutch Intervention Values

VRW: AEGL value is adopted (except 10 min value for which time scaling was applied), 2h value added

AGW: AEGL value is adopted (except 10 min value for which time scaling was applied), 2h value added

LBW: AEGL value is adopted (except 10 min value for which time scaling was applied), 2h value added

Date: November 2015

AEGL Document: Final, 2002

Dutch Intervention Values (mg/m^3)

	10 min	30 min	1 h	2 h	4 h	8 h	End point
VRW	6.9	2.3	1.2	0.58	0.35	0.17	Threshold for mild headaches in humans
AGW	42	14	6.9	3.5	1.7	0.86	Threshold for severe headaches and loss of equilibrium in humans
LBW	160	110	88	70	55	36	Threshold for lethality in monkeys

Derivation of the Dutch Intervention Values

VRW: In a study with human volunteers mild headaches were reported in 1/3 subjects after a 6-hour exposure at 0.1 ppm (0.691 mg/m^3), in 2/3 subjects after a 2-hour exposure at 0.2 ppm (1.382 mg/m^3), and in 1/3 subjects after a 1-hour exposure at 0.5 ppm (3.46 mg/m^3). Severe headaches occurred after an 8-hour exposure at 0.2 ppm (1.4 mg/m^3 , in 6 of 12 exposures) and at 0.35 ppm (2.4 mg/m^3) and at 0.5 ppm (3.5 mg/m^3) after a 2-hour exposure (1/3 subjects). Mild headache is an example of mild discomfort and the threshold concentration at which subjects first developed a mild headache was considered as point of departure for derivation of the VRW-levels. The concentration of 0.5 ppm (3.5 mg/m^3) was used as point of departure for derivation of the 10-min, 30-min, 1-hour and 2-hour VRW values. The concentration of 0.1 ppm (0.69 mg/m^3) was used as point of departure for derivation of the 4-hour and 8-hour VRW values. The default intraspecies uncertainty factor of 3 was considered sufficient. A total uncertainty factor of 3 was applied. Time-scaling was performed using the equation $C^n \times t=k$, using $n=1$, based on data that show that the relationship between exposure concentration and duration for the endpoints mild and severe headache is approximately linear for 1,2-propanediol dinitrate.

AGW: A study in human volunteers showed that subjects experienced throbbing headaches and became incapacitated after exposure to 1.5 ppm (10.4 mg/m^3) for approximately 3 hours. A concentration of 0.5 ppm (3.5 mg/m^3) for approximately 6 hours resulted in severe headaches and slight loss of equilibrium which was considered to be the threshold for inability to escape and used as the point of departure for derivation of the AGW values. The default intraspecies uncertainty factor of 3 was considered sufficient. A total uncertainty factor of 3 was applied. Time-scaling was performed using the equation $C^n \times t=k$, using $n=1$, based on data that show that the relationship between exposure concentration and duration for the endpoints mild and severe headache is approximately linear for 1,2-propanediol dinitrate.

LBW: Two animal studies conducted with high exposure concentrations are considered to be suitable for deriving the LBW values. No death or signs of toxicity were observed in rats exposed to 189 ppm (1306 mg/m^3) 1,2-propanediol dinitrate (mist) for 4 hours. A study in monkeys showed severe signs of CNS depression and cardiovascular effects but no deaths at a concentration of 70 ppm (484 mg/m^3) for 6-hours. The concentration of 70 ppm (484 mg/m^3) was considered to be the threshold for lethality and the point of departure for derivation of the LBW values. The default total uncertainty factor of 10 (3x3) was considered sufficient to account for inter- and intraspecies differences. Time-scaling was performed using the equation $C^n \times t=k$, using $n=1$, based on data that show that the relationship between exposure concentration and duration for the endpoints mild and severe headache is approximately linear for 1,2-propanediol dinitrate.

Additional toxicological information (including relevant results of a general literature search, if any)

1,2-propanediol dinitrate is rapidly and completely metabolized and eliminated in the urine as inorganic nitrate within 24-hours after exposure. 1,2-propanediol dinitrate has effects on both the cardiovascular and central nervous systems. Exposure to the substance results in vasodilation of cerebral blood vessels and fall in blood pressure, with headache as the main symptom. Exposure to high levels of 1,2-propanediol dinitrate can increase the levels of methemoglobin and blood nitrate levels, which decreases the ability to bind oxygen. Furthermore, the substance acts as a central nervous system depressant in humans. The mechanism of central nervous system depression induced by 1,2-propanediol dinitrate is poorly understood but may be comparable to volatile anesthetics.

Data on developmental and reproductive toxicity in animals did not indicate reproductive and developmental effects at concentrations below levels that induce maternal toxicity.

No harmonized hazard sentences were found.

Carcinogenicity and derivation of the CRP value	Odour and derivation of the LOA value
<p>IARC classification: not classified</p> <p>No carcinogenic risk potency (CRP) was derived.</p>	<p>Odour: unpleasant odour</p> <p>Odour threshold: 1.38 mg/m³ [Stewart et al., 1974]</p> <p>No LOA was derived due to a lack of data.</p>

Other standards and guidelines (1h values in mg/m³, unless otherwise indicated)				
VRW level 1.2	AEGL-1 1.1	ERPG-1 -		IDLH: -
AGW level 6.9	AEGL-2 6.8	ERPG-2 -		
LBW level 88	AEGL-3 93	ERPG-3 -		