

Overall review - Flukonazol

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Manufacturer: Fresenius Kabi

Substance: Flukonazol

Overall review: **No remark**

Review of proposed Fass text

Environmental risk

Användning av flukonazol har bedömts medföra försumbar risk för miljöpåverkan. / Use of [name of the substance] has been considered to result in insignificant environmental risk.

Review: **No remark**

Degradation

Flukonazol är potentiellt persistent. / [Name of the substance] is potentially persistent

Review: **No remark**

Bioaccumulation

Flukonazol har låg potential att bioackumuleras. / [Name of the substance] has low potential for bioaccumulation.

Review: **No remark**

PBT

Review:

Other comments

Review:

Proposed Fass text

Miljöpåverkan Flukonazol

Miljörisk: Användning av flukonazol har bedömts medföra försumbar risk för miljöpåverkan.

Nedbrytning: Flukonazol är potentiellt persistent.

Bioackumulering: Flukonazol har låg potential att bioackumuleras.

Detaljerad miljöinformation

Environmental Risk Classification

Predicted Environmental Concentration (PEC)

PEC is calculated according to the following formula:

$$\text{PEC } (\mu\text{g/L}) = (A \cdot 10^9 \cdot (100 - R)) / (365 \cdot P \cdot V \cdot D \cdot 100) = 1.37 \cdot 10^{-6} \cdot A \cdot (100 - R)$$

$$\text{PEC} = 0,0254 \mu\text{g/L}$$

Where:

$A = 185,58 \text{ kg}$ (total sold amount API in Sweden year 2022, data from IQVIA). *Reduction of A may be justified based on metabolism data.*

$R = X \%$ removal rate (due to loss by adsorption to sludge particles, by volatilization, hydrolysis or biodegradation) = 0 if no data is available.

$P = \text{number of inhabitants in Sweden} = 10 \cdot 10^6$

$V \text{ (L/day)} = \text{volume of wastewater per capita and day} = 200 \text{ (ECHA default) (Ref. 1)}$

$D = \text{factor for dilution of waste water by surface water flow} = 10 \text{ (ECHA default) (Ref. 1)}$

Predicted No Effect Concentration (PNEC)

Ecotoxicological studies (ref 2)

Algae (Raphidocelis subcapitata) (guideline eg OECD 201):

LOEC 72 h (growth rate) = 4590 µg/L

NOEC 72 h (growth rate) = 3060 µg/L

Crustacean (Thamnocephalus platyurus):

Acute toxicity

LC₅₀ 24 h (Immobile) = 100000 µg/L (guideline eg OECD 202)

Fish (Oryzias latipes):

Acute toxicity

LC₅₀ 96 h (Mortality) = 100000 µg/L (guideline eg OECD 203)

Fish (Gobiocypris rarus):

LC₅₀ 72 h (Mortality) = 4900 µg/L (guideline eg OECD 203)

PNEC (µg/L) = 3060 /1000, where 1000 is the assessment factor used NOEC for Algae (Raphidocelis subcapitata) 72 h has been used for this calculation since it is the most sensitive of the tested species.

PNEC = 3,060 µg/L

Environmental risk classification (PEC/PNEC ratio)

PEC/PNEC = **0,0254 /3,060** = 0,0083, i.e. PEC/PNEC < 0,1 which justifies the phrase 'Use of fluconazole has been considered to result in insignificant environmental risk.'

Degradation:

Biotic degradation (OECD 303A), (ref 3)

0,8 % of fluconazole was found degraded in 28 days

fluconazole was highly persistent in the aerobic activated sludge.

Abiotic degradation (ref 4)

Hydrolysis:

Fluconazol is resistant to hydrolysis.

Photolysis:

Fluconazol is resistant to photolysis.

Bioaccumulation

Bioconcentration factor (BCF), (Ref 5):

13,9 (guideline OECD 305). (USEPA)

Partitioning coefficient (ref 6):

Log P = 0,58 at pH 7

Justification of chosen bioaccumulation phrase:

Since BCF < 500, the substance has low potential for bioaccumulation.

References:

ECHA, European Chemicals Agency. 2008 Guidance on information requirements and chemical safety assessment. http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_en.htm

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ECOTOX | Search (epa.gov)

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Ewa Kaczorek; Azole fungicides: (Bio)degradation, transformation products and toxicity elucidation, Science of the Total Environment 802 (2022) 149917

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Fluconazole Env. Fate/Transport (epa.gov)

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<https://go.drugbank.com/drugs/DB00196>