Substance Information Document

Methyl cyclopentenolone

1. Substance identity

Name	Methyl cyclopentenolone
Synonyms	Cyclotene; 2-Cyclopenten-1-one, 2-hydroxy-3-methyl-; 2-Hydroxy-3-methylcyclopent-2-en-1-one; 3-Methyl-2-cyclopenten-2-ol-1-one; Maple lactone; Corylone
IUPAC Name	2-hydroxy-3-methylcyclopent-2-en-1-one
CAS	80-71-7

2. Toxicological information

Methyl cyclopentenolone is found primarily as the keto-enol (CAS 80-71-7), which transforms to the diketone form (CAS 765-70-8) in solution.

A lack of skin irritation has been reported in humans tested at 3% and rabbits at 100%, and also in vitro. However, severe eye irritation was seen with the undiluted material in an in vitro assay using bovine corneas.

Respiratory tract irritation and sensitisation have been noted as potential concerns for methyl cyclopentenolone in ENDS, but no supporting evidence was provided or identified.

No evidence of skin sensitisation was seen in a human maximization test with 3% methyl cyclopentenolone, or in an in vitro LuSens assay. However, it was active in a DPRA in chemico analysis.

No acute or repeated-dose human inhalation, dermal, or oral systemic data were identified. In animal studies, the LD_{50} ranged from 1067 to >5000 mg/kg bw in rats and was >2000 mg/kg bw in guinea pigs, indicating low-moderate acute toxicity. In a repeated-dose study, oral administration for 6 months resulted in a NOAEL of about 500 mg/kg bw/day in rats.

No human data on reproductive and developmental toxicity were identified. In rats administered methyl cyclopentenolone by gavage, 50 mg/kg bw/day induced adversed effects on growth, although no adverse effects on female fertility or the offspring were seen resulting in a (female) reproductive and developmental toxicity NOAEL of 500 mg/kg bw/day.

No evidence of mutagenic potential was seen in bacterial mutation (Ames) assays, with the keto-enol or diketo forms. No reliable mammalian genotoxicity studies are available, but an EFSA expert panel have concluded a lack of a concern regarding genotoxicity and also carcinogenicity.

JECFA and, more recently, EFSA have concluded that methyl cyclopentenolone is of “no safety concern” at the then-current estimated levels of daily intake as a food flavour additive of 10-15 and 12 µg/kg bw/day in Europe and the USA, respectively.

JECFA	946. Aliphatic acyclic and alicyclic a-diketones and related alpha-hydroxyketones (WHO Food Additives Series 42) (inchem.org)
FEMA	METHYLCYCLOPENTENOLONE | FEMA (femaflavor.org)
EFSA	Scientific Opinion on Flavouring Group Evaluation 213, Revision 2 (FGE.213Rev2): Consideration of genotoxic potential for α,β-unsaturated alicyclic ketones and precursors from chemical subgroup 2.7 of FGE.19 - - 2015 - EFSA Journal - Wiley Online Library
ECHA – REACH dossier	Registration Dossier - ECHA (europa.eu)
PUBCHEM	Cyclotene | C6H8O2 - PubChem (nih.gov)
CIR	-
OSHA	-

3. Addictiveness and attractiveness

In its review of "maple lactone" [assigned CAS 765-70-8; the diketo form], the EU SCENIHR noted that "it is… used as a flavouring substance having a maple syrup caramel flavour, woody and sweet aromatic fruity taste" and, as such, might be assumed to increase the attractiveness of an ENDS product containing it.

SCENIHR	Final Opinion on Additives used in tobacco products (Opinion 1) (europa.eu)
EMA	-
PUBMED	-