# Substance Information Document

Dill oil

## 1. Substance identity

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| Name | Dill oil |
| Synonyms | Dill seed oil<br>Dill weed oil<br>Anethum graveolens, oil<br>*(not exhaustive list)* |
| IUPAC Name | N/A* |
| CAS | 8006-75-5 |

*Non answered, IUPAC Name was not found.

## 2. Toxicological information

Dill oil (*Anethum graveolens* L.) is an essential oil extracted from the seeds or leaves/stems (dillweed) of the Dill plant. Dill oil is characterized by its high carvone constituent profile.

**Acute toxicity** – The acute oral $LD_{50}$ value in rats was reported as 4.04 ml/kg and the acute dermal $LD_{50}$ value in rabbits as greater than 5g/kg.

**Irritation/corrosion** – Undiluted dill oil was not irritating when applied to the backs of hairless mice and swine or to intact or abraded rabbit skin for 24 hours under occlusion. Tested at 4% in petrolatum, it produced no irritation after 48 hours closed-patch test on human subjects.

**Sensitization** – A maximization test was carried out on 25 volunteers. The material was tested at a concentration of 4% in petrolatum and produced no sensitization reactions.

**Phototoxicity** – The dill plan has been reported to be a photosensitizing agent. No phototoxic effects were reported for undiluted dill oil on hairless mice and swine.

**Repeat dose toxicity** – Substance-related information is not available.

**Genetic toxicity** – No evidence of mutagenicity was observed in a GLP study when concentrations of dill oil were incubated with *S. typhimurium* strains TA98, TA100, TA1535, TA1537 and TA1538 up to the limit of cytotoxicity (i.e., up to 22,250 µg/plate). Cytotoxicity was observed in strain TA100 at 1040 µg/plate (appearance of microcolonies). No evidence of mutagenicity was observed using the plate incorporation method either in the presence or absence of S9 metabolic activating system. Dill oil was negative in the unscheduled DNA synthesis (UDS) assay in rat hepatocytes at 60 µg/mL, the only concentration tested. A sample of commercial dill oil was reported to induce an increase in chromosomal aberrations at the two highest concentrations tested, 0.2 to 0.25 µL/mL, in human lymphocytes. However, at these concentrations, there was also a significant decrease in the mitotic index to less than 45% of the control, the threshold for cytotoxicity in human lymphocytes indicated in the OECD guidance for this assay (OECD, 2016). A sister chromatid exchange (SCE) assay on dill oil in human peripheral lymphocytes was also positive when tested at concentrations of 0.1–0.25 µl/mL.

Currently, there is no correlation between SCE frequencies and cancer risk (Mateuca et al., 2012) and the OECD no longer has a guideline for this assay (OECD, 2015). An *in vivo* micronucleus study in C57Bl/6 and CBA mice found that dill oil given at 1 g/kg i.p. did not induce micronuclei in polychromatic erythrocytes in the bone marrow. Furthermore, studies related to the genotoxicity of carvone (CAS 99-49-0) and related compounds carveol (CAS 99-48) and dihydrocarveol (CAS 619-01-2) support the conclusion of a lack of genotoxic potential for carvone-rich dill oil.

**Carcinogenicity** – Substance-related information is not available.

**Developmental and/or reproductive toxicity** – Substance-related information is not available.

**Cardiopulmonary toxicity** – Substance-related information is not available.

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| JECFA | - |
| FEMA | DILL OIL (ANETHUM GRAVEOLENS L.) \| FEMA (femaflavor.org) |
| EFSA | - |
| ECHA – REACH dossier | - |
| PUBCHEM | SID 135353669 - PubChem (nih.gov) |
| CIR | - |
| OSHA | - |

## 3. Addictiveness

Based on the PubMed search ("Dill oil"[tiab] AND addiction AND tobacco), substance-specific information related to addictiveness is not available.

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| SCENIHR | - |
| EMA | - |
| PUBMED | - |

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