



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

Healthy Water

The Dutch Approach

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Healthy Water | 28 May 2015



Good News!



NoPills results are already used
in Dutch policy discussions



What happens in The Hague?

Difficult dilemma for Ministry of Environment:

- end-of-pipe: upgrade STPs
 - > Expensive
 - > Costs for waterboards
 - > More than just pharma's removed
- Source measures: reduce use of pharma's
 - > Behavioural measures
 - > Involves ministry of Health, care sector and industry – no priority for environment
 - > What about marketing authorisation??

But also:

- Sector asks national government to take the lead
- This does not fit in general view of retreating government and self regulation by sector





What happens in The Hague?

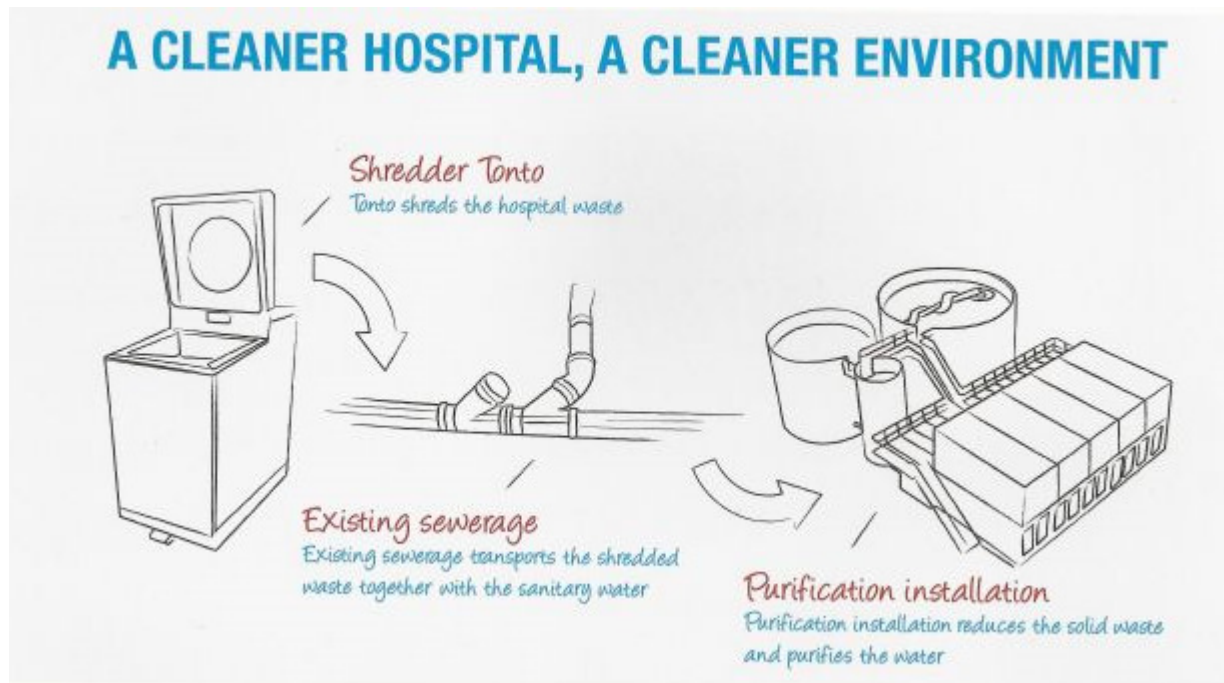
- Past years: Parliament letters and discussions about environmental effects of pharmaceuticals and possibilities treatment and chain-approach
 - Parliamentary round table meeting with sector (January 2014)
 - Parliament and Secretary of State ask for concrete actions
 - Waterboards and drinking water companies presented plan
 - Ministry of environment talks with pharmacists, industry, care sector, waterboards, drinking water companies
 - At present: much energy. Round table meeting, government conference on water quality, new Parliament letter and discussion, ...
- Development of chain agreement!





Various Dutch hospitals take initiatives

- Experiments with urine bags
- On-site water treatment
- Example: Pharmafilter (www.pharmafilter.eu)



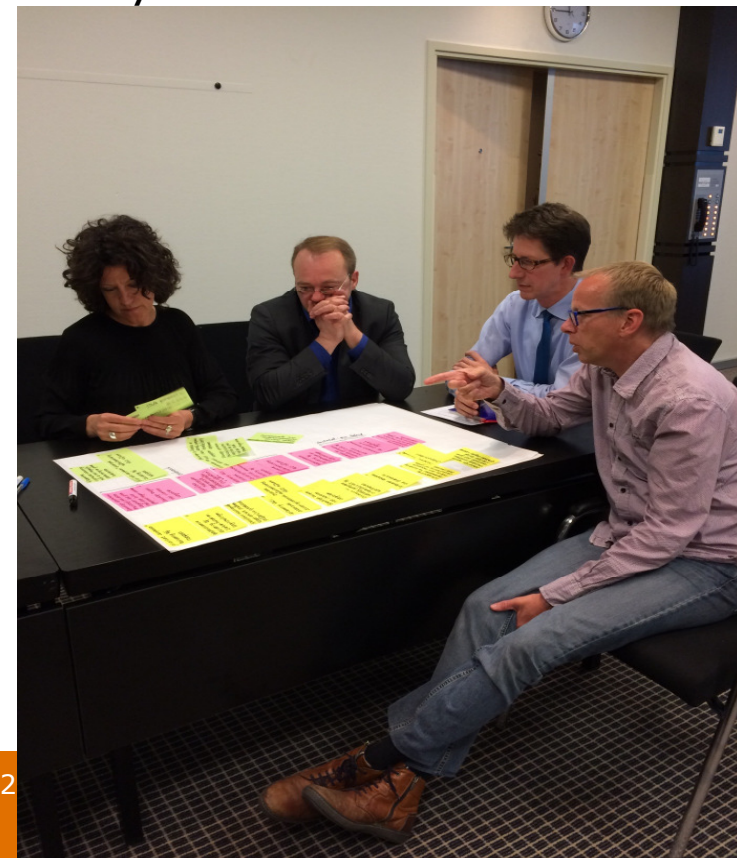


Round table meeting with sector representatives

- NoPills results used as input
- Prioritization of measures
- Formation of working groups to work out priority measures
 - Short or medium-long term possibilities
 - Dutch national possibilities

So far the good news...

- Most measures are EU wide measures
- Dutch national policy needs steps to be taken in EU





What else happens in The Hague?

- RIVM has derived Environmental Quality Standards (EQSs) for
 - Carbamazepine
 - Metformin
 - Metoprolol
 - Amidotrizoic acid
- Substances on Dutch national Watchlist
- Should they be monitored regularly?



EQSs for pharmaceuticals

- carbamazepine relatively toxic to aquatic organisms
- metoprolol and metformine: EQS for ecotoxicity in high $\mu\text{g/L}$ -area
- Human-toxicological drinking water limit much higher than 0.1 or 1.0 $\mu\text{g/L}$ signal values.
- No data for amidotrizoic acid

Table 1. Derived AA-EQS, MAC-EQS, NC, , SRC, $QS_{dw, hh}$ values for three pharmaceuticals.

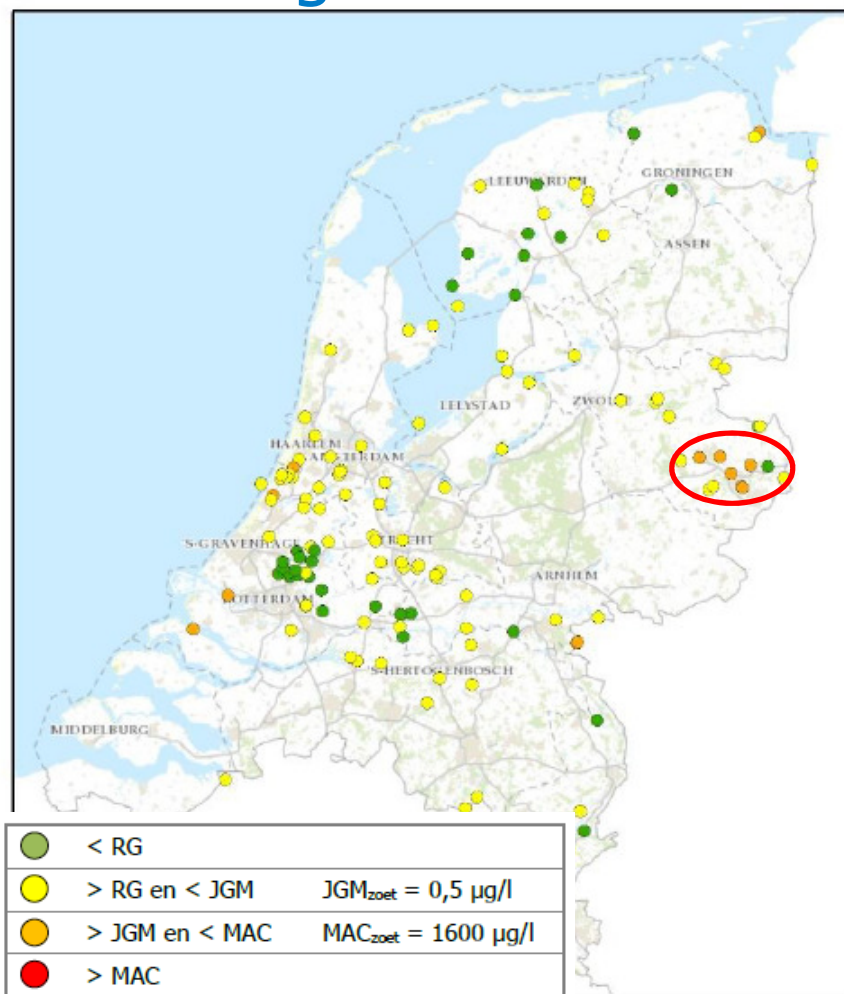
Compound	Fresh or salt water	Quality standard	NC	MAC-EQS	SRC _{eco}	$QS_{dw, hh}$
		($\mu\text{g/L}$)				
Carbamazepine	Fresh	AA-EQS 0.50	0.005	1600	1430	54
	Salt	0.05	0.0005	160	1430	n.a.
Metoprolol	Fresh	62	0.62	760	12100	9.8
	Salt	6.2	0.062	76	12100	n.a.
Metformin	Fresh	780	7.8	780	n.d.	196
	Salt	78	0.78	78	n.d.	n.a.

n.a. = not applicable

n.d. = not determined due to a lack of data



Monitoring results carbamazepine

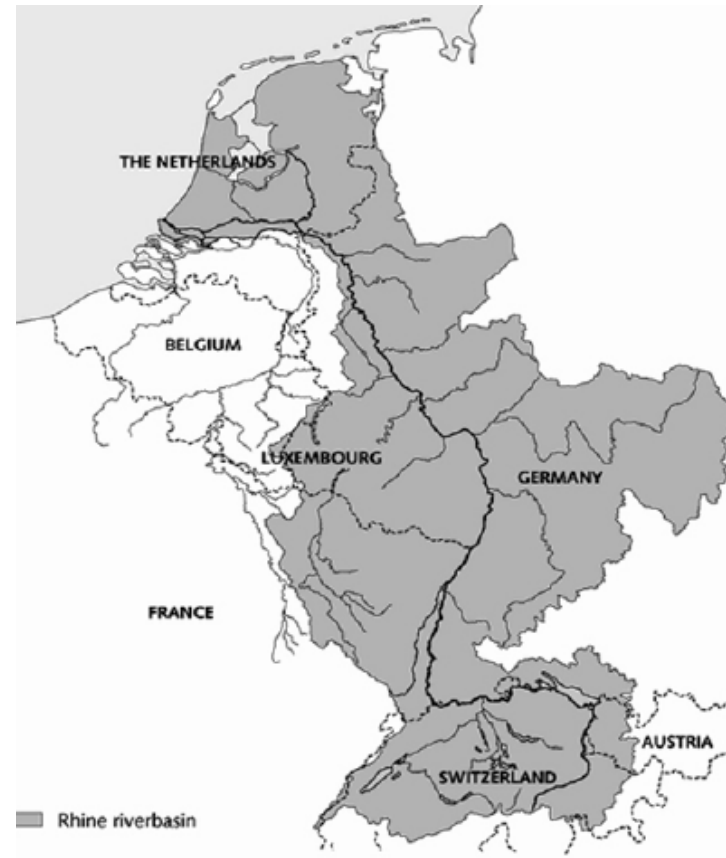
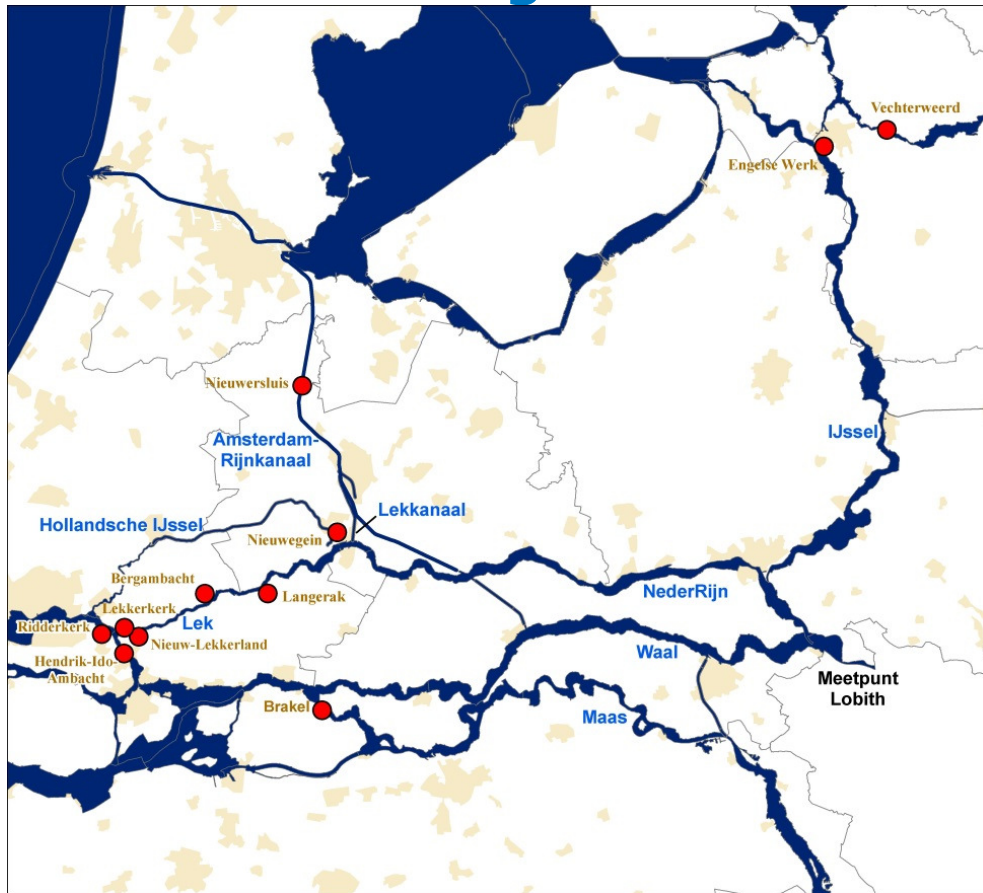


Annual Average EQS = 0.5 µg/L

- Maximum in larger water bodies: 0,125 µg/L
- Maximum in regional bodies: 1,9 µg/L
- AA-EQS exceeded in 11 samples.
- However: these samples are not a yearly average.
- Peak quality standard (1600 µg/L) not exceeded
- Drinking water standard (54 µg/L) not exceeded
- Large variation in regional waters
- Seasonal variation

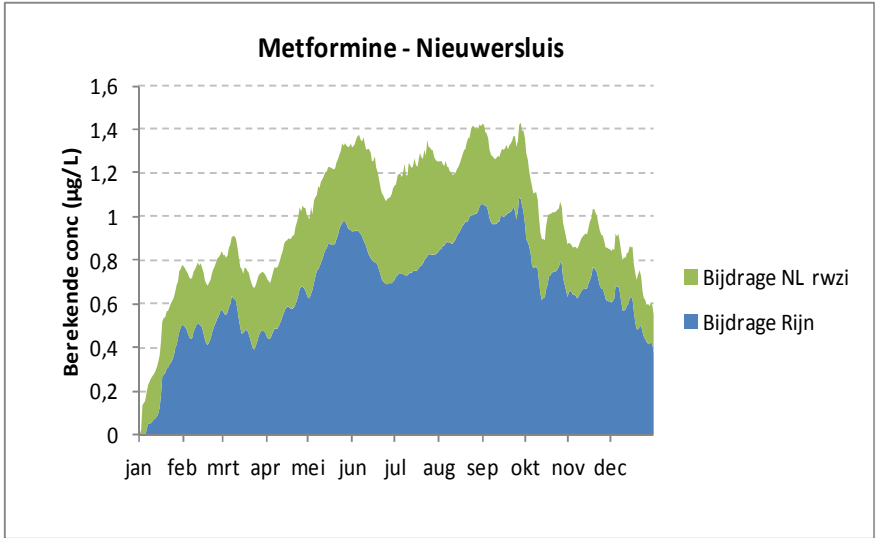
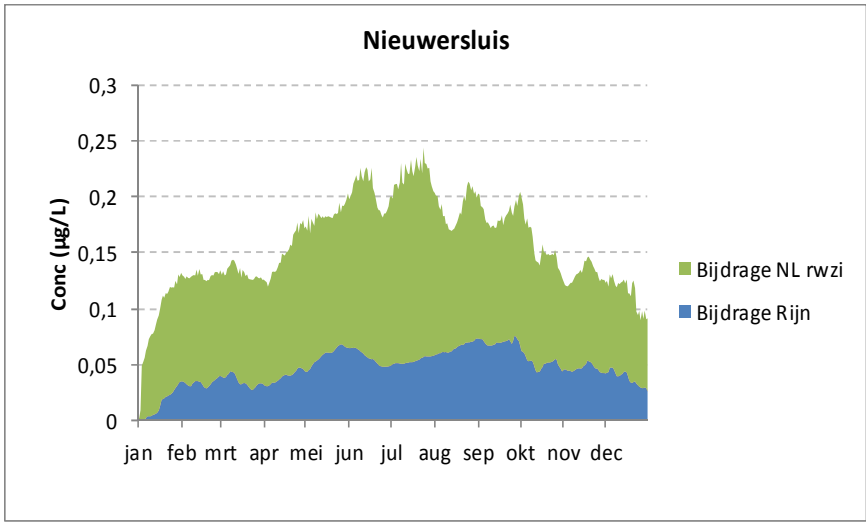
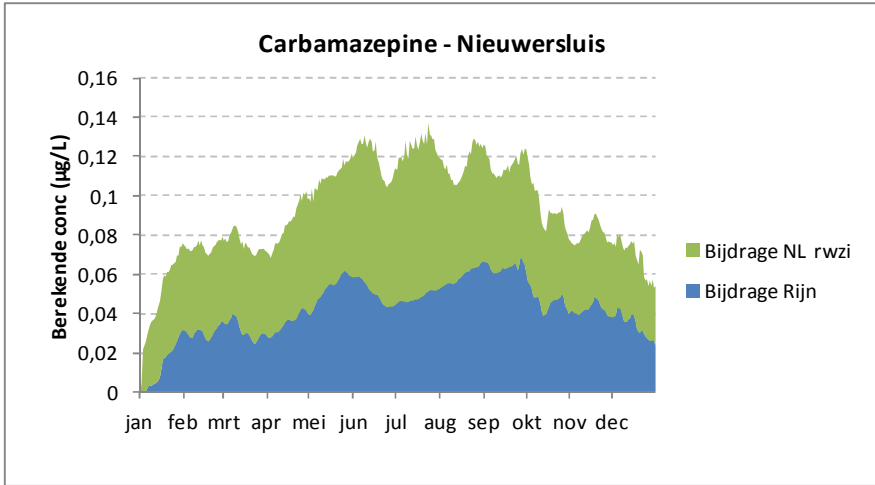


Rhine modelling exercise - Nieuwersluis





Nieuwersluis – Foreign contribution vs Dutch STPs





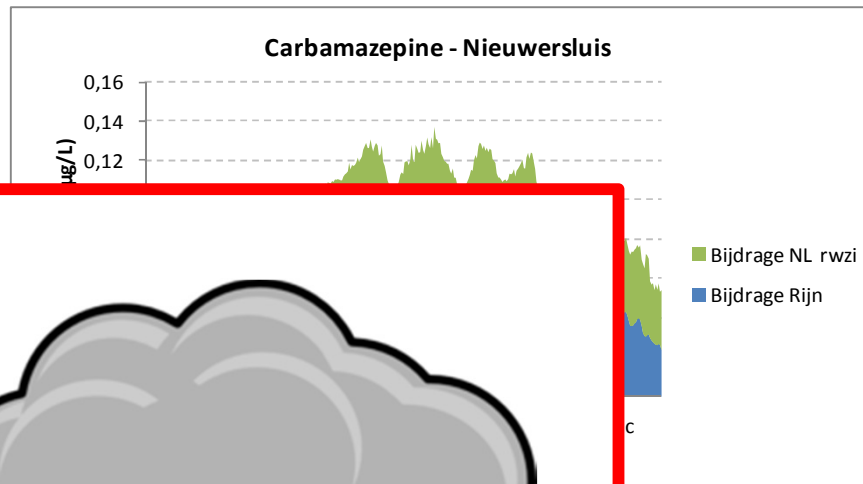
Nieuwersluis – Foreign contribution vs

Climate change



Conc (µg/L)

jan feb mrt apr mei jun jul aug sep okt nov dec



jan feb mrt apr mei jun jul aug sep okt nov dec



Policy discussion

- AA-EQS for carbamazepine may be relevant for ecology
- Should EQS be formalized?
 - ✓: acknowledgement of problem; monitoring assured
 - ✗: what can we do about it?
- Water boards oppose (costs)
- Should policy aim at specific substances or the whole group?
- National or EU Policy?



Outlook

- Much is going on in the Netherlands
- However, policy is mainly European
- The Netherlands is the 'sink' of Europe
 - Germany and Switzerland are taking measures



**Take
home message*

- Results of NoPills are very valuable!
 - NL cannot do this alone