

Study: Pesticides in the air

A study on atmospheric transport of
synthetic pesticides in Germany

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Initiated and financed by : Bündnis für eine enkeltaugliche Landwirtschaft (BEL) / Umweltinstitut Munich

Study 2015

Urinale

→ Glyphosate residues in
99,6% of urine samples



Suspicion:

Widespread distribution of pesticides via
atmospheric transport



Study 2018

Tree bark monitoring at 47 locations
→ *Suspicion is confirmed*



Study 2021

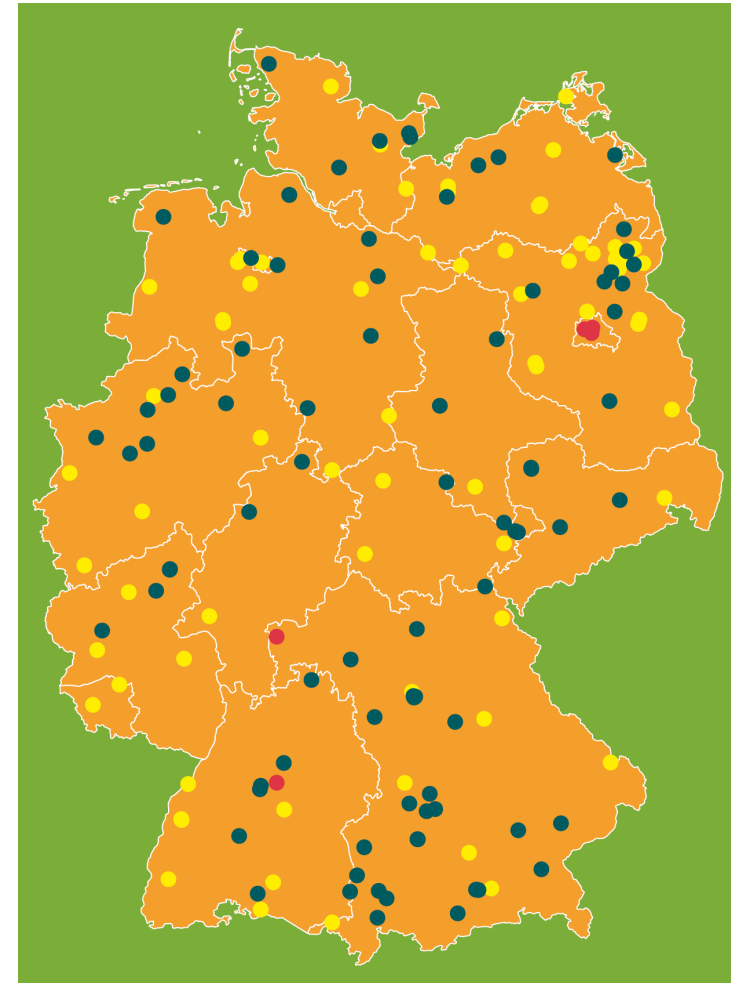
Atmospheric transport of pesticides
163 samples, 4 different sampling methods

99,6% aller
Deutschen haben
Glyphosat im
Urin!



Study: Atmospheric transport of pesticides

- So far the most comprehensive data set on this subject in Germany
- 163 sampling sites across the country
- Sites included:
 - Non-protected areas
(e.g. Agricultural areas, private gardens)
 - Protected areas
(e.g. national parks, nature reserves)
 - cities



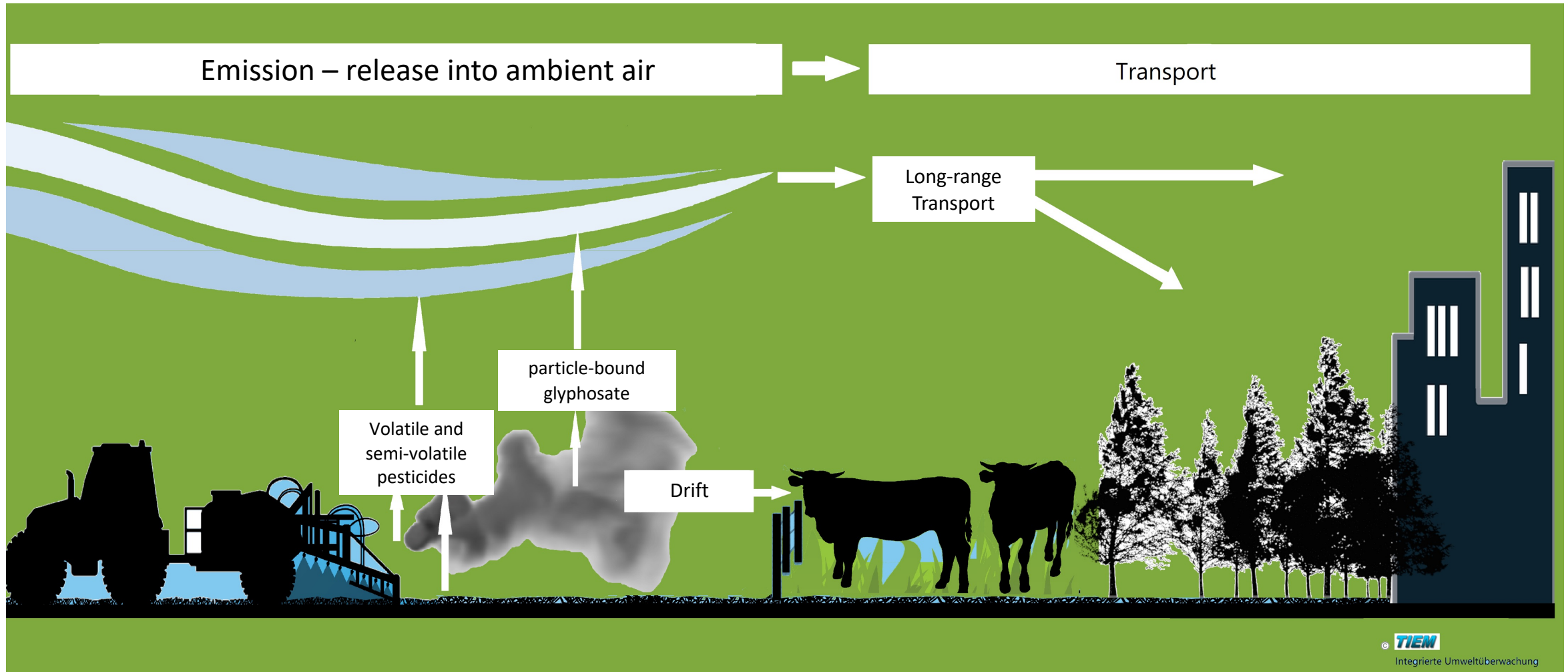
Study: Atmospheric transport of pesticides

- 4 different sampling methods:
 - Passive samplers (49)
 - Filter mats (20)
 - Honeybee bread (41)
 - Tree bark samples (6) + samples from previous monitoring (47)

→ Total of 163 samples were analysed for the presence of over 500 different pesticides and their related substances



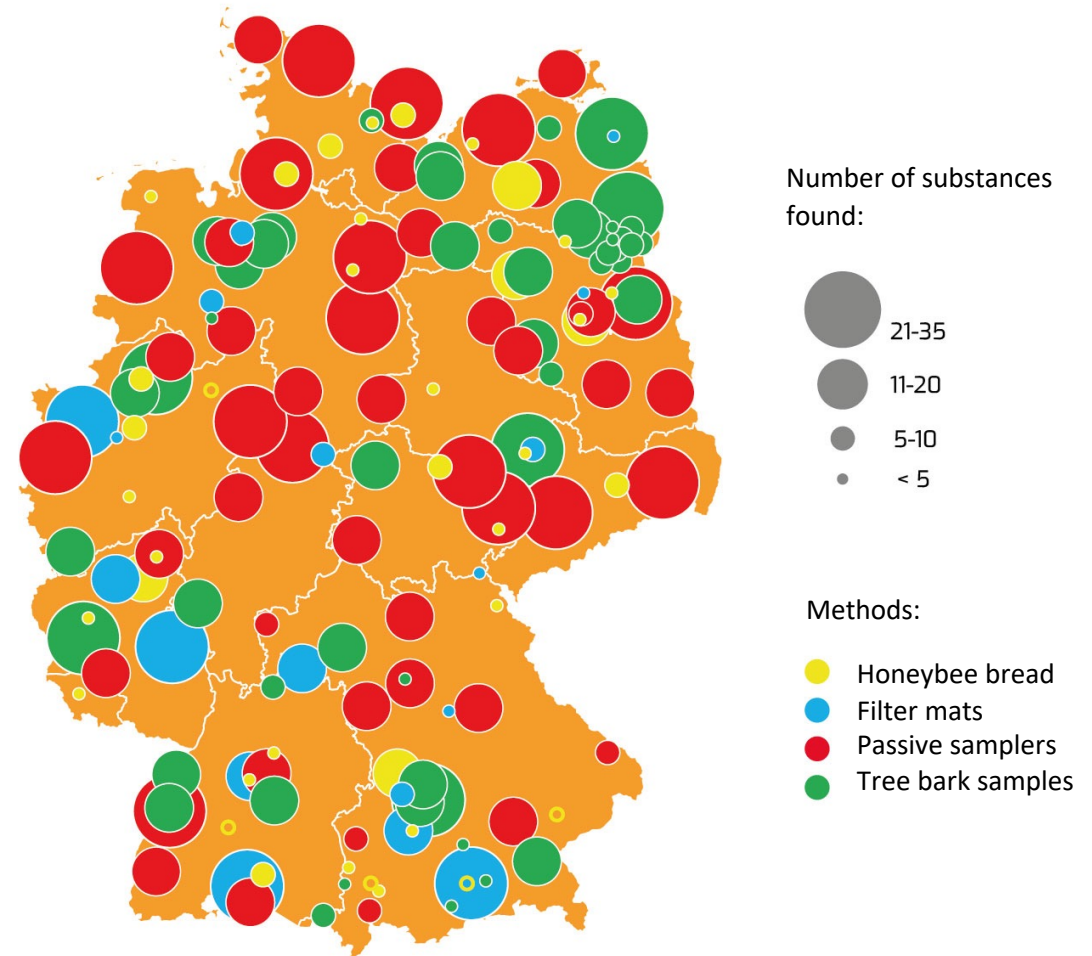
Atmospheric transport of pesticides: Drift and long-range transport



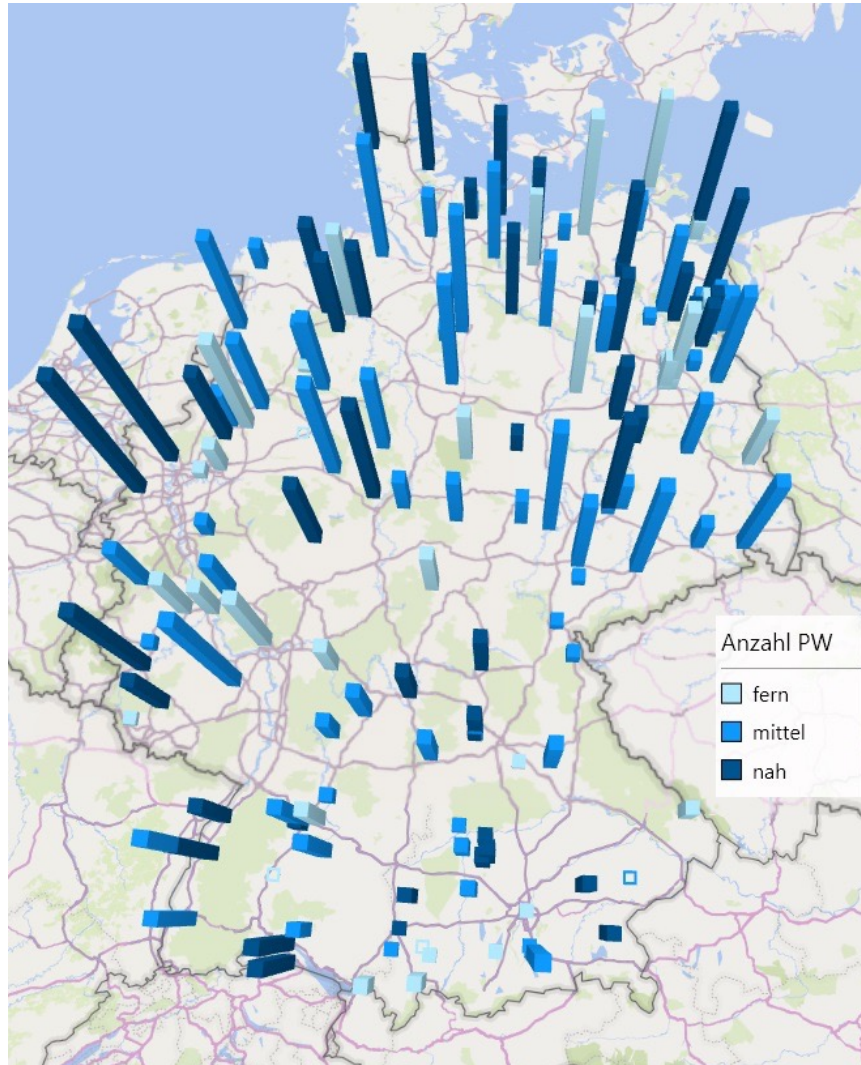
Study: Atmospheric transport of pesticides

Key findings:

- 138 different pesticides and their related substances were found
- Residues of multiple pesticides at nearly every site
- Glyphosate was found in all passive samplers and filter mats
- 30% of the substances detected were not approved for use in Germany (e.g. DDT)



Number of substances found based on distance to potential source



Position of sampling site in relation to the potential source:

- far (> 1 km)
- medium (100 – 1000 m)
- close (< 100 m)

Location only had a small effect on the number of substances recorded

Height of bar indicates number of substances found

Pesticides in the air in cities

Bremen:

Residues of **6 different** substances found on the outskirts of the city

Münster:

Residues of **13 different** substances found near city centre

Aschaffenburg:

Residues of **9 different** substances found on the outskirts of the town

Stuttgart:

residues of **8 different** substances found near the city centre

Schwerin:

Residues of **13 different** substances found near town centre

Berlin:

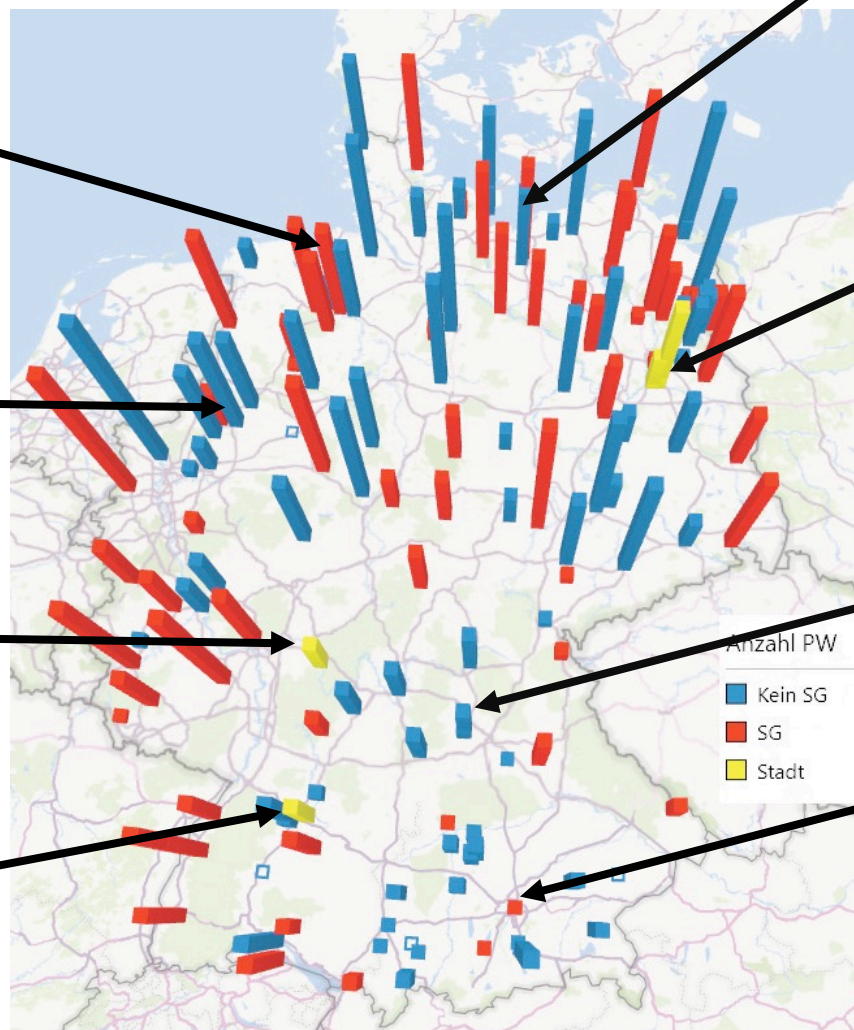
residues of **18 different** substances in the city centre

Fürth:

21 different substances found on the outskirts of the town

Munich:

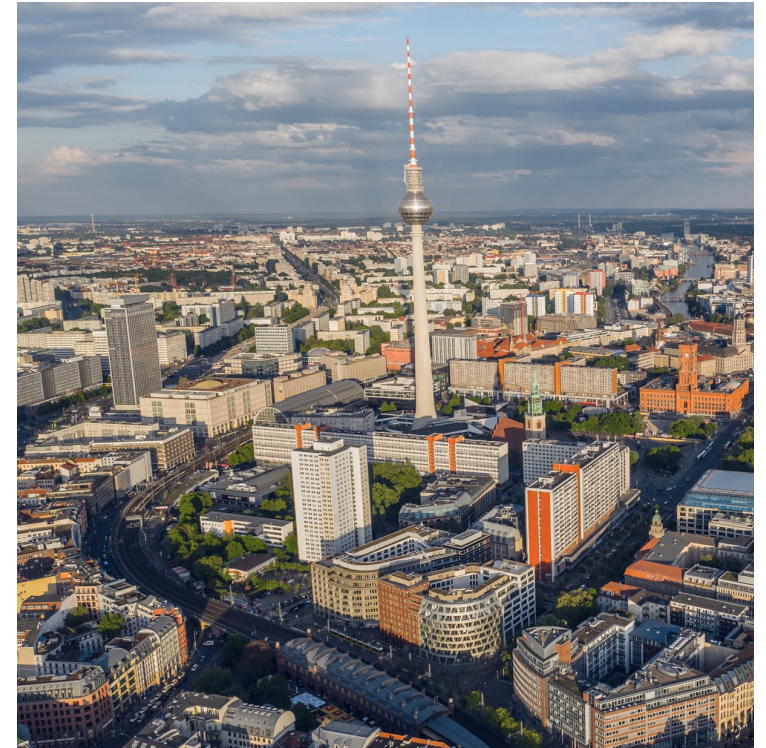
residues of **3 different** substances in Munich's largest park „English Garden“



Pesticides in the air in cities: Berlin

Key findings:

- Methods: Passive sampler, Honeybee bread
- Passive sampler was located in the city centre of Berlin
- Residues **of 18 different pesticides** detected
→ incl. Glyphosate, Metolachlor, Prosulfocarb, Pendimethalin, Terbutryn, Terbuthylazine, Chlorfurenol and Metabolites of DDT (DDE-pp and DDT-pp)



Implications

- Pesticides can travel long distances via air and can be found far away from their original source of outbringing
- Sites without pesticides in the air are unlikely in Germany
- Impact of pesticides in the air (and cocktails) on human health and environment are largely unkown
- Potential chemical interactions between pesticides and other air pollutants (e.g. vehicle or industrial emmissions) and its impacts on human health are unknown



What needs to happen?

What Individuals can do:

- Don't use pesticides in your garden
- Buy organic

What needs to happen on a political level:

- Studies on the environmental and health implications of pesticides in the air
- The atmospheric transport of pesticides needs to be considered in the approval process of substances
- Yearly monitorings need to be implemented to monitor atmospheric transport of pesticides
- The 5 most commonly found substances in our study need to be banned immediately (Glyphosat, Pendimethalin, Prosulfocarb, S-Metolachlor und Terbutylazine)

Thank you for you attention!

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Find out more about us and our study here:

www.enkeltauglich.bio

<https://enveurope.springeropen.com/articles/10.1186/s12302-021-00553-4>

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