



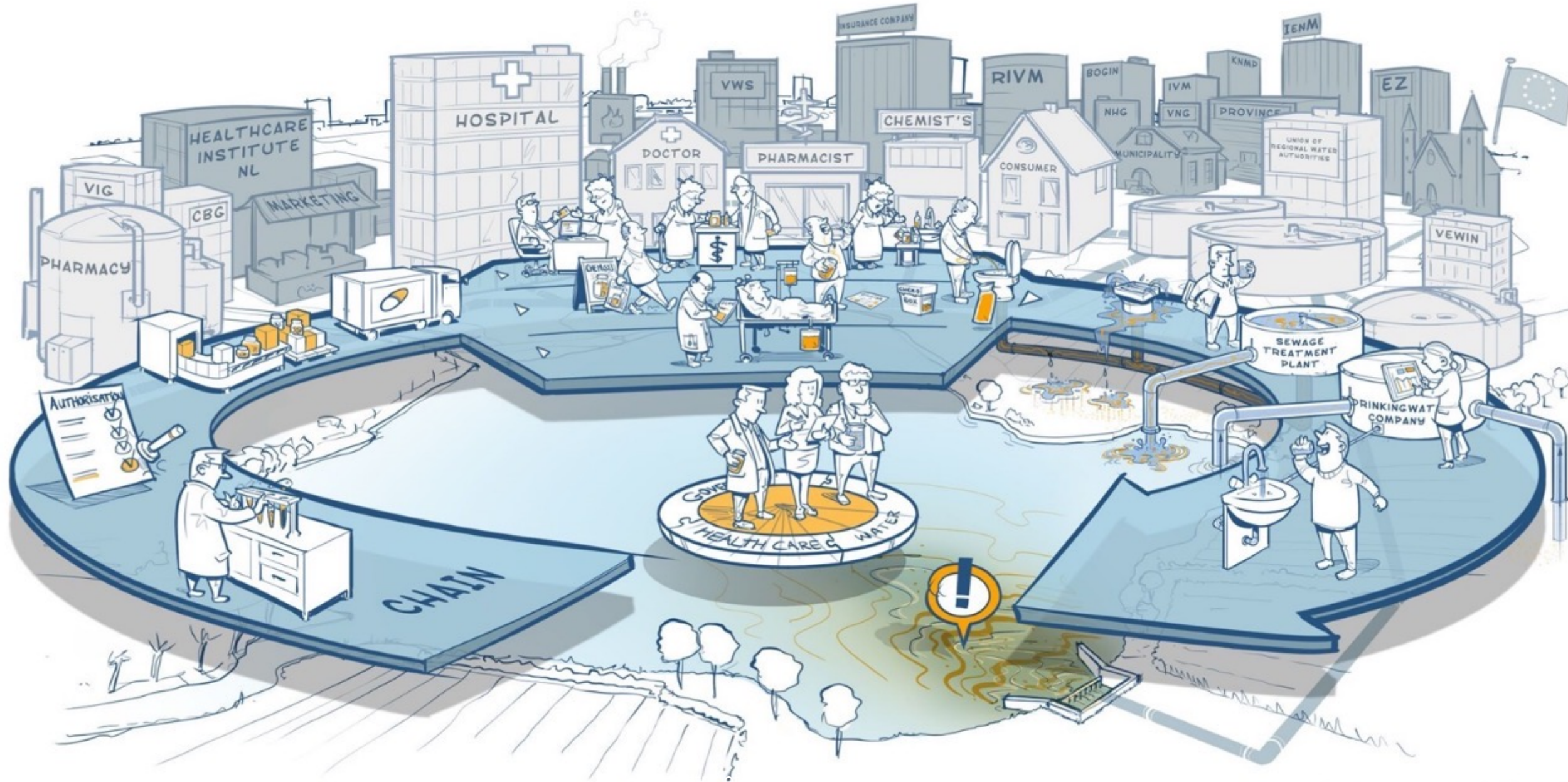
Ministry of Infrastructure  
and Water Management

## Netherlands' strategy on removing pharmaceutical residues\* in municipal WWTP discharges

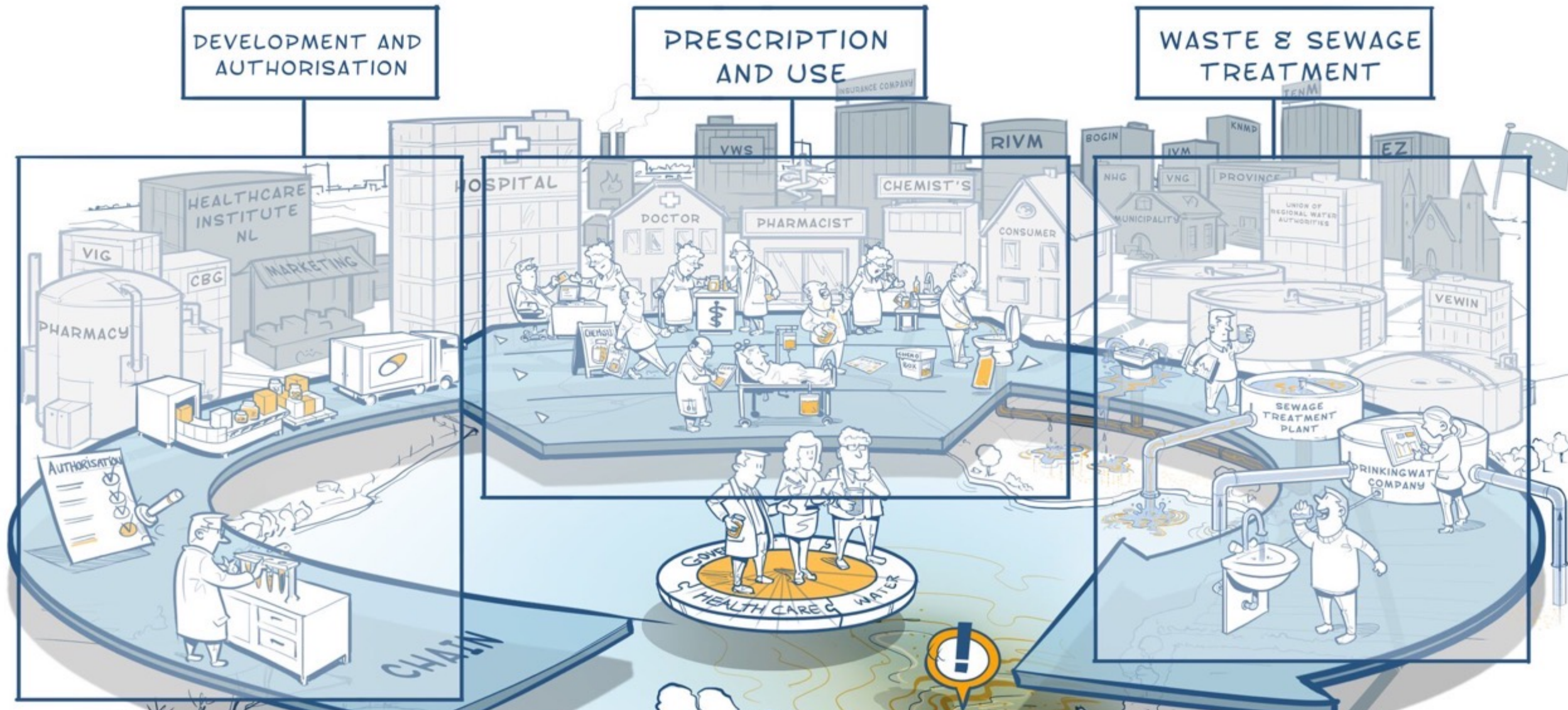
\* and other micro pollutants

Marc de Rooy  
Dep. Water Quality & Quantity

# NL Chain approach on pharmaceutical residues







### Conclusion:

1. Measures in the whole chain of health care and water sector are needed.
2. Measures 'at the source' will not solve the problem by their own; additional treatment at UWWTP is necessary



## Additional treatment at municipal WWTPs

Starting point in 2016:

- Questions about necessity (no obligation from the WFD)
- Little experience in NL with additional treatment of micro-pollutants
- Fear for high costs
- Fear that other actors in the 'chain' would stop acting once extra treatment is in place

=> High level of uncertainty; how to cope with it?







## First steps: motivation

- Interpretation of existing data on water quality (RIVM)
  - 'Yes, we see the effects of pharmaceutical residues' (yet much remains unclear)
- Learn from research and full scale experiences abroad (DE/CH; Kompetenzzentra)
  - Yes, techniques exist, and they might be less costly than feared
- Analysis of hot spots (what WWTPs have high impact?)
  - We don't have to improve all WWTPs
- Meanwhile, various water quality problems occurred, showing that WWTPs have a role to play in abating micro-pollutants
- Conclusion: additional treatment is useful to reduce the load of micro-pollutants, not only pharmaceuticals





## Next steps: learning by doing (implementation, innovation, exchange)

### Budget (doing)

- Demonstration/Full-scale Implementation program (€ 60 mln)
  - to support regional water authorities
  - full scale on municipal WWTPs for a 10 years period;
  - with directly applicable advanced treatment techniques (O3, PAC/GAC)
- Innovation program for promising treatment technologies (€ 12 mln)
  - technologies with added value compared to existing techniques (e.g. better treatment efficiency, sustainability, lower costs)
  - technologies on the threshold of breaking through (within 5-7 years; TRL 7\*)
  - feasibility studies and pilot plant research at WWTPs

\* TRL = Technology Readiness Level; 1-12 scale





## Next steps: learning by doing (implementation, innovation, exchange)

### Knowledge dissemination (learning)

- Community of Practice
  - to share experiences from both programs (feasibility studies, pilots, demo's)
  - exchange of experiences from both regional authorities and consulting firms
- Robust method for sampling WWTP influent/effluent and a validated analysis for indicator substances
- Using standard methods for:
  - removal efficiency,
  - costs,
  - CO2-footprint,
  - biological impact assessment





## Future steps:

Short term:

- Could indicator substances be used as a proxy for other groups of chemicals (of emerging concern)?
- Picture of the developments in the aquatic ecosystem as a result of the additional treatment of WWTPs

**Learning by doing: act, learn, improve!**







## Future steps:

Long term:

- Chemicals of emerging concern are best approached using techniques with a broad working spectrum (in monitoring and in treatment)
- substance-by-substance approach = sand trap
- In WWTP-effluent many sources combine (households, industry, rain): use it as a gauge for signalling new chemicals of emerging concern
- Than act according to the source of the pollution
  - Point source in your sewer system?
  - New substance commonly used in society?
- As WWTP; become director of your influent!

**Learning by doing: act, learn, improve!**





**Thank you for your attention!**

**Marc de Rooy**

**Ministry of Infrastructure and Water Management**

**[marc.de.rooy@minienw.nl](mailto:marc.de.rooy@minienw.nl)**



**Rijkswaterstaat**  
*Ministry of Infrastructure  
and Water Management*

**Tackling Micropollutants in Wastewater**  
**Approaches on Implementation and Innovation in Europe and The Netherlands**  
**November 3 and 4 2021**  
**Aquatech Amsterdam**