Substance Information Document

Butyric acid

1. Substance identity

Name	Butyric acid
Synonyms	Butanoic acid Ethylacetic acid Propylformic acid 1-Propanecarboxylic acid
IUPAC Name	butanoic acid
CAS	107-92-6

2. Toxicological information

Butyric acid is considered by experts to be corrosive to the respiratory tract. Changes indicative of (severe) respiratory irritation have been reported in several laboratory animal studies. No signs of irritation were seen in rats exposed continuously for 94 days to butyric acid at average levels of up to 0.144 mg/m3 but reduced respiratory rate was observed in mice after a few minutes of exposure at about 94 mg/m3. In humans, butyric acid was severely irritating to the skin. Butyric acid shows moderate skin irritation to corrosion in rabbit studies and skin corrosion in in vitro human epidermis. Butyric acid, even at a concentration of 1%, was reported to be corrosive when instilled into the eyes of rabbits. Moderate eye irritation was noted in rats exposed to an atmosphere containing butyric acid at a concentration of 4180 mg/m3 for between 3 and 8 hours.

A maximization test in humans concludes no evidence of sensitisation at a 1% test concentration. No substance-specific respiratory tract sensitisation data were identified.

Butyric acid appears to be of low acute inhalation systemic toxicity (rabbit LC50 of >40,000 mg/m3), moderate acute oral systemic toxicity (e.g. mouse LD50 of 1250 mg/kg bw, and rat of 1500 and 1630 mg/kg bw) and possibly high dermal systemic toxicity (rabbit LD50 of 509 mg/kg bw, but several other values (>2000 mg/kg bw) suggestive of low dermal systemic toxicity have been reported). A systemic inhalation NOAEC of 0.0076 mg/m3, based on effects on blood chemistry seen at 0.018 mg/m3, was reported in rats exposed continuously for 94 days to atmospheres containing butyric acid. Maternal (reduced survival, decreased growth and noisy breathing) and foetal (reduced pup weight, reduced viability) effects were seen at 100 mg/kg bw/day (lowest-tested dose) in a developmental toxicity study involving the oral exposure of pregnant rats for about one week. No substance-specific fertility data were identified.

Experts do not consider butyric acid to be genotoxic. Notably, butyric acid produced no evidence of mutagenic potential base on *in vitro* test. No *in vivo* genotoxicity data were identified.

Butyric acid was not predicted to have carcinogenic potential. No high-quality substance-specific laboratory animal carcinogenicity data were identified.

JECFA did not raise any human health concerns regarding the use of this compound as a food flavouring.

JECFA	906. Saturated aliphatic acyclic linear primary alcohols, aldehydes and acids (WHO Food Additives Series 40) (inchem.org)
FEMA	0320 FEMA GRAS 29 (femaflavor.org)
EFSA	-
ECHA – REACH dossier	Registration Dossier - ECHA (europa.eu)
PUBCHEM	Butyric acid | C4H8O2 - PubChem (nih.gov)
CIR	-
OSHA	SIDS INITIAL ASSESSMENT PROFILE (oecd.org)

3. Addictiveness and attractiveness

No substance-specific addictiveness data were identified.

In an investigation into the most common flavouring ingredients added to e-liquids on the Dutch market, butyric acid (reportedly providing a tropical fruity floral, plum, apricot-pear-like flavour) was identified in 15% of e-liquid samples. The investigators noted that such flavourings increase e-cigarette attractiveness and use and thereby exposure to potentially toxic ingredients.

Although SCENIHR (2016) did not cite any studies or provide an opinion on the addictiveness of butyric acid, they do note that it is “added to tobacco during the manufacturing of cigarettes, to give cigarettes a distinct taste and smell”.

SCENIHR	Final Opinion on Additives used in tobacco products (Opinion 1) (europa.eu)
EMA	-
PUBMED	Comprehensive overview of common e-liquid ingredients and how they can be used to predict an e-liquid’s flavour category - PMC (nih.gov)