

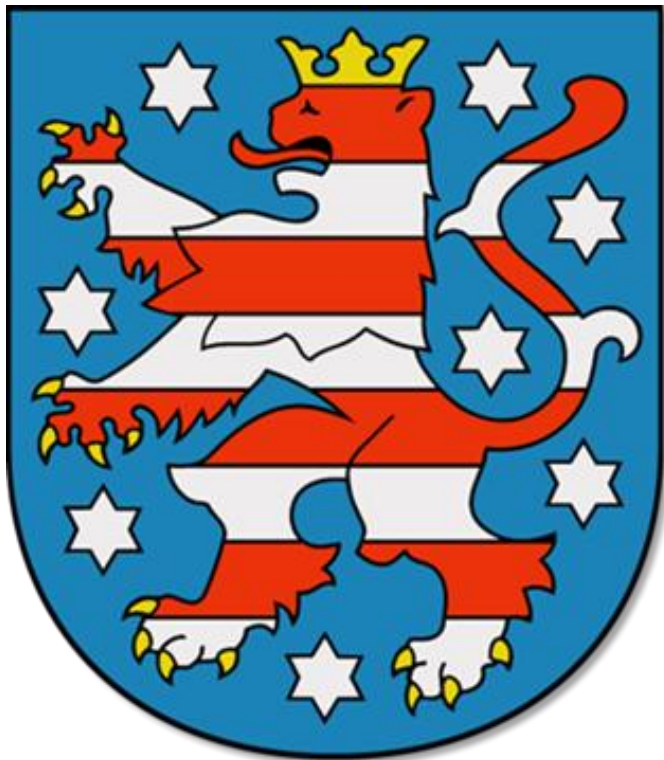
Pharmaceuticals in the environment

View of local and regional authorities

Dr. Babette Winter

State Secretary for Europe and Culture in the Thuringia State Cancellery
CoR Rapporteur on an EU action plan for the Circular Economy

The Free State of Thuringia.



Size: **16,200 km²**
Population: **2.2 mio**
Capital City: **Erfurt**
Greater Erfurt Area: **1.5 mio inhabitants**

Important Cities:
Jena, Gera, Weimar, Eisenach

	1991	2015
GDP	17.2 bn €	56.8 bn €
Sales (Industry)	6.4 bn €	32 bn € (2014)
Export (total)	1.1 bn €	13.5 bn €

pharmaceuticals in the environment

Ideas that changed the world

- Martin Luther translated the Holy Bible at Wartburg
- J. W. von Goethe and Friedrich Schiller lived as writers and poets in Weimar
- Carl Zeiss and Ernst Abbe invented optical lenses and founded optical industries in Jena
- Walter Gropius founded the BAUHAUS



The Circular Economy Package

Coping the loop – An EU action plan for the Circular Economy COM(2015) 614 final

Proposals for amending Directives on

- Waste
- Packaging Waste
- Landfill
- Electrical and electronic waste

Commission Communication of 02/12/2015

Annex with more than 50 proposals by the Commission until 2019

The transition to a circular economy requires long-term commitment and action in a wide range of policy areas in the EU and at all levels of government in Member States, including active engagement of all levels of government with the private sector.

Pharmaceuticals: In Germany 38 tons/a

The CoR opinion: clear statement on pharmaceuticals and nanomaterials as waste or discharges into the environment.

they were not included in the Action Plan, and have to be addressed swiftly as further priorities by means of corresponding strategies.

Local and Regional Authorities

(mainly) responsible for

- Waste collection
- Sampling of Waste Water
- Waste Water Treatment
- Public Health Care
- Environmental Monitoring
- Control of fertilization in agriculture

Pharmaceuticals in the environment through

Human medical treatment: waste water from households and hospitals

Veterinary medical treatment: fertilizers in agriculture, food & feed

Findings in Thuringia

surface water in Thuringia:

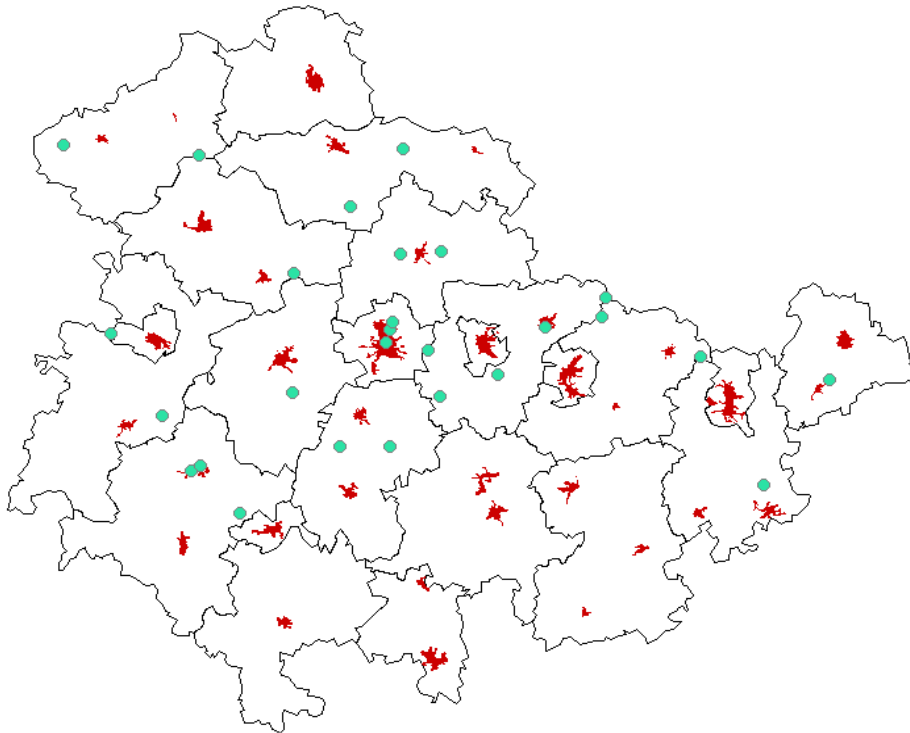
pharmaceutical active ingredients are only tested at a few selected measuring points. There is no legal obligation to monitor up to one active ingredient, according to the Surface Wastewater Ordinance: Triclosan (from antibiotics).

Extended Monitoring in 2016:

A total of 30 different active pharmaceutical ingredients were investigated.

Diclofenac (painkiller / analgesic) was detected at almost all measuring sites. The findings are above the currently internationally discussed proposal for an environmental quality standard of $0.05 \mu\text{g} / \text{l}$. Maximum values up to $0.85 \mu\text{g} / \text{l}$ were detected in diclofenac. There are also findings with ibuprofen (analgetics).

Findings in Thuringia



Monitoring of pharmaceutical traces in
Ground Water

EU-Watch-list (Water Framework
Directive)

*Measuring points with findings above the
limit of determination (light green)*

Findings in Thuringia

214 groundwater monitoring stations:

pharmaceutical agents and also metabolites were detected in 109 measuring points in the period from 2000 to 2016.

In 2016: pharmaceuticals and metabolites were found at 82 out of 214 measuring points

it is only the substances to which the analytics have been eliminated that are found. The actual substance spectrum and the total value should therefore be higher.

most common:

- Triclosan (disinfectant) - 49 measuring points from 214 (2016)
- Carbamazepine (antiepileptic) - 21 sites from 214 (2016)
- Bezafibrate (lipid-lowering) -26 measuring points from 247 (2008-2014 and 2016)
- Diclofenac (analgesic) 17 measuring points of 254 (2008-2014 and 2016)

Findings in Northrhine-Westphalia

- Human medicines such as the antiepileptic gabapentin, the metabolic products metamizol (4-acetamidoantipyrine and 4-formylaminoantipyrin), the antibiotic sulfamethoxazole and the beta-blocker metoprolol are frequently detected in quantities that exceed the drinking water-specific target values.

Waste Water Treatment

Micropollutants are generally not sufficiently degraded in conventional municipal sewage treatment plants and thus get into the waters with the treated wastewater.

Technical solutions:

- Active carbon
- Nanofiltration
- (addition of specific bacteria)

Pre-Treatment in Hospitals:

Usually “only” to extract hazardous bacterial pollutants
(University Hospital in Jena, Thuringia)

Sewage plants:

4th treatment step yet not obligatory

Expensive

➡ Increase of costs – charges for the citizens

Especially in remote areas

Avoiding and/or treatment at the source is better than „end-of-pipe-treatment“

Awareness: No Pills in sewage Water

An increased awareness of medicinal products' potential impacts should also be considered. The low level of general public's and health professions' awareness of environmental impacts of medicinal products is mostly due to the difficulty to appreciate these impacts and to communicate on this issue, according to [a report published by the Executive Agency for Health and Consumers.](#)

The city of Dülmen is currently implementing the project "DSADS - tracking trace substances" within the EU-project "No PILLS in Water"

with the Lippeverband and the state of North Rhine-Westphalia. Residents, administrators and healthcare workers should be made aware of the consequences of medicines in the water cycle. One hopes for an improved handling of medicines.

Precautionary Principle and Responsibility of Manufacturer

Many actors can do something:

1. The authorization procedure for medicinal products must, in the future, adequately take into account environmental criteria. Even the current German regulations are inadequate.
2. The polluter pays principle, which is the basis of German and European environmental law, must be enforced. It is unacceptable that only the citizen with wastewater charges absorbs the costs that are spared the pharmaceutical industry.
3. Medicinal overcaps existing in the household of citizens may not be disposed of via the toilet but must be disposed of with household waste. The household garbage is burned hereafter, extensive harmlessness is probable on this way.
4. Patients should be prescribed the smallest possible pack size, citizens should not hoard medicines in the household.
5. The medical profession should consider prescribing behavior both in terms of quantity and environmental relevance of the prescribed drugs.

Precautionary Principle and Responsibility of Manufacturer

Many actors can do something:

6. Pharmaceutical companies too often bring drugs on the market in which the necessary for the cure purpose drug dose is far exceeded.
7. At the same time, reducing the consumption of excessively cheap meat reduces the use of veterinary medicines and medicated feedingstuffs.
8. Policies and authorities should reconsider the current practice of considering natural waters to be more intensively (though also inadequately) for pharmaceuticals than drinking and mineral waters.
9. Analogous Problem Plasticizers: Buying glass bottles instead of plastic bottles when buying drinks - for the environment and one's own health. In addition, preferred purchase of food with little packaging, in particular without plastic (Reduction of the use of plasticizers).

Thank you!

Dr. Babette Winter

State Secretary for Europe and Culture in the Thuringia State Cancellery

Regierungsstraße 73

99084 Erfurt

babette.winter@tsk.thueringen.de

www.thueringen.de