

Levaxin[®]

Takeda Pharma

Tablett 25 mikrog

(vita, runda bikonvexa, 5 mm, märkta 25)

Tyreoideahormoner

Aktiv substans:

Levotyroxin

ATC-kod:

H03AA01

Läkemedel från Takeda Pharma omfattas av Läkemedelsförsäkringen.

M R F

Miljöpåverkan

Levotyroxin

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

Nedbrytning: Levotyroxin är potentiellt persistent.

Bioackumulering: Levotyroxin har låg potential att bioackumuleras.

Detaljerad miljöinformation

Environmental Risk Classification

Predicted Environmental Concentration (PEC)

PEC is calculated according to the following formula:

$$PEC (\mu\text{g/L}) = (A \cdot 10^9 \cdot (100 - R)) / (365 \cdot P \cdot V \cdot D \cdot 100) = 1,5 \cdot 10^{-6} \cdot A \cdot (100 - R)$$

$$PEC = 22,07 \times 10^{-4} \mu\text{g/L}$$

Where:

A = 14,71 kg (total sold amount API in Sweden year 2018, data from IQVIA).

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

P = number of inhabitants in Sweden = $9 \cdot 10^6$

V (L/day) = volume of wastewater per capita and day = 200 (ECHA default) (Ref.1)

D = factor for dilution of waste water by surface water flow = 10 (ECHA default) (Ref.1)

Predicted No Effect Concentration (PNEC)

Ecotoxicological studies:

- Algae (*Pseudokirchneriella subcapitata*):

EC₅₀ = 520 mg/l after 72 hours exposure (guideline OECD 201) (Ref.2)

- Crustacean - Fresh water flea (*Daphnia magna*):

EC₅₀ = 497 mg/l after 72 hours exposure (guideline OECD 202) (Ref.2)

- Fish - Sheepshed minnow (*Cyprinodon variegatus variegatus*):

LC₅₀ > 1000 g/l after 72 hours exposure (modified OECD 203 Fish Acute Toxicity Test) (Ref.2)

PNEC = 497 µg/l (justification of chosen assessment factor)

*PNEC (µg/l) = lowest EC₅₀/1000 where 1000 is the assessment factor used. EC₅₀ for *Daphnia magna* has been used as for this calculation since it is the most sensitive of the three tested species.*

Environmental risk classification (PEC/PNEC ratio)

PEC/PNEC = $22,07 \times 10^{-4} \mu\text{g/l} / 497 \mu\text{g/l} = 4,44 \times 10^{-6}$

PEC/PNEC < 0,1 which justifies the phrase "Användning av läkemedlet har bedömts medföra försumbar risk för miljöpåverkan."

Degradation

Test results from "closed bottle test" (guideline 301 D) shows that the biological degradation is 0% in 28 days.

Levothyroxine is potentially persistent.

Bioaccumulation

Partitioning coefficient:

Log Pow = 2,4 (Ref.3; computed by XLOGP3-AA method)

Since log Pow < 4, the substance has low potential for bioaccumulation.

Referenser

1. 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
2. Report: Test Results for the Test Substance Levothyroxinsodium (Report Nr: R 197-05), Nycomed AB.
3. United States National Library of Medicine, PubChem, Compound, Levothyroxine,
<http://pubchem.ncbi.nlm.nih.gov/>. Accessed: 21 July 2015