



A holistic approach to the challenge of pharmaceuticals in the environment

Prof. Jan Peter van der Hoek

29 November 2017

Intergroup meeting 'Pharmaceuticals in the Environment'



About EurEau

EurEau

the voice of
Europe's
water sector
since 1975

Our members
are 32
national
associations
of
water
services
from 29
European
countries

We represent
public and
private
drinking
and
wastewater
services

Employing
500,000
people,
the sector
makes
a significant
contribution to
the European
economy

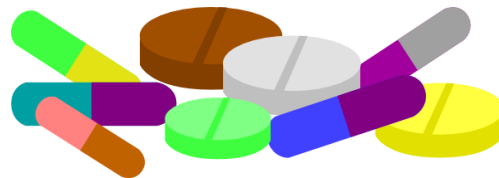
EurEau's vision

- ~ Water suppliers must have access to adequate and long term reliable water resources
- ~ Groundwater and surface water used to produce drinking water must be well protected (art.7.3 WFD)
- ~ Once released into the environment chemical substances may occur sooner or later in the water resources
- ~ Keep treatment as simple as possible: end-of-pipe treatment should remain the last option



The challenge of pharmaceuticals

- ~ Safe drinking water is a human right
- ~ Access to appropriate medication is a human right
- ~ Pharmaceutical residues (human & veterinary) in surface water and groundwater





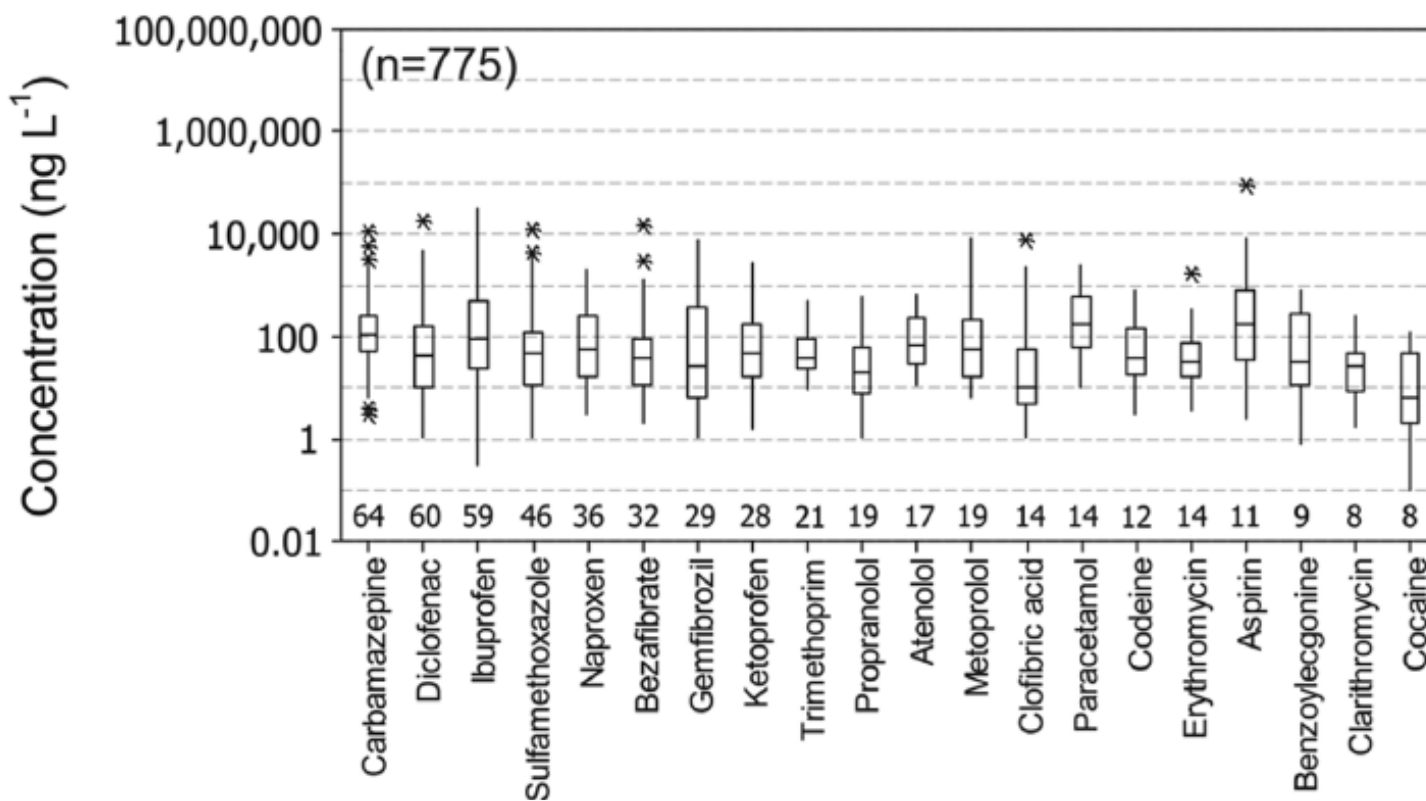
EurEau

Reasons to take action now

- ~ Pharmaceuticals in the environment pose a threat to the aquatic environment and drinking water resources

Surface water

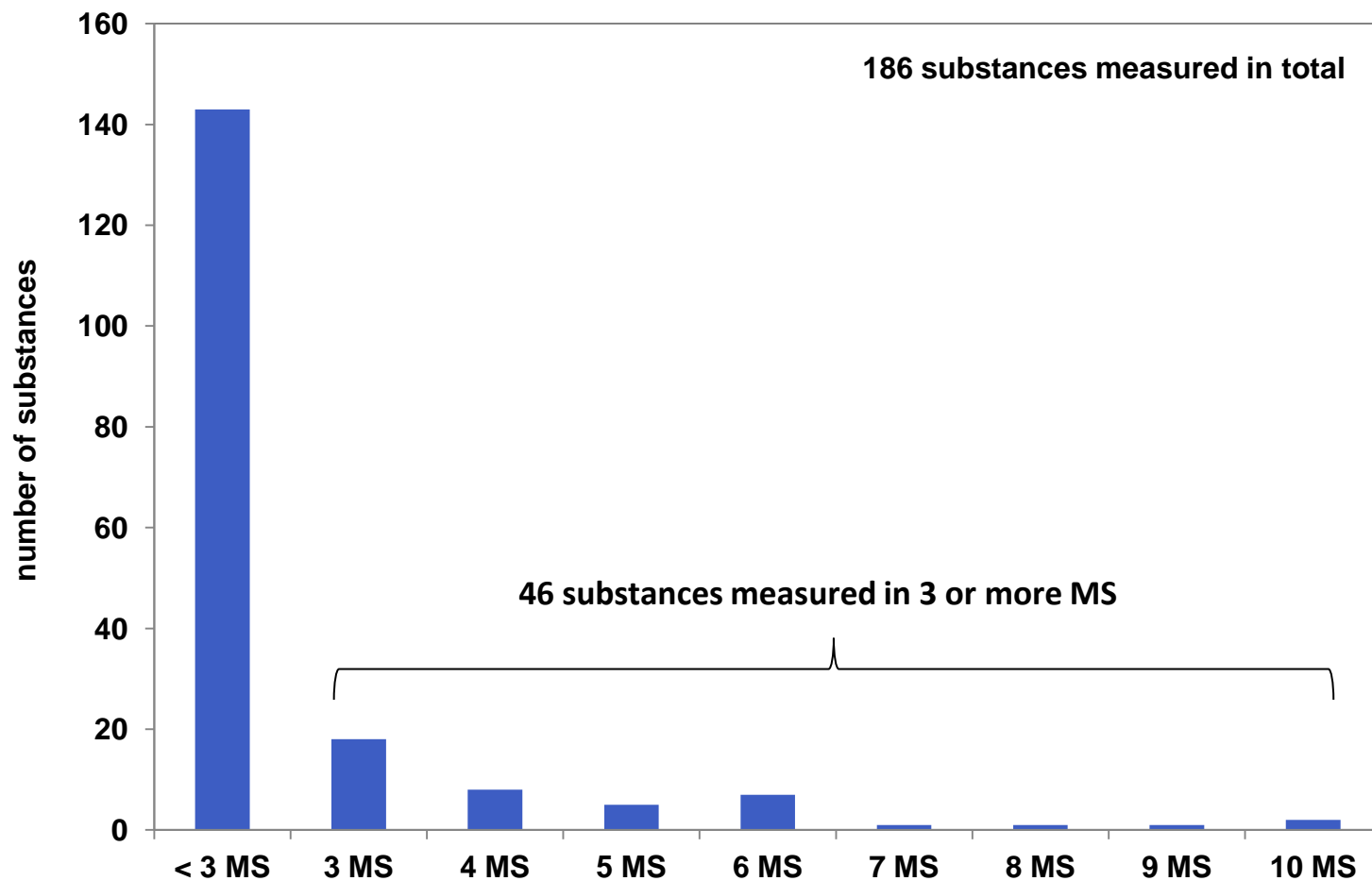
European rivers



Hughes et al., Env. Sci. Technology 47 (2013), 661-677

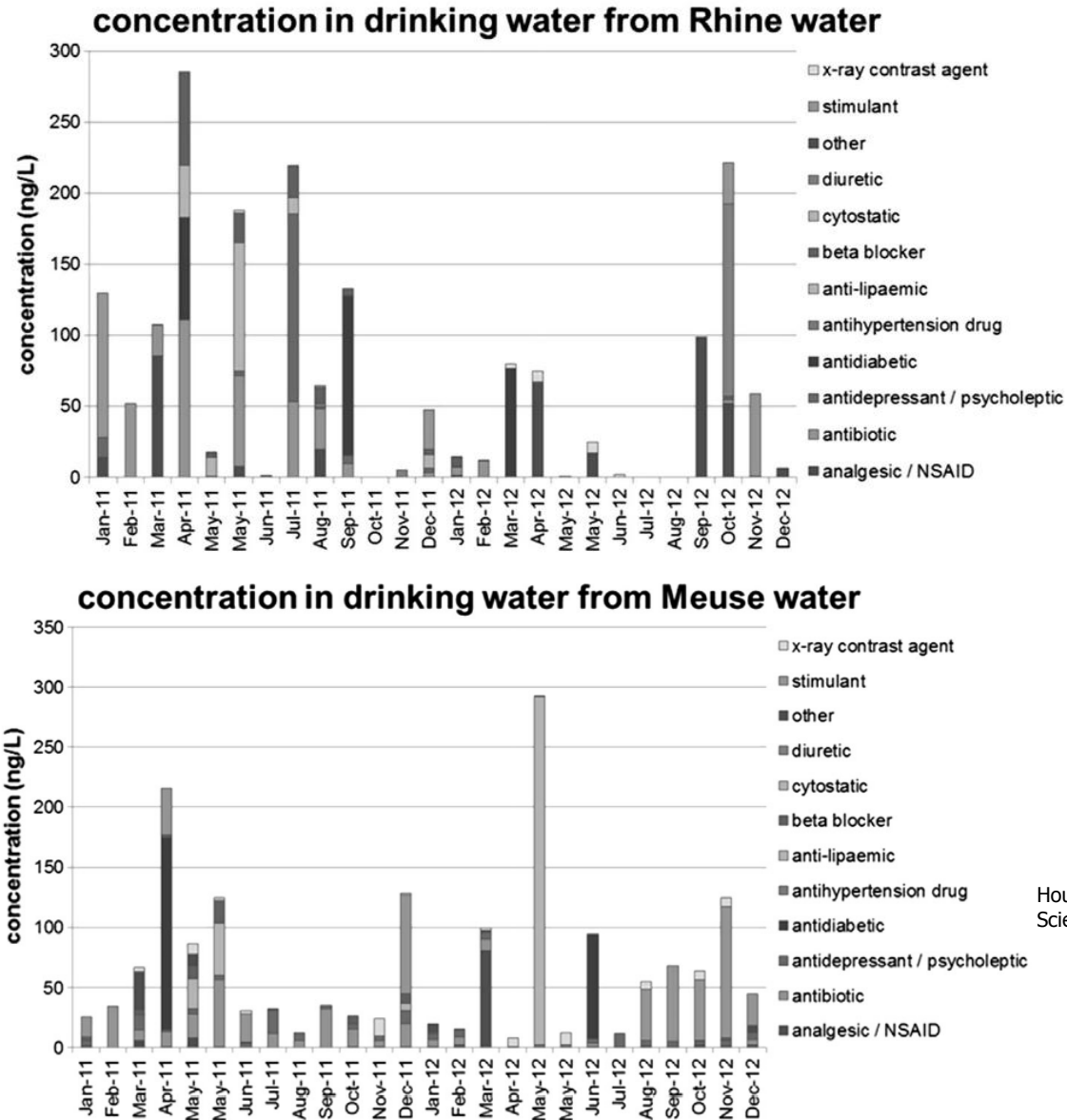
Surface water

Drinking water resources



Drinking water

produced from surface water (river Rhine and river Meuse)

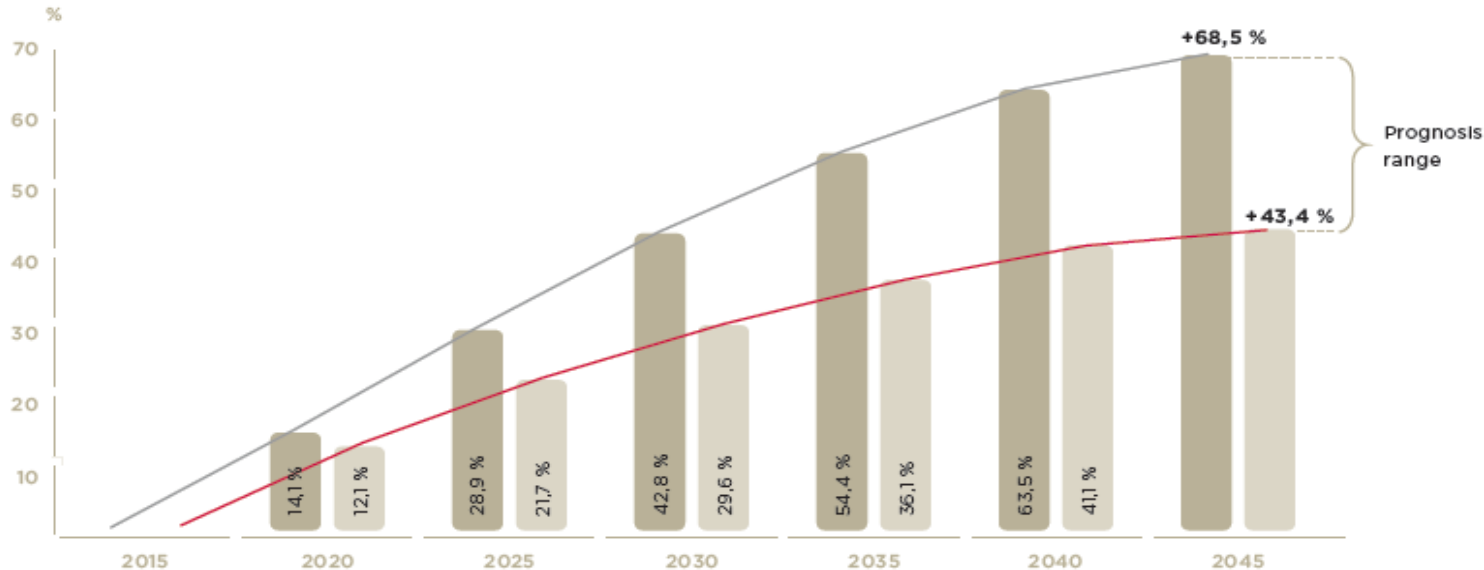


Houtman et al.,
Science of the Total Environment 496 (2014), 54-62

Reasons to take action now

- ~ Pharmaceuticals in the environment pose a threat to the aquatic environment and drinking water resources and
- ~ Situation is likely to deteriorate in the future

GROWTH PROGNOSIS FOR THE CONSUMPTION OF PRESCRIPTION DRUGS FOR HUMAN USE



■ Upper-end scenario
■ Lower-end scenario

Source: civity analysis 2017

State of play – EU level

- ~ Treaty on the Functioning of the European Union Art.191(2)
 - ~ EU legislation built on: precautionary principle, control at source principle and polluter-pays principle

- ~ Water Framework Directive
 - ~ “[..] *avoiding deterioration in their quality to reduce the level of purification treatment [..]*” Art. 7 (3)

- ~ Drinking Water Directive
 - ~ Emphasizing precautionary principle in water policies

State of play – EU level

Priority Substances Directive

- ~ Develop a strategic approach to pharmaceuticals in the environment

DIRECTIVES

DIRECTIVE 2013/39/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 12 August 2013
amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of
water policy

- ~ Roadmap published by the Commission
- ~ Considerable delay in the process
- ~ EurEau welcomes the consultations launched last week

EurEau's holistic approach

- ~ A framework for action to tackle the problem of pharmaceuticals in the water cycle
- ~ Mix of measures such as voluntary actions and improvement of legal frameworks
- ~ Tackle problem as much as possible **at the source**
- ~ End-of-pipe solutions are not sustainable:
 - ~ Economically unsustainable: water bills might increase € 10-20/ person/year
 - ~ Environmentally unsustainable: increase in energy, chemicals consumption and chemical by-products
 - ~ 100% removal hardly achievable
 - ~ Against the circular economy approach: after extra treatment in the WWTP pharmaceuticals may end up in sewage sludge, reducing reuse options (e.g. reuse in agriculture as fertiliser)

Action at different levels

1. Design level:

Development of green pharmacy

2. Authorisation level:

Stringent cut-off criteria within the environmental risk assessment of new active pharmaceutical ingredients

3. Post authorisation level:

Environmentally classified pharmaceuticals

Data should be made available upon request

4. Marketing level:

Eco-label on packaging

5. Hospitals level:

Special treatment of their wastewater



EurEau

PUBLIC RELEASE: 9-SEP-2015

Making pharmaceuticals that degrade before they can contaminate drinking water

AMERICAN CHEMICAL SOCIETY

In recent years, researchers have realized that many products, including pharmaceuticals, have ended up where they're not supposed to be -- in our drinking water. But now scientists have developed a way to make drugs that break down into harmless compounds before they contaminate our taps. Their report appears in ACS' journal *Environmental Science & Technology*.

Action at different levels

1. Design level:

Development of green pharmacy

2. Authorisation level:

Stringent cut-off criteria within the environmental risk assessment of new active pharmaceutical ingredients

3. Post authorisation level:

Environmentally classified pharmaceuticals

Data should be made available upon request

4. Marketing level:

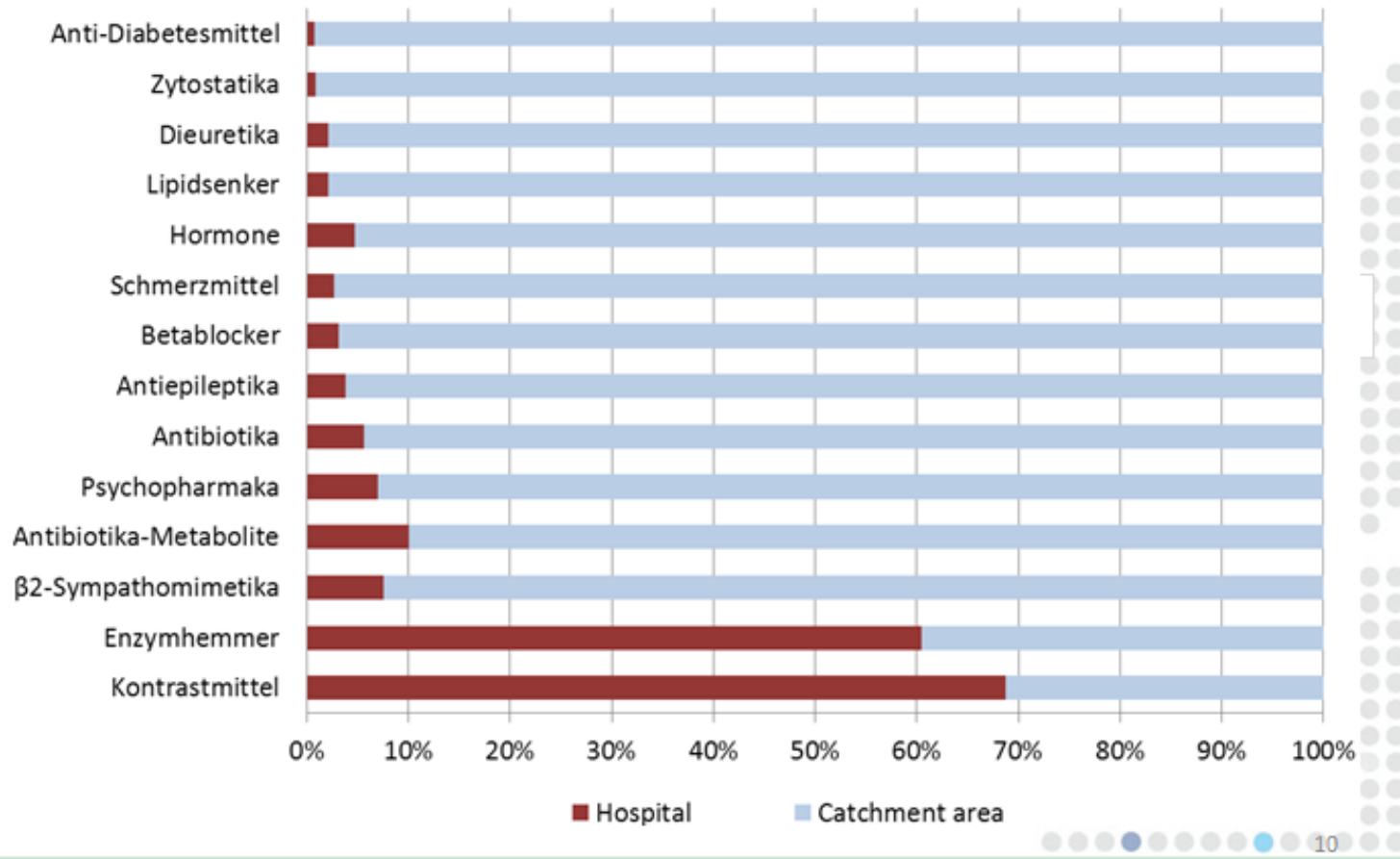
Eco-label on packaging

5. Hospitals level:

Special treatment of their wastewater



Compound-specific consideration is needed



Action at different levels



6. Healthcare professionals level:

Compulsory prescriptions for medications with high environmental impact

7. Households level:

Consumers and patients associations should raise awareness and promote healthier lifestyles

8. Wastewater treatment plants level:

End-of-pipe treatments alone does not solve the problem

Develop cost-efficient and sustainable methods for pollutants removal

9. Drinking water level:

Drinking water operators will continue to monitor pharmaceuticals

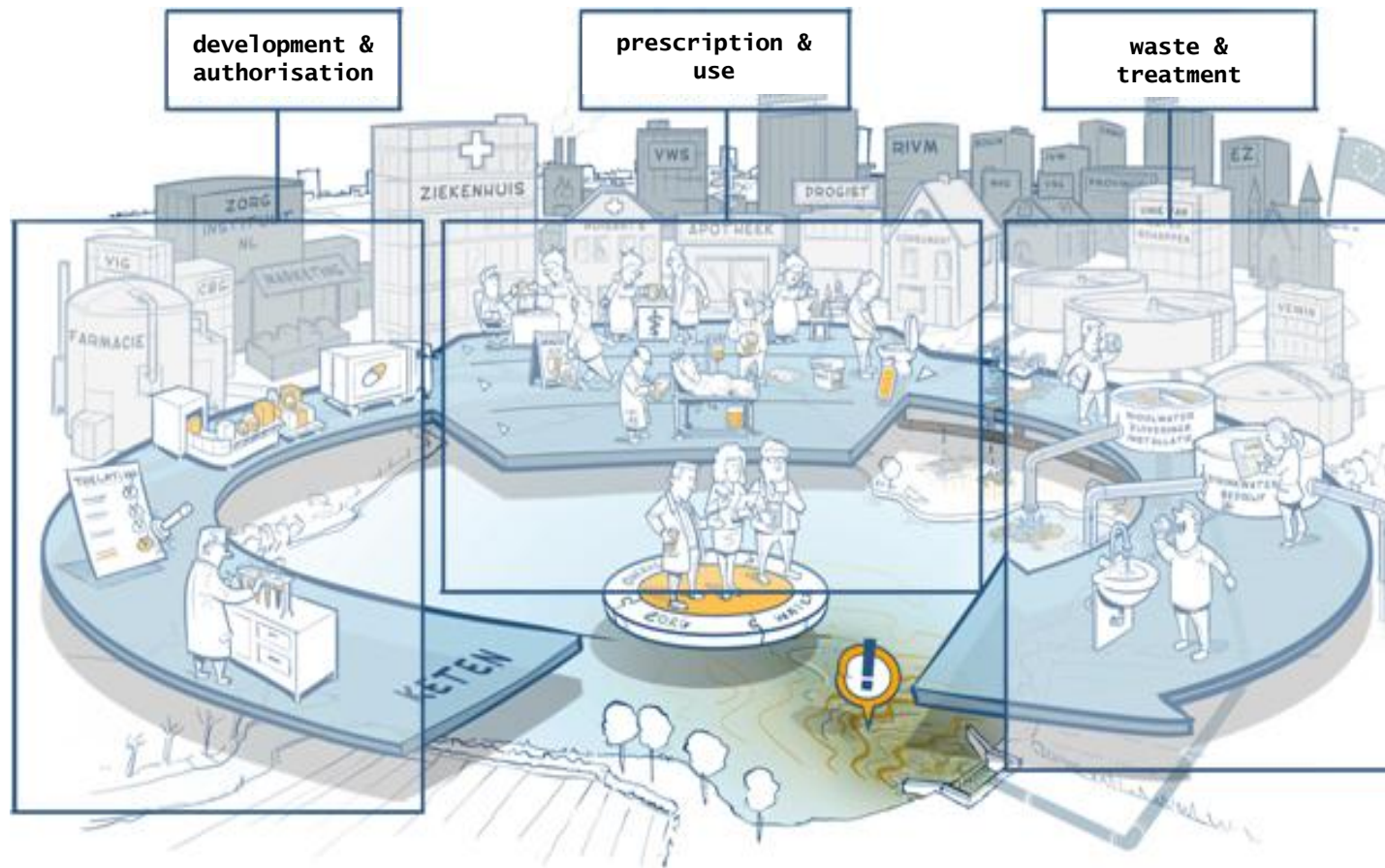
The way forward

Active cooperation and committed exchange with all involved actors at different levels including:

- pharmaceutical industry, doctors, hospitals, patients, consumers associations, environmental NGOs and decision makers
- Extended Producers Responsibility to be considered



The Dutch approach as example



In summary



- ~ Pharmaceuticals are present in surface water, in groundwater and in our drinking water resources
- ~ Source control measures should be developed
- ~ A holistic strategy is necessary to tackle pharmaceutical substances in water
- ~ Active cooperation and committed exchange with all involved actors at different levels is needed

Thank you for your attention

Jan Peter van der Hoek



EurEau

Rue du Luxembourg 47-51,
B-1050 Brussels, Belgium
Tel: +32 (0)2 706 40 80
Fax: +32 (0)2 706 40 81
BE 0416 415 347
secretariat@eureau.org
www.eureau.org

EurEau. Water Matters.

www.eureau.org