Rijksinstituut voor Volksgezondheid en Milieu
Ministerie van Volksgezondheid, Welzijn en Sport

Stofdocument deel A

CAS-nr: 107-15-3

Ethyleendiamine

$H_2NCH_2CH_2NH_2$

VN-nr: 1604
GEVI: 83

Synoniemen: 1,2-diaminoethaan, 1,2-ethaandiamine, dimethyleendiamine
(Engels: Ethylenediamine)

Interventiewaarden		10 min.	30 min.	1 uur	2 uur	4 uur	8 uur
Voorlichtingsrichtwaarden	**VRW (mg/m^3)**	NA	NA	NA	NA	NA	NA
Alarmeringsgrenswaarden	**AGW (mg/m^3)**	150	100	81	64	51	40
Levensbedreigende waarden	**LBW (mg/m^3)**	450	320	250	200	160	130

Datum vaststelling: 13-05-2009

1 mg/m^3 = 0,400 ppm; 1 ppm = 2,50 mg/m^3

Explosiegrens: LEL = 2,5 vol% ≈ 62500 mg/m^3

Geur: ammoniak-achtige, muffe geur

LOA: 5,2 mg/m^3

Fysisch-chemische eigenschappen

Uiterlijk: kleurloze tot lichtgele hygroscopische vloeistof, aan vochtige lucht rokend
Brand: brandgevaarlijk

Relatieve dichtheid van verzadigd damp-lucht mengsel: 1,02

Molecuulmassa: 60,1 g/mol
Zuurgraad: pKa1 = 10.7, pKa2 = 7.6
LogKow: -2
Wateroplosbaarheid: volledig
Verzadigde dampdruk: 15 mbar

Overige informatie

Publieke grenswaarde:
niet afgeleid
MAK: niet afgeleid
TLV-TWA: 25 mg/m^3

Toxicologische eigenschappen

Effecten bij inhalatoire blootstelling

*Onder **AGW***: mogelijke lichte irritatie van slijmvliezen van ogen en bovenste luchtwegen

AGW → LBW: irritatie slijmvliezen ogen en luchtwegen, longoedeem

Boven LBW: sterfte

LET OP: De afwezigheid van een VRW betekent niet dat blootstelling onder de AGW zonder effecten is.

Toxiciteit bij eenmalige, inhalatoire blootstelling

- Ethyleendiamine veroorzaakt sterke irritatie van ogen, slijmvliezen en luchtwegen.
- Ethyeeldiamine kan longoedeem veroorzaken, echter uitsluitend na verschijnselen van irriterende effecten op de slijmvliezen van ogen en/of hogere luchtwegen.
- De stof is sensibiliserend. Na sensibilisatie kan de stof luchtwegallergie veroorzaken na inhalatie of huidallergie bij dermaal contact!

Effecten bij blootstelling aan vloeistof

Huidcontact: roodheid en pijn, branderig gevoel. De stof kan via de huid worden opgenomen.

Oogcontact: *bijtend*, roodheid en pijn, tranenvloed, slecht zien.

Carcinogeniteit

IARC classificatie: niet geclassificeerd
CRP: niet afgeleid.

Beknopte medische informatie

Ontsmetting damp

algemeen: frisse lucht, rust, halfzittende houding en arts raadplegen.

Ontsmetting vloeistof

huid: verontreinigde kleding uittrekken, minimaal 20 min. spoelen met veel water of douchen en arts raadplegen.

ogen: minimaal 15 min. spoelen met water (evt. contactlenzen verwijderen), dan naar oogarts brengen, blijven spoelen tijdens vervoer.

inslikken: mond laten spoelen (uitspugen!), actieve kool (carbomix) toedienen, GEEN braken opwekken en 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.

National Institute for Public Health and the Environment
Ministry of Health, Welfare and Sport

Stofdocument deel B

CAS-nr: 107-15-3 **Ethylenediamine** **$H_2NCH_2CH_2NH_2$** **UN-nr: 1604**

Basis for the Dutch Intervention Values

VRW: Not recommended, in accordance with the AEGL

AGW: Same point of departure as for AEGL, different uncertainty factors, 2-hr value added

LBW: Same point of departure as for AEGL, different uncertainty factors, 2-hr value added

Date: 13-05-2009 AEGL document: Final, 2005

Dutch Intervention Values (mg/m^3)

	10 min	30 min	1 h	2 h	4 h	8 h	End point
VRW	NR	NR	NR	NR	NR	NR	Not recommended
AGW	150	100	81	64	51	40	Bronchiolar edema and kidney swelling in animals
LBW	450	320	250	200	160	130	Threshold of lethality in rats

Derivation of the Dutch Intervention Values

VRW: VRW values were not recommended due to insufficient data.

AGW: AGW values were based on a study in which rats and guinea pigs (6/group) were exposed to approximately 484 ppm (1210 mg/m^3) for 30 minutes to 8 hours. Both species exposed for 8 hours had bronchiolar edema of unspecified severity and "light cloudy swelling of the kidney". An uncertainty factor of 3 was used for interspecies variability because a similar response was seen in two species, and a modifying factor of 3 was used because the key study did not specify the severity of the bronchiolar edema. An intraspecies uncertainty factor of 3 was applied. Timescaling was performed using the equation $C^n \times t = k$ and n=3 (default). In contrast to the 10 minute AEGL-2 value, time scaling was also applied for the 10 minute AGW value.

LBW: LBW values were derived from a range-finding test in which 0/6 rats died from exposure for 8 hours to 1000 ppm (2500 mg/m^3) but 6/6 died from 8-hour exposure to 2000 ppm (5000 mg/m^3). Toxic effects (other than death) were not described, and 1000 ppm (2500 mg/m^3) was considered to be the lethality threshold. This was the only single-exposure study adequate for LBW derivation. A total uncertainty factor of 20 was applied: 3 for interspecies variability and 3 for intraspecies variability and a modifying factor of 2 for the uncertainties in the used data (a.o. concentrations). Data were not available to determine the concentration-time relationship, and scaling across time was performed using the equation $C^n \times t = k$ and n=3 (default). In contrast to the 10 minute AEGL-3 value, time scaling was also applied for the 10 minute LBW value.

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

Ethylenediamine is an eye, mucous membrane, and respiratory irritant and a known respiratory and skin sensitizer. Sensitized individuals may experience more severe and/or different effects at a given exposure concentration or duration than non-sensitized people respiratory irritation and asthma-like symptoms were described in individuals exposed to concentrations ranging from < 1 ppm (2,5 mg/m^3) during a workday to 30 ppm (75 mg/m^3) for 15 minutes.

No relevant information on reproductive and developmental toxicity with regard to the derivation of the AGW values.

H302: Harmful if swallowed; H312: Harmful in contact with skin; H314: Causes severe skin burns and eye damage; H317: May cause an allergic skin reaction; H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Carcinogenicity and derivation of the CRP value
IARC classification: not classified No carcinogenic risk potency (CRP) was derived. No inhalation carcinogenicity studies were located and animal dietary and skin painting studies yielded negative results.

Odour and derivation of the LOA value
Odour: ammonia like OT_{50}: 0.133 ppm (0.33 mg/m^3) [AEGL (2007); Hellman and Small (1974)] LOA = 11.8 * OT_{50} * 1.33 = 5.2 mg/m^3 (The concentration Level leading to distinct Odour Awareness (I=3) is calculated using the formula: I = 2.33 * log (C/OT_{50}) + 0.5. A correction factor of 1.33 is applied to this value) The LOA is below the AGW, therefore subjects will be aware of the odour below the level where health effects may be expected.

Other standards and guidelines (1h values in mg/m^3, unless otherwise indicated)				
VRW level NR	*AEGL-1* NR	*ERPG-1* not derived		*IDLH:* 2500 (30 minutes)
AGW level 81	*AEGL-2* 24	*ERPG-2* not derived		
LBW level 250	*AEGL-3* 50	*ERPG-3* not derived		