Plant protection products from a drinking water perspective

Progress was made, but not enough

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TAPES final conference, Brussels, 24 September 2015

Topics

- **RIWA**
  - Who are we and what do we do?
- **Water quality concerns**
  - Focus on plant protection products and their impact on sources for drinking water
  - Which measures were successful and what is the way forward?

RIWA: who are we?

- Association of River Water Works
  - Founded in 1951 by drinking water companies
- Three sections since Water Framework Directive came into force
  - RIWA-Scheldt = De Watergroep
  - RIWA-Meuse is an international association

water-link brabant Water dunea DUIN & WATER VIVAQUA wml Limburgs drinkwater Evides

  - RIWA-Rhine is part of international association IAWR

waternet PWN oaseo drinkwater Vitens

Water quality concerns

Focus on three issues

- Plant protection products and biocides
  - Focus of this presentations
- Substances of emerging concern
  - Pharmaceuticals, x-ray contrast media, EDCs, industrial compounds and consumer products
- Impact of climate change on water quality
  - Longer periods of low flow conditions
  - Less dilution of current emission

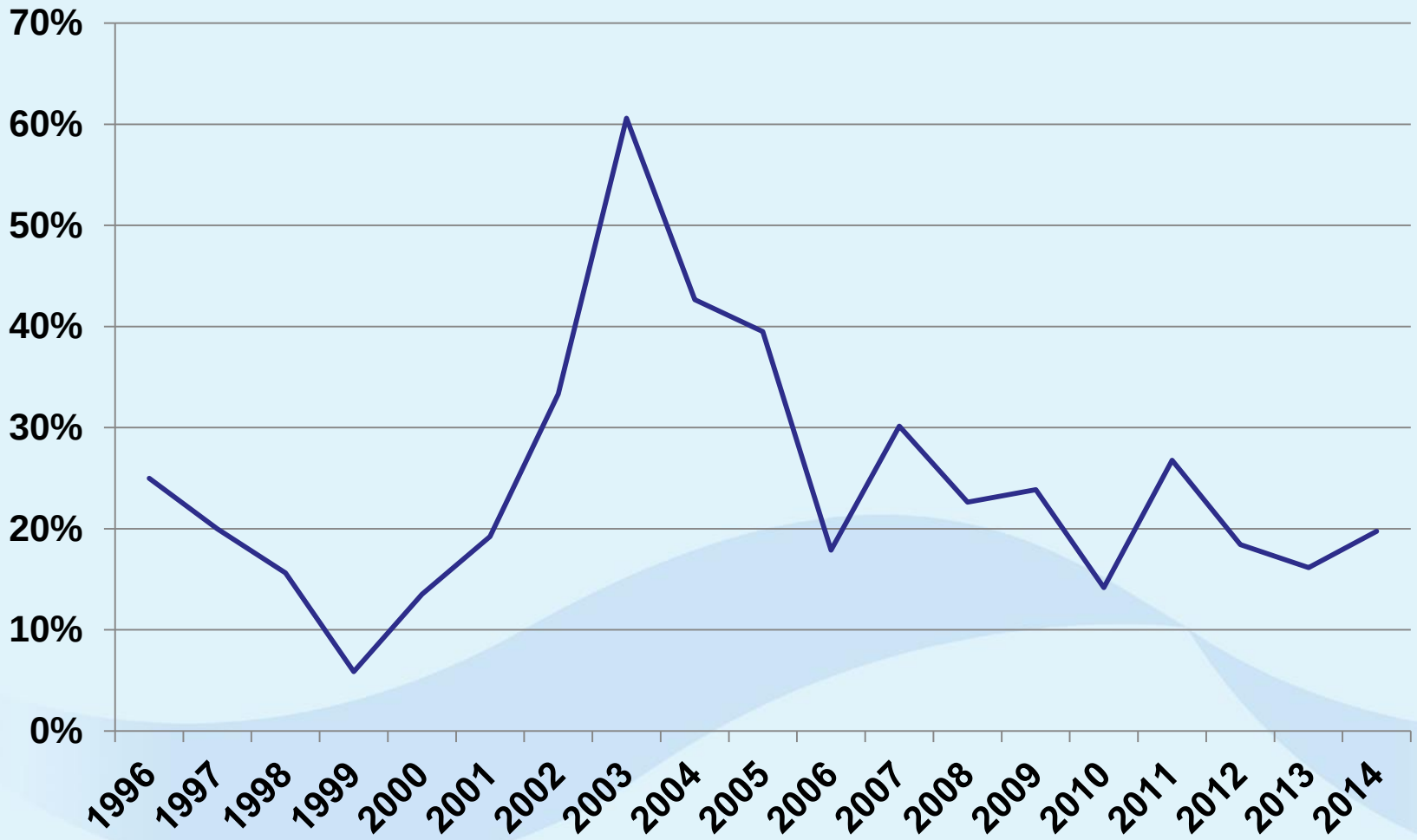
Overview of exceedances PPPs at intake points NL

2010-2015

- 24 active substances in total found > 0.1 µg/L
  - 7 metabolites
- Five most frequently found active substances:
  1. Glyphosate
  2. Isoproturon
  3. MCPA
  4. MCPP
  5. Terbuthylazine

  (all herbicides)
- Significant downward trend since 2000
  - Last five years: downward trend levels off / slight increase

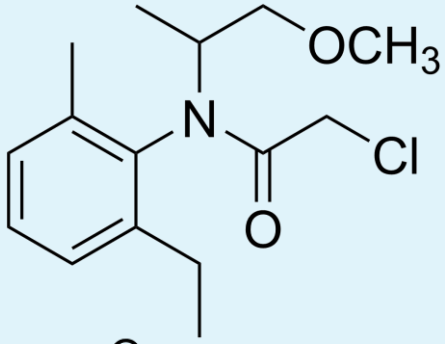
Glyphosate exceedances intake points river Meuse



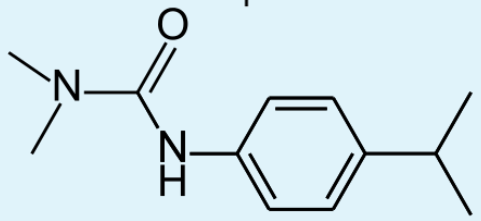
PPPs which cause intake stops Rhine since 2010

All originating from use upstream

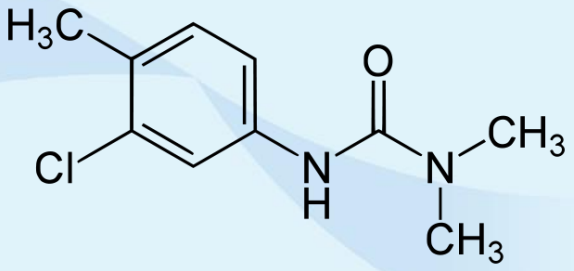
- 2015, 2012: metolachlor



- 2014, 2013, 2011: isoproturon

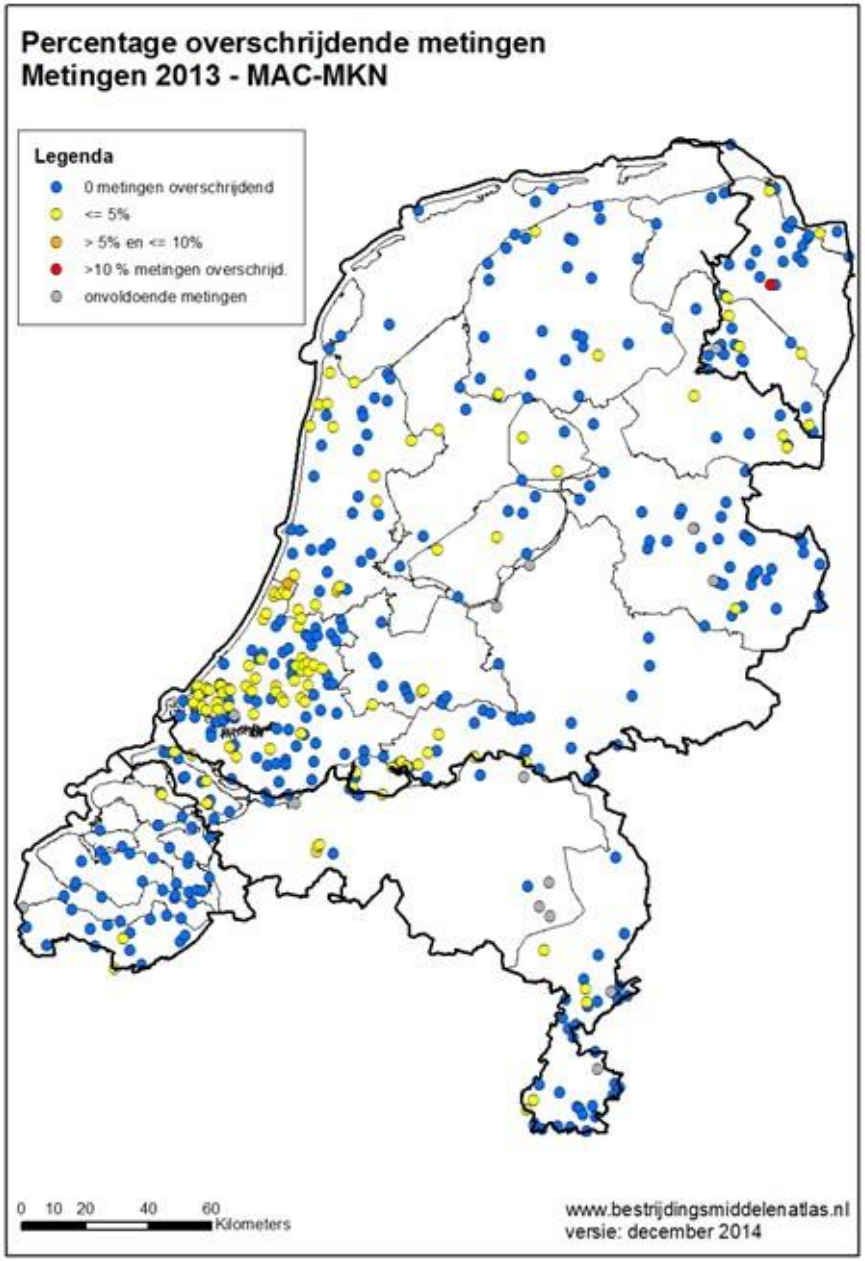


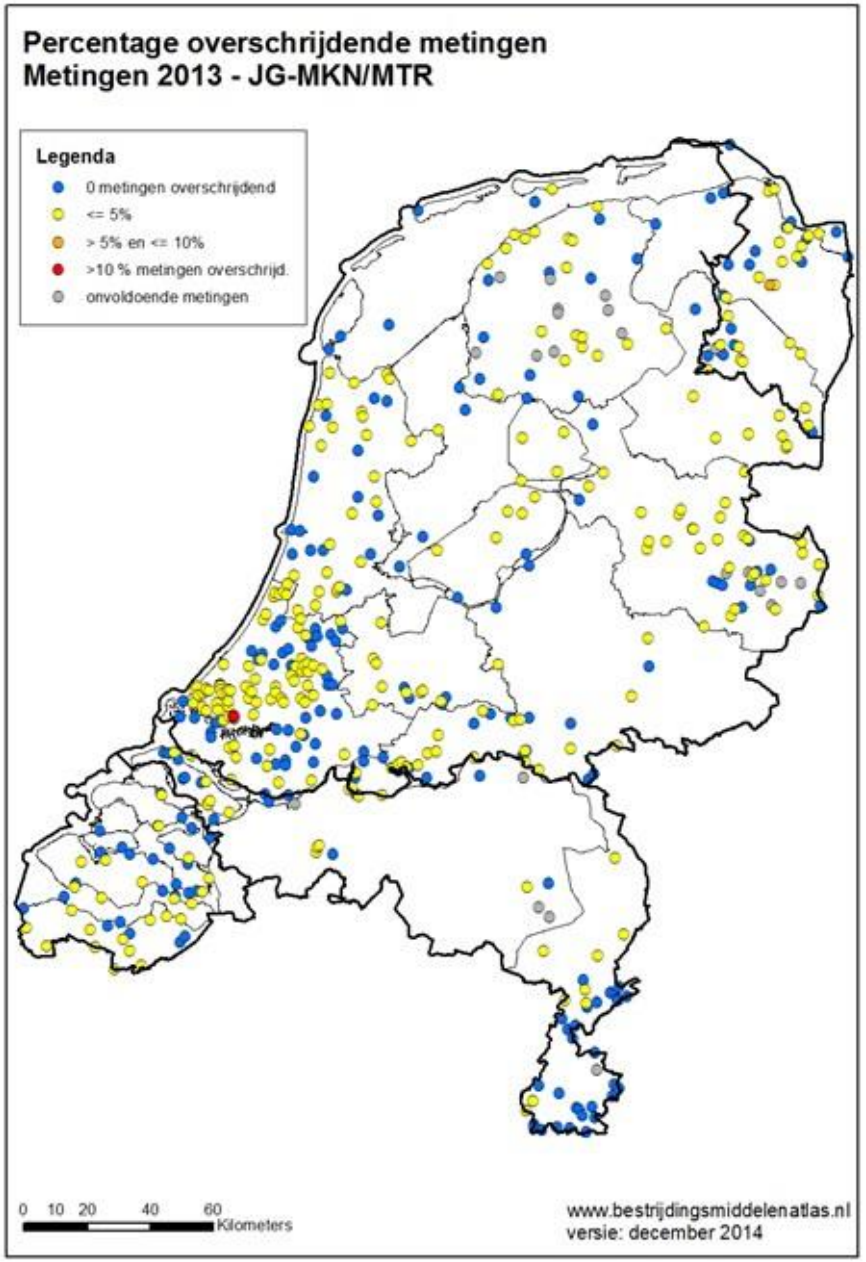
- 2011: chlortoluron



(all herbicides)

Impact on ecology





Evaluation policy document sustainable crop protection

Trend in sustainable crop protection and target achievements

Objective	Indicator	Trend policy term	Objective achieved?
Ecological quality	Ecological quality surface waters	Cannot be determined	No
	Environmental pressure on surface waters due to agriculture	Large improvement	No
Drinking water quality	Problems related to drinking water quality	Large improvement is likely	No
Food safety	Exceedance of maximally permitted residue levels in food	Large improvement	Yes
Safe working conditions	Risk inventory and evaluation	Slight improvement	No
Maintaining economic prospects	Economic prospects (in relation to this policy)	Unchanged	Yes

Source: PBL.

www.pbl.nl

Mandatory measures were successful

PBL: surface water quality for drinking water has improved

- Drinking water problems reduced by 75%
  - Target was 95%
  - Problem was defined as exceedances per substance, per year, per drinking water abstraction site
- Most of problems were solved by ban on certain herbicides (diuron, atrazine, simazine)
- New target Dutch government: 50% (95%) less exceedances in 2018 (2023) than in 2013

Bottleneck success voluntary measures

Some measures have great potential e.g.

- New spray technology
  - GPS based (efficient application, only there where needed), spray drift reduction (wingssprayer, air flow support)
- Treatment of farm yard waste water
  - Degradation of tank residues / spray cleaning water
- Organic farming (e.g. weeding equipment)

EU CAP subsidies are not coupled enough to environmental achievements

New mandatory measures

Stricter rules on chemical weed control outside agriculture DE, BE, NL, FR (?)

- Part of National Action Plans on Sustainable Use of PPPs
- Emissions of Glyphosate should drop in near future

Some concerns not yet addressed

What we don't know yet could hurt us

- Usage data are classified…

- … but ranking on emission calculations can be shared in NL

	A	B
1	Stof	Rang verbruik
2	CHLOORPROFAM	18
3	BENTAZON	43
4	MCPA	6
5	CHLORIDAZON	23
6	PROPAMOCARB_HYDROCHLORIDE	7
7	METAMITRON	8
8	ISOPROTURON	24
9	ETHOFUMESAAT	35
10	TERBUTYLAZIN	30
11	2_4_D	48
12	CHLOORMEQUAT	13
13	S_METOLACHLOOR	16
14	DIMETHENAMIDE_P	14
15	AZOXYSTROBINE	50
16	FLUROXYPYR	38
17	METRIBUZIN	52
18	IMIDACLOPRID	69
19	AMITROL	57
20	MALEINE_HYDRAZIDE	44
21	LINURON	25

Some concerns not yet addressed

What we don't know yet could hurt us

- Lack of detection methods (newly) authorized substances with high use/calculated emission
  - *Propamocarb_hydrochloride*
  - Chloormequat
  - Diquat_dibromide
  - Mandipropamid
  - Prothioconazool
  - Metaldehyde
  - *Epoxiconazool*
  - Cyazofamid
  - Hymexazool
  - Karvon_d
  - *Imazalil*
  - *Fluoxastrobin*
  - Trinexapac_ethyl
  - Fludioxonil
  - Benthiavalicarb_isopropyl
  - Fenpropidin

Grey means this substance will be detected with screening methods used

Some other concerns

Screening methods show large number of unknown substances

- Mostly in industrial waste water
  - Recently Pyrazole was identified
  - Identifying every single one = impractical/hopeless
- Industrial Emissions Directive looks promising
  - How (well) is it implemented?
  - Does screening play a role in drafting permits?

Some other concerns

Pharmaceuticals

- Integrated/holistic approach
  - Effects on ecology as well as drinking water sources
- Precautionary approach
  - Deriving Quality Standards for every single substance is impractical/hopeless
  - Water Quality Standards for groups of substances
  - Taking into account the uncertainties around life long exposure to low concentrations of a mix of chemicals

Plant Protection Products

Overall

- Progress has been made, but there are still challenges left

Photo: wingssprayer.com

Thank you for your attention