

# EFFICIENT TREATMENT OF PHARMACEUTICAL RESIDUE AT SOURCE - EPIC

## FINAL REPORT: Content of

Finnish Environment Institute (SYKE),  
Lappeenranta University of Technology (LUT)  
University of Helsinki (UH) &  
Subcontractor Law and Water



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Rinnekoti-Säätiö

<http://www.syke.fi/hankkeet/epic>  
<http://www.syke.fi/projects/epic>  
<http://www.syke.fi/projekt/epic>



## Needs, Approach, Main outputs, Benefits, Collaboration & Further information

1. Emissions and risk identification – WP1 (SYKE, UH & Law and Water)
  - 1.1. Emission estimates from primary sources (SYKE, Law and Water & UH)
  - 1.2. Load estimation (SYKE& Law and Water)
  - 1.3. Identification of environmentally harmful APIs (SYKE, Law and Water, & UH)
2. Pilot-scale testing of technologies for treatment of waste water - development of new Cleantech solutions – WP2 (LUT, SYKE, TYKS & Law and Water)
3. Cost effectiveness of waste water treatment solutions – WP3 (SYKE & Law and Water)

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4. Policy recommendations for sustainable management for pharmaceuticals – WP4 (SYKE, UH & Law and Water)
  - 4.1. Market Based Instruments (UH, SYKE & Law and Water)
    - 4.1.1. Enhanced Environmental Permitting of Pharmaceutical Plants
    - 4.1.2. Decrease Environmental Impacts of Medicines via Improved Legislation
  - 4.2. Improved Waste Management (SYKE)
  - 4.3. Raising Awareness (SYKE & UH)
  - 4.4 Promoting Environmental Classification (SYKE & UH)

# Collaboration

## Partners

BUSINESS  
FINLAND



HELSINGIN YLIOPISTO  
HELSINGFORS UNIVERSITET  
UNIVERSITY OF HELSINKI  
FARMASIAN TIEDEKUNTA  
FARMACEUTISKA FAKULTETEN  
FACULTY OF PHARMACY



Vantaanjoen ja Helsingin seudun  
vesiensuojeluyhdistys ry



Kymen Vesi Oy



Turun seudun  
puhdistamo Oy



VARSINAIS-SUOMEN  
SAIRAANHOITOPIIRI

Rinne koti-Säätiö



## National

- Financiers / investors (steering group)
- Healthcare operators & related stakeholders: health institutions, hospitals, Finnish Medical Society Duodecim, Association of Finnish Pharmacies & SFL
- Pharmaceutical industry: Pharma Industry Finland (PIF), Pharmaceutical Information Centre & Orion Oy, KRKA Finland Oy
- Authorities: YM, STM, Fimea, Tukes, ELY Centres, Regional State Administrative Agencies (AVIs), municipalities
- Finnish Water Utilities Association (FIWA), MWWTPs
- Technology providers, consulting firms, enterprises
- Scientific community: Research institutions & universities
- Other stakeholders & networks: NGOs, Generation Green, Media



- Authorities:
  - EU Strategy for the Baltic Sea Region (EUSBSR) - Policy Area Hazards: 8 Baltic Sea EU member states + HELCOM + DG REGIO as members
  - Swedish national knowledge centre on pharmaceuticals - Swedish Medical Products Agency
- European Parliament & EU Commission – DG ENV
- HELCOM

- Scientific community: Research institutions, e.g. IVL & universities, Interreg projects CWPharma, HAZBREF, BEST & SUDDEN
- Technology developers & providers, e.g. Pharem Biotech & GRUNDFOS BioBooster
- Pharmaceutical industry: International Pharmaceutical Federation (FIP), Swedish Association of Pharmaceutical Industry (LIF), European Federation of Pharmaceutical Industries and Associations (EFPIA)
- Stockholm County Council
- Networks / NGOs: Health Care Without Harm



## Benefits and influence of the EPIC project

- A global need for knowledge on effective good practices for minimizing pharmaceutical waste .
- Guidance and best practices for waste management of pharmaceutical substances will benefit health care operators, waste water treatment plants (WWTP) and recycling businesses.
- Removing pharmaceutical residue at source improves the quality of water and the reusability of WWTP sludge and allocates treatment costs to the source of origin.
- MWWTPs will benefit from new knowledge on the composition and load of pharmaceutical in effluents from hospitals/healthcare institutions, households and pharmaceutical plants
- Hospitals/Healthcare operators obtain new knowledge on the composition and quantity of emissions of pharmaceutical residues they release to the MWWTPs, minimising the impacts on environment.
- Healthcare operators obtain new knowledge on how the management of unused medicines and packaging/equipment containing pharmaceutical residue could be enhanced.



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