Substance Information Document

Nerol

1. Substance identity

Name	Nerol
Synonyms	cis-3,7-Dimethyl-2,6-octadien-1-ol ; cis-Geraniol
IUPAC Name	(2Z)-3,7-dimethylocta-2,6-dien-1-ol
CAS	106-25-2

2. Toxicological information

Expert groups, including EFSA, RIFM and JECFA have concluded that Nerol is not genotoxic.

Carcinogenicity data are limited, the RIFM expert panel concluded that "the available data provide no evidence to indicate that the non-cyclic or cyclic terpene alcohols considered here are carcinogenic".

An Australian review (AICIS, 2016) noted that nerol is not considered to be a specific reproductive or developmental toxin. In the reproductive phase of an OECD TG 422 study, performed according to GLP, ten Wistar rats/sex were given diets providing nerol at up to 191 or 374 mg/kg bw/day and groups of ten females and five males were given diets providing 0 or 720 mg/kg bw/day. Males were treated for 42 days (including 2 weeks before mating), while females were treated from 2 weeks before mating up until postpartum day 6 (up to 53 days). There were no treatment-related histopathological effects on the ovaries, uterus, testes, epididymides, seminal vesicles or prostate. In addition, there were no adverse effects on reproduction or development, furthermore no adverse effects were reported on the gross or microscopic pathology of the heart, aorta, lungs or trachea (Anon., 2013).

Nerol did not produced evidence of respiratory tract irritation in mice (exposed to aerosolised nerol for 1 minute) indicating a lack of (significant) respiratory tract irritation. An Australian review (AICIS, 2016) considered that nerol is a moderate skin irritant in humans (48-hour covered contact) and animals (24-hour patch tests in rabbits), as well as an eye irritant. The same expert panel concluded that nerol is considered as a skin sensitizer (mouse LLNA).

Studies in laboratory animals suggest that nerol is of low acute oral and dermal toxicity and repeated-dose toxicity (LD50 rats 4500 mg/kg bw, LD50 rabbits >5000 mg/kg bw, NOAEL 345 mg/kg bw/day 14 weeks). Limited information is available on the acute- and repeated-dose toxicity of nerol after inhalation or dermal exposure.

JECFA	ALIPHATIC BRANCHED-CHAIN SATURATED AND UNSATURATED ALCOHOLS, ALDEHYDES, ACIDS, AND RELATED ESTERS (JECFA 52, 2004) (inchem.org) WHO FOOD ADDITIVES SERIES:52
FEMA	0320 FEMA GRAS 29 (femaflavor.org)

EFSA	Scientific Opinion on Flavouring Group Evaluation 06, Revision 4 (FGE.06Rev4): Straight- and branched-chain aliphatic unsaturated primary alcohols, aldehydes, carboxylic acids and esters from chemical groups 1, 3 and 4 | EFSA (europa.eu) Safety and efficacy of α,β-unsaturated straight-chain and branched-chain aliphatic primary alcohols, aldehydes, acids and esters belonging to chemical group 3 when used as flavourings for all animal species (wiley.com) Scientific Opinion on Flavouring Group Evaluation 72, Revision 2 (FGE.72Rev2): consideration of aliphatic, branched-chain saturated and unsaturated alcohols, aldehydes, acids and related esters evaluated by JECFA (61st, 68th and 69th meetings) and structurally related to flavouring substances in FGE.05Rev3 (wiley.com)
ECHA – REACH dossier	Registration Dossier - ECHA (europa.eu)
PUBCHEM	Nerol | C10H18O - PubChem (nih.gov)
CIR	-
OSHA	-

3. Addictiveness and attractiveness

In vitro studies on human ASM cells indicated that nerol stimulates the odorant receptor OR2W3, causing increases in intracellular calcium concentrations and the relaxation of ASM cells. In vivo, such an effect could result in bronchodilation and possibly the increased absorption of nicotine.

In an investigation into the most common flavouring ingredients added to e-liquids on the Dutch market, nerol was identified in 1.24% of e-liquid samples. The investigators noted that such flavourings increase e-cigarette attractiveness and use and thereby exposure to potentially toxic ingredients.

SCENIHR	-
EMA	-
PUBMED	Genotoxicity induced by nerol, an essential oil present in citric plants using human peripheral blood mononuclear cells (PBMC) and HepG2/C3A cells as a model - PubMed (nih.gov) Fragrance material review on nerol - PubMed (nih.gov)