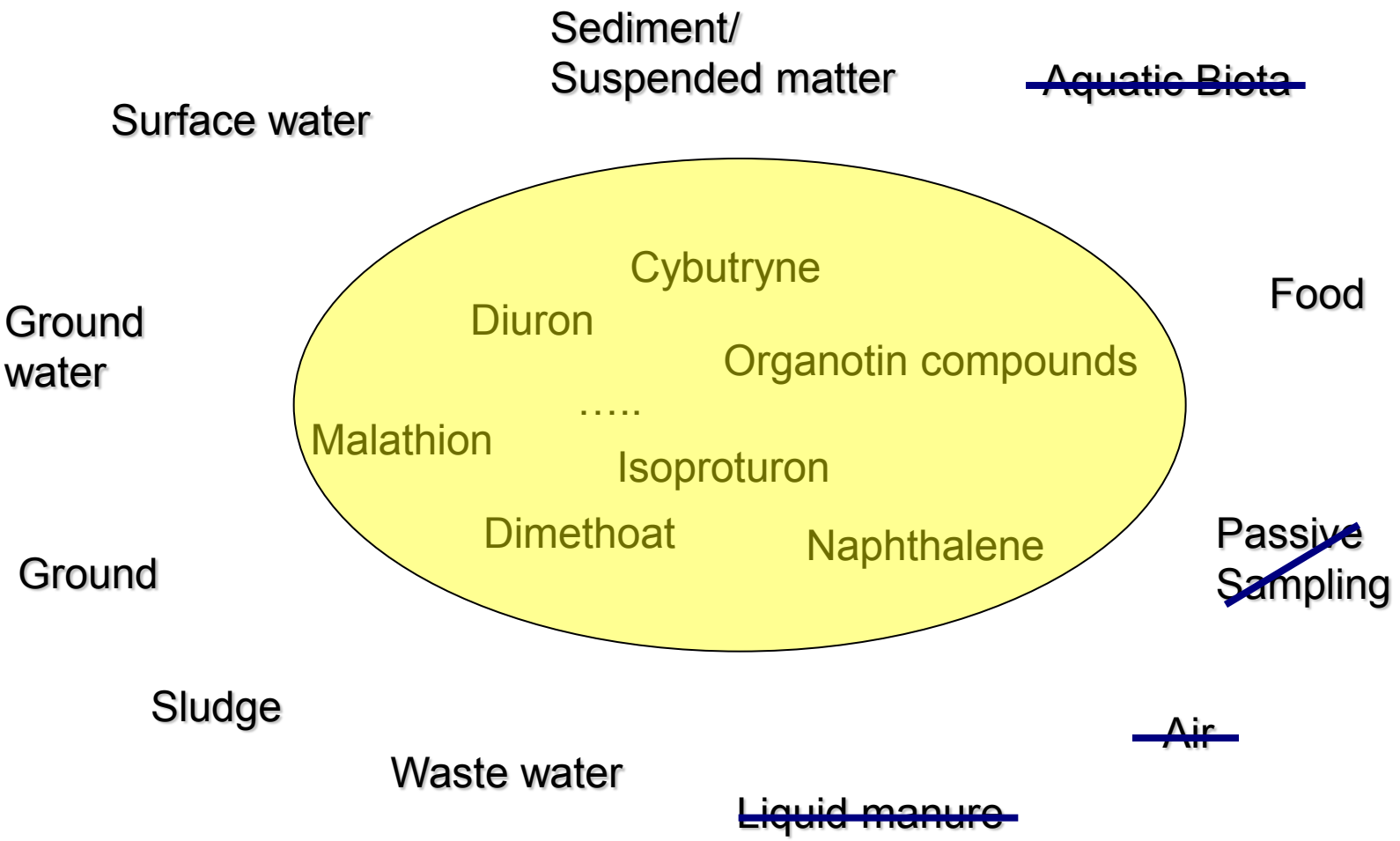
Status of biocide monitoring in Germany

Report from North-Rhine Westphalia (NRW) – surface water

Workshop "Environmental monitoring of biocides in Europe - from prioritisation to measurements“ 5./6.11.2012, Berlin

Session II – biocide monitoring in surface waters Dr. Harald Rahm, Dr. Friederike Vietoris, LANUV NRW

Biocide monitoring in NRW



Availabel data - A short overview

Matrix	Period of time	Substances
Surface water	Continual since the 80's	19 substances, e.g. Diuron, Isoproturon, Malathion, Naphthalin, Organotin compounds, …
Suspended matter	Continual since the 90's	Mainly organotin compounds, Naphthalene
Sediments	Continual since the 90's	Mainly organotin compounds, Naphthalene
Ground water	Continual since the 80's	22 substances, e.g. Carbendazim, Diuron, Isoproturon, Malathion, Naphthalin …
Waste water	Continual since the 80's	e.g. Diuron, Isoproturon, Terbutryn, Organotin compounds, Naphthalene
Sludge	unique	Organotin compounds
Ground	unique	Hexachlorcyclohexane,Naphthalene, Organotin Compounds, Diuron, …

Monitoring of wastewater, groundwater and surfacewater in NRW

→ **Waste water** monitoring
sampling based on German and EU legislation,
additional monitoring of biocides where possible

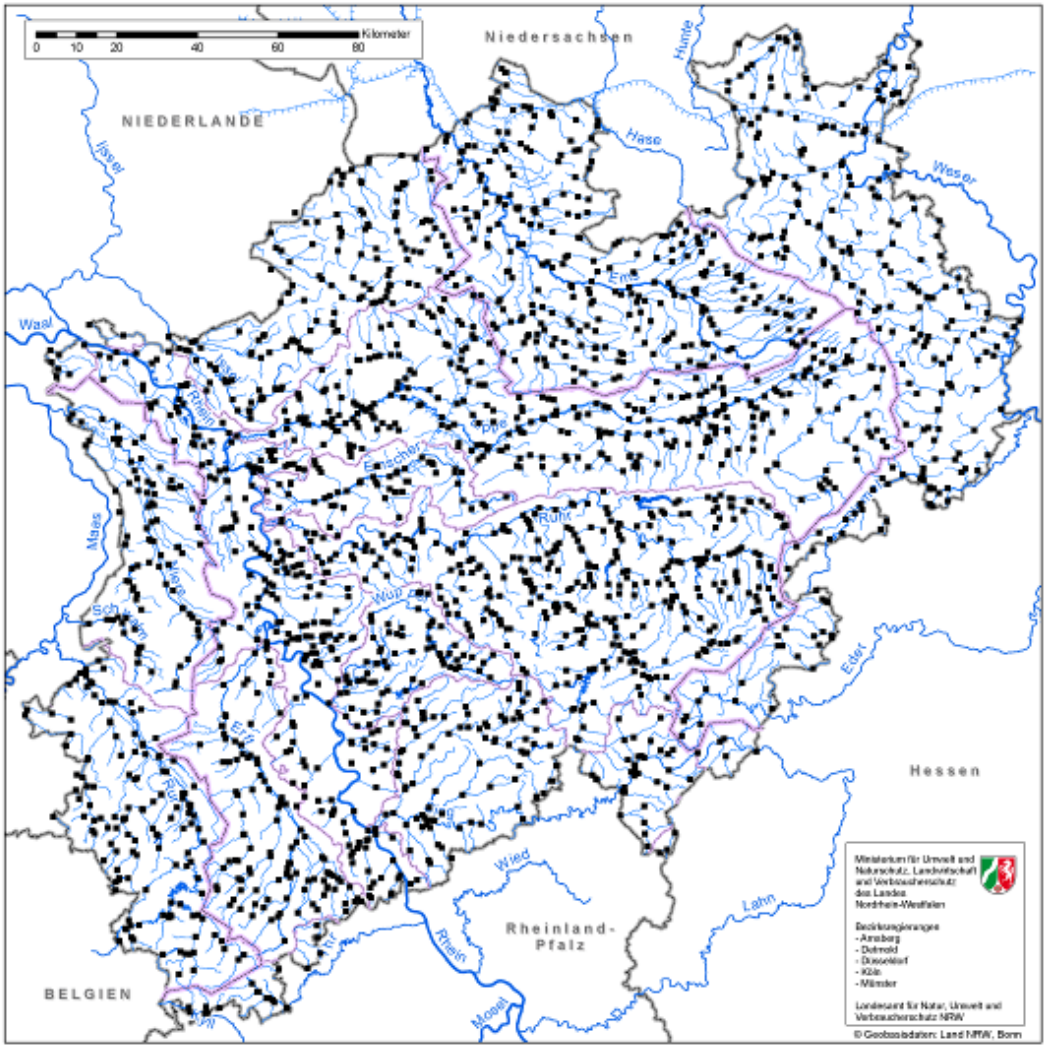
→Monitoring according to EU-WFD for **surface water**
chemical and physical values

from water, suspended matter and sediment
and a „realtime“ surveillance along the Rhine

→ Monitoring according to EU-WFD for **ground water**
chemical and physical values

Biocides are part of each monitoring program – but there ist no special biocide monitoring to meet the BPD!

Surface water – WFD Monitoring NRW



Monitoring of substances depends on their relevance

(value > ½ EQS)

Monitoring Guideline NRW: http://wiki.flussgebiete.nrw.de/index.php/Monitoringleitf%C3%A4den

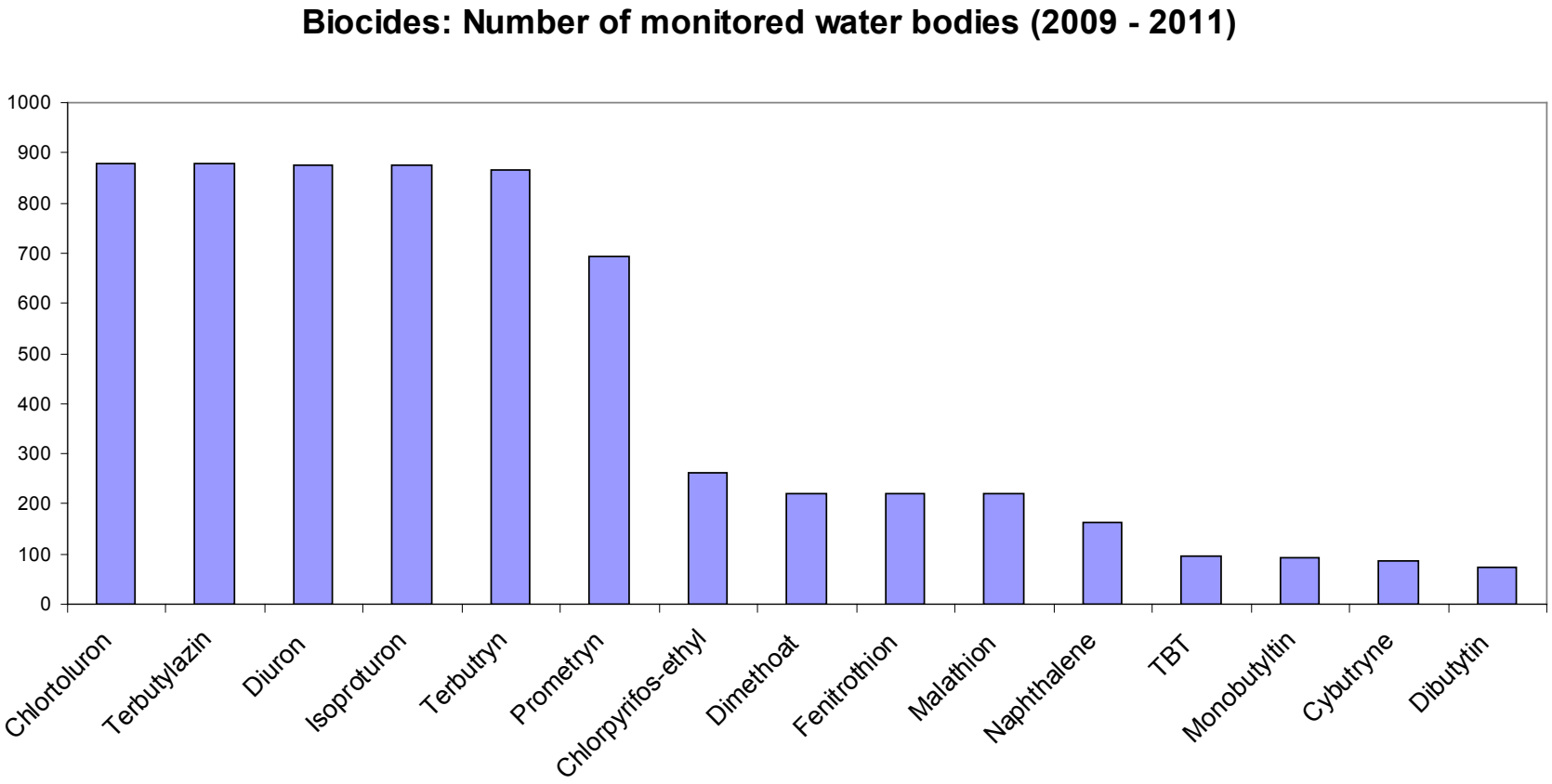
Chemical analysis

Substance groups are analysed in common

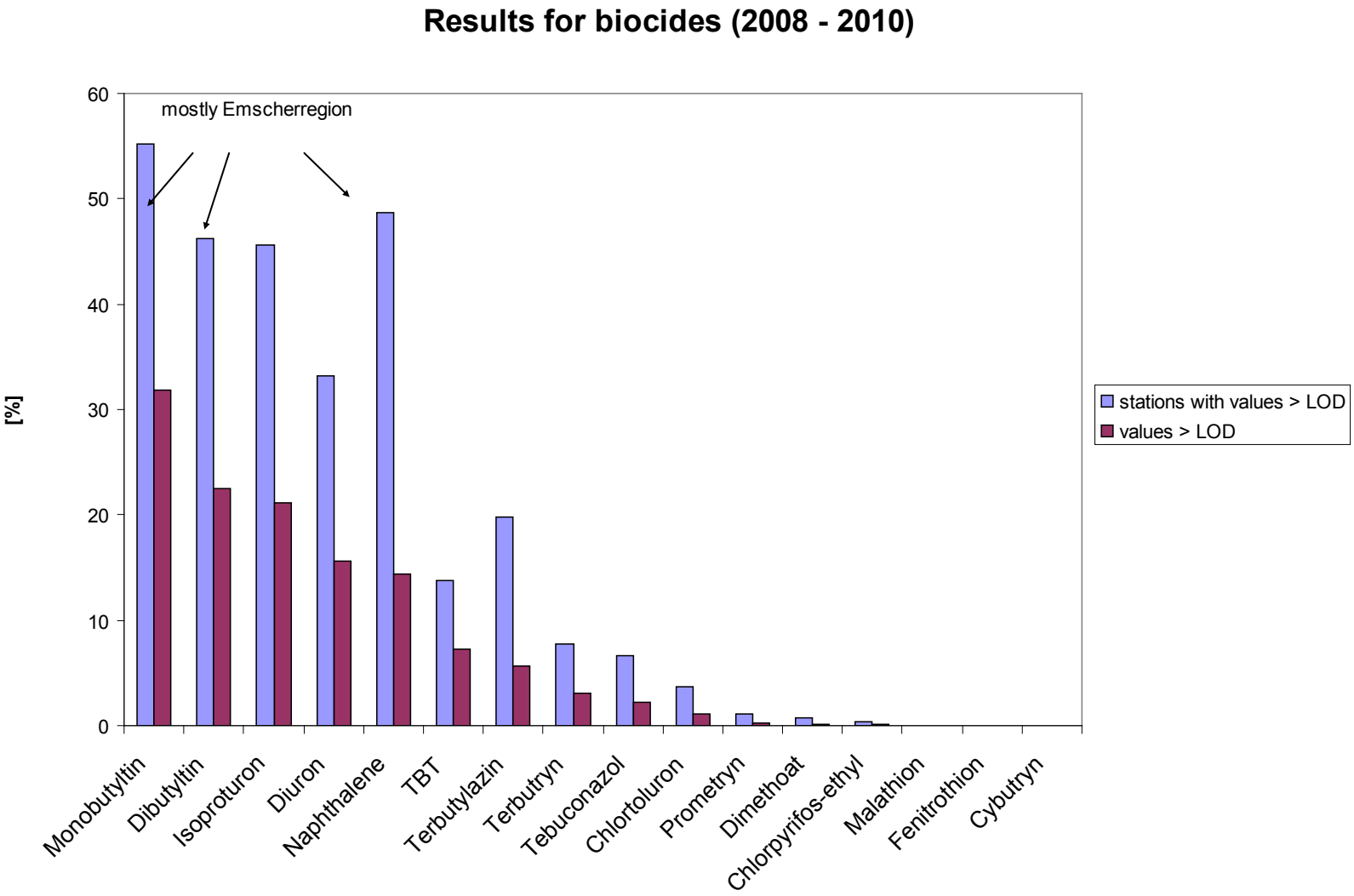
AMPA & Glyphosat	DIN 38407-F22
21 Aniline derivates	DIN 38407-F16
13 Chlorophenoles	DIN EN 12673
22 Chlorinates pesticides	DIN 38407-F2
16 Nitroaromatic compounds	DIN 38407-F17
8 PBDE	ISO CD 22032 (s)
37 Phosphorous compunds	EN ISO 10695 - F6
25 neutral/basic plant treatment agents	DIN EN ISO 11369
22 acid plant treatment agents (POC)	DIN 38407-35
6 organotin compounds DIN EN ISO 17353(aq)	ISO/DIS 23161(s)
15 polycyclic aromatic hydrocarbons (PAH)	DIN EN ISO 17993

…

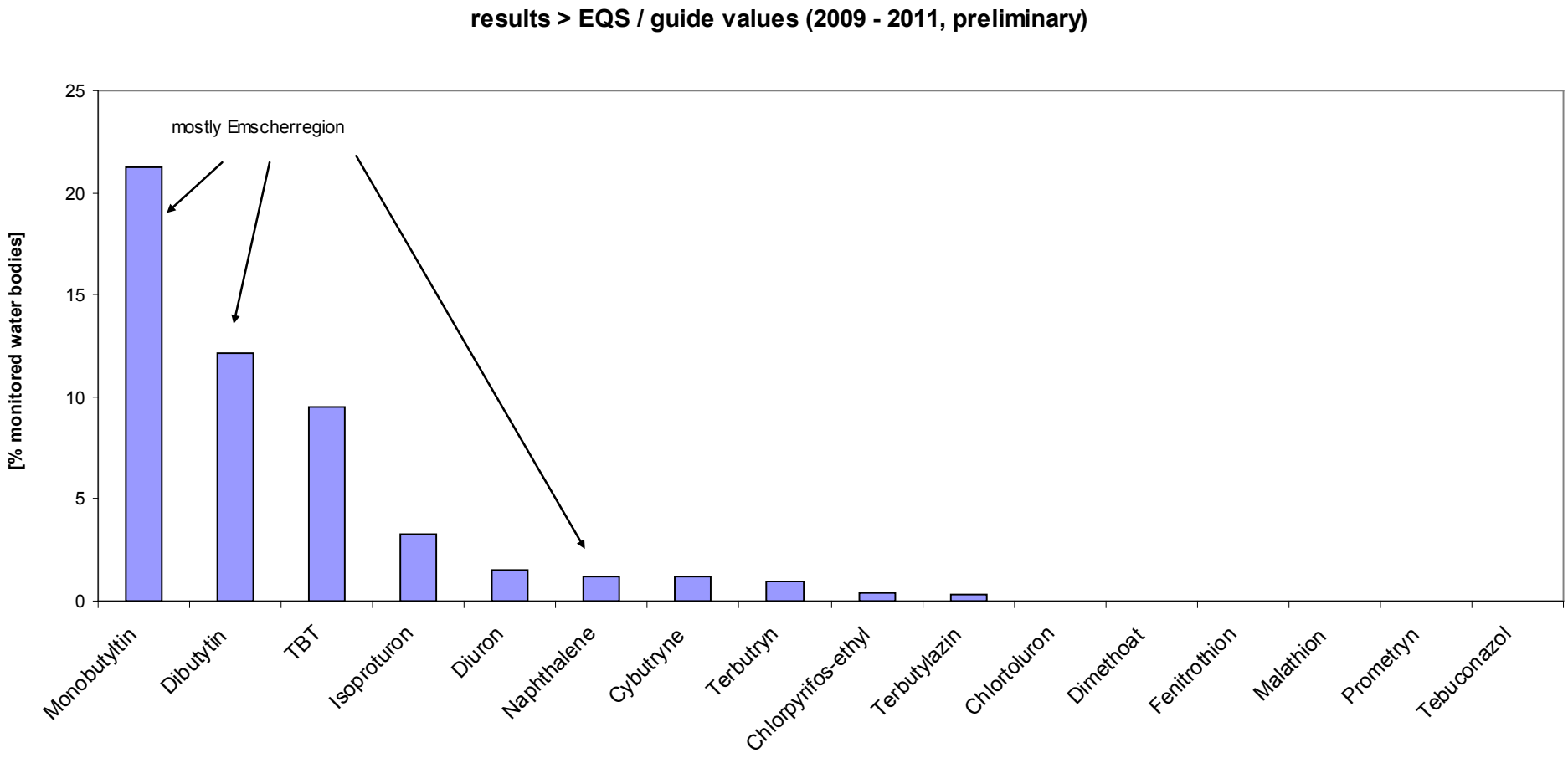
WFD monitoring: surface waters



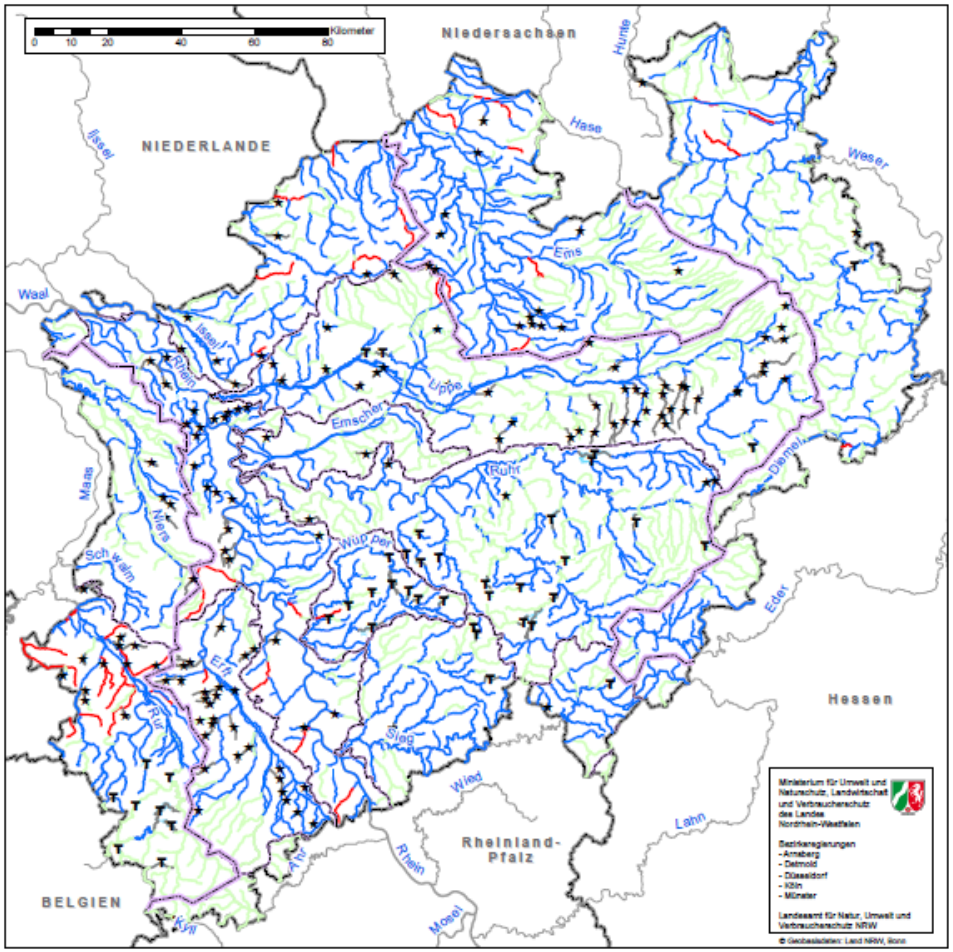
WFD monitoring: surface waters



Surface waters – assessment in accordance to WFD



WFD monitoring: surface waters - Diuron



Chemischer Zustand der Fließgewässer

Prioritäre Pflanzenschutzmittel

Diuron im Wasser

Bewertung der Oberflächenwasserkörper
- gut
- gut gemäß Experteneinschätzung
- nicht gut
- keine Bewertung

- ★ Oberflächenwasserkörper zumindest zeitweise trocken
- T Oberflächenwasserkörper Talsperre

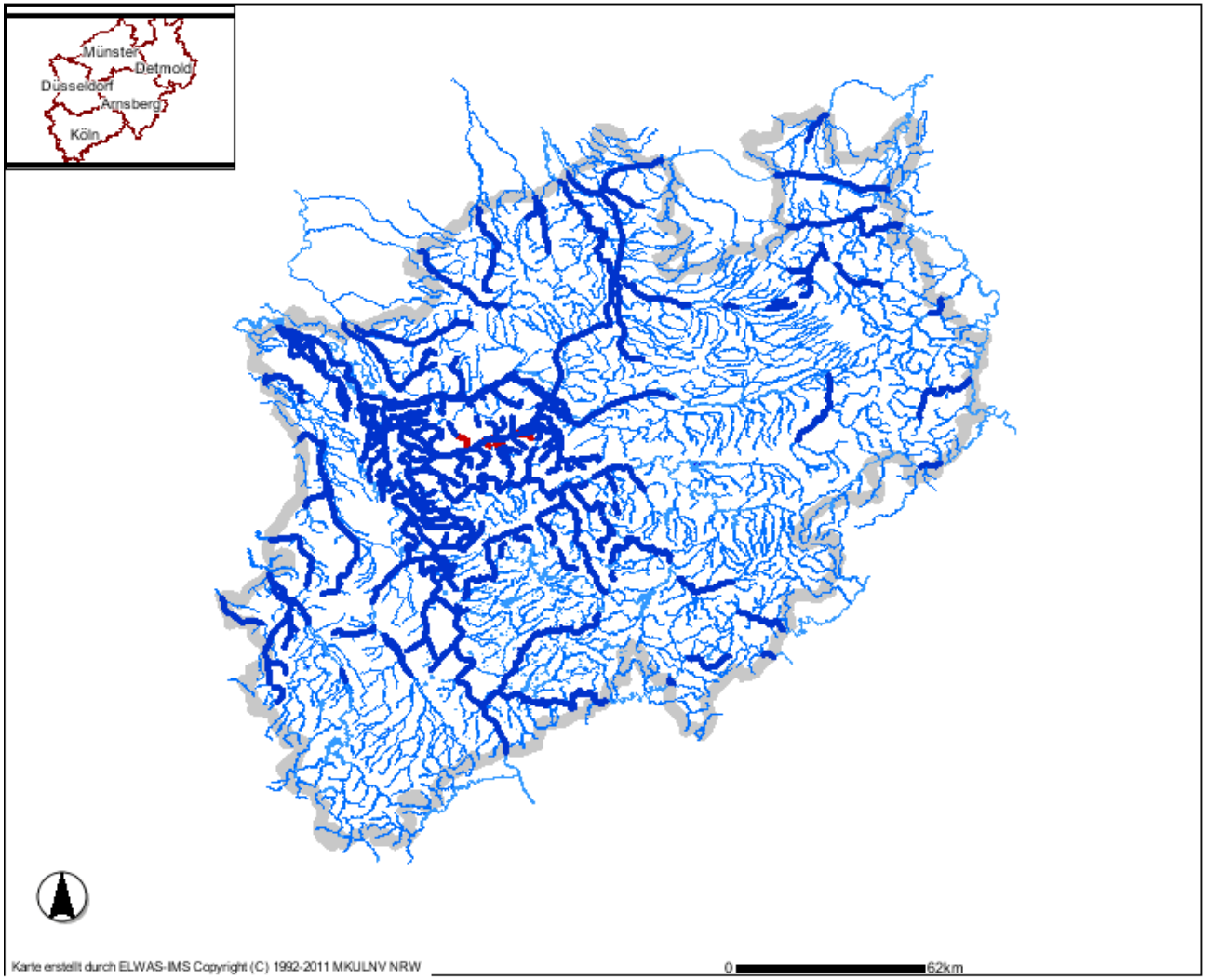
- Grenzen Flussgebiete NRW
- Grenzen Teileinzugsgebiete NRW
- Staats-, Landesgrenze

Stand: 30.06.09

lanuvNRW.

WFD monitoring: surface waters - Naphthalene

Naphthalene - results chemical status WFD (2007 - 2009)



Legende

2005 - 2007: Naphthalin - Wasserphase (Chemischer Zustand)

Chemischer Zustand

- ≤ QN — gut
- > QN — nicht gut
- keine Bewertung

Ökologischer Zustand Chemie, ACP und sonstige Parameter

- < 1/2 QN — sehr gut
- ≥ 1/2 QN - QN — gut
- > QN — höchstens mäßig
- keine Bewertung

Übersichtsgewässer (Flächen) GSK3C

Übersichtsgewässer (Linien) GSK3C

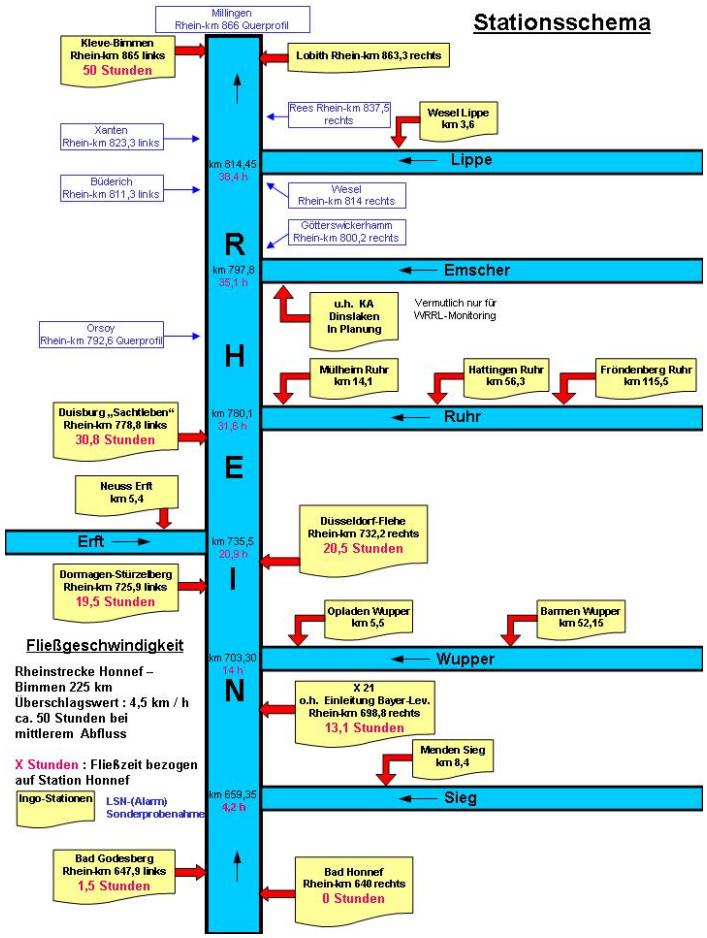
Seewasserkörper 3C

LANUV NRW

Datum	01.10.2012
Maßstab	1 : 2.183.942

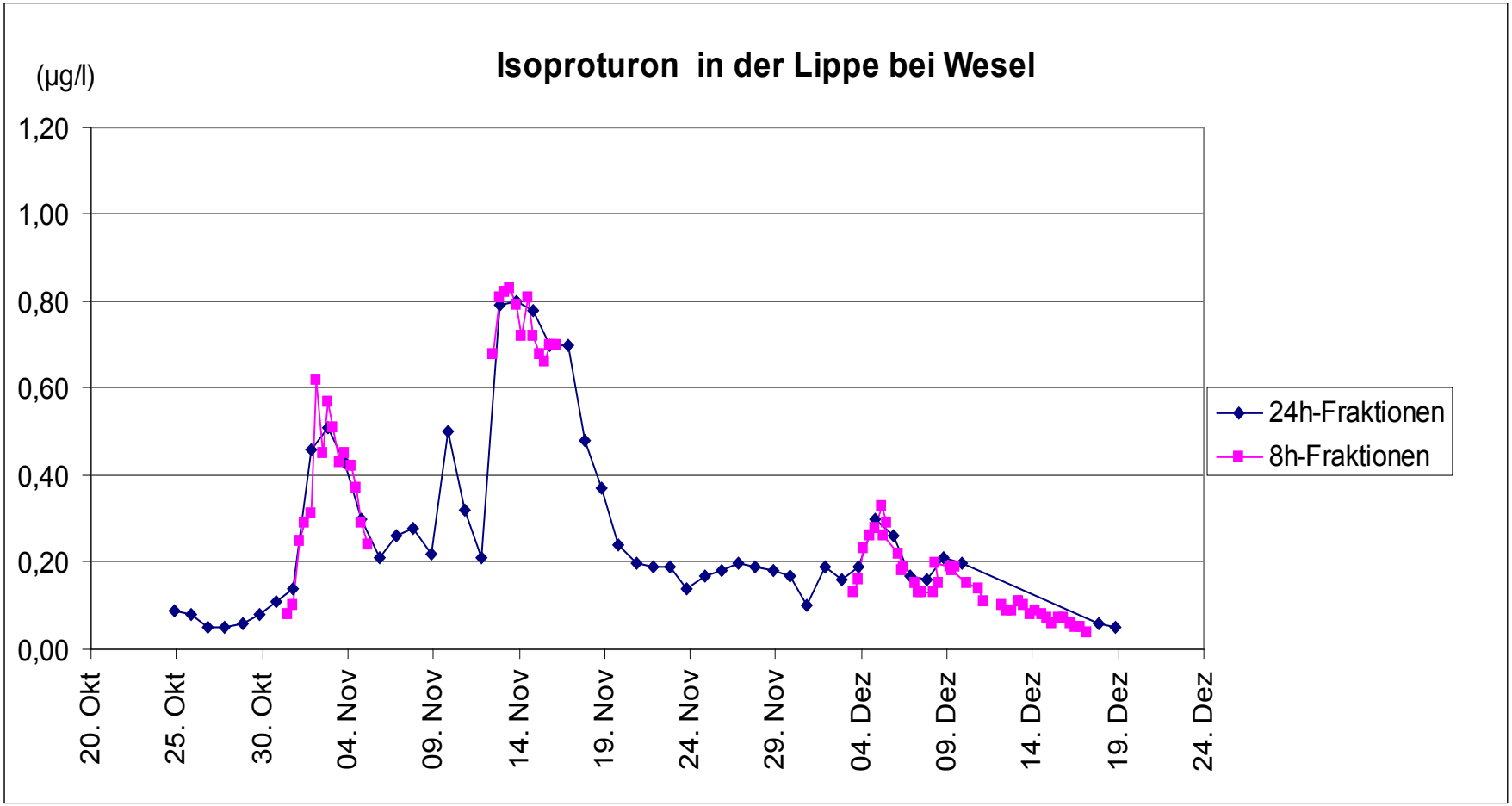
surveillance along the river Rhine

warning and alert system for drinking water-plants along Rhine and Ruhr

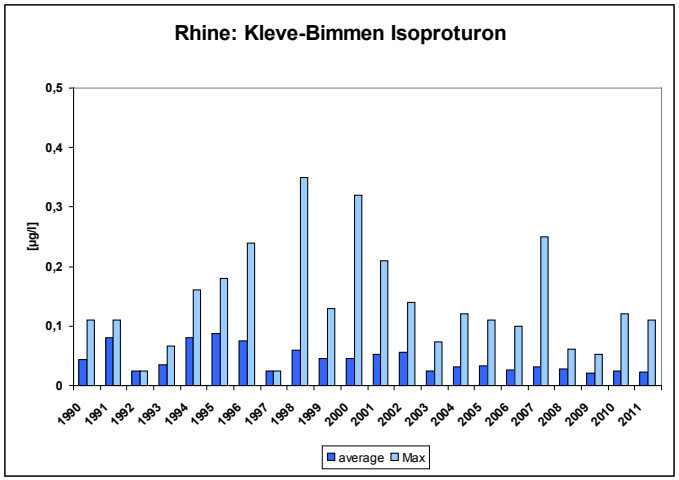


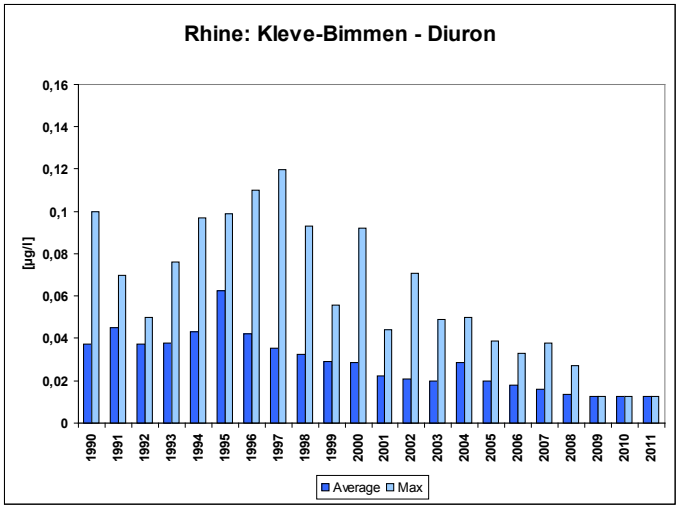
- chemical laboratory in Düsseldorf
- two continous sampling stations with laboratories in Bad Honnef and Bimmen
- four automatic measuring and sampling stations along river Rhine
- seven stations in big tribuatries
- three more stations for retain sampling
- Laboratory and sampling ship „Max Prüss“ in Duisburg
- possible cross-profile-sampling from Rhine-ferries

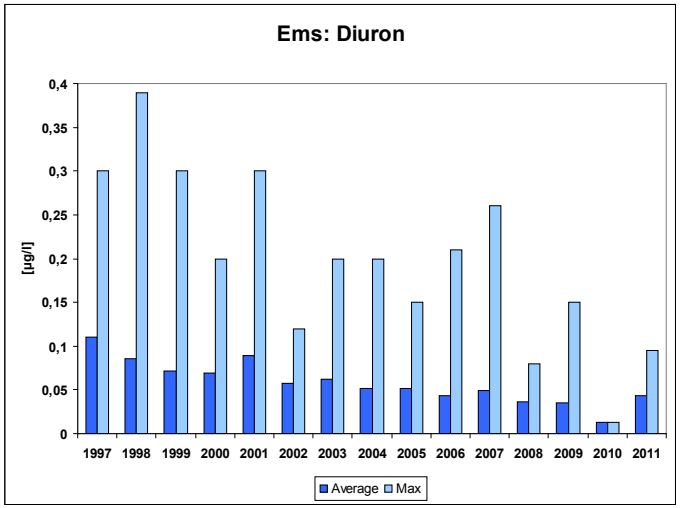
Example for time-scale sampling

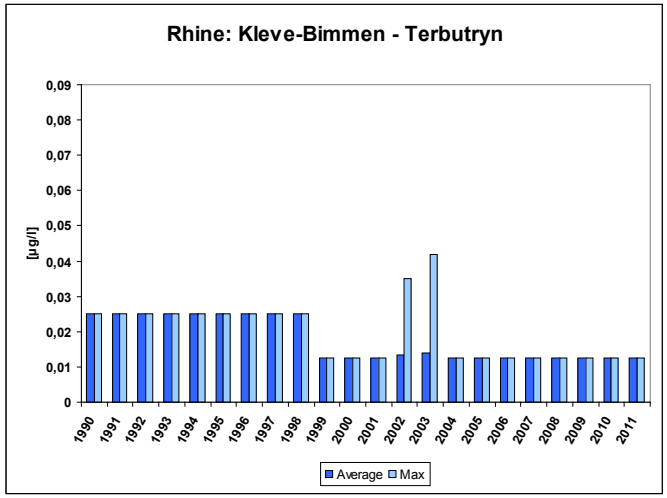


Surface water: Trends??

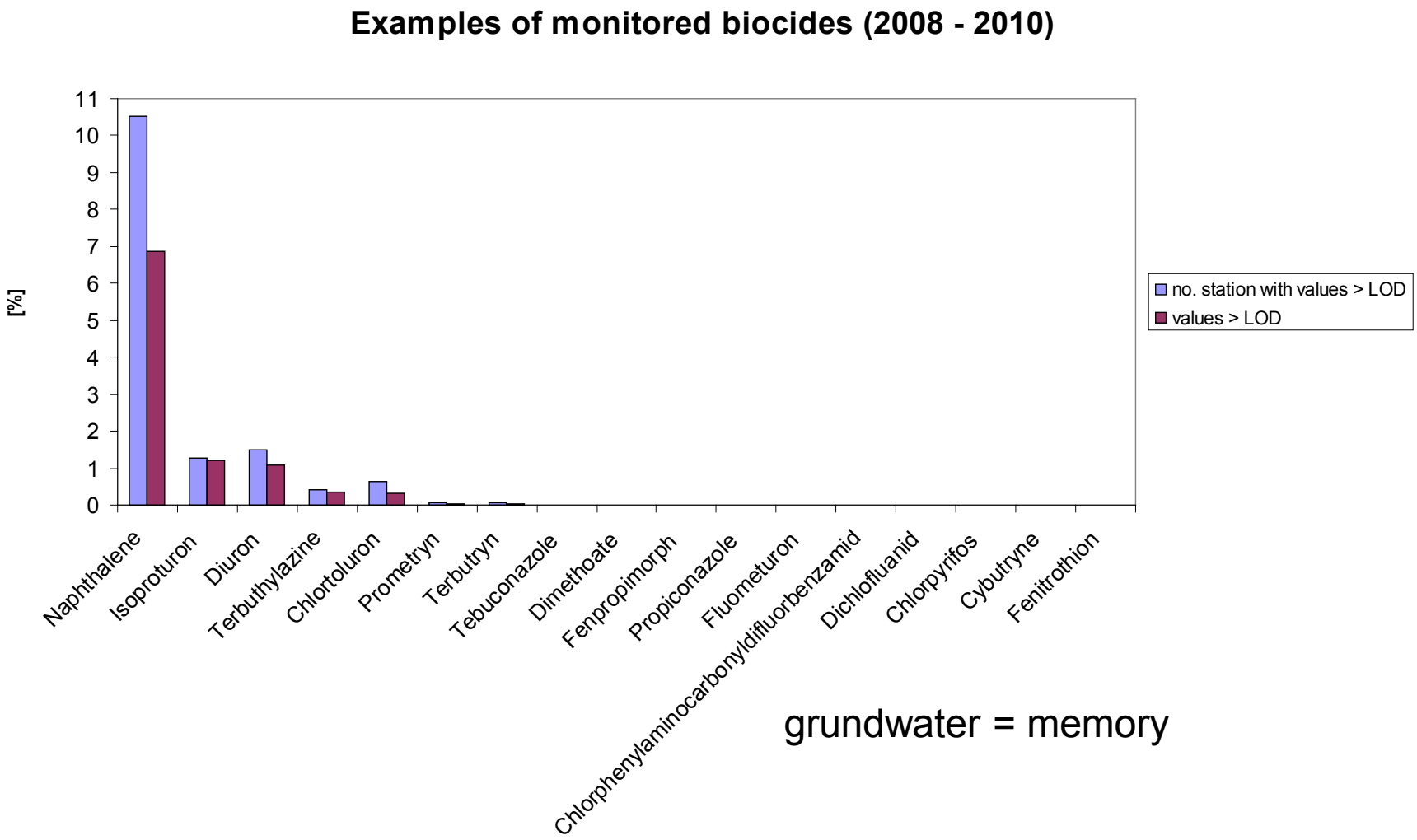






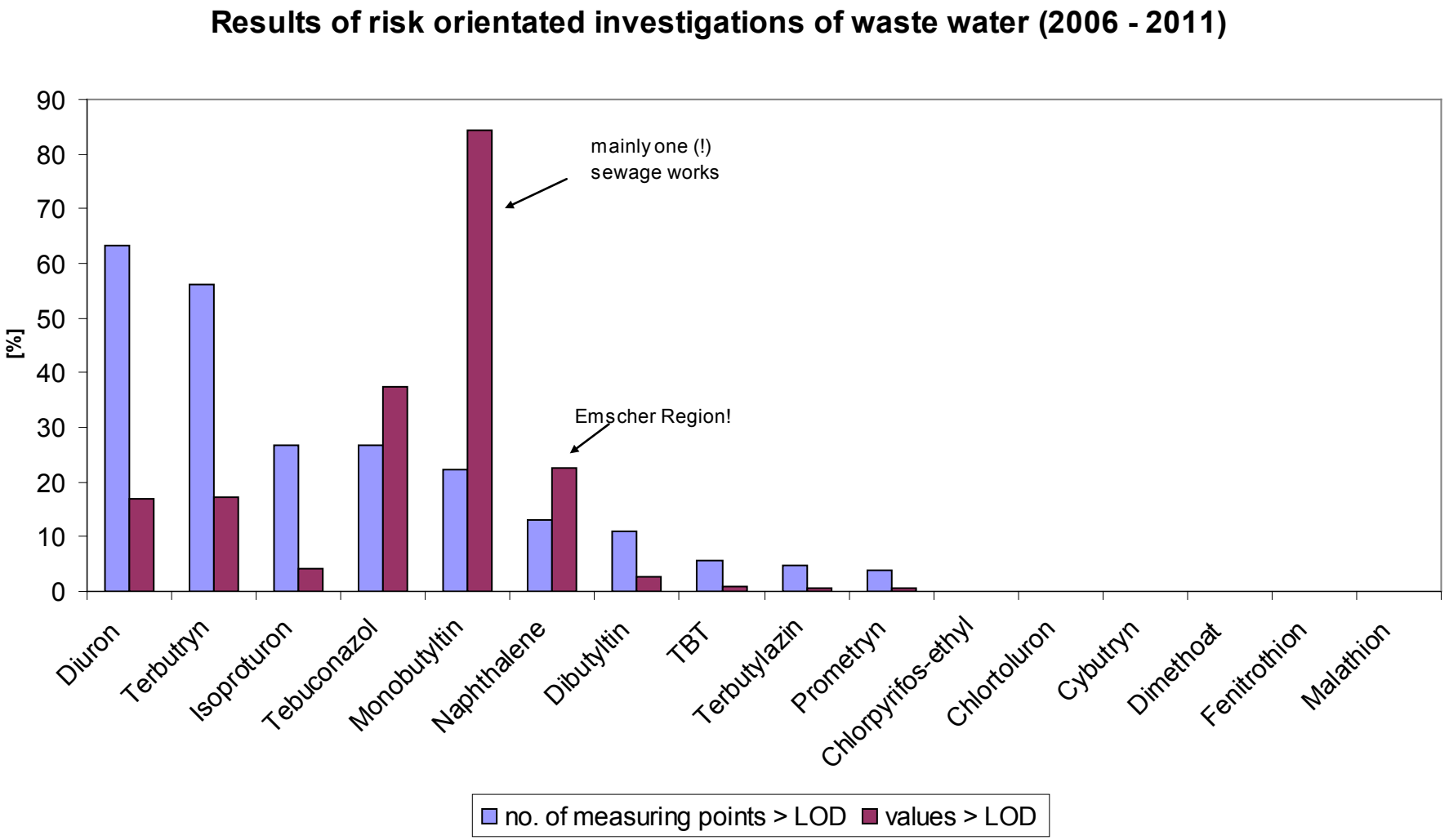


WFD monitoring: Ground Water



grundwater = memory

Waste Water: legal requirement and risk orientated investigations

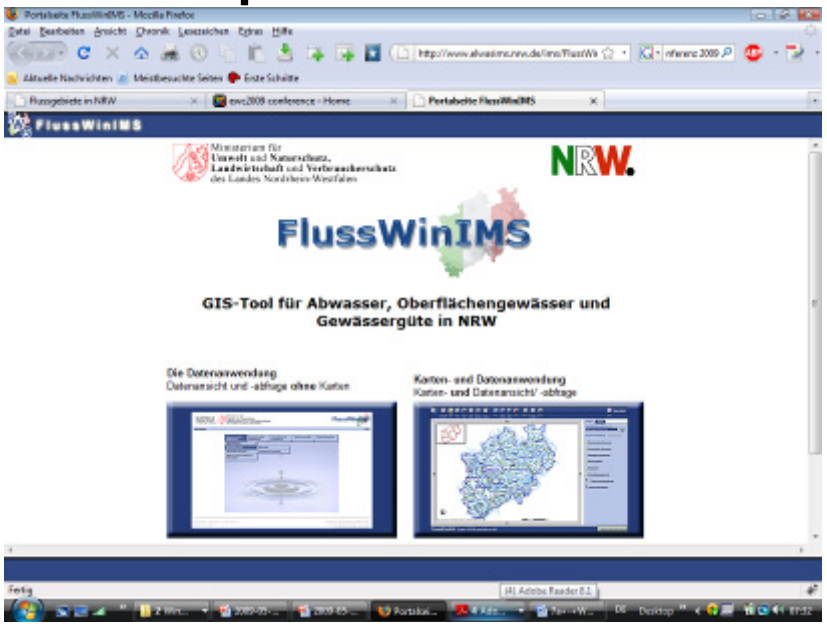


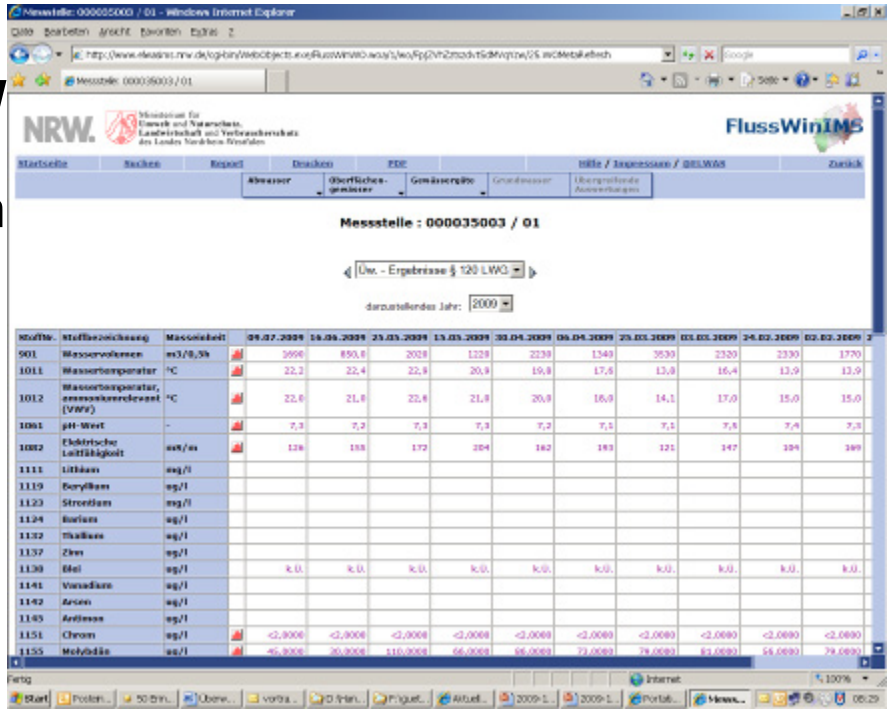
Information tool: waste water, surface water, ground

Surface water/ waste water:

- River Management Plan NRW
  http://www.flussgebiete.nrw.de/Bewirtschaftungsplanung/index.jsp

- Internet
  http://www.elwasims.nrw.de



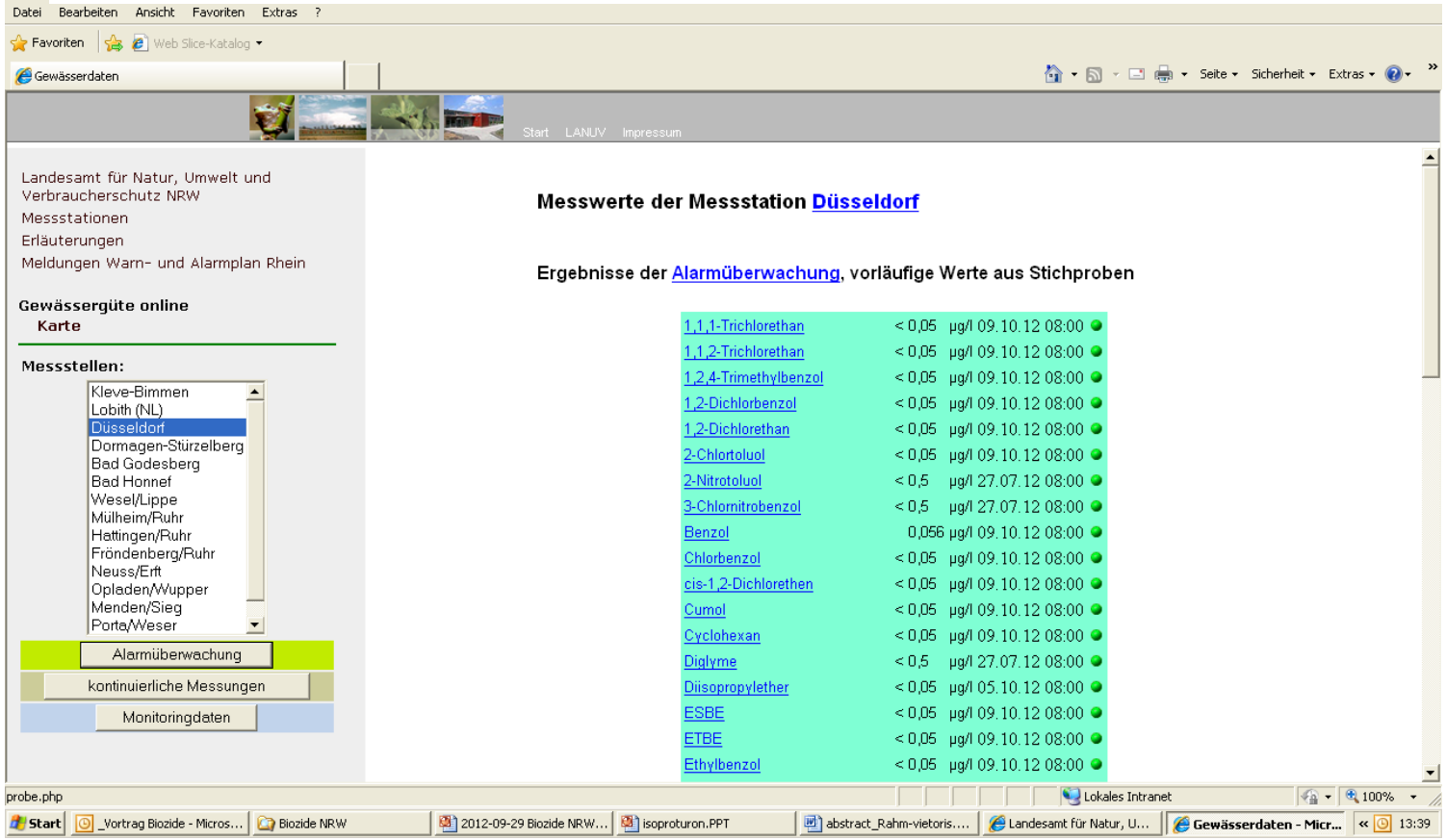


Ground:

- http://w-du11-ims/fisstobo

Information tool: current surface water quality

http://www.lanuv.nrw.de/aktuelles/umwdat.htm



Results and Outlook: monitoring of biocides in water

Results:

→ monitoring of biocides
in surface water, waste water and ground water is necessary und useful

→ relevant biocides in NRW: Isoproturon, Diuron, Terbutryn, organotin compounds;
local: naphthalene (industrial sources)

→ EQS-excess: less than 3% of surface waters (length),
mostly regional and in smaller brooks

→ positve trends for many biocides positive, not for all, e.g. Isoproturon

Outlook:

→ Trend monitoring and overview will continued according to WFD

→ Improvements:
- event-related monitoring to find maximum concentrations in smaller rivers and brooks
- monitoring of „new“ biocides according to emission aspects, ecotoxicological effects
- evaluating substance-lists for relevance
- better combination with drinking water monitoring

→ adapting WFD-monitoring