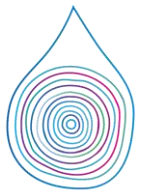




Pharmaceuticals in the water cycle

Arjen Frentz

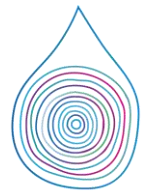
Chairman EurEau Commission on Drinking Water



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Water matters

- 1. EurEau**
- 2. Human pharmaceuticals in water: the challenge**
- 3. Veterinary pharmaceuticals**
- 4. State of play: EU**
- 5. EurEau position / view**
- 6. The way forward**

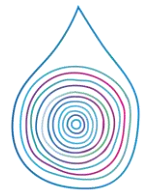


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Water matters

1. EurEau

- European umbrella Federation of national drinking water and waste water associations: +/- 70.000 utilities
- Members: provide water supply and sanitation at affordable prices in a sustainable way
- Founded in 1975
- Consensus approach and the voice of the water sector in Europe
- Platform: expertise and knowledge exchange
- Members: from 25 EU MS, Norway, Switzerland and Serbia.

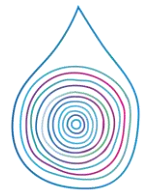


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2. Human pharmaceuticals in water: the challenge

- Ranges ng/L to mg/L in surface water and also in groundwater resources
- Threat to drinking water resources
- Efforts to purify/safeguard
- Drinking water: good quality



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**Protect
Sources**

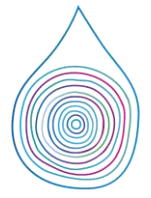


**Simple
Purification**



**Tap
&
Knowledge**





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Activities EurEau members

- Perform research topics on pharmaceuticals and the aquatic environment in Member States
- Projects on national level with different stakeholders acting at various levels in order to reduce emissions

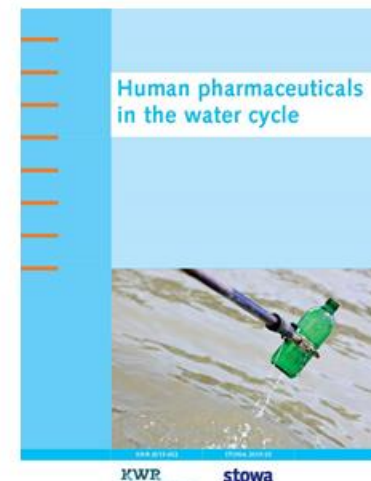
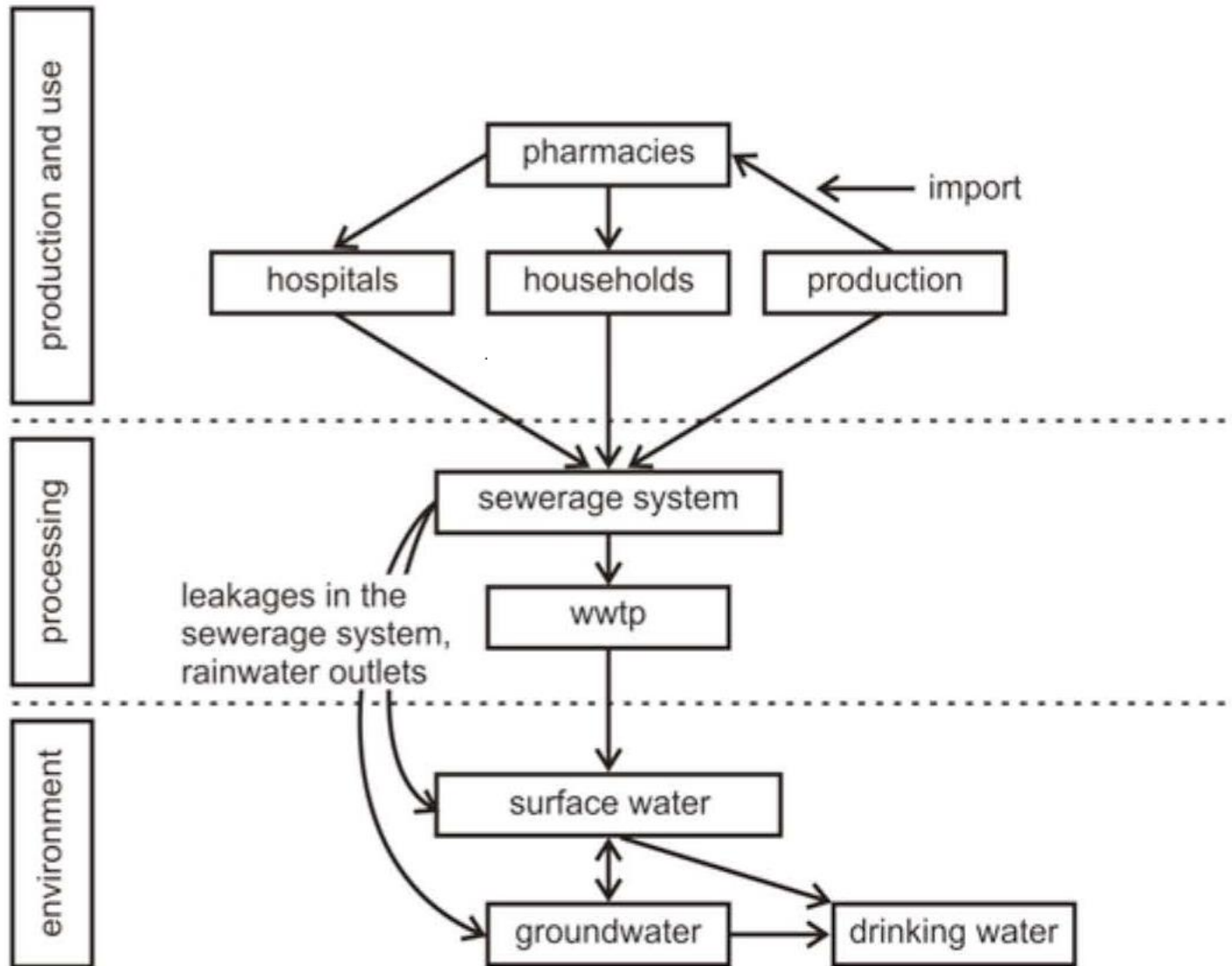
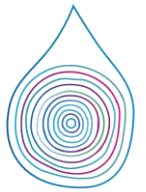




FIGURE 1 THE MATERIAL FLOW OF HUMAN PHARMACEUTICALS IN THE WATER CYCLE. SOURCE: ICBR (2010)





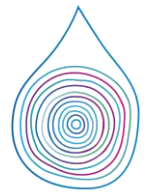
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Concentrations

Concentrations of pharmaceuticals in the different parts of the water cycle depend on:

1. The sale of pharmaceuticals
2. The proportion of pharmaceuticals actually used
3. The proportion the user excretes and metabolites are formed in the process
4. The proportion passes wastewater treatment and degradation products formed in the process
5. The proportion in the surface water adsorbed to sediment broken down
6. The degree substances pass through the soil
7. The degree they are removed during drinking water production processes.

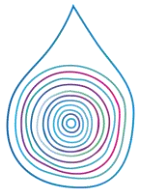


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3. Veterinary pharmaceuticals

- Comparative studies (10 MS) show veterinary antibiotics & pharmaceutical residues present in groundwater in ALL countries
- More diffuse routes than human pharmaceuticals
- More affecting rural areas than urban environments.



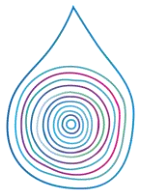
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4. State of play: EU

Water Framework Directive: simple purification

- Ensure the necessary protection with the aim of avoiding deterioration in water quality in order to reduce the level of purification treatment in the production of drinking water (article 7);
- Polluter Pays principle;
- Requiring Member States to ensure that under the water treatment regime applied the resulting water will meet the requirements of the Drinking water Directive.

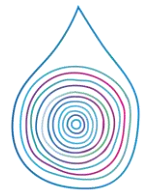


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Drinking Water Directive

Member States shall take measures necessary to ensure that water intended for human consumption is free from any substances in concentrations that constitute a potential danger to human health and thus emphasising the relevance of the precautionary principle in water policies.

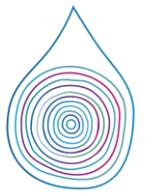


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EU Policy measures

- Watch list of pharmaceuticals (February 2015)
- Strategic approach European Commission to pollution of water by pharmaceutical substances (delayed):
 - environmental objectives
 - public health
 - cost effectiveness of measures
- By September 2017 the European Commission proposes measures to address environmental effects of pharmaceutical substances
- **Sense of urgency?**



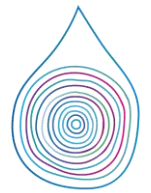
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5. EurEau position/view

Holistic approach:

- action plan to tackle presence of pharmaceuticals in the water cycle
- at the source by reducing emissions discharges and losses to the aquatic environment
- measures at waste water treatment level is end of pipe
- mix of measures necessary like voluntary actions and improvement of legal frameworks
- raise public awareness



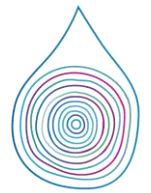
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EurEau action plan

Coherent actions at different levels:

1. Development of green pharmacy
2. Authorisation level
3. Post authorisation level
4. Marketing level
5. Hospitals level
6. Healthcare professionals
7. Household level
8. Wastewater treatment plants level
9. Drinking water level



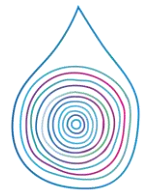
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6. The way forward

Committed exchange on the topic at EU and country level with

- The pharmaceutical industry associations,
- consumer associations
- NGO's
- Decision makers
- Member States
- All other stakeholders involved.



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In summary

- Pharmaceuticals are present in surface water, ground water and in our drinking water resources
- Source control measures should be developed
- Holistic strategy absolutely necessary to tackle pharmaceutical substances in water.

Thank you for your attention

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