Substance Information Document

Valeric acid

1. Substance identity

Name	Valeric acid
Synonyms	Pentanoic acid n-Valeric acid n-Pentanoic acid valerianic acid 1-Butanecarboxylic acid
IUPAC Name	pentanoic acid
CAS	109-52-4

2. Toxicological information

Several GLP and non-GLP studies equivalent to OECD guidelines 404 and 405 are available for valeric acid for skin and eye irritation: pure valeric acid produced full thickness necrosis after 3 minutes of administration to rabbit skin and severe irritation with some irreversible effects to the eye. Valeric acid is therefore classified as corrosive. No substance-specific data are available for respiratory sensitization.

An OECD 401 study for acute oral toxicity showed an LD_{50} of 4600 mg/kg bw. An OECD 403 study showed that a mixture of valeric acid and 2-methylbutyric acid (isopentanoic acid) administered as saturated vapor for 16.5 h to rats did not produce any death, nor any signs of toxicity. An OECD 402 study for dermal acute toxicity showed an LD_{50} >2000 mg/kg bw.

A 14-day repeated dose dermal study in rabbits and a chronic skin painting study in mice are available for valeric acid. Both studies are considered to be invalid due to severe deficiencies in the methodology. No substance-specific data are available for repeated-dose toxicity by the oral and inhalation route. However, EFSA derived a NOAEL of 120 mg/kg/bw/d from read-across repeated-dose toxicity studies with butanol, octanol, and acetaldehyde.

Genetic toxicity studies are available for valeric acid according or equivalent to OECD 471, 473, 476, 479, and 474. All studies show negative results.

A chronic dermal toxicity study in mouse is available for valeric acid, showing no carcinogenic potential; however, the study is considered invalid due to significant methodological deficiencies. One study reported by JECFA (reliability not indicated) indicated that rats fed at around 2500 mg/kg bw/d valeric acid in diet for 115-150 days had papillomatous growths in the forestomach.

A maternal tolerance study (non-GLP, non-OECD) in rats was performed with n-valeric acid to determine dose levels for a subsequent teratology screening study. Valeric acid was administered between day 6 and 15 of gestation up to 1000 mg/kg bw/d. The observed data did not demonstrate significant differences between control and treated groups. A dose related effect was not observed. A NOAEL was not determined. In another study reported by JECFA, valeric acid was administered to female rats at 75 or 100 mg/kg bw/d by gavage on days 6 to 15 of gestation. Rats exhibited signs of

maternal toxicity including respiratory effects and decreased body weight, but no significant developmental toxicity at either dose. In Segment II of this study, valeric acid was associated with maternal toxicity and reduced fetal weights at dose levels from 50 to 200 mg/kg bw/d.

JECFA	906. Saturated aliphatic acyclic linear primary alcohols, aldehydes and acids (WHO Food Additives Series 40) (inchem.org)
FEMA	VALERIC ACID | FEMA (femaflavor.org)
EFSA	Scientific Opinion on Flavouring Group Evaluation 501 (FGE.501): Grill flavour concentrate (vegetable) (wiley.com) Scientific Opinion on the safety and efficacy of straight-chain primary aliphatic alcohols/aldehydes/acids, acetals and esters with esters containing saturated alcohols and acetals containing saturated aldehydes (chemical group 1) when used as flavourings for all animal species (wiley.com)
ECHA – REACH dossier	Registration Dossier - ECHA (europa.eu)
PUBCHEM	Valeric acid | C5H10O2 - PubChem (nih.gov)
CIR	-
OSHA	-

3. Addictiveness and attractiveness

In a publication by Rabinoff et al., valeric acid was reported as part of the formulation of *Valeriana officinalis*, which is listed as addictive. The authors added that "*valeric acid has documented direct sedative effects and interactions with neurotransmitters such as GABA*".

SCENIHR	-
EMA	-
PUBMED	Pharmacological and chemical effects of cigarette additives - PubMed (nih.gov)