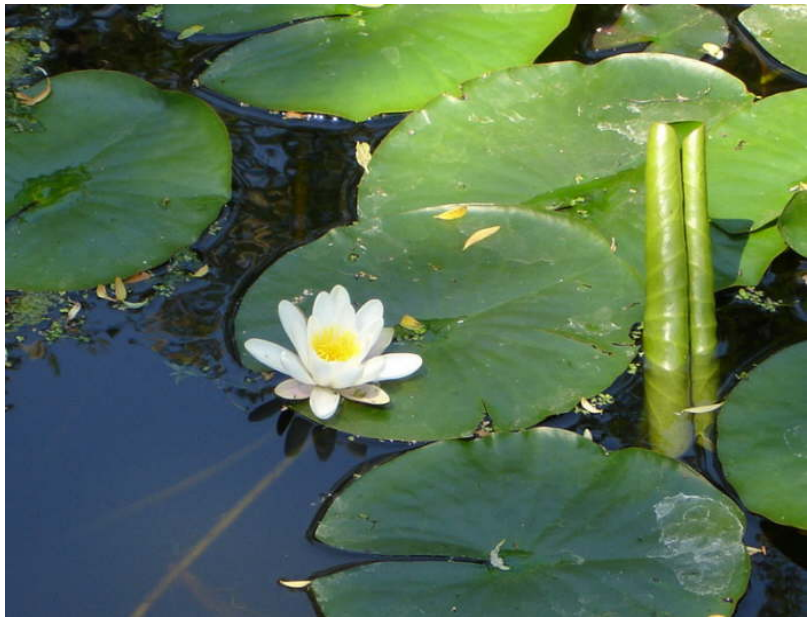


Ministerie van Verkeer en Waterstaat

Pesticides in the Dutch part of the River Rhine basin

Vision on harmonizing pesticide regulation with the Water Framework Directive

23 februari 2010

Dennis Kalf
Centre for Watermanagement

This presentation

1) Introduction
- Vulnerable Dutch surface waters with high risk for pesticide emission
- Pesticide use and agricultural activity in NL

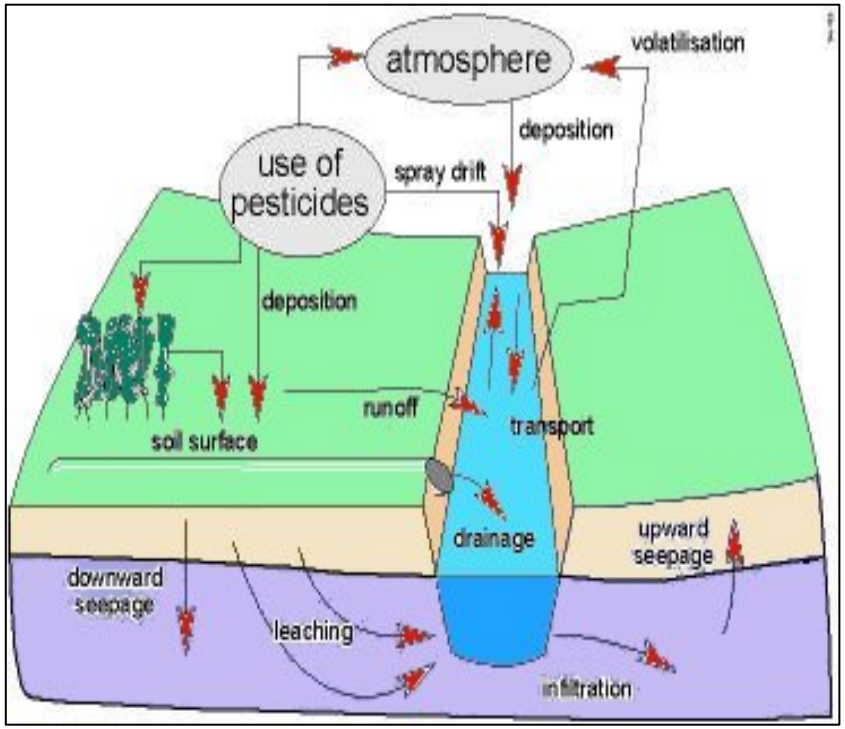
2) Surface water
- Pesticides in the Dutch surface waters
- Problem pesticides in Dutch surface waters
- Example imidacloprid
- Vision on harmonisation of pesticides regulation with WFD

3) Drinking water
- Problem pesticides and drinking water
- Example glyfosaat
- Vision on harmonisation of pesticide regulation and drinking water regulation

4) Conclusions

1) High vulnerability of Dutch surface waters

- Netherlands situated in a delta area of the rivers Rhine, Scheldt, Ems and Meuse
- Dense surface water network, with a relatively low rate of flow
- High agricultural activity



Therefore,

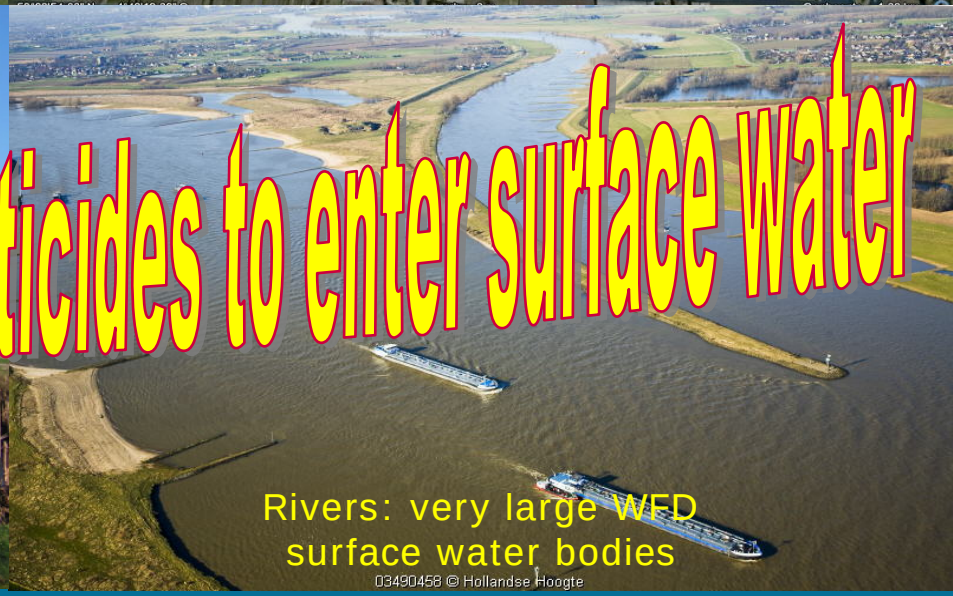
- Vulnerability of Dutch water systems in terms of pesticide emissions
- Agricultural activity in the direct vicinity of surface waters

1) High vulnerability of Dutch surface waters

Ditches: dense surface water network grass/arable land

Ditches: dense surface water network green house area

Polder outlets: large/medium WFD surface water bodies



Rivers: very large WFD surface water bodies

High risk for emission of pesticides to enter surface water

1) Pesticide use and agricultural activity in Netherlands

- Pesticide use in total approximately 9 million kg per year.
- Mainly crops 8,5 million kg/year; 4 kg/ha
  Glasshouses 0,4 million kg/year; 45 kg/ha
- Estimated emission to surface water approximately 7000 kg assuming 100% good agricultural practice
- Mainly caused by (preferential) flow (kg), but also spray drift that cause peak concentrations in surface water

2) Problem pesticides in Dutch surface waters

Rhine pesticide list 2007 (EQS)		Problem pesticides Rhine basin; Dutch regional waters 2007 (MPC/EQS)	Problem pesticides Rhine basin Dutch WFD water bodies 2007 (MPC/EQS)
2,4-D	TBT	abamectin	azinfos ethyl
alachloor		aldicarb sulfoxide	azinfos methyl
atrazine		carbendazim	carbendazim
azinfos methyl		deltametrin	*diazinon*
bentazon		desethyl terbuthylazine	dimethoaat
chloorfenvinfos		dichloorvos	*endrin*
chloorpyrifos		dimethoaat	imidacloprid
chloortoluron		esfenvaleraat	isoproturon
dibutyltin		ETU	linuron
dichloorprop		[illegible]noxycarb	*mal[illegible]ion*
dichloorvos			
dimethoaat			
diuron		[illegible]ndoxacarb	propoxur
endosulfan		isoproturon	*tetrabutyltin*
fenitrothion		metolachloor	triazofos
fenthion		metribuzine	*tributyltin*
HCB		mevinfos	TBT
isoproturon		pirimifos ethyl	
lindaan		triazofos	
MCPA		trichloorfon	
mecoprop			
parathion ethyl			
parathion methyl			
trichloorbenzeen			
trifluralin			

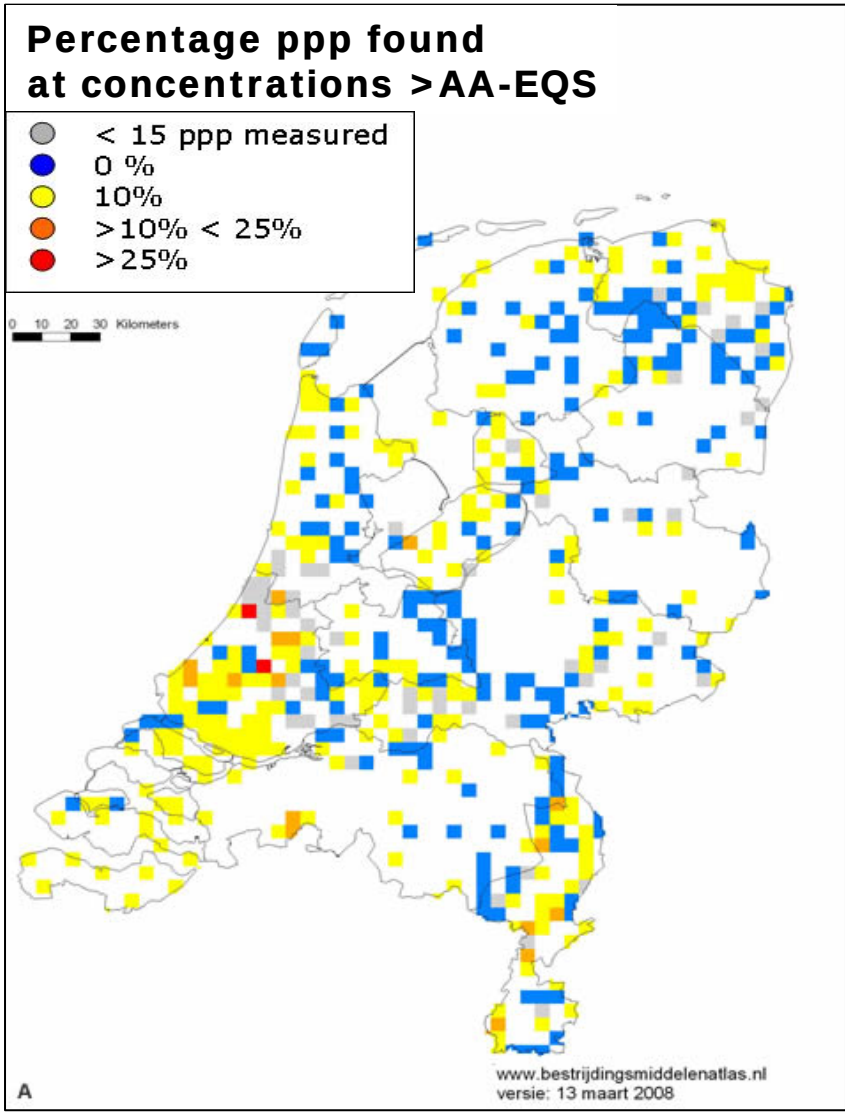
Beware, jumping to conclusions

Problems with pesticides in Dutch part of the Rhine basin likely caused by use in the Netherlands; foreign origin in most cases unlikely.

overlap with Rhine pesticide list

2) Problem pesticides in Dutch surface waters

- Exceedance of water quality standards on large scale!
- >60% monitoring locations exceed the water quality standard for at least 10% of the pesticides found.
- Annually approximately 80 pesticides exceed the water quality standards



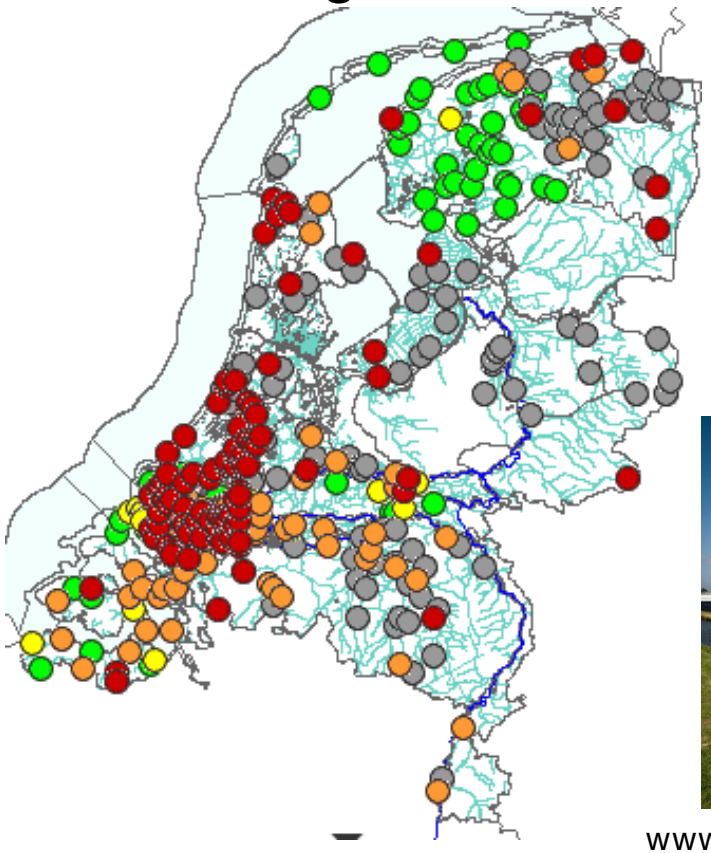
2) Main differences between WFD and pesticide regulation

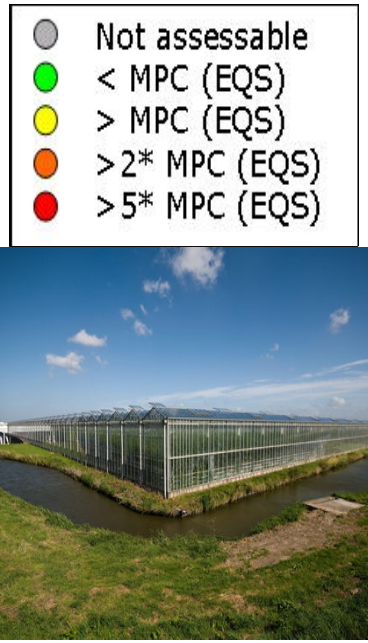
WFD	91/414/EG
Focus on environmental goals	Focus on harmonising ppp regulation
Protection of ecosystems; Good ecological and chemical status	Protection of non target organisms
All chemicals	Pesticides
Retrospective (monitoring)	Prospective (pre registration modelling)
All waters; waterbodies	Edge of field; ditches
Long and short term quality standards MAC-EQS and AA-EQS	Long and short term risks
No recovery in EQS	Recovery of transient effects
91/414 as minimum requirement Additional measures possible Watermanagement plans	No reference to WFD

2) Example: imidacloprid exceeding MPC/EQS. Regional scale versus WFD water bodies

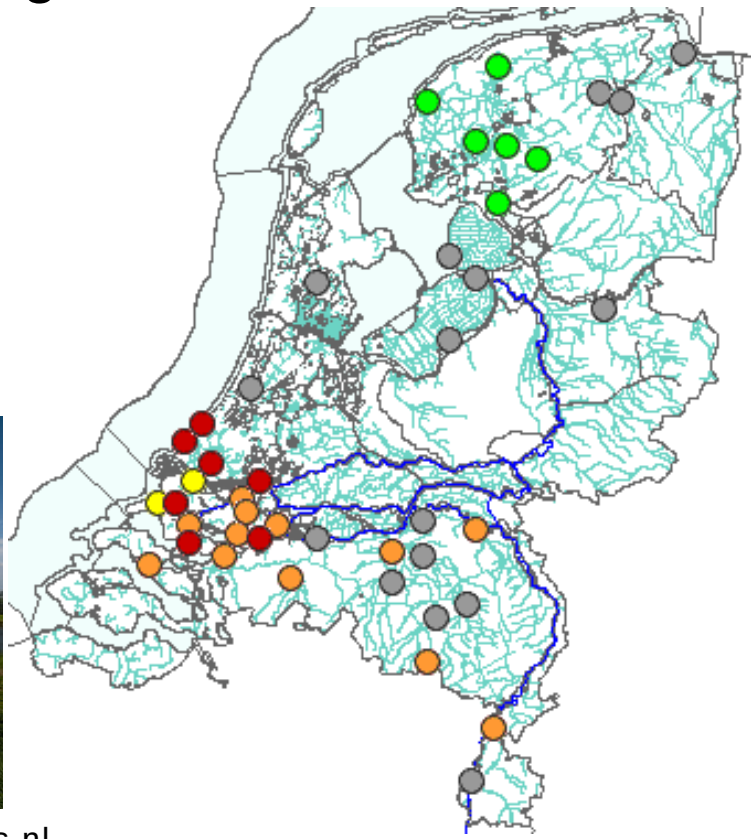
High concentrations of pesticides in Dutch regional waters (small ditches) cause problems in Dutch WFD water bodies (large waters)

Regional scale





Larger WFD water bodies



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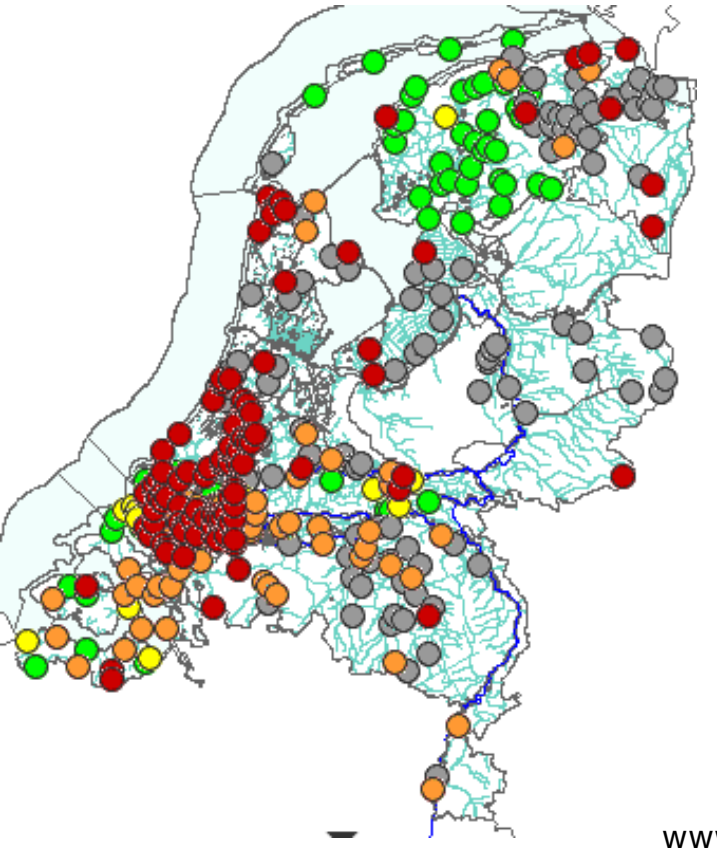
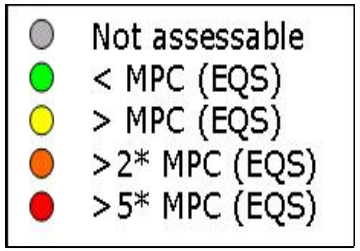
2) Example: imidacloprid exceeding water quality standard compared with Regulatory acceptable oncentration (RAC)

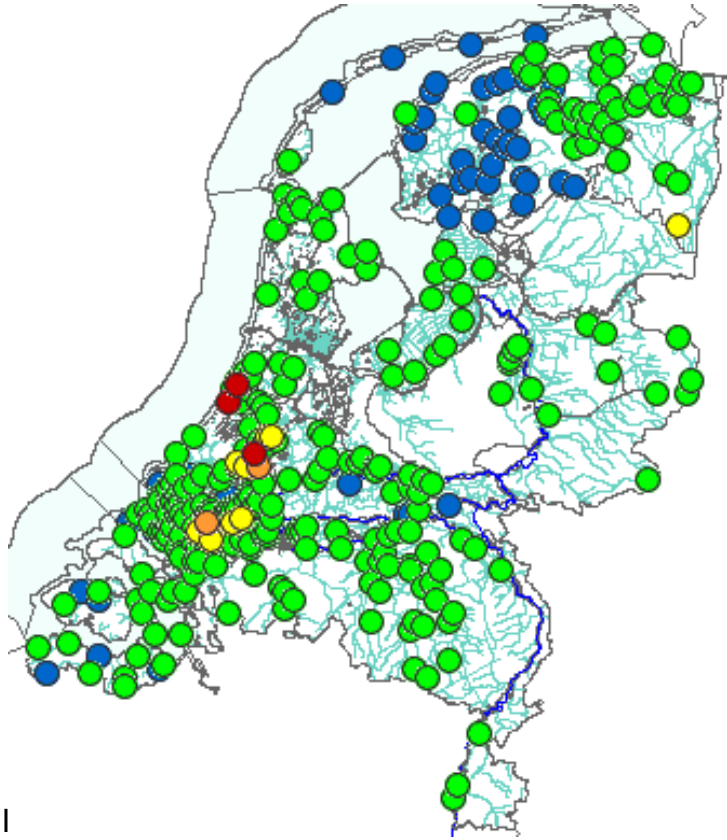
WFD
Water quality
standard=0,013 ug/l

Factor 110 difference

Pesticide regulation
RAC=1,47 ug/l







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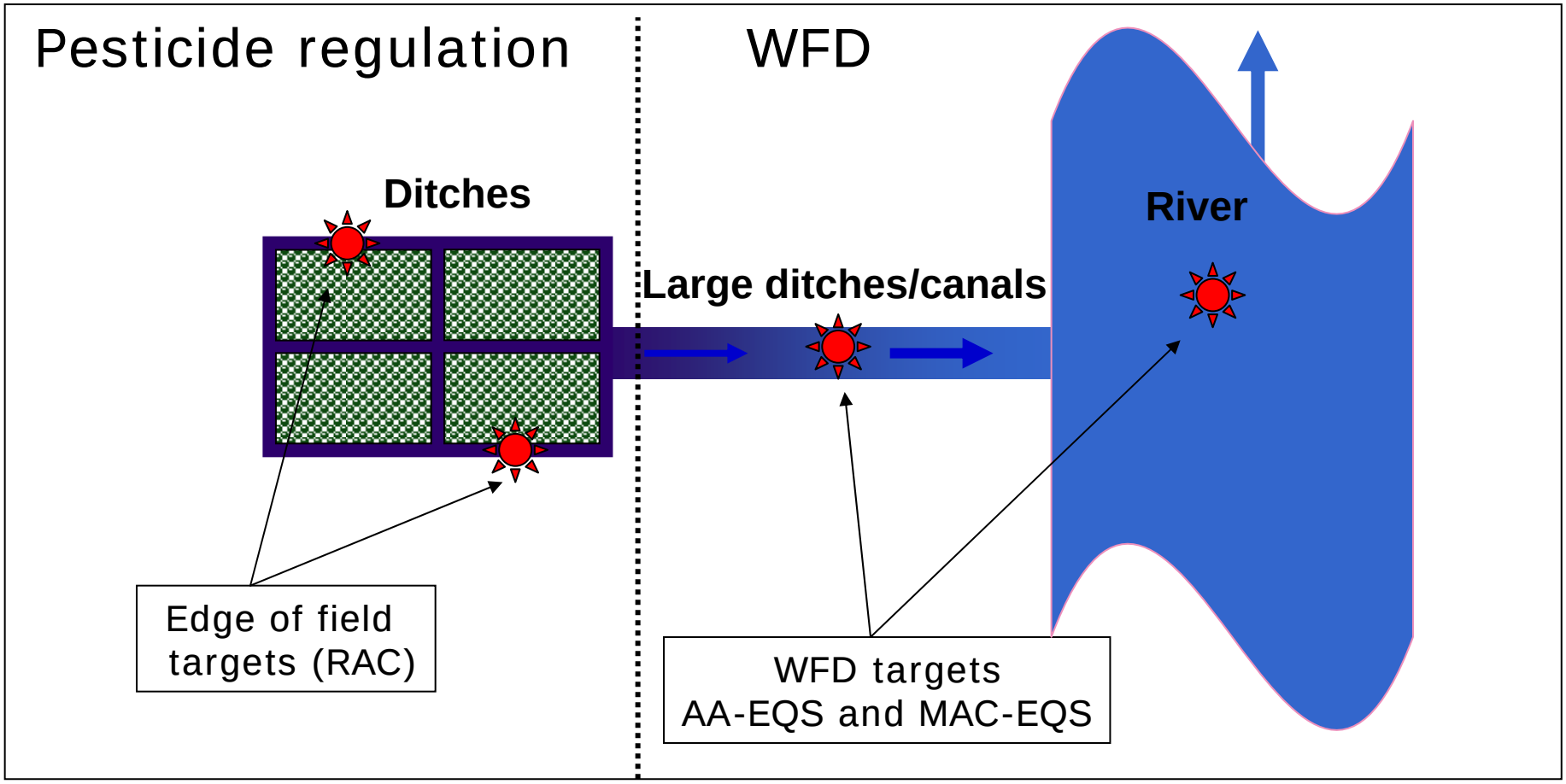
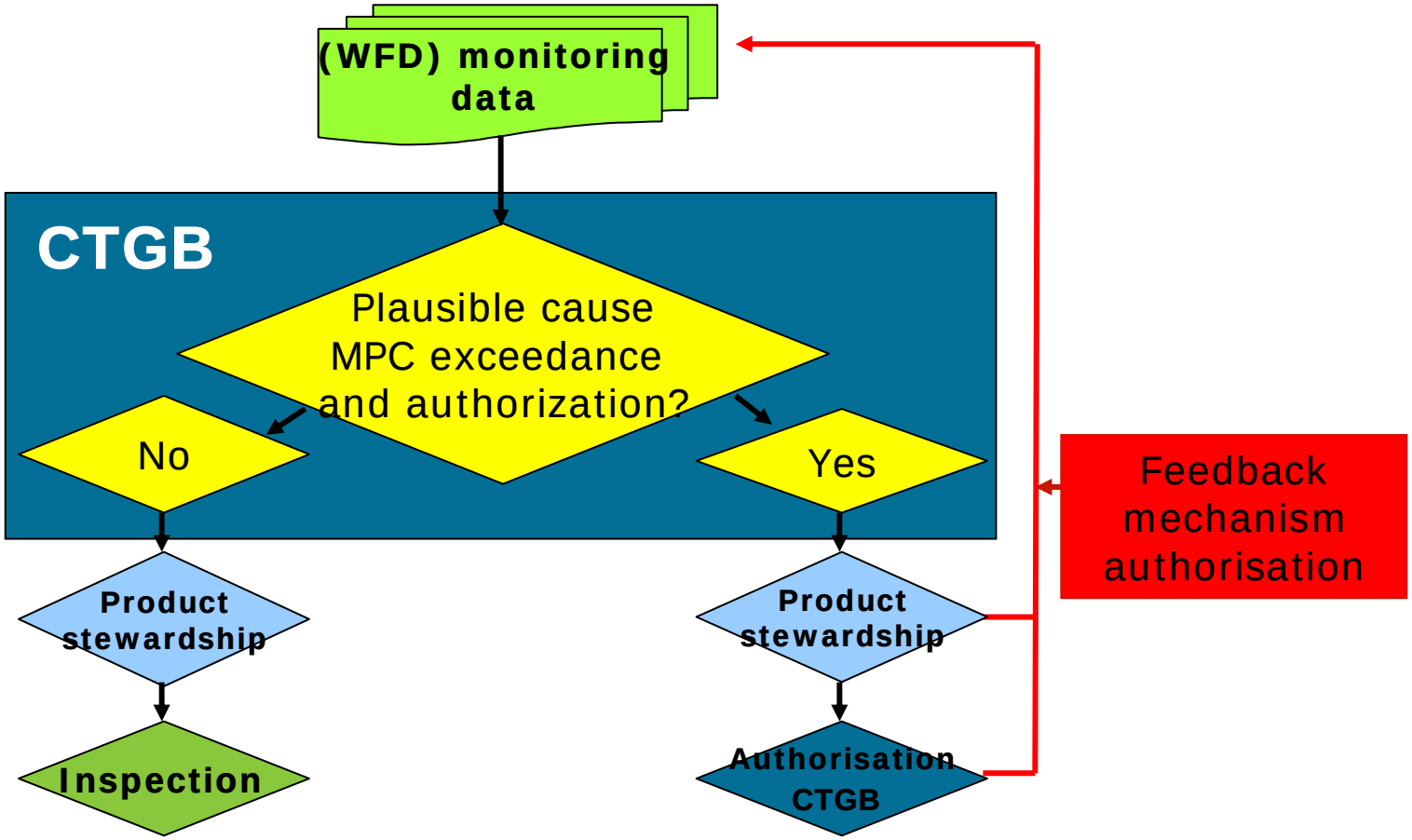
2) Future idea for a spatial model to harmonise pesticide regulation with WFD

The pre registration authorisation of a pesticide is determined by both spatial targets.



2) Feedback mechanism; use of monitoring data for authorization

The re-authorisation of a pesticide is also determined by post registration WFD water quality monitoring data.



3) Relevant (potential problem) pesticides for drinking water preparation from surface water (VEWIN; 2003-2007)

Nr	Stof
1	Aminomethylfosfonzuur (AMPA) ****
2	Amitrol
3	Bentazon
4	Carbendazim
5	4-chloor-2 Methylfenoxyazijnzuur (MCPA)
6	Chloridazon
7	Dicamba
8	2,6-dichloorbenzamide (BAM)
9	Dimethomorf
10	2,4-Dichloorfenoxyazijnzuur (2,4-D)
11	Ethofumesaat
12	Etradiazool
13	Glyfosaat ****
14	Imidacloprid (under discussion)
15	Isoproturon ****
16	Mecoprop-P
17	S-Metolachloor
18	Nicosulfuron
19	Propoxur (biocide)
20	Tebuconazool
21	Tolclofos-methyl

Found in the Dutch part of the Rhine basin in 2007

**** Possible foreign influence

3) Problem pesticides in Dutch surface waters; comparison with drinking water standard (0,1 ug/l)

- 4 pesticides (AMPA, glyfosaat, isoproturon, propoxur) cause problems with drinking water preparation in the Netherlands in 2007 (Rhine relevant abstraction points).

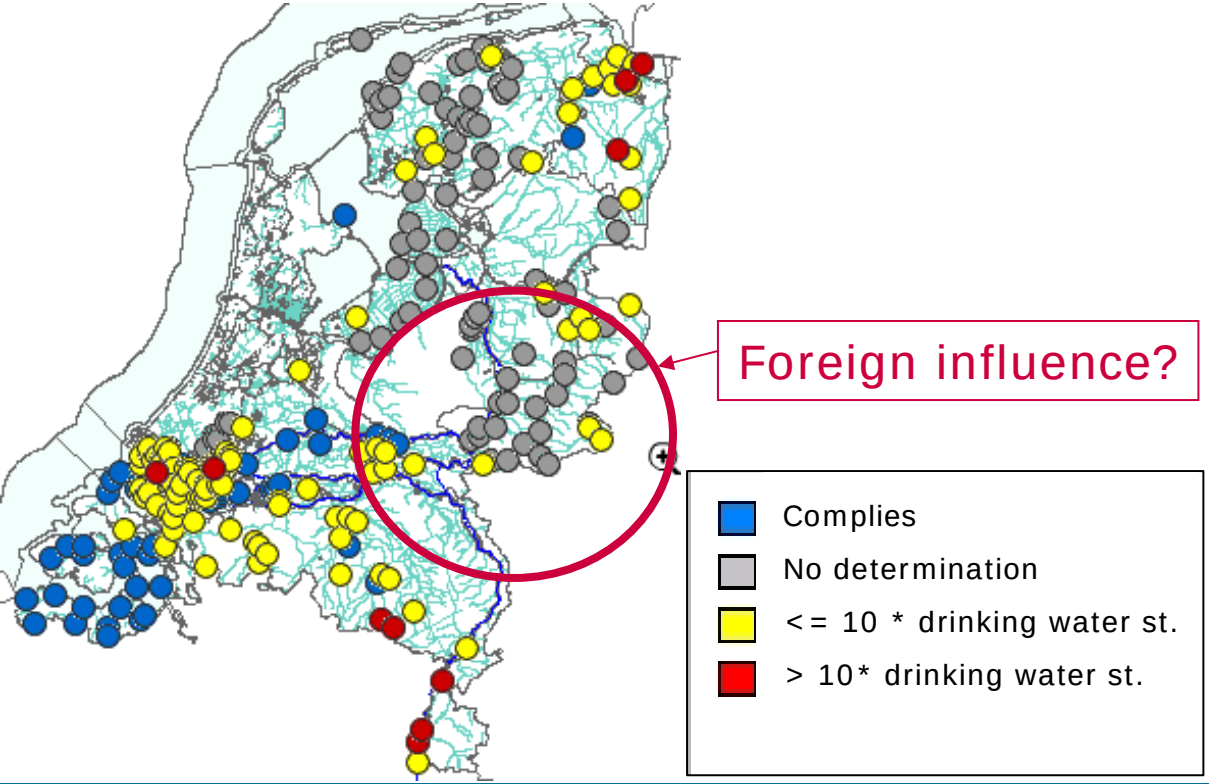
- Herbicides are the main problem due to large differences between water quality standards and drinking water standard

- Although there is no direct causal relation between these pesticides entering the Netherlands and actual problems, the foreign influence seems clear.

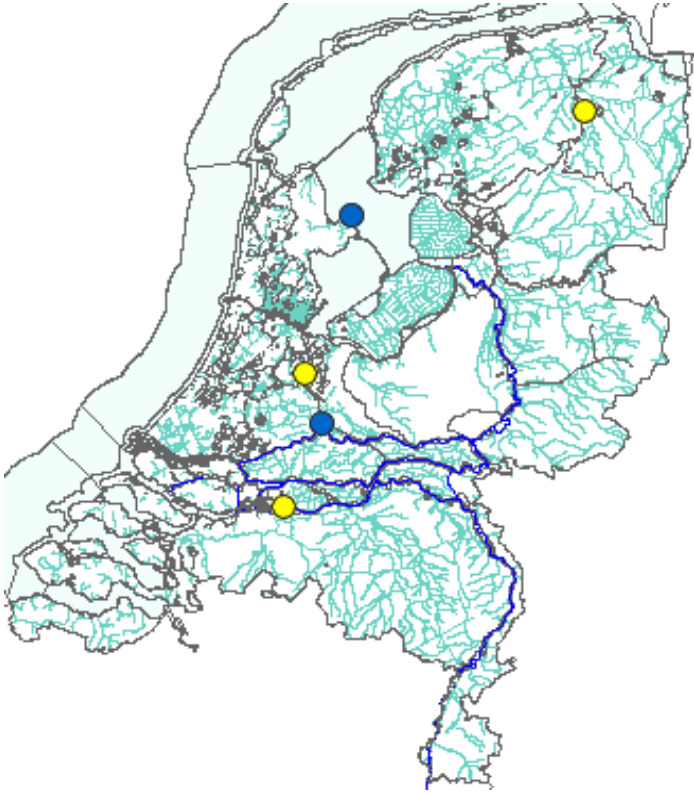
3) Example: Glyfosaat exceeding the drinking water standard for preparation of drinking water from surface water.

Until recently the authorisation did not use the drinking water standard as a criterion. Court case changed this!

Glyfosaat all monitoring locations

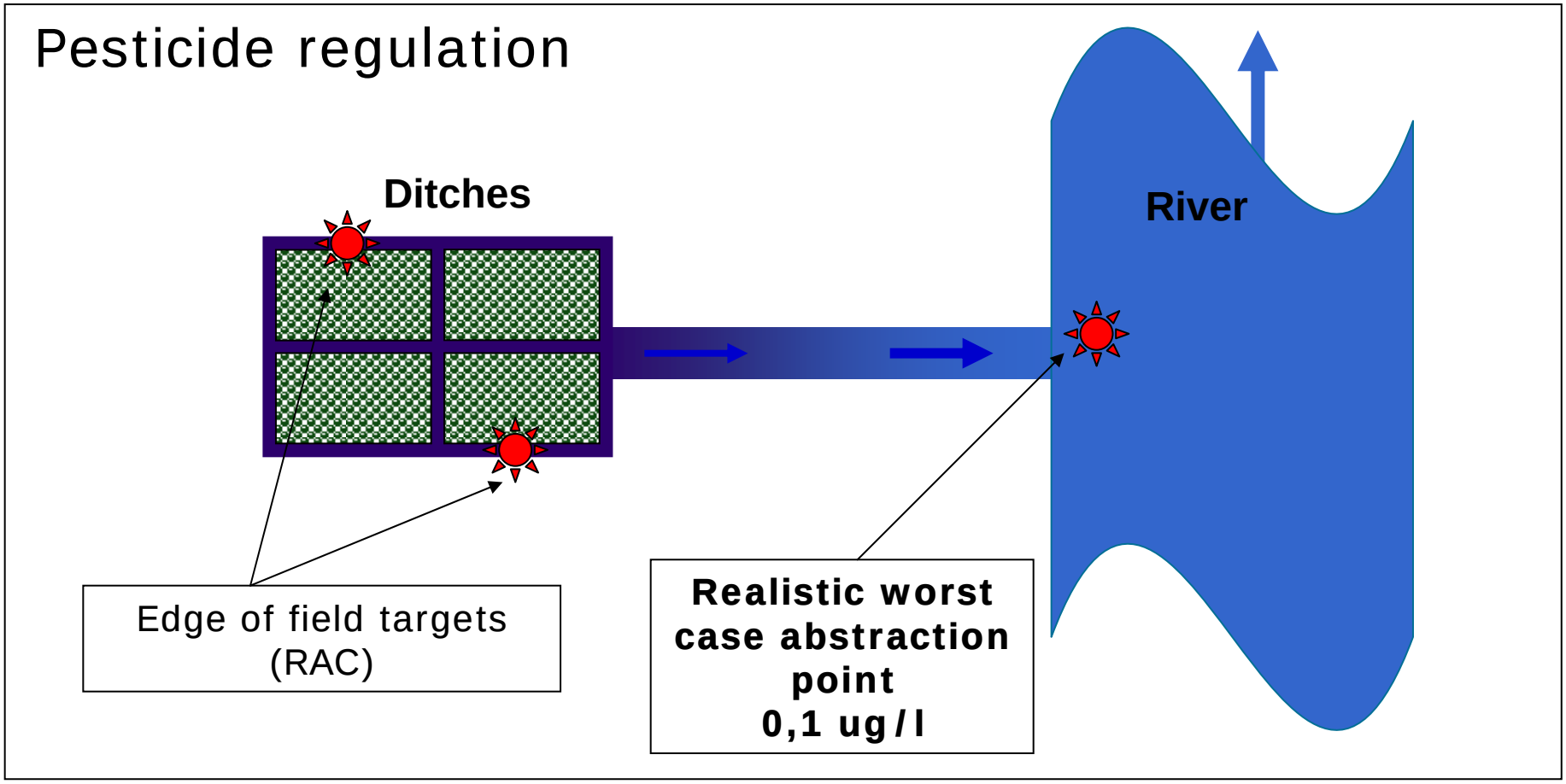


Glyfosaat at abstraction points



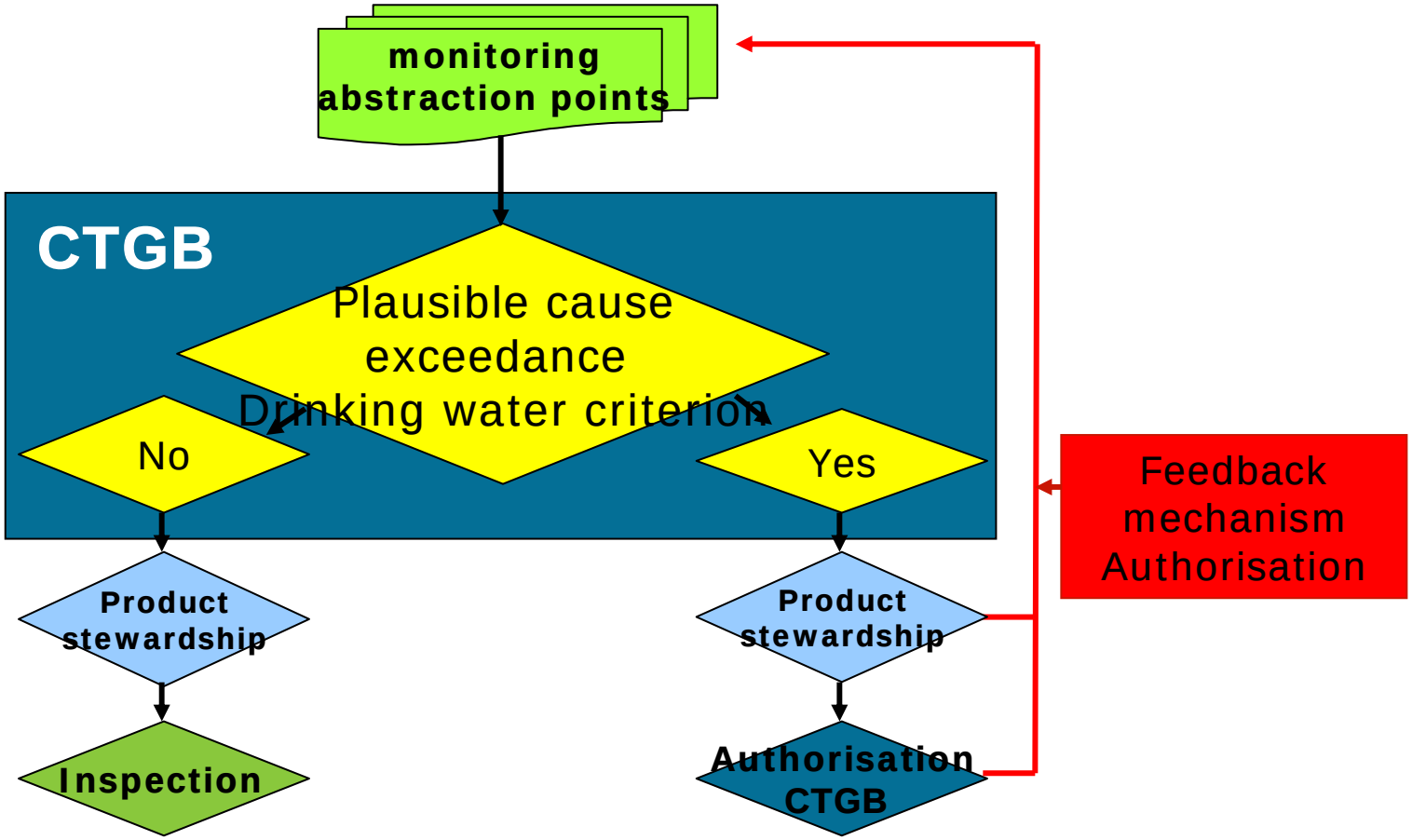
3) Dutch idea for a spatial model to harmonise pesticide regulation with drinking water standard

The authorisation of a pesticide is determined by both spatial targets (pesticide regulation and drinking water standard).



3) Feedback mechanism use of monitoring data for authorization

The re-authorisation of a pesticide is also determined by post registration monitoring data on drinking water abstraction points.



4) Conclusions

- Using list with problem pesticides is tricky because pesticides show large spatial and temporal variation. Pesticide use is related to seasons and actual pest occurring in the field.

- Exceedance of water quality standards in Dutch Rhine basin most likely caused by use in the Netherlands!

- Exceedance water quality standards: if member states tackle their own water quality issues, the river basin approach will become an instant success!

- Exceedance drinking water standard in Dutch Rhine basin most likely caused by use in the Netherlands (some exceptions)

- The Dutch idea for a spatial model that harmonizes the pesticide regulation with WFD and drinking water regulation might help other member states to solve problems with pesticides.


Thank you very much for your attention!
Questions??